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COAL-MINE ACCIDENTS IN THE
UNITED STATES
1942

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COAL-MINE ACCIDENTS IN THE UNITED STATES, 1942¹

By W. W. ADAMS² AND L. E. GEYER³

INTRODUCTION

With production of coal per man-hour of work highest in history, the coal mines of the United States established a lower accident-frequency⁴ rate in 1942 than in any year since 1930, the first for which the Bureau of Mines, United States Department of the Interior, collected complete reports of nonfatal as well as fatal injuries.

Reports from mine operators and State mining departments showed that 530,861 men were employed in and about coal mines during the calendar year 1942. This number does not include office employees or coke-oven workers. The figure represents a decrease of 15,831 men from the previous year, owing to losses of men to the military services and to more lucrative employment in the munitions and other industries. The loss of men was offset to some degree by an increase in the number of days of mine activity and the average number of hours of work per man during the year. The volume of work done during 1942 was 910 million man-hours, 11 percent more than in 1941. The average employee worked 243 days, 30 days more than in 1941. Production reached the unprecedented total of 640 million short tons, an increase of 12 percent over 1941; 582 million tons came from the bituminous fields of the United States and 58 million tons from the anthracite fields of Pennsylvania. To produce this quantity of coal 1,471 men sacrificed their lives, and 69,564 men suffered nonfatal injuries that disabled them for more than the remainder of the day on which the accident occurred. The nonfatal injuries were divided into three groups: 65 caused permanent total disability, 2,045 caused permanent partial disability, and 67,454 caused temporary disability of 1 day or more but did not result in the loss of, or permanent loss of use of, any part of the body.

Bituminous mines employed 448,797 men—about 2 percent fewer than in the previous year—but this decrease was offset by an increase of 12 percent in total man-hours worked and 14 percent in the total number of hours of employment per man per year. Production of coal reached more than 581 million tons, an increase of 13 percent over 1941. Fatal accidents at bituminous mines increased from 1,072 in 1941 to 1,245 in 1942, and nonfatal injuries increased from 46,637 in 1941 to 53,193 in 1942.

¹ Work on manuscript completed June 1944.

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⁴ Number of accidents per million man hours of employment.

Anthracite mines in Pennsylvania, like bituminous mines throughout the country, had fewer workers in 1942 than in 1941; the decrease was 8 percent, as the number of employees declined from 88,948 in 1941 to 82,064 in 1942. Man-hours of work increased 6 percent and production of coal (excluding the output from so-called "bootleg" mines) increased 8 percent.

The chief cause of accidents at bituminous mines was falls of roof and coal; haulage accidents ranked second. The same two hazards were likewise the chief cause of accidents in the Pennsylvania anthracite mines. The various causes of accidents during 1942 are shown in tables 2, 7, 8, 9, and 10.

Table 4 shows the relative contribution of each coal-producing State in 1942 to the United States total production of coal, men employed, man-hours of employment, and total number of men killed and injured.

Major disasters—those in which five or more men were killed—caused 132 deaths in seven accidents in 1942. All these disasters but one were explosions of gas or coal dust; the exception was a haulage accident on the surface. All of the major disasters occurred in bituminous mines. Anthracite mines in Pennsylvania have been free of major disasters since June 2, 1938, when a gas explosion took a toll of 10 lives.

Of the 31 States in which coal is produced, 9 were entirely free of fatal accidents. Although these 9 States produced less than 1 percent of the total United States output, the consumption of coal within these States is an important factor in their trade and community life.

Reports of fatalities are sometimes received by the Bureau of Mines long after the final statistics have been compiled. As such fatalities are not reported in time to be incorporated in the bulletin, notation is made in the following year's bulletin. This course is followed to allow all fatalities to be charged to the date on which the accident occurred rather than to the date of death, so that they may be related to conditions that caused the fatalities.

Final figures of output and development obtained from the annual canvass of production of bituminous coal in 1942, as shown in the Minerals Yearbook, differ slightly from those obtained from the annual canvass of accidents as published in this bulletin. According to the production canvass the output was 582,692,937 net tons and the average number of men employed amounted to 461,991, while according to the accident canvass of soft-coal mines the production was 581,704,840 net tons and average men employed totaled 448,797. There are two major causes for the slight discrepancy in the two series of data. First, the coverage was not identical; that is, some mines were covered by the production canvass and not by the accident canvass, and vice versa. Upon an over-all basis, the production canvass included 6,972 mines, while the accident canvass included 6,940. Since the question on production was asked in substantially the same form on both canvasses, the discrepancy in output figures is due largely to the difference in coverage, while the discrepancy in employment is due partly to other causes. Second, producers reported for identical mines different figures of output and employment on the production canvass from those reported on the accident canvass. Although this cause is only slightly responsible for the discrepancy in the output figures, it is very significant in explaining the discrepancy in the employment series. The principal reason for the producer reporting different figures of employment for the same mine was that the question on employment on the production canvass

was asked in a slightly different form from the way it was in the accident canvass. The wording of the question on employment in the production canvass tends to count the employee who works only part of the year and at the same time not give complete consideration to absenteeism. Since the employment series from the accident canvass tends to discount the employee who leaves the industry during the year as well as discount absenteeism, this figure is probably a better measure of changes of manpower in the soft-coal industry.

Note. The following fatalities occurred long after the date of the accident and do not appear in any of the figures or calculations on the following pages:

Ohio, Athens County, December 1942; fall of roof.

Utah, Carbon County, November 1942; struck by haulage motor.

COAL-MINE ACCIDENTS IN THE UNITED STATES, 1942

TABLE 1.—Comparative accident statistics, 1941 and 1942

	Bituminous			Pennsylvanian anthracite 1			Total		
	1941	1942	Change in 1942, percent				1941	1942	Change in 1942, percent
Number of mines	7,401	6,940	-6.2						
Number of employees:									
Underground	374,953	361,061	-3.7	65,583	58,747	-10.4	440,536	419,808	-4.7
Open-cut	18,605	20,353	+9.4	4,501	4,360	-3.1	23,106	24,713	+7.0
Surface	64,186	67,383	+5.0	18,864	18,957	+5	83,050	86,340	+4.0
Total	457,744	448,797	-2.0	88,948	82,064	-7.7	546,692	530,861	-2.9
Man-days:									
Underground	80,066,307	88,290,160	+10.3	13,601,171	14,198,496	+4.4	93,667,478	102,488,656	+9.4
Open-cut	4,022,362	4,683,616	+16.4	855,696	943,240	+10.5	5,626,856	5,626,856	+14.6
Surface	13,910,808	16,517,365	+18.7	3,987,465	4,502,500	+13.8	17,868,363	21,020,095	+17.6
Total	97,989,577	109,491,371	+11.7	18,444,332	19,644,236	+6.5	116,443,889	129,135,607	+10.9
Man-hours:									
Underground	563,255,987	621,472,377	+10.3	95,739,822	98,439,274	+3.8	659,025,800	720,911,651	+9.4
Open-cut	29,712,028	34,987,330	+17.8	6,167,485	6,821,583	+11.1	35,879,513	41,609,413	+16.0
Surface	98,101,373	116,368,785	+18.6	28,150,098	31,499,137	+11.9	136,251,471	147,867,922	+17.1
Total	691,049,388	772,828,992	+11.8	130,107,405	137,559,904	+5.7	821,156,793	910,388,986	+10.9
Killed:									
Underground	994	1,143	+15.0	172	210	+22.1	1,166	1,353	+16.0
Open-cut	34	31	-8.8	6	4	-33.3	40	35	-12.5
Surface	44	71	+61.4	16	12	-25.0	60	83	+38.3
Total	1,072	1,245	+16.1				1,266	1,471	+16.2
Injured:									
Underground	42,218	46,267	+14.3	14,752	14,304	-3.0	56,970	62,571	+9.8
Open-cut	1,450	1,460	+1.7	172	135	-21.5	1,622	1,595	-1.7
Surface	2,969	3,466	+16.7	1,904	1,932	+1.5	4,873	5,398	+10.8
Total	46,637	53,193	+14.1		16,828	-2.7	63,465	69,564	+9.6

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Production:								
Underground.....	460,291,510	516,222,364	+12.2	41,727,430	44,339,388	+6.3	502,018,940	
Open-cut.....	55,477,738	65,482,476	+18.0	7,211,478	9,026,646	+25.2	62,689,216	
Washery.....				3,688,588	3,575,011	-3.3	3,698,588	
Dredge.....				1,477,465	1,374,977	-6.9	1,374,977	
Total.....	515,769,238	581,704,846	+12.8	54,114,961	56,316,022	+7.8	560,884,209	
Fatality rate (per million man-hours):								
Underground.....	1,765	1,839	+4.2	1,796	2,112	+17.6	1,789	
Open-cut.....	1,144	.886	+22.6	.973	.604	-37.9	1,115	
Surface.....	.449	.610	+35.9	.568	.381	-32.8	.475	
Total.....	1,551	1,611	+3.9		1,491	+10.2	1,542	
Injury rate (per million man-hours):								
Underground.....	74,956	77,666	+3.6	154,004	143,847	-6.6	86,446	
Open-cut.....	48,802	41,729	-14.5	27,888	20,388	-26.9	45,207	
Surface.....	30,295	28,785	-1.6	67,637	61,355	-9.3	38,388	
Total.....	67,437	68,329	+2.0	159,339	119,010	-8.0	77,287	
Fatality rate (per million short tons):								
Underground.....	2,160	2,214	+2.5	4,122	4,736	+14.9	2,323	
Open-cut.....	.613	.473	-22.8	.832	.443	-46.8	.638	
Total.....	2,078	2,140	+3.0		3,585	+8.1	2,222	
Injury rate (per million short tons):								
Underground.....	91,720	93,500	+1.9	333,532	322,603	-8.7	113,482	
Open-cut.....	26,157	22,296	-14.7	23,851	14,956	-37.3	25,874	
Total.....	90,422	91,443	+1.1		310,968	280,729	-9.7	111,365

¹ Men employed in washery and dredge operations are included with surface employees. Accidents to men employed in the washery and dredge are included in surface accidents.

COAL-MINE ACCIDENTS IN THE UNITED STATES, 1942

TABLE 2.—Number and causes of fatalities and nonfatal injuries at coal mines, by principal causes, in the United States for the year ended December 31, 1942

Cause of accident	Fatalities			Nonfatal injuries		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Underground:						
Falls of roof or face.....	592	132	724	13,224	2,666	15,890
Mine cars and locomotives.....	241	37	278	11,581	1,866	13,447
Explosives of gas or coal dust:						
Local explosions.....	21	9	30	114	72	186
Major explosions.....	127		127			
Explosives.....	16	13	29	318	108	426
Electricity.....	51	6	57	931	141	1,072
Machinery (cutters, loaders, etc.).....	49	1	50	4,911	720	5,631
Mine fires.....	3	5	8	14	4	18
Miscellaneous.....	37	6	43	17,105	8,688	25,793
Total underground.....	1,137	209	1,346	48,198	14,265	62,463
Shaft.....	6	1	7	69	39	108
Stripping or open-cut mining ¹	31	4	35	1,460	162	1,622
Surface: ²						
Haulage.....	32	6	38	893	392	1,285
Machinery.....	14	3	17	345	198	543
Miscellaneous.....	25	3	28	2,228	1,315	3,543
Total surface.....	71	12	83	3,466	1,905	5,371
Grand total	1,245	226	1,471	53,193	16,371	69,564

¹ Includes dredge operations at Pennsylvania anthracite mines.² Includes washery operations at Pennsylvania anthracite mines.

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TABLE 3.—*Relative standing of States in 1942 according to their fatality and injury rates per million man-hours of employment*

State	Fatality rate	State	Injury rate
Missouri.....		Other States ¹	26.044
Michigan.....		Wyoming.....	36.167
Texas.....		Missouri.....	39.132
Other States ¹		Kansas.....	41.013
South Dakota.....		Oklahoma.....	47.912
Maryland.....	.765	South Dakota.....	51.996
Kansas.....	.906	Tennessee.....	54.874
Pennsylvania (bituminous).....	.981	Alabama.....	56.991
Indiana.....	1.005	Indiana.....	58.832
Pennsylvania (bituminous and anthracite).....	1.248	Pennsylvania (bituminous).....	63.413
Alabama.....	1.405	Ohio.....	66.398
Washington.....	1.469	Alaska.....	67.872
Virginia.....	1.492		
United States (bituminous).....	1.611	United States (bituminous).....	68.829
United States (average).....	1.616		
Pennsylvania (anthracite).....		Kentucky.....	69.195
Illinois.....	1.643	West Virginia.....	72.034
New Mexico.....	1.738	Virginia.....	73.248
Kentucky.....	1.763	North Dakota.....	74.755
Iowa.....	1.792	Michigan.....	75.632
Tennessee.....	1.798		
Ohio.....	1.840	United States (average).....	76.411
West Virginia.....	1.877	Iowa.....	76.826
Wyoming.....	1.917	Texas.....	81.335
North Dakota.....	2.434	Illinois.....	83.040
Utah.....	2.509	Pennsylvania (bituminous and anthracite).....	85.874
Oklahoma.....	2.523	Colorado.....	89.734
Montana.....	2.604	New Mexico.....	90.220
Alaska.....	2.808	Arkansas.....	90.644
Arkansas.....	3.669	Maryland.....	98.705
Colorado.....	3.722	Utah.....	99.172
	4.350	Montana.....	104.706
		Pennsylvania (anthracite).....	119.010
		Washington.....	133.965

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.

TABLE 4.—*Proportionate State contributions to the employment and accident record of coal mines in the United States in 1942*

State	Percent of employees	Percent of man-days worked	Percent of man-hours worked	Percent of production	Percent of deaths	Percent of injuries
Alabama.....	4.51	4.83	4.85	3.03	4.21	3.62
Alaska.....	.04	.05	.06	.04	.14	.05
Arkansas.....	.67	.50	.50	.32	1.16	.60
Colorado.....	1.55	1.50	1.49	1.26	4.01	1.75
Illinois.....	6.47	5.95	5.94	10.21	6.39	6.46
Indiana.....	2.06	1.95	1.97	3.97	1.22	1.52
Iowa.....	.90	.65	.67	.44	.75	.68
Kansas.....	.47	.47	.48	.66	.27	.26
Kentucky.....	10.41	10.10	10.12	9.56	11.22	9.16
Maryland.....	.43	.43	.43	.31	.20	.56
Michigan.....	.07	.07	.07	.04	-----	.07
Missouri.....	.70	.62	.65	.55	-----	.33
Montana.....	.30	.27	.27	.60	.48	.38
New Mexico.....	.36	.37	.37	.26	.41	.44
North Dakota.....	.23	.20	.22	.42	.34	.21
Ohio.....	4.20	4.16	4.21	5.01	4.89	3.66
Oklahoma.....	.47	.41	.42	.37	.68	.26
Pennsylvania (bituminous).....	21.41	22.31	22.29	22.24	13.53	18.50
South Dakota.....	.01	.01	.01	.01	-----	(2)
Tennessee.....	1.76	1.72	1.73	1.28	1.97	1.24
Texas.....	.04	.03	.04	.05	-----	.04
Utah.....	.63	.70	.70	.90	1.09	.90
Virginia.....	3.62	3.61	3.61	3.24	3.33	3.46
Washington.....	.42	.45	.45	.31	.41	.79
West Virginia.....	21.84	22.44	22.35	24.51	26.51	21.07
Wyoming.....	.93	.95	.95	1.29	1.43	.45
Other States ¹.....	.04	.04	.04	.01	-----	.01
Total bituminous.....	84.54	84.79	84.89	90.89	84.64	76.47
Pennsylvania (anthracite).....	15.46	15.21	15.11	9.11	15.36	23.53
Total, 1942.....	100.00	100.00	100.00	100.00	100.00	100.00

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.² Less than 0.01 percent.

ACKNOWLEDGMENTS

The information presented in this paper, insofar as it relates to 1942, is based upon a study of reports furnished to the Bureau of Mines by coal-mining companies throughout the United States. Information from the operators was supplemented by data from the various State coal-mine inspectors.

The authors express appreciation to the producing companies and State mine officials for their cooperation in promoting safety in coal mines by making possible this presentation of uniform and comparable accident statistics for the industry in all parts of the country.

Comparability of accident statistics in all States tends to promote safety, since one State or one county is thereby enabled to compare its success in accident prevention with that of another State or county. Moreover, each mining company may compare its individual experience with that of the coal-mining industry as a whole or with any major segment thereof.

SCOPE OF STATISTICS

The canvass conducted for the calendar year 1942 showed that a total of 6,940 bituminous-coal mines and an undetermined number of Pennsylvania anthracite mines were in operation for all or part of the year. The active bituminous mines showed a decrease of 6 percent from the number in operation in the previous year.

The statistics in this and previous bulletins do not cover accidents to office employees or to visitors or other nonemployees, except when such persons are injured while engaged in rescue work. Accidents to trespassers also are excluded, as are deaths from suicide, crime, or natural causes.

CLASSIFICATION OF INJURIES

Coal-mine accidents covered by this bulletin have been classified into four groups:

Fatalities.—This class is intended to cover all deaths resulting from injuries within the calendar year. The date of the accident rather than the date of death determines the month and year to which the accident is chargeable. Death may have occurred after the close of the year or at any time before the date when the operating company sent its report for the year to the Bureau of Mines.

Permanent total disability.—The loss of, or loss of use of, both hands, or both arms, or both legs, or both feet, or both eyes, or any two thereof; or any injury (except death) which permanently and totally incapacitates the injured person from following any gainful occupation.

Permanent partial disability.—Loss of, or loss of use of, one foot, leg, hand, arm, or eye; or loss of part of bone of one of the foregoing; or loss or loss of use of one or more fingers, or one great toe, or any two or more toes; or the permanent impairment of use of any part of the body.

Temporary.—This class includes all other injuries causing disability to the injured employee for more than the remainder of the day on which the accident occurred. (See table 5.)

TABLE 5.—*Accident rates per million man-hours, by severity of injury, in 1942*

Severity of injury	Bituminous		Anthracite		Total	
	Number of injuries	Rate	Number of injuries	Rate	Number of injuries	Rate
Fatal.....	1,245	1.611	226	1.643	1,471	1.616
Permanent total disability.....	62	.080	3	.022	65	.071
Permanent partial disability.....	1,935	2.504	110	.800	2,045	2.246
Temporary (1 day or more).....	51,196	66.245	16,258	118.188	67,454	74.094
Total nonfatal injuries.....	53,193	68.829	16,371	119.010	69,564	76.411
Total fatal and nonfatal.....	54,438	70.440	16,597	120.653	71,035	78.027

MAN-HOURS WORKED IN COAL MINES

All accident rates shown in this bulletin, unless otherwise indicated, are based upon a unit of 1 million man-hours of exposure of mine workers to the risk of injury from accidents in and about the mines, exclusive of operations of coke ovens. The number of man-hours worked is intended to represent as nearly as possible the actual number of hours all employees spent in the performance of their duties in and about the mines. Many mines do not keep such records with complete accuracy. The questionnaire form that the Bureau mails to all operating companies at the close of each calendar year requests that the number of man-hours of employment be indicated on the company reply to the Bureau. When the information is supplied by the reporting company, it is accepted as correct or as nearly correct as possible. When the company is unable to report the volume of employment in terms of man-hours, the number of man-hours is calculated from other information supplied by the company. This supplemental information relates to the number of days the mine was in operation, the average number of men employed during such period, the number of shifts worked daily (that is, whether the mine was operating on a one-, two-, or three-shift basis), the number of hours constituting a standard shift, and the total number of man-days worked by all employees while the mine was in operation.

An increasing number of coal-mining companies answer the Bureau's annual request for information as to the number of man-hours worked. Frequently the figure furnished doubtless is a close approximation rather than an exact count; but it is believed that it is the most accurate obtainable, as the operating companies are the best source of such information, whether actual or estimated. (See tables 6 to 10.)

MAN-HOURS WORKED IN COAL MINES

TABLE 6.—United States: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

State	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment				
			Under-ground		Open-cut ²	Under-ground		Open-cut ²	Surface ³		Under-ground		
			Average days of employment per man	Total	Surface ³	Average days of employment per man	Total	Open-cut ²	Surface ³	Total	Open-cut ²	Surface ³	Total
Alabama	207	19,390,705	20,343	232	3,354	23,929	261	5,326,020	48,779	86,168	6,236,437	37,678,654	367,472
Alaska	6	257,169	167	70	539	3,579	181	527,848	288	68	143	377,896	545,144
Arkansas	114	2,031,566	2,867	173	8,217	1,558	12	8,079,042	26,513	95,098	649,460	3,618,029	201,011
Colorado	237	65,355,364	66,647	6,201	34,366	223	5,321,138	962,655	1,396,134	9,674,806	1,924,585	6,936,261	4,567,302
Indiana	512	25,416,137	5,853	1,084	1,010	9,100	231	1,287,249	907,552	236,558	2,511,429	9,058,121	13,582,339
Kentucky	239	2,800,592	4,466	1,497	4,778	176	851,436	816,433	20,218	8,643	8,833,046	4,688,701	54,004,402
Louisiana	103	4,255,556	1,144	1,160	2,181	242	267,710	209,379	43,086	601,175	1,990,211	2,094,138	6,117,748
Maryland	611	1,173,638	46,381	87	8,033	557	236	11,077,473	1,754	1,886,430	13,047,603	78,140,965	92,058,997
Michigan	113	1,971,427	1,964	9	315	2,288	243	482,143	82,533	72,761	556,658	3,305,207	12,278
Missouri	6	250,020	343	441	384	739	212	492,469	232,681	10,021	92,554	577,731	5,139,299
Montana	193	3,519,130	2,398	993	415	1,587	210	231,644	28,654	67,766	3,620,114	1,775,958	507,060
New Mexico	120	3,817,060	1,080	93	405	1,486	415	377,757	104,759	87,638	347,956	1,638,218	228,578
North Dakota	168	2,657,914	524	544	134	1,202	213	106,655	121,573	27,252	482,506	2,663,238	3,402,784
Oklahoma	681	32,027,313	16,137	2,823	3,325	22,285	211	3,871,814	67,842	88,700	802,786	4,846,446	975,799
Pennsylvania (61-turning)	123	2,345,302	4,747	417	338	2,502	213	359,075	108,140	66,766	533,981	2,535,042	5,792,234
South Dakota	1,577	142,360,304	94,694	4,100	14,871	113,674	253	24,237,538	803,136	3,768,387	28,809,061	170,198,446	6,158,309
Tennessee	171	8,217,468	8,019	25	1,322	9,336	201	1,898,070	5,882	322,309	2,290,720	17,558,973	26,581,374
Texas	9	322,787	192	23	20	235	180	35,093	4,554	2,719	42,366	274,963	47,333
Utah	63	5,731,999	2,374	1,747	996	3,370	268	631,175	4,073,180	272,063	903,238	4,432,164	4,432,164
Virginia	156	20,755,966	16,743	2,448	19,191	243	4,073,180	1,120	591,415	4,664,595	28,656,277	4,177,527	6,312,495
Washington	52	2,006,968	1,701	4	503	2,208	264	450,694	1,200	131,508	583,412	3,154,567	32,833,804
West Virginia	966	156,883,317	95,606	1,026	19,326	115,953	250	23,898,568	166,553	9,910,576	28,955,682	167,771,833	4,052,150
Wyoming	108	8,241,164	3,849	74	1,007	4,330	249	955,869	18,111	250,089	1,228,029	6,724,746	34,419,880
Other States	16	50,650	139	55	194	228	31,336	12,883	44,219	243,764	101,806	101,806	345,570
Total bituminous	6,940	581,704,840	361,061	20,353	67,383	448,767	244	88,290,160	4,683,616	16,517,595	109,491,371	621,472,377	34,987,850
Pennsylvania (an-thracite)	58,316,022	58,747	4,844	18,473	82,064	239	14,198,496	1,054,308	4,391,432	19,644,236	99,439,274	7,548,687	30,572,023
Total, 1942	640,020,862	419,808	25,197	85,856	530,661	243	102,488,656	5,737,924	20,909,027	129,155,607	720,911,051	42,536,527	146,940,808
Total, 1941	569,884,209	440,536	23,596	82,560	546,692	213	93,667,478	5,008,375	17,768,036	116,443,889	659,245,309	36,710,900	821,156,793

TABLE 6.—United States: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Continued

State	Killed	Injured		Tempo- rary	Total	Killed	Injured	Rate per million man-hours	Rate per million tons	Tons per man-hour of em- ployment	Man- hours of employment per ton	Average hours of employment per man per day	
		Killed	Perma- nent total disabili- ty										
Alabama	62	11	148	2,356	2,515	1,405	56,991	3,197	129,701	0,439	2,276	7.08	
Alaska	2	—	—	337	3,659	67,872	7,777	143,874	4,472	2,120	8,00	2,300	
Arkansas	17	—	—	410	414	90,644	8,388	203,784	4,445	2,248	7,03	1,276	
Colorado	59	3	1	1,183	1,217	4,350	89,734	150,637	5,956	1,679	7,01	1,651	
Illinois	94	3	191	4,298	4,992	1,738	83,040	1,458	70,732	1,208	828	7,04	1,574
Indiana	18	1	1,020	1,005	1,054	58,832	708	41,470	1,410	705	7,11	1,642	
Iowa	11	3	467	470	1,798	78,826	3,898	166,043	4,663	2,161	7,26	1,280	
Kansas	4	—	—	2	179	181	906	41,013	944	42,736	1,042	1,770	
Kentucky	165	12	390	5,970	6,372	1,792	69,195	2,697	104,153	6,664	1,505	7,06	1,666
Maryland	3	2	—	385	387	765	98,705	1,522	196,305	5,03	1,989	7,04	1,714
Michigan	—	2	47	47	49	—	75,632	213,025	355	2,817	7,00	1,687	
Missouri	—	—	—	227	231	—	39,132	—	65,641	5,956	1,677	7,45	1,579
Montana	7	—	4	—	—	—	—	—	1,531	1,653	7,16	1,571	
New Mexico	6	—	12	249	261	2,908	104,796	1,834	68,377	2,018	7,05	1,790	
North Dakota	5	—	8	299	307	1,763	90,220	3,558	182,074	2,018	7,05	1,658	
Ohio	72	2	6	143	149	2,566	74,755	1,881	56,061	1,333	1,750	7,14	
Oklahoma	10	—	7	2,467	2,547	1,877	66,338	2,248	79,526	8,335	1,98	7,14	
Pennsylvania (bituminous)	199	9	207	12,653	177	1,84	2,604	9,912	4,175	1,603	1,633	1,785	
South Dakota	—	—	3	12,869	12,869	—	63,413	1,398	90,397	701	1,426	7,04	
Tennessee	29	2	43	820	865	1,840	51,906	56,587	919	1,088	7,98	1,603	
Texas	—	—	—	29	29	—	54,874	3,529	105,264	521	1,918	7,10	
Utah	16	1	16	612	629	2,523	99,172	2,700	106,677	1,106	8,42	1,517	
Virginia	49	5	119	2,281	2,405	1,492	73,248	2,361	115,870	632	1,582	7,04	
Washington	6	—	15	532	547	1,469	133,965	2,991	272,670	491	2,035	7,00	
West Virginia	390	12	588	14,058	14,658	1,917	72,034	2,486	93,432	771	1,297	7,02	
Wyoming	21	1	26	285	312	2,434	36,167	2,548	37,859	955	1,047	7,02	
Other States 1.	—	—	9	—	—	—	26,04	—	177,690	147	8,823	7,81	
Total bituminous	1,245	62	1,335	51,196	53,163	1,611	68,829	2,140	91,443	.753	1,329	7.06	
Pennsylvania (anthracite)	1,226	3	110	16,258	16,371	1,643	119,010	3,875	280,729	.424	2,359	7.00	
Total, 1942	1,471	65	2,045	67,454	69,564	1,616	76,411	2,268	108,690	.703	1,422	7.05	
Totals, 1941	1,266	73	2,108	61,284	63,465	1,542	77,287	2,222	111,365	.694	1,441	7.05	

UNITED STATES BITUMINOUS

	Number of mines	Men em- ployed	Production	Man-days	Man-hours	Killed	Injured	Rate per million man-hours		Tons per man-hour
								Killed	Injured	
Underground	6,185	361,061	516,222,364	88,290,160	621,472,377	1,143	48,267	1,839	77,666	0.831
Open-cut	755	20,333	65,432,476	4,653,116	34,987,850	31	1,460	.886	41,729	1.872
Surface	6,383			16,517,596	116,368,785	71	3,466	.610	29,785	-----
Total, 1942	6,940	448,797	581,704,840	109,491,371	772,828,992	1,245	53,133	1,611	68,829	.753
Total, 1941	7,401	457,744	515,789,248	97,999,557	691,049,388	1,072	46,637	1,551	67,487	.746

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.² Includes dredge operations at Pennsylvania anthracite mines.³ Includes breaker and washery data at Pennsylvania anthracite mines.

TABLE 7.—Coal-mine fatalities during the year ended December 31, 1942, by causes and States

State	Underground		Surface		Total	
	Males	Females	Males	Females	Males	Females
Alabama	25	2	3			
Alaska	5	1				
Arkansas	11	3				
Colorado	40	2				
Illinois	4	1				
Indiana	5	1				
Iowa	3					
Kansas	82	2	6			
Kentucky	1		1			
Maryland						
Michigan						
Missouri						
Montana	6					
New Mexico	4	1				
North Dakota						
Ohio	33					
Oklahoma						
Pennsylvania (bituminous)	113	2	3	1		
South Dakota						
Tennessee	18					
Texas	5	2	1			
Utah	3					
Virginia	148	3	10	3		
Washington						
West Virginia	9	1				
Wyoming						
Other States 1						
Total bituminous	545	12	34	1	5	4
Pennsylvania (anthracite)	110	1	13	8	1	2
Total, 1942	655	13	47	9	6	4
Total, 1941	676	15	67	16	6	5

19. Shaft and slope

18. All other accidents under categories, etc.)						
17. Mine fires (burns, suffocation, etc.)						
16. Subidence from natural gases (not from mines or explosions)						
15. Machinery						
14. Electricity (not resulting in explosion)						
13. Explosives (not including dust or gases)						
12. Explosions of gas or coal dust						
11. Mine cars and mine locomotives						
10. Striking of sharp objects or sharp edges on nails or other sharp objects						
9. Slipping on nails or other sharp objects						
8. Hand tools						
7. Handling materials						
6. Falls of persons						
5. Other falling material or objects (not being handled by injured worker)						
4. Rush of coal, rock, or gob						
3. Falls of face or rib						
2. Roof fall due to ear or masonry knocking out post						
1. Falls of roof (rock, coal, or draw slate)						

Total bituminous	545	12	34	1	5	4	2	241	148	16	51	49	3	3	15	1,377	6
Pennsylvania (anthracite)	110	1	13	8	1	2	2	37	9	13	6	1	3	3	1	1,209	1
Total, 1942	655	13	47	9	6	4	6	278	157	29	57	50	5	8	16	1,346	7
Total, 1941	676	15	67	16	6	5	1	218	97	36	47	39	2	4	13	1,151	15

MAN-HOURS WORKED IN COAL MINES

15

State	Surface ^a	Grand total	
		Total surface	All other surface accidents
Alabama			
Alaska		1	1
Arkansas			
Colorado			
Illinois		5	3
Indiana		1	1
Iowa			
Kansas			
Kentucky			
Maryland			
Michigan			
Missouri			
Montana			
New Mexico			
North Dakota			
Ohio			
Oklahoma		1	1
Pennsylvania (bituminous)		1	1
South Dakota			
Tennessee			
Texas			
Utah			
Virginia			
Washington			
West Virginia			
Wyoming			
Other States ¹			
Total bituminous		3	1
Pennsylvania (anthracite)		1	7
Total, 1942		4	1
Total, 1941		3	1

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.

² Includes dredge accidents at Pennsylvania anthracite mines.

³ Includes tipple breaker, shops, yards, and washery accidents at Pennsylvania anthracite mines.

TABLE 8—Coal-mine nonfatal injuries during the year ended December 31, 1942, by causes and States

State	Underground										Shaft and slope										
	1. Falls of roof (rock, slate), coal, or draw slate)	2. Roof fall due to ear or machine knocking out post	3. Falls of face or rib	4. Rush of coal, rock, or slate	5. Other falling materials (not being handled or objects not being handled by miners)	6. Falls of persons	7. Handling materials	8. Hand tools	9. Stepping on nails or other sharp objects	10. Striking against objects bumping mine cars and mine locomotives	11. Mine cars and mine locomotives	12. Explosions of gas or dust	13. Explosives (not including explosions of gas or dust)	14. Electricity (not resulting in explosions)	15. Machinery	16. Suffocation from natural gases (not from fires or explosions)	17. Mine fires (burns, suffocations, etc.)	18. All other accidents under-ground	19. Shaft and slope		
Alabama.....	473	10	163	31	75	109	326	108	16	13	617	4	14	53	273	....	....	56	2,340	2
Alaska.....	7	1	31	2	5	1	1	1	2	2	28	11	1	1	20	1	1	6	2,240	1	
Arkansas.....	128	1	69	13	10	69	15	1	2	23	219	1	6	20	130	1	4	4	385	1	
Colorado.....	229	4	106	3	58	62	133	71	2	23	850	15	15	86	388	1	1	41	1,109	2	
Illinois.....	584	7	270	13	172	196	341	14	54	18	181	6	15	105	105	1	1	214	3,874	9	
Indiana.....	119	1	37	17	40	127	42	1	18	18	68	5	1	3	3	1	1	30	744	3	
Iowa.....	169	41	41	10	18	42	48	7	5	5	68	1	1	3	6	105	1	6	408	4	
Kansas.....	18	2	2	2	8	7	11	99	1	99	1,538	15	60	116	600	1	2	1	2,340	1	
Kentucky.....	1,306	13	420	33	148	161	830	410	11	10	68	2	2	5	30	1	1	157	5,918	13	
Maryland.....	99	29	29	12	21	60	17	1	10	4	9	1	1	1	14	1	1	8	362	1	
Michigan.....	8	1	1	2	4	4	4	2	2	2	16	1	1	1	1	1	1	1	48	1	
Missouri.....	38	13	13	1	8	8	23	23	12	12	33	2	1	1	1	1	1	3	119	1	
Montana.....	38	1	9	9	9	9	9	9	9	9	31	1	1	8	8	1	1	10	192	1	
New Mexico.....	111	1	22	1	18	11	23	25	25	25	4	4	1	1	2	1	1	1	16	292	1
North Dakota.....	15	1	1	1	1	1	13	13	13	13	434	10	10	34	34	1	1	1	1	66	1
Ohio.....	408	2	149	10	89	85	335	156	10	10	44	3	3	4	63	1	1	1	65	2,230	2
Oklahoma.....	39	2	6	1	4	19	1	1	2	2	11	1	1	1	1	1	1	2	111	1	
Pennsylvania (bituminous).....	2,033	42	787	34	394	635	1,844	882	82	82	2,998	12	12	59	156	1,047	1	1	523	11,849	9
South Dakota.....	217	62	3	21	17	88	58	2	7	7	205	5	8	13	85	1	1	1	18	809	1
Tennessee.....	4	4	4	14	1	1	4	3	2	2	152	2	2	2	76	1	1	1	1	24	1
Utah.....	102	70	70	14	29	51	33	2	6	27	538	5	16	48	192	1	1	1	18	566	1
Virginia.....	573	11	152	7	76	46	381	157	7	7	63	4	4	6	25	1	1	1	16	2,292	1
Washington.....	102	2	37	2	55	27	55	93	59	4	244	3,633	17	33	1,473	39	1	1	11	13,500	21
West Virginia.....	2,549	39	970	53	425	437	2,255	82	45	45	2,633	14	2	63	39	2	1	14	458	13,562	21
Wyoming.....	51	41	5	10	11	31	14	14	2	2	63	2	3	3	3	1	1	14	283	1	
Other States 1.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	
Total bituminous.....	9,432	135	3,460	197	1,597	1,984	7,430	290	202	202	875	11,581	114	1,911	2	14	1	1	1,725	48,198	69
Pennsylvania (anthracite).....	1,230	30	1,233	173	1,079	1,153	3,746	1,088	292	296	1,866	72	108	14,720	1	4	1	4	923	14,265	39
Total, 1942.....	10,682	165	4,693	370	2,676	3,137	11,176	4,488	494	494	13,447	186	426	5,631	3	18	18	2,648	62,463	108	
Total, 1941.....	9,476	174	5,025	515	2,562	3,064	9,704	4,484	432	1,051	11,570	269	379	831	5,232	2	18	18	2,073	56,861	109

MAN-HOURS WORKED IN COAL MINES

State	Stripping or open-cut mining ²		Surface ³		Grand total	
	20. Falls or slides of coal or overburden	21. Mine cars and locomotives	22. Railways cars and locomotives	23. Explosives	24. Electricity	
Alabama	3	8	4	4	2	1
Alaska		2	1	1	1	1
Arkansas		10	12	2	33	23
Colorado		10	12	2	33	23
Illinois		5	14	10	53	19
Indiana		20	14	10	56	19
Iowa		3	1	4	2	5
Kansas		4	1	2	8	7
Kentucky		1		2	5	4
Maryland						
Michigan						
Missouri		8	3	2	13	10
Montana						
New Mexico						
North Dakota		1	1	6	4	5
Ohio		13	2	6	26	16
Oklahoma		7	5	3	23	17
Pennsylvania (bituminous)		12	5	3	11	12
South Dakota						
Tennessee						
Texas						
Utah						
Virginia						
Washington						
West Virginia		2	1	1	8	2
Wyoming						
Other States ¹						
Total bituminous	78	50	12	33	216	100
Pennsylvania (anthracite)	11	1	4	1	19	9
Total, 1942	89	35	54	13	33	233
Total, 1941	112	40	34	22	27	259

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.² Includes dredge accidents at Pennsylvania anthracite mines.³ Includes tipple, breaker, shops, yards, and washery accidents at Pennsylvania anthracite mines.

TABLE 9.—Coal mines: Accidents, by causes and severity of injury, during the year ended December 31, 1942

Cause of accident	Bituminous-coal mines						Anthracite mines						All coal mines					
	Injured			Killed			Injured			Killed			Injured			Killed		
	Killed	Permanent total	Temporary non-fatal	Grand total	Killed	Permanent total	Temporary non-fatal	Grand total	Killed	Permanent total	Temporary non-fatal	Grand total	Killed	Permanent total	Temporary non-fatal	Grand total		
UNDERGROUND																		
1. Falls of roof (rock, coal, or draw slate):																		
(a) While mining—	165	5	93	2,690	2,788	2,953	17	4	286	300	317	182	5	97	2,986	3,088	3,270	
(b) While loading by hand—	103	8	105	2,904	3,017	3,120	23	1	278	281	304	126	9	107	3,182	3,298	3,424	
(c) While testing or taking down roof—	52	1	23	832	876	928	10	—	206	208	219	62	1	23	1,061	1,085	1,147	
(d) While setting or pulling props—	64	—	30	734	764	828	25	—	202	202	227	89	—	30	936	966	1,055	
(e) While moving machinery—	22	3	23	380	406	428	—	—	39	39	39	22	3	23	419	445	467	
(f) All other—	139	6	36	1,559	1,581	1,720	35	3	196	199	234	174	6	39	1,735	1,780	1,954	
2. Roof fall due to car or machine knocking out post—	12	1	7	127	135	147	1	—	30	30	31	13	1	7	157	165	178	
3. Falls of face or rib:																		
(a) While mining—	11	2	10	843	855	866	3	2	316	318	321	14	2	12	1,159	1,173	1,187	
(b) While loading by hand—	4	1	19	889	898	893	2	—	208	212	214	6	1	23	1,077	1,101	1,107	
(c) While testing or taking down roof—	2	—	9	144	153	155	2	—	115	115	117	4	—	9	259	268	272	
(d) While setting or pulling props—	5	—	8	206	215	220	4	—	164	164	168	9	—	8	370	379	388	
(e) Roll of loose coal or rock—	6	1	17	898	926	932	2	—	241	246	246	8	1	20	1,049	1,070	1,078	
(f) While moving machinery—	3	—	4	128	132	135	—	—	38	38	38	3	—	4	166	170	173	
(g) All other—	3	1	8	381	390	393	—	—	142	142	142	3	—	1	523	532	535	
4. Rush of coal, rock, or gob—	1	1	7	189	197	198	8	—	172	173	181	9	1	8	361	370	379	
5. Other falling material or objects (not being handled by injured worker):																		
(a) Falling pros—	5	8	587	565	600	—	—	1	197	198	198	5	—	9	784	793	798	
(b) Object dropped or thrown by co worker—	—	—	2	138	140	140	—	—	1	63	64	64	—	3	231	234	234	
(c) Rolling or shifting objects—	—	—	10	402	412	412	—	5	558	563	563	—	1	16	960	975	975	
(d) All other—	—	—	1	442	450	450	1	—	224	224	225	—	1	7	666	674	675	
6. Falls of persons:																		
(a) Stumbling or slipping—	3	—	13	1,699	1,712	1,715	—	—	2	1,004	1,006	1,006	3	—	15	2,703	2,718	2,721
(b) All other (not from ears)—	1	—	5	267	271	273	—	—	147	147	147	1	—	5	4,44	4,49	4,50	
7. Handling materials:																		
(a) Coal—	1	—	25	1,983	2,008	2,009	1	—	5	1,366	1,374	1,375	2	—	30	3,352	3,382	3,384
(b) Rock or slate—	2	—	30	1,774	1,804	1,806	—	—	3	1,734	1,737	1,737	2	—	33	2,508	2,551	2,553
(c) Rails—	31	1	154	1,181	1,181	1,181	—	—	3	1,018	1,022	1,022	1	—	34	2,296	2,330	2,331
(d) Rails—	27	1	104	1,128	1,129	1,129	—	—	1	153	154	154	1	—	28	1,307	1,335	1,335
(e) All other—	1	—	24	1,104	1,128	1,129	—	—	460	460	460	—	1	24	1,564	1,588	1,588	

TABLE 9.—Coal mines: Accidents, by causes and severity of injury, during the year ended December 31, 1942—Continued

Cause of accident	Bituminous-coal mines				Anthracite mines				All coal mines			
	Injured		Grand total	Killed	Injured		Grand total	Killed	Injured		Grand total	
	Permanent total	Ten- per- manent non- fatal total			Permanent total	Ten- per- manent non- fatal total			Permanent total	Ten- per- manent non- fatal total		
UNDERGROUND—continued												
13. Explosives (not including explosions of gas or dust):												
(a) Premature blast (not short fuse)	3	1	2	37	40	43	1	18	19	4	1	2
(b) Premature blast (short fuse)	4	17	9	9	21	21	1	1	10	10	10	62
(c) Premature blast (electric wire or stray currents)	4	8	12	12	3	16	16	16	19	3	31	31
(d) Charging and tampering	1	40	41	42	3	2	2	2	5	4	24	28
(e) Shot breaking through rib or pillar	2	3	5	5	1	2	2	3	1	1	42	47
(f) Drilling into unexpected holes	1	16	18	20	1	3	4	2	2	5	7	8
(g) Delayed blast	2	1	6	6	6	1	4	4	2	1	2	24
(h) Unexploded powder in loose coal	6	4	4	4	4	4	4	4	4	10	10	10
(i) Sparks from matches or smoking materials	2	2	2	2	2	1	1	1	1	4	4	4
(j) Open or end-capped shots	8	8	8	8	162	5	1	5	5	3	3	3
(k) Suffocation from smoke from explosives	10	1	144	152	44	45	44	50	50	15	1	8
(l) All other	34	1	100	101	135	2	2	35	35	37	36	1
14. Electricity (not resulting in explosions):												
(a) Contact with trolley wire	4	1	163	164	168	1	1	20	20	21	5	1
(b) Contact with machine feed wire, junction box, or switch	1	54	54	55	62	64	1	8	8	1	183	189
(c) Contact with haulage locomotive	2	62	62	64	32	32	1	12	12	3	62	63
(d) Contact with power or lighting circuit	3	29	29	32	1	2	2	2	2	4	74	77
(e) Contact with mining machine	1	17	17	18	—	—	1	1	1	—	31	35
(f) Contact with mechanical shovel, loader, or conveyor	—	—	—	—	—	—	—	—	—	—	18	19
(g) Contact with stationary electrical equipment (motor, switches, etc.)	6	4	457	461	467	1	1	12	12	13	1	54
(h) All others from electricity	—	—	—	—	—	—	—	51	51	6	4	518
15. Machinery (underground, not including items under No. 12 or 14):												
(a) Mining machine, caught or run over while moving	10	2	37	323	362	372	—	39	39	10	2	37
(b) Mining machines while being set up	1	9	237	246	247	—	41	41	42	1	2	287
(c) Mining machine, jack pipe, bar, or skid	2	1	602	631	633	—	42	42	42	2	1	675

		MATERIALS										MANUFACTURE AND CONSTRUCTION									
		IRON AND STEEL					COPPER					LEAD					TIN				
		IRON		STEEL			COPPER		TIN			LEAD		TIN			ZINC		ZINC		
ITEM	QUANTITY	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS	TONS
Mining machine, caught by cutter chain	7	2	22	115	139	146	1	1	13	13	13	1	1	1	1	2	22	128	152	159	152
(d) Mining machine, operating	1	1	66	607	664	674	1	1	31	32	32	1	1	1	1	2	22	638	696	706	706
(e) Mining machine, all other	1	1	298	321	330	330	1	1	30	30	30	1	1	1	1	2	22	328	349	351	351
Mechanical scrapper or loader	1	20	313	334	341	345	2	2	106	108	108	1	1	1	1	2	22	419	442	449	449
Conveyor, loaded mechanically	1	23	261	284	285	285	1	1	18	18	18	1	1	1	1	2	23	279	302	303	303
Conveyor, loaded by hand or hand shovel	1	33	262	265	266	266	2	2	31	33	33	1	1	1	1	2	23	293	328	329	329
Power drills (fan effectiv)	1	21	534	554	556	556	1	1	134	134	134	1	1	1	1	2	21	668	689	690	690
Power drills (fan effectiv)	2	29	545	574	576	576	1	1	97	98	98	2	2	2	2	2	20	642	672	674	674
Accidents while moving machinery	6	42	466	508	613	613	1	3	129	132	133	6	6	45	45	6	45	595	640	646	646
All other machinery accidents	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Explosions	1	3	14	14	17	17	5	5	1	1	1	3	5	5	5	5	5	3	3	8	8
Underground accidents:	1	13	781	794	795	795	2	2	58	58	58	9	9	9	9	9	9	18	18	26	26
Fires (burns, suffocations, etc.)	14	13	918	931	945	945	1	1	403	403	403	15	15	15	15	15	15	1,299	1,314	1,315	1,315
Flying particles (other than 8, 12, and 13)	14	14	14	14	14	14	1	1	403	403	403	15	15	15	15	15	15	1,321	1,334	1,349	1,349
All other miscellaneous causes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total underground	1,137	58	1,722	46,388	48,198	49,335	209	3	32	14,170	14,205	14,474	1,346	61	1,844	60,558	62,463	63,809	63,809	63,809	63,809
SHAFT AND SHOPE																					
VERTICAL OR INCLINED SHAFTS (OPEN FROM THE SURFACE):																					
Persons falling down shaft	2	1	4	4	6	6	1	1	10	11	11	4	4	4	4	2	2	1	1	4	4
Objects falling down shaft	2	1	6	6	8	8	1	1	5	6	6	2	2	2	2	1	1	1	1	12	14
Struck by cage or bucket	1	1	3	3	3	3	1	1	1	2	2	1	1	1	1	1	1	5	5	5	5
Caught by car while caging	1	1	8	9	9	9	1	1	30	30	30	31	31	31	31	1	1	9	10	11	11
All other	1	4	43	47	48	48	1	1	30	30	30	31	31	31	31	1	1	4	73	77	79
Total shaft	6	5	64	69	75	75	1	1	38	38	38	40	40	40	40	7	7	6	102	108	116
TRIPPING OR OPEN-CUT MINING AND DREDGE OPERATIONS																					
ALL OR SIDES OF COAL OR OVERTURBEN:																					
The cars and locomotives	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Railways	1	7	3	47	50	57	57	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inclined materials	1	12	12	12	12	12	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Handling materials	1	33	33	33	33	37	37	1	1	17	17	17	1	1	1	1	1	1	1	1	1
Crushers	4	1	215	216	216	216	1	1	16	16	16	16	16	16	16	1	1	1	232	233	233
Crushers	1	3	97	100	100	100	1	1	19	19	19	20	20	20	20	1	1	3	113	116	116
Crushers	1	207	207	208	208	208	1	1	20	20	20	21	21	21	21	1	1	226	228	228	228
Crushers	1	2	107	109	110	110	1	1	9	9	9	9	9	9	9	1	1	10	182	192	201
Crushers	1	167	176	176	176	176	1	1	24	25	25	25	25	25	25	1	1	116	118	119	119
Crushers	9	9	37	37	37	37	1	1	2	2	2	2	2	2	2	1	1	39	39	39	39
Crushers	3	1	23	23	23	23	1	1	5	5	5	5	5	5	5	3	3	6	9	9	9
Crushers	1	6	87	94	94	94	1	1	16	16	16	16	16	16	16	1	1	31	31	31	31
Crushers	4	2	294	296	300	300	1	1	28	29	29	30	30	30	30	1	1	6	102	109	110
Total open-cut 1	31	1	35	1,424	1,460	1,491	4	3	159	162	166	35	1	1	1	3	3	322	325	330	330
Total open-cut 1	31	1	35	1,424	1,460	1,491	4	3	159	162	166	35	1	1	1	3	3	38	1,583	1,622	1,657

TABLE 9.—Coal mines: Accidents, by causes and severity of injury, during the year ended December 31, 1942—Continued

Cause of accident	Bituminous-coal mines						Anthracite mines						All coal mines				
	Injured			Killed			Injured			Killed			Injured		Grand total		
	Killed	Per- manent total	Total non- fatal	Injured	Per- manent total	Total non- fatal	Killed	Per- manent total	Total non- fatal	Killed	Per- manent total	Total non- fatal	Injured	Per- manent partial	Total non- fatal		
SURFACE																	
(Including tipple, breaker, shops, and yards)																	
34. Mine cars and mine locomotives:																	
(a) Coupling—																	
(6) Railing same—																	
(c) All other—	22	1	14	339	354	376	2	1	124	125	127	24	1	15	463	479	
35. Railway cars and locomotives:	10	16	232	248	258	3	1	142	143	146	13	17	374	391	404	404	
36. Handling materials:	22	538	560	560	560	560	2	358	360	360	360	24	896	920	920	920	
37. Hand tools:	3	225	228	228	228	228	1	171	172	172	172	4	396	400	400	400	
38. Falls of persons:	3	327	330	330	330	330	2	165	165	165	165	3	492	495	495	495	
(a) Swimming—	5	6	202	208	213	213	1	107	107	107	107	7	6	308	315	322	
(b) All other—	4	4	189	193	197	197	1	99	99	100	100	5	4	288	292	297	
39. Falling objects:	40	305	345	359	359	359	3	7	191	198	201	17	47	496	543	560	
40. Machinery on surface:	5	2	55	57	62	62	1	47	47	47	47	5	2	102	104	109	
41. Electricity:	11	2	10	623	635	646	17	17	17	17	17	12	12	29	29	29	
42. Explosives:												352	353	11	2	11	
43. All other surface accidents:	71	3	143	3,320	3,466	3,537	12	14	1,891	1,905	1,917	83	3	157	5,211	5,371	
Total surface 2																	
Grand total	1,245	62	1,935	51,196	53,193	54,438	226	3	110	16,258	16,371	16,597	1,471	65	2,045	67,454	68,364
																71,035	

¹Includes dredge accidents at Pennsylvania anthracite mines.²Includes washery accidents at Pennsylvania anthracite mines.

TABLE 10.—Coal-mine fatalities and nonfatal injuries: Number and percentages, by causes, for the year ended December 31, 1942.

Cause of accident	Fatalities						Nonfatal injuries					
	Bituminous			Anthracite			Total			Anthracite		
	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
UNDERGROUND												
1. Falls of roof (coal, coal, or draw slate):												
(a) While mining	165	13.26	17	7.52	182	12.37	2,788	5.24	300	1.83	3,088	4.44
(b) While loading by hand	103	8.27	23	10.18	126	8.37	3,017	5.67	281	1.72	3,298	4.74
(c) While testing or taking down roof	62	4.18	10	4.43	62	4.21	876	1.65	209	1.28	1,035	1.56
(d) While setting or pulling props	64	5.14	25	11.06	89	6.05	764	1.44	202	1.23	966	1.55
(e) While moving machinery	22	1.77	35	15.49	22	1.50	1,766	.76	39	.23	445	.64
(f) All other	130	11.17	35	15.49	174	11.83	1,581	2.97	199	1.22	1,780	2.56
2. Roof fall due to car or machine knocking out post	12	.97	1	.44	135	.88	2,135	.25	30	.18	1,955	.24
3. Falls of face or rib:												
(a) While mining	11	.88	3	1.33	14	.05	855	1.61	318	1.94	1,173	1.69
(b) While loading by hand	4	.32	2	.89	6	.41	889	1.67	212	1.30	1,101	1.58
(c) While testing or taking down roof	2	.16	4	.89	4	.27	163	.29	115	.70	288	.38
(d) While setting or pulling props	5	.40	4	1.77	9	.61	215	.40	164	1.00	379	.55
(e) Fall of loose coal or rock	6	.48	2	.89	8	.64	826	1.55	244	1.49	1,070	1.54
(f) While moving machinery	3	.24	2	1.22	3	.21	132	.25	38	.23	170	.24
(g) All other	3	.24	8	3.54	9	.21	390	.73	142	.87	532	.76
4. Rush of coal, rock, or gob	1	.08	1	.08	197	.61	.37	.37	173	1.06	370	.53
5. Other falling material or objects (not being handled by injured worker):												
(a) Falling props	5	.40	—	—	5	.34	595	1.12	198	1.21	793	1.14
(b) Object dropped or thrown by coworker	—	—	—	—	—	—	140	.26	94	.58	234	.34
(c) Pulling or shifting objects	—	—	—	—	—	—	412	.77	563	3.44	975	1.40
(d) All other	—	—	1	.44	1	.07	450	.85	224	1.37	674	.97
6. Falls of persons:												
(a) Strangling or suffocating	3	.24	—	—	3	.21	1,712	3.22	1,006	6.15	2,718	3.91
(b) All other (not from cars)	1	.08	—	—	1	.07	272	.51	147	.90	419	.60
7. Handling materials:												
(a) Coal	1	.08	1	.44	2	.13	2,008	3.78	1,374	8.39	3,382	4.86
(b) Rock or slate	2	.16	1	.44	1	.13	1,804	3.39	737	4.50	2,541	3.66
(c) Props	—	—	1	.44	1	.07	1,309	2.46	1,021	6.24	2,380	3.35
(d) Rails	—	—	1	.44	1	.07	1,181	2.22	154	.92	1,335	2.28
(e) All other	—	—	1	.08	1	.07	1,128	2.12	460	1.28	1,588	2.81

TABLE 10.—Coal-mine fatalities and nonfatal injuries: Number and percentages, by causes, for the year ended December 31, 1942—Continued

Cause of accident	Fatalities						Nonfatal injuries											
	Bituminous			Anthracite			Total			Bituminous			Anthracite			Total		
	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
UNDERGROUND—continued																		
8. Hand tools:																		
(a) Picks, in hands of injured worker.	1	.08			1	.07	650	1.22	214	1.31	864	1.24						
(b) Axes, in hands of injured worker.							287	.54	119	.73	406	.58						
(c) Hammers and sledges, in hands of injured worker.							203	.38	146	.89	349	.50						
(d) Other tools, in hands of injured worker.	3	.24			3	.21	828	1.56	344	2.10	1,172	1.68						
(e) Tools, in hands of fellow worker.							240	.45	85	.52	325	.47						
(f) Flying particles from hand tools.							1,082	2.04	290	1.77	1,372	1.97						
9. Sleeping on nails or other sharp objects.							222	.38	292	1.78	494	.71						
10. Striking or bumping against objects.							875	1.65	296	1.81	1,171	1.68						
11. Mine cars and mine locomotives:																		
A. Struck, run over, or squeezed between cars or locomotives																		
(a) While coupling	17	1.37	1	.44	18	1.22	2,219	4.17	245	1.50	2,464	3.54						
(b) While switching, straggling, blocking, braking	30	2.41	4	1.77	34	2.31	1,058	1.99	181	1.11	1,339	1.78						
(c) While pulling or pushing car.	6	.48			6	.41	712	1.34	110	.67	822	1.18						
(d) While operating or riding trip.	56	4.50	6	2.66	62	4.21	978	1.84	73	.45	1,051	1.51						
(e) All other.	25	2.01	8	3.54	33	2.24	811	1.53	133	.81	944	1.36						
B. Squeezed between car and rib, timber, or roof:																		
(a) White coupling	4	.32	1	.44	5	.34	506	.95	66	.40	572	.82						
(b) While switching, straggling, blocking, braking	13	1.04	1	.44	14	1.45	505	.95	102	.62	607	.87						
(c) While pulling or pushing car.	1	.08			1	.07	368	.69	65	.40	433	.62						
(d) While operating or riding trip.	22	1.77	7	3.10	28	1.97	609	.96	45	.28	554	.81						
(e) All other.	18	1.45	2	.89	20	1.36	508	.96	56	.34	564	.81						
C. Detainments:																		
D. Rerailing cars																		
E. Pulling or pushing cars by hand, strain from...																		
F. Animals on haulage.																		
G. Falling from cars (not run over).	2	.16			1	.07	245	.46	145	.28	290	.42						
H. Run-away cars in dips or slopes.	18	1.45	5	2.21	23	1.36	203	.38	28	.17	174	.25						
I. Other haulage accidents.	16	1.29			16	1.00	1,048	1.97	341	.20	1,389	2.00						
J. Explosions of gas or coal dust ignited by:																		
(a) Open-flame lamp.	3	.24	1	.44	4	.27	22	.04	14	.09	36	.05						
(b) Matches, lighters, or smoking.	10	.80	1	.44	11	.75	5	.01	5	.03	10	.01						
(c) Defective safety lamp or opening same.					2	.13	2	.01	2	.01	8	.05						

(d) Electric arc from bare power line.	.02	12
(e) Electric arc from mining machine	.02	
(f) Electric arc from mechanical ladder or scaper	.01	
(g) Electric arc from electric drill or cutter	.03	
(h) Electric arc from motor of auxiliary fan	.01	
(i) Electric arc from trolley locomotive	.01	
(j) Electric arc from all other	.01	
(k) Blasting with black powder	.02	
(l) Blasting with dynamite or permissible	.01	
(m) All other	.06	
(n) Explosives (not including explosions of gas or dust):		
(o) Premature blast (short fuse)	.01	
(p) Premature blast (electric wire or stray currents)	.04	
(q) Charging and tampering	.04	
(r) Shot breaking through rib or pillar	.04	
(s) Drilling into unexploded holes	.06	
(t) Detonated blast	.01	
(u) Unexploded powder in loose coal	.03	
(v) Sparks from matches or smoking materials	.01	
(w) Open or mud-capped shots	.01	
(x) Suffocation from smoke or explosives	.03	
(y) All other—	.02	
(z) Electricity (not resulting in explosions):		
(a) Contact with trolley wire	.01	
(b) Contact with machine feed wire, junction box, or switch	.01	
(c) Contact with trolley locomotive	.01	
(d) Contact with power or lighting circuit	.01	
(e) Contact with mining machine	.01	
(f) Contact with mechanical shovel, loader or conveyor	.01	
(g) Contact with stationary electrical equipment (motor, switches, etc.)	.01	
(h) All others from electricity	.01	
Machinery underground, not including items under No. 12, or No. 14:		
(i) Mining machine caught or run over while moving	.01	
(j) Mining machine while being set up	.01	
(k) Mining machine jack pipe, bar, or skid	.01	
(l) Mining machine caught by cutter chain	.01	
(m) Mining machine operating	.01	
(n) Mining machine, all other	.01	
(o) Mechanical scraper or loader	.01	
(p) Conveyor, loaded mechanically	.01	
(q) Conveyor, loaded by hand or hand shovel	.01	
(r) Power drills (air or electric)	.01	
(s) Accidents while moving machinery	.01	
(t) All other machinery accidents	.01	

TABLE 10.—Coal-mine fatalities and nonfatal injuries: Number and percentages, by causes, for the year ended December 31, 1942—Continued

Cause of accident	Fatalities						Nonfatal injuries					
	Bituminous		Anthracite		Total		Bituminous		Anthracite		Total	
	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
UNDERGROUND—Continued												
16. Suffocation from natural gases (not from fires or explosions).....	3	.24	2	.89	5	.34	2	.03	1	.01	3	(3) .03
17. Mine fires (burns, suffocations, etc.).....	3	.24	5	2.21	8	.54	14	.06	4	.02	18	.18
18. Other underground accidents (a):												
(a) Flying particles (other than gas, 12, and 13).....	1	.08			1	.07	734	1.49	520	3.18	1,314	1.89
(b) All other miscellaneous causes.....	14	1.13	1	.44	15	1.02	931	1.75	403	2.46	1,334	1.92
Total underground.....	1,137	91.33	209	92.48	1,346	91.50	48,198	90.61	14,265	87.14	62,463	89.79
SHAFT AND SLOPE												
19. Vertical or inclined shafts (open from the surface):												
(a) Persons falling down shaft.....	2	.16			2	.13	4	.01				
(b) Objects falling down shaft.....	2	.16			2	.13	6	.01	6	.03	12	.01
(c) Struck by cage or bucket.....	1	.08			1	.07	3	.01	2	.01	5	.01
(d) Caught by car while cageing.....	1	.08	1	.44	2	.13	9	.01	1	.01	10	.11
(e) All other.....	1	.08					47	.09	30	.18	77	.11
Total shaft.....	6	.48	1	.44	7	.48	69	.13	39	.23	108	.16
STRIPPING OR OPEN-CUT MINING AND DREDGE OPERATIONS												
20. Falls or slides of coal or overburden.....	3	.24	1	.44	4	.27	78	.15	11	.07	89	.13
21. Mine cars and locomotives.....	1	.08			1	.07	34	.06	1	.01	35	.05
22. Railway cars and locomotives.....	7	.57			7	.48	50	.06	4	.02	54	.02
23. Explosives.....	4	.32			4	.27	33	.06	1	.01	33	.02
24. Electricity.....												
25. Handling materials.....												
26. Hand tools.....												
27. Falls of persons (stumbling, slipping, etc.).....	1	.08	1	.44	2	.13	100	.19	17	.10	233	.33
28. Falling objects, other than coal.....	1	.08			1	.07	207	.39	19	.12	226	.32
29. Power shovels, scrapers, or buckets.....	9	.72			9	.61	167	.31	9	.05	118	.17
30. Drills (power drills of all kinds).....							37	.07	25	.01	192	.28
31. Operation of dredge machinery.....							4	.01	5	.01	39	.05

32. Stepping on or striking objects.....					.23	.04	8	.05	3	.04
33. Miscellaneous:										
(a) Machinery (other than 29, 30, and 31)		1	.44	1		.94	.18	15	.09	.16
(b) All other.....		1	.44	5	.34	.296	.56	29	.18	.47
Total stripping or open-cut 1.....		31	2.49	4	1.77	35	2.38	1,460	2.74	162
SURFACE										
34. Mine cars and mine locomotives:										
(a) Coupling.....			1	.44	1	.07	.224	.42	.90	.55
(b) Retailing same.....										
(c) All other.....		22	1.77	2	.89	24	1.63	.67	.34	314
35. Railway cars and locomotives.....		10	.80	3	1.33	13	.88	248	.47	.76
36. Handling materials.....										
37. Hand tools.....										
38. Falls of persons:										
(a) Stumbling.....										
(b) All other.....		5	.40	2	.89	7	.48	208	.39	107
39. Falling objects.....		4	.32	1	.44	5	.34	133	.36	.65
40. Machinery on surface.....		14	1.13	3	1.33	17	1.15	345	.65	99
41. Electricity -.....		5	.40			5	.34	.57	.11	198
42. Explosives.....										
43. All other surface accidents.....		11	.88			11	.76	635	.19	353
Total surface 2.....		71	5.70	12	5.31	83	5.64	3,468	6.52	1,905
Grand total.....		1,245	100.00		226	100.00	1,471	100.00	53,193	100.00

¹ Includes dredge accidents at Pennsylvania anthracite mines.

² Includes washery accidents at Pennsylvania anthracite mines.

³ Less than 0.01 percent.

ACCIDENTS BY PRINCIPAL CAUSES

FALLS OF ROOF AND COAL

Forty-nine percent of the fatalities and 23 percent of the nonfatal lost-time injuries were caused by falls of roof and coal. The hazards of coal mining are such that the liability to injury from falling roof is greater than from any other cause, primarily because the natural roof support has been removed when the coal is extracted. Although props are used to support the roof they are only temporary props at best, subject to decay, knocking out, and the error of human judgment in placing them. The record for this class of accidents showed an improvement in 1942 over the previous year, as the accident-frequency rate per million man-hours of employment was 23.05, whereas in 1941 the rate was 24.07. Relatively good records were made by South Dakota, Kansas, Missouri, Wyoming, and Michigan. The highest rate was for Arkansas, after which, with less severe rates, came New Mexico, Washington, Iowa, and Utah. (See tables 11 and 12.)

TABLE 11.—*Fatal and nonfatal injury rates per million man-hours underground in 1942 from falls of roof and coal*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Falls of roof (rock, coal, or draw slate):						
(a) While mining.....	0.265	0.171	0.252	4.486	3.017	4.283
(b) While loading by hand.....	.166	.231	.175	4.855	2.826	4.575
(c) While testing or taking down roof.....	.084	.101	.086	1.410	2.102	1.505
(d) While setting or pulling props.....	.103	.251	.123	1.229	2.031	1.340
(e) While moving machinery.....	.035	—	.031	.653	.392	.467
(f) All other.....	.224	.352	.241	2.544	2.001	2.469
Roof falls due to car or machine knocking out post.....	.019	.010	.018	.217	.302	.229
Falls of face or rib:						
(a) While mining.....	.018	.030	.019	1.376	3.198	1.627
(b) While loading by hand.....	.006	.020	.008	1.431	2.132	1.527
(c) While testing or taking down roof.....	.003	.020	.006	.246	1.157	.372
(d) While setting or pulling props.....	.008	.040	.013	.346	1.649	.526
(e) Roll of loose coal or rock.....	.010	.020	.011	1.329	2.454	1.484
(f) While moving machinery.....	.005	—	.004	.212	.382	.236
(g) All other.....	.005	—	.004	.628	1.428	.738
Rush of coal, rock, or gob.....	.002	.081	.013	.317	1.740	.513
Total, 1942.....	.953	1.327	1.004	21.279	26.810	22.042
Total, 1941.....	1.019	1.044	1.023	22.108	28.583	23.049

TABLE 12.—*Number of nonfatal injuries from falls of roof and coal per million manhours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota.....	10.049	Tennessee.....	20.799	Montana.....	29.300
Kansas.....	14.088	Ohio.....	20.833	Colorado.....	31.348
Missouri.....	14.424	Alaska.....	21.170	Maryland.....	37.700
Wyoming.....	15.578	West Virginia.....	21.523	Utah.....	38.807
Michigan.....	17.313	United States ²	22.042	Iowa.....	42.682
Indiana.....	17.968	Kentucky.....	22.677	Washington.....	45.334
Alabama.....	18.534	Illinois.....	23.398	New Mexico.....	50.690
Oklahoma.....	18.693	Virginia.....	25.928	Arkansas.....	53.533
North Dakota.....	20.702	Texas.....	29.095		

¹ Pennsylvania bituminous, 17,133; Pennsylvania anthracite, 26,810.

United States bituminous, 21,279.

HAULAGE ACCIDENTS

The transportation of coal from the underground workings to the surface and the return of materials from the surface to the underground workings constitute hazards in coal mines. Nineteen percent of the fatalities and nonfatal injuries were chargeable to this hazard in 1942. The frequency with which this type of accident occurred was at the rate of 19.04 per million man-hours of work underground; the rate for 1941 was 17.89. The largest number of accidents was caused by employees being struck, run over, or squeezed between cars and locomotives. The next divisions of these accidents comprised those in which men were squeezed between car and rib, timber, or roof; rerailing cars; pushing or pulling cars by hand; and derailments. South Dakota, Oklahoma, Missouri, Arkansas, and Wyoming had the most favorable rates, while Utah, North Dakota, Texas, Montana, and Illinois had relatively high rates. (See tables 13 and 14.)

TABLE 13.—*Fatal and nonfatal injury rates per million man-hours underground in 1942 from haulage underground*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Mine cars and mine locomotives:						
<i>A.</i> Struck, run over, or squeezed between cars or locomotives:						
(a) While coupling.....	0.028	0.010	0.025	3.571	2.464	3.418
(b) While switching, spragging, blocking, braking.....	.049	.040	.047	1.702	1.820	1.719
(c) While pulling or pushing car.....	.010		.008	1.146	1.106	1.140
(d) While operating or riding trip.....	.090	.060	.086	1.574	.734	1.458
(e) All other.....	.040	.081	.046	1.305	1.338	1.310
<i>B.</i> Squeezed between car and rib, timber, or roof:						
(a) While coupling.....	.006	.010	.007	.814	.664	.793
(b) While switching, spragging, blocking, braking.....	.021	.010	.019	.813	1.026	.842
(c) While pulling or pushing car.....	.002		.001	.592	.654	.601
(d) While operating or riding trip.....	.035	.070	.040	.819	.452	.768
(e) All other.....	.029	.020	.028	.817	.563	.782
<i>C.</i> Derailments.....	.013	.010	.012	.750	.955	.778
<i>D.</i> Rerailing cars.....	.006	.010	.007	1.210	1.026	1.185
<i>E.</i> Pulling or pushing cars by hand, strain from.....				.880	1.679	.990
<i>F.</i> Animals on haulage.....	.002		.001	.394	.452	.402
<i>G.</i> Falling from cars (not run over).....	.003		.003	.235	.282	.241
<i>H.</i> Run-away cars in dips or slopes.....	.029	.050	.032	.327	.121	.298
<i>I.</i> Other haulage accidents.....	.026		.022	1.686	3.429	1.927
Total, 1942.....	.389	.372	.386	18.635	18.765	18.653
Total, 1941.....	.339	.282	.331	17.458	18.133	17.556

TABLE 14.—*Number of nonfatal injuries, from haulage per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota.....		Tennessee.....	15,120	Virginia.....	18,774
Oklahoma.....	4,338	Michigan.....	15,578	Kentucky.....	19,682
Missouri.....	4,420	Ohio.....	15,890	Indiana.....	19,960
Arkansas.....	7,570	Alabama.....	16,375	Washington.....	19,972
Wyoming.....	9,368	New Mexico.....	18,023	Maryland.....	20,028
Alaska.....	10,585	Pennsylvania ¹	18,039	West Virginia.....	20,045
Kansas.....	13,566			Colorado.....	20,074
Iowa.....	14,512	United States ²	18,653	Illinois.....	22,997
				Montana.....	23,196
				Texas.....	25,458
				North Dakota.....	29,909
				Utah.....	34,295

¹ Pennsylvania bituminous, 17,615; Pennsylvania anthracite, 18,765.
² United States bituminous, 18,635.

HANDLING MATERIALS

In coal mining, as in many other industries, the handling of materials is necessary for the performance of work. Fatalities from this cause occur infrequently, although nonfatal injuries are numerous. In 1942 there were 6 fatalities and 11,176 nonfatal injuries, the former constituting less than 0.5 percent of the fatal accidents and the latter 16 percent of all nonfatal injuries. The same types of accidents prevail among surface workers, but they do not occur as frequently on the surface as underground. The accident-frequency rate for this class of accidents to the underground workers was 15.51 per million man-hours in 1942. This rate indicates an increase from the rate of 14.73 in 1941. South Dakota, Alaska, Kansas, and Wyoming had favorable rates, while Washington, Pennsylvania, and Arkansas had relatively high rates compared with the United States average. (See tables 15 and 16.)

TABLE 15.—*Fatal and nonfatal injury rates per million man-hours underground in 1942 from handling materials*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Handling materials:						
(a) Coal.....	0.002	0.010	0.003	3.231	13.818	4.601
(b) Rock or slate.....	.003	.....	.003	2.903	7.411	3.525
(c) Props.....	.....	.010	.001	2.106	10.267	3.232
(d) Rails.....	.....	.....	.....	1.900	1.549	1.852
(e) All other.....	.002	.....	.001	1.815	4.626	2.203
Total, 1942.....	.006	.020	.008	11.955	37.671	15.503
Total, 1941.....	.004	.031	.008	10.912	37.144	14.725

TABLE 16.—*Number of nonfatal injuries from handling materials per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota.....	2.646	Kentucky.....	10.622	North Dakota.....	16.200
Alaska.....	3.517	Utah.....	11.507	Montana.....	16.481
Kansas.....	4.610	Colorado.....	12.191	Illinois.....	17.268
Wyoming.....	6.353	Ohio.....	12.265	Maryland.....	17.672
Missouri.....	6.490	Virginia.....	13.296	Arkansas.....	18.656
Tennessee.....	6.924	West Virginia.....	13.441	Pennsylvania ²	20.732
Michigan.....	7.492	Indiana.....	14.005	Washington.....	29.483
Oklahoma.....	8.626	Texas.....	14.547		
Alabama.....	8.636	United States ¹	15.503		
New Mexico.....	8.963				
Iowa.....					

¹ United States bituminous, 11,955.

² Pennsylvania bituminous, 10,834; Pennsylvania anthracite, 37.671.

HAND TOOLS

Hand tools caused 4 fatalities and 4,488 nonfatal injuries among underground workers, thus giving an accident-frequency rate of 6.23 per million man-hours of work performed underground in 1942, which was slightly more favorable than the rate of 6.81 in 1941. Flying particles were the most numerous class; these include particles set in motion by hand tools and parts of tools, or particles thereof flying off. Next in order

of frequency were accidents from unidentified tools in the hands of the injured worker. Ranking third were accidents caused by picks.

South Dakota, Oklahoma, Missouri, Wyoming, and Alaska had the most favorable rate from this cause of accident; the highest rates were reported for Washington, Texas, Iowa, New Mexico, and Illinois. (See tables 17 and 18.)

TABLE 17.—*Fatal and nonfatal injury rates per million man-hours underground in 1942 from hand tools*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Hand tools:						
(a) Picks, in hands of injured worker.....	.002	.....	0.001	1.046	2.152	1.198
(b) Axes, in hands of injured worker.....	.....	.....	.....	.462	1.197	.563
(c) Hammers and sledges, in hands of injured worker.....	.....	.....	.....	.327	1.468	.484
(d) Other tools, in hands of injured worker.....	.005	.....	.004	1.332	3.459	1.626
(e) Tools, in hands of fellow worker.....	.....	.....	.....	.386	.855	.451
(f) Flying particles from hand tools.....	.....	.....	.....	1.741	2.916	1.903
Total, 1942.....	.006	.....	.006	5.294	12.048	6.226
Total, 1941.....	.002	.....	.002	5.303	15.628	6.804

TABLE 18.—*Number of nonfatal injuries from hand tools per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota.....	.....	Tennessee.....	4.278	Colorado.....	6.508
Oklahoma.....	0.394	Indiana.....	4.632	Michigan.....	6.924
Missouri.....	1.934	West Virginia.....	4.840	Montana.....	7.325
Wyoming.....	2.082	Maryland.....	5.007	Utah.....	7.446
Alaska.....	2.646	Kentucky.....	5.247	Pennsylvania 2	7.714
Alabama.....	2.866	Virginia.....	5.479	North Dakota.....	8.723
Kansas.....	3.517	Ohio.....	5.712	Illinois.....	9.129
Arkansas.....	4.056	United States 1	6.225	New Mexico.....	9.387
				Iowa.....	10.244
				Texas.....	10.911
				Washington.....	18.704

1 United States bituminous, 5,294.

2 Pennsylvania bituminous, 5,182; Pennsylvania anthracite, 12,048.

FALLS OF PERSONS

Falls of persons underground in manways, haulageways, airways, chambers, etc., accounted for 4 fatalities and 3,137 nonfatal injuries in 1942. For each million man-hours of work performed underground, the accident-frequency rate was 4.36 in 1942 and 4.66 in 1941, thus showing some slight improvement. No such accidents were reported for South Dakota mines, and favorable rates were revealed by reports for Tennessee, Oklahoma, Virginia, and Wyoming. On the other hand, higher-than-average rates were reported for Washington, Alaska, Michigan, Pennsylvania, and Utah. (See tables 19 and 20.)

TABLE 19.—*Fatal and nonfatal injury rates per million man-hours in 1942 from falls of persons*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Falls of persons:						
Underground:						
(a) Stumbling or slipping.....	0.005	.....	0.004	2.755	10.117	3.770
(b) All other.....	.002	.....	.001	.437	1.478	.581
Total.....	.006	.....	.006	3.192	11.505	4.351
Open-cut.....	.029	0.015	.048	5.916	.287	5.431
Surface.....	.043	.064	.047	4.623	8.635	5.478

TABLE 20.—*Number of nonfatal injuries from falls of persons per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota.....		Arkansas.....	2.704	Indiana.....	4.411
Tennessee.....	1,254	Alabama.....	2.893	Illinois.....	5.247
Oklahoma.....	1,577	Ohio.....	3.112	Montana.....	5.494
Virginia.....	1,605	Texas.....	3.637	Colorado.....	5.683
Wyoming.....	1,636	Iowa.....	3.841	Maryland.....	6.185
Kentucky.....	2,060	Kansas.....	4.020	Utah.....	6.543
Missouri.....	2,210	New Mexico.....	4.130	Pennsylvania ²	6.631
North Dakota.....	2,492	United States ¹	4.351	Michigan.....	6.924
West Virginia.....	2,605			Alaska.....	13.231
				Washington.....	17.436

¹ United States bituminous, 3,192.² Pennsylvania bituminous, 3,731; Pennsylvania anthracite, 11,595.

MACHINERY

In the present discussion, machinery underground in coal mines includes mining machines (undercutting or shearing), mechanical scrapers and loaders, mechanically loaded conveyors, and conveyors loaded by hand or hand shovel. Accidents connected with the operation of machines of these types caused 50 fatal injuries and 5,631 nonfatal injuries to underground workers in coal mines in 1942. Considering the number of man-hours worked by all employees in the mines during the year, these accidents indicate a fatality rate of 0.069 and an injury rate of 7.811 per million man-hours of work performed. The fatality rate compared unfavorably with the previous year's rate of 0.059. On the other hand, the nonfatal-injury rate represented an improvement over the rate for 1941, which was 7.939. Included in the injury rate of 7.811 for 1942 were rates of 3.548 for mining machines, 0.613 for mechanical loaders and scrapers, 0.419 for mechanically loaded conveyors, 0.455 for conveyors loaded by hand or hand shovel, and 0.956 for power drills (air or electric). An injury rate of 0.932 was reported due to accidents incident to moving machinery from one place or position to another. Three States were free from machinery accidents causing injuries to employees. These States were Alaska, Texas, and South Dakota, all small producers of coal or lignite. Kansas, Missouri, and Iowa had very favorable records, while Utah, Montana, and Michigan rates were far above the average for the United States. (See tables 21 and 22.)

TABLE 21.—*Fatal and nonfatal injury rates per million man-hours underground in 1942 from machinery*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Machinery (underground):						
(a) Mining machine, caught or run over while moving	.016	-----	.014	.582	.392	.556
(b) Mining machine, while being set up	.002	-----	.001	.396	.412	.398
(c) Mining machine, jack pipe, bar, or skid	.003	-----	.003	1.015	.422	.934
(d) Mining machine, caught by cutter chain	.011	-----	.010	.224	.130	.211
(e) Mining machine, operating	.016	-----	.014	1.069	.322	.965
(f) Mining machine, all other	.003	-----	.003	.513	.302	.484
(g) Mechanical scraper or loader	.011	-----	.010	.537	1.086	.613
(h) Conveyor, loaded mechanically	.002	-----	.001	.457	.181	.419
(i) Conveyor, loaded by hand or hand shovel	.002	-----	.001	.475	.332	.455
(j) Power drills (air or electric)	.002	-----	.001	.893	1.348	.956
(k) Accidents while moving machinery	.003	-----	.003	.924	.986	.932
(l) All other machinery accidents	.008	0.010	.008	.817	1.328	.888
Total, 1942-----	.079	.010	.069	7.902	7.241	7.811
Total, 1941-----	.069	-----	.059	7.913	8.091	7.939

TABLE 22.—*Number of nonfatal injuries from machinery per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Alaska-----		Wyoming-----	5.799	Arkansas-----	7.841
Texas-----		Tennessee-----	6.269	Washington-----	7.926
South Dakota-----		Pennsylvania ¹ -----	6.553	West Virginia-----	8.780
Kansas-----	1.005	Virginia-----	6.700	Maryland-----	8.836
Missouri-----	1.381	Alabama-----	7.245	Illinois-----	10.387
Iowa-----	1.494	Kentucky-----	7.678	Indiana-----	11.579
New Mexico-----	3.004	United States ² -----	7.811	Colorado-----	11.916
North Dakota-----	3.739			Ohio-----	12.265
Oklahoma-----	5.126			Utah-----	17.147
				Montana-----	18.923
				Michigan-----	24.233

¹ Pennsylvania bituminous, 6,152; Pennsylvania anthracite, 7,241.² United States bituminous, 7,902.

ELECTRICITY

Electricity is becoming more and more important in coal mining because of the widespread use of electrically operated machinery, the advantages of electric haulage motors over animal haulage, and the need for increased electrically driven ventilation equipment. Reports for 1942 show that 57 persons met death from electricity and that 1,072 were injured. Contact with machine feed wires, junction boxes, or switches was the principal cause of the accidents; this was followed by accidents occurring when men came into contact with trolley wires. An accident-frequency rate of 1.57 per million man-hours was reported for 1942 for accidents from electricity; this was higher than the rate of 1.33 for 1941. Seven States—Oklahoma, Kansas, North Dakota, Michigan, Alaska, Texas, and South Dakota—were free from nonfatal accidents caused by electricity. Montana, Ohio, Illinois, Utah, and West Virginia had rates higher than those for the United States as a whole. (See tables 23 and 24.)

TABLE 23.—*Fatal and nonfatal injury rates per million man-hours in 1942 from electricity*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Electricity (not resulting in explosions):						
Underground:						
(a) Trolley wire.....	0.055	0.020	0.050	0.162	0.352	0.189
(b) Machine feed wire, junction box, or switch.....	.006	.010	.007	.264	.201	.255
(c) Haulage locomotive.....	.002	—	.001	.087	.081	.086
(d) Power or lighting circuit.....	.003	.010	.004	.100	.121	.103
(e) Mining machine.....	.005	.010	.006	.046	.020	.043
(f) Mechanical shovel, loader or con- veyor.....	.002	—	.001	.028	.010	.025
(g) Stationary electrical equipment (motors, switches, etc.).....	—	.010	.001	.069	.121	.076
(h) All others from electricity.....	.010	—	.008	.742	.512	.710
Total, 1942.....	.082	.060	.079	1.498	1.418	1.487
Total, 1941.....	.075	.052	.071	1.309	.981	1.261
Open-cut.....	.114	—	.096	.943	—	.793
Surface.....	.043	—	.034	.490	1.492	.703

TABLE 24.—*Number of nonfatal injuries from electricity per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Oklahoma.....	—	Wyoming.....	0.297	Indiana.....	1.654
Kansas.....	—	Washington.....	.634	Virginia.....	1.675
North Dakota.....	—	Iowa.....	.640	Colorado.....	1.833
Michigan.....	—	New Mexico.....	.751	West Virginia.....	1.955
Alaska.....	—	Tennessee.....	.959	Utah.....	2.031
Texas.....	—	Pennsylvania ¹	1.101	Illinois.....	2.302
South Dakota.....	—	Alabama.....	1.407	Ohio.....	2.307
Arkansas.....	0.270	Maryland.....	1.473	Montana.....	4.883
Missouri.....	.276	Kentucky.....	1.484		
		United States ²	1.487		

¹ Pennsylvania bituminous, 0.917; Pennsylvania anthracite, 1.418.² United States bituminous, 1.498.

EXPLOSIVES

Large quantities of explosives of various types are used in the coal-mining industry, each type having its own characteristics for the work to be done. The quantity of explosives used during 1942 was 176 million pounds. Twenty-nine fatalities and 426 nonfatal injuries among coal-mine workers were caused by explosives during the year. The accident-frequency rate was 0.63 in 1942, the same as in 1941. Premature blasts and shots breaking through the rib or pillar were the chief causes of this type of accident. Eight States were free of injuries from explosives, while Texas, Washington, Oklahoma, and Ohio had rates far in excess of the average for the United States. (See tables 25 and 26.)

TABLE 25.—*Fatal and nonfatal injury rates per million man-hours in 1942 from explosives*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
Explosives (not including explosions of gas or dust)						
Underground:						
(a) Premature blast (not short fuse)	0.005	0.010	0.006	0.064	0.181	0.080
(b) Premature blast (short fuse) .....	.....	.....	.....	.014	.010	.014
(c) Premature blast (electric wire or stray currents) .....	.....	.....	.....	.034	.101	.043
(d) Charging and tamping .....	.030	.....	.004	.019	.161	.038
(e) Shot breaking through rib or pillar .....	.002	.030	.006	.066	.020	.060
(f) Drilling into unexploded holes .....	.....	.010	.001	.008	.020	.010
(g) Delayed blast .....	.003	.....	.003	.029	.040	.031
(h) Unexploded powder in loose coal .....	.....	.....	.....	.010	.040	.014
(i) Sparks from matches or smoking materials .....	.....	.....	.....	.006	.....	.006
(j) Open or mud-capped shots .....	.....	.....	.....	.003	.010	.004
(k) Suffocation from smoke from explosives .....	.....	.....	.....	.013	.050	.018
(l) All other .....	.016	.050	.020	.245	.452	.273
Total, 1942 .....	.026	.130	.040	.512	1.086	.591
Total, 1941 .....	.043	.125	.055	.435	1.399	.575
Open-cut .....	.029	.....	.048	.343	.015	.312
Surface .....	.....	.....	.....	.146	.381	.196

TABLE 26.—*Number of nonfatal injuries from explosives per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Wyoming	Arkansas	0.270	Virginia	0.558
Maryland	Alabama .....	.372	Tennessee .....	.590
Kansas	New Mexico .....	.375	United States 1 .....	.501
Montana	Illinois .....	.402	Pennsylvania 2 .....	.619
North Dakota	Utah .....	.451	Kentucky .....	.768
Michigan	West Virginia .....	.495	Ohio	1.245
Alaska	Colorado .....	.550	Oklahoma	1.577
South Dakota	Indiana .....	.551	Washington	1.902
Iowa	0.213	Missouri .....	.552	Texas	3.637

¹ United States bituminous, 0.512.² Pennsylvania bituminous, 0.347; Pennsylvania anthracite, 1.086.

EXPLOSIONS OF GAS OR COAL DUST

Explosions of gas and coal dust have been the causes of most of the "major" disasters in coal mines, a "major" disaster being an accident in which five or more lives were lost. Seven major disasters occurred during 1942; six of these were explosions in which 127 men were killed, in all, the other disaster being a surface haulage accident in which 5 men lost their lives. Local or nonmajor explosions caused the death of 30 men, thus bringing to 157 the number of lives lost in explosions during 1942, an increase of 60 over the year 1941. All of the major explosions and all but 9 of the deaths from both major and nonmajor explosions were in bituminous mines.

Reports showed that bituminous mines used 521 million pounds of rock dust as a preventive of explosions in 1942. Rock dust, when mixed in proper proportions with coal dust, produces a nonexplosive mixture that acts as a safeguard against local explosions becoming widespread. The rate at which rock dust was used in bituminous mines in 1942 was 1 pound of rock dust to 0.99 ton of coal. This indicated a more extended use of rock dust than in 1941, when the ratio was 1 pound of rock dust to 1.34 tons of coal.

The death rate from explosions in coal mines (including Pennsylvania mines) was 0.22 in 1942 compared with 0.15 in 1941; the rate for non-fatal injuries, on the other hand, indicated improvement, the rates being 0.26 in 1942 and 0.41 in the previous year. For bituminous mines, in which, as before stated, large explosions occur more frequently than in anthracite mines, the fatality rate from explosions was 0.24 in 1942 as against 0.16 in 1941, and the injury rate was 0.18 as against 0.27. The higher death rate from explosions in the light of the relatively greater use of rock dust used to prevent explosions in 1942, as compared with 1941, suggests the possibility that rock dust may not have been used in adequate quantities in one or more of the mines in which the major explosions occurred.

The explosions, both major and local, that resulted in fatalities occurred in 8 States, as shown in table 7. Nonfatal injuries occurred in 16 States, as shown in table 8. Among the States that had no injuries from explosions were the 10 States heading the list of States shown in table 28. On the other hand, some States reported high rates for nonfatal injuries caused by explosions; these States were Arkansas, Kansas, and Oklahoma.

Many of the injuries from explosions during 1942 were due to ignitions by open-flame lamps, others by arcs from electric drills. (See tables 27 and 28.)

TABLE 27.—*Fatal and nonfatal injury rates per million man-hours underground in 1942 from explosions of gas or coal dust*

Cause	Fatality rate			Nonfatal injury rate		
	Bitumi-nous	Anthra-cite	Total	Bitumi-nous	Anthra-cite	Total
<i>Explosions of gas or coal dust ignited by:</i>						
(a) Open-flame lamp.....	0.005	0.010	0.006	0.035	0.141	0.050
(b) Matches, igniters, or smoking.....	.016	.010	.015	.008	.050	.014
(c) Defective safety lamp or opening same.....		.020	.003	.003	.081	.014
(d) Electric arc from bare power line.....	.122	.010	.107	.010	.060	.016
(e) Electric arc from mining machine.....	.002		.001	.014	.020	.015
(f) Electric arc from mechanical loader or scraper.....					.040	.006
(g) Electric arc from electric drill.....	.005		.004	.031		.026
(h) Electric arc from motor of auxiliary fan.....	.055		.047	.002	.050	.008
(i) Electric arc from trolley locomotive.....		.030	.004	.014		.013
(j) Electric arc from all other.....	.010		.008	.019	.010	.018
(k) Blasting with black powder.....	.003		.003	.008		.007
(l) Blasting with dynamite or permissibles.....				.014		.013
(m) All other.....	.021	.010	.019	.024	.272	.058
Total, 1942.....	.238	.090	.218	.183	.724	.258
Total, 1941.....	.158	.084	.147	.266	1.242	.408

TABLE 28.—Number of nonfatal injuries from explosions of gas or coal dust per million man-hours underground

State	Injuries	State	Injuries	State	Injuries
Wyoming.....		Colorado.....	0.092	Tennessee.....	0.369
Iowa.....		West Virginia.....	.101	New Mexico.....	.375
Missouri.....		Alabama.....	.106	Illinois.....	.402
Washington.....		Virginia.....	.174	Utah.....	.451
Montana.....		Kentucky.....	.192	Maryland.....	.589
North Dakota.....		United States ¹.....	.258	Indiana.....	.662
Michigan.....		Pennsylvania ².....	.312	Oklahoma.....	1.577
Alaska.....		Ohio.....	.366	Kansas.....	2.010
Texas.....				Arkansas.....	2.974
South Dakota.....					

¹ United States bituminous, 0.183.² Pennsylvania bituminous, 0.071; Pennsylvania anthracite, 0.724

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Of the 71,035 fatal and nonfatal injuries that occurred both underground and above ground during 1942, the reports from mining companies showed that 56,445 were nonfatal injuries among men employed underground that could be attributed to seven main causes of accidents in coal mines. The injuries that were chargeable to these seven main causes comprised 79 percent of all accidents, fatal and nonfatal, on the surface as well as underground. A comparison, State by State, of the injury rates for these principal causes discloses the reasons for the wide variations between the over-all accident rate for the various States. These rates are shown in table 29, and they represent the number of injuries per million man-hours of employment underground.

Alabama.—The principal hazard to underground men in the mines of Alabama was falls of roof and coal, followed closely by haulage accidents, both rates (as shown in table 29) being more favorable than the average for the United States. Of the seven leading causes of accidents, Alabama improved in only one cause over 1941—hand tools. Alabama employed 4.5 percent of the men and produced 3 percent of the total quantity of coal mined in the United States.

Arkansas.—Falls of roof and coal in Arkansas were more than twice as frequent in the State than in the United States as a whole, the rate being 53.53 per million man-hours worked underground compared with 22.04 for the United States. Like Alabama, Arkansas improved in only one cause over the State figures for 1941—machinery. The State contributed 0.7 percent of the employment and 0.3 percent of the production of the country.

Colorado.—Colorado improved in three of the seven causes of main accidents over the former year; the improvement was in falls of roof and coal, hand tools, and machinery. However, the rates in these three causes were above the general average for the United States. The State was a contributor of 1.6 percent of the men employed and 1.3 percent of the tonnage produced in the country.

Illinois.—Illinois, like Colorado, showed improvement in the same three causes of accidents over the State's figures of the previous year. These and other causes of accidents were higher in Illinois than in the United States as a whole. From the standpoint of employment, Illinois showed a contribution of 6.5 percent of the men; the State also accounted for 10 percent of the total production of coal in the United States.

Indiana.—Improvement in all causes except machinery and falling objects was shown by the injury rates for Indiana for the seven main causes of nonfatal injuries in 1942 compared with similar rates for 1941. Moreover, the Indiana rates were favorable when compared with the United States average. Employment was 2.1 percent and production 4.0 percent of the country's total.

Iowa.—The rate for machinery accidents was reduced in Iowa in 1942. Falls of roof and coal were the principal cause of injuries to the men, having a rate of 42.7, which was considerably above that of 22.0 for the United States. As a contributor to employment, Iowa's percentage was 0.9 percent in men; the State produced 0.4 percent of the Nation's coal.

Kansas.—Falls of roof and coal, handling materials, hand tools, falls of persons, and falling objects were the main causes in which Kansas improved in 1942 over 1941, and the rates for all seven causes were appreciably lower than for the United States as a whole. The State employed 0.5 percent of the men and produced 0.7 percent of the coal in the country during 1942.

Kentucky.—Improvement in the nonfatal injury rate of Kentucky in 1942 was revealed for falls of roof and coal, handling materials, falls of persons, and falling objects. The State was third largest employer of men and fourth largest producer of coal, with 10.4 percent of the employees and 9.6 percent of the production of the entire country.

Maryland.—Haulage and hand tools were the two main causes of accidents in coal mines in which improvement was made in 1942 over 1941; falls of roof and coal was the principal hazard to the men employed underground. Only in hand tools and falling objects were the rates for Maryland better than for the United States as a whole. About 0.4 percent of the men and 0.3 percent of the tonnage was Maryland's contribution to the coal-mining effort of the United States.

Michigan.—The first four of the seven main causes of accidents as shown in table 29 were the ones in which Michigan made improvement in 1942 over the previous year. However, machinery was the principal cause of injuries in the State, whereas falls of roof and coal usually rank first among causes of accidents in coal mines. Michigan's contribution to coal-mining operations in the United States was 0.1 percent of the employees and less than 0.1 percent of the output of coal.

Missouri.—Falls of roof and coal, handling materials, and falling objects were the causes in which Missouri improved in 1942 over 1941, but all seven main causes showed favorable rates compared with the average rates for the United States. Employment amounted to 0.7 percent and production to 0.6 percent of the country's total.

Montana.—With 0.3 percent of the employment and 0.6 percent of the production of the United States attributed to Montana, the State record for 1942 showed higher rates than similar causes for the United States at large. Compared with its own record in 1941, no reduction was made in any of the seven main causes of accidents.

New Mexico.—Of the seven main causes of nonfatal injuries, New Mexico showed improvement in three in 1942 when compared with similar causes in 1941. Falls of roof and coal occurred at a higher rate in New Mexico than in any other State except Arkansas. The State's contribution to employment in the coal-mining industry of the country was 0.4 percent; to production it was 0.3 percent.

North Dakota.—Improvement in only one of the seven leading causes was shown for North Dakota in 1942 over 1941, that being in falls of persons. However, more favorable rates were shown for falls of roof and coal, falls of persons, machinery, and falling objects than the average for the country. The State is a producer of both lignite and bituminous coal; its part in the country's total was 0.2 percent in employment and 0.4 percent in production.

Ohio.—A more favorable rate was shown in Ohio in 1942 for falls of persons than in 1941, this being the only one of the seven leading causes of mine accidents in which progress was made. However, the individual cause rates were better than the corresponding average for the United States, except for machinery. The State was sixth in point of contribution of employment, its part being 4.2 percent of the total; and it was fifth in production, contributing 5.0 percent of the total coal produced.

Oklahoma.—While not a large producer of coal (having a credit of 0.4 percent of the country's total), Oklahoma made progress in reducing the accident rates for hand tools, falls of persons, and falling objects. Employment within the State was 0.5 percent of the United States total number of men employed underground.

Pennsylvania.—Coal mining in Pennsylvania is divided into two separate and distinct classes, bituminous in the western part of the State and anthracite in the middle eastern part. As mining conditions differ in the two classes of mines, separate figures are given for each class. In the bituminous fields a reduction in nonfatal accident rates from falls of roof and coal and from machinery was shown in 1942 over 1941, and the rates for all seven main causes of accidents were better than the general average for the United States. In the anthracite fields progress in reducing the nonfatal injury rates was shown for five of the seven main causes. Except for machinery, the injury rates were generally higher for anthracite mines than the average for all coal mines in the country as a whole. Bituminous mines in Pennsylvania employed 21 percent and the anthracite mines 16 percent of the total underground coal miners in the United States. Production of bituminous coal was 22 percent and anthracite 9 percent of the country's total. Thus, if taken as one industry, coal mining in Pennsylvania leads all other States, with 37 percent of the employment and 31 percent of the production.

Tennessee.—Haulage, handling materials, hand tools, and falls of persons were the four causes of nonfatal injuries in which the State showed improvement in 1942 over its 1941 rates. When compared with the United States rates, all of the rates for Tennessee were favorable. Employment was 1.8 percent and production 1.3 percent of the total for the United States.

Texas.—Most of the production in Texas comes from lignite mines. The mines reduced their nonfatal injury rates in four of the seven main causes of underground accidents. Less than 0.1 percent of employment and 0.1 percent of the United States production was credited to the State.

Utah.—Handling materials and machinery were the two causes in which coal mines in Utah reduced their accident-frequency rates in 1942 over 1941. Its part in the United States total amounted to 0.6 percent in employment and 0.9 percent in tonnage. Except for handling materials and falling objects, the accident rates were generally higher for Utah than for the United States as a whole.

Virginia.—No reduction was made in the State in any of the seven main causes of underground nonfatal injury rates in 1942 compared with similar rates for 1941, yet only falls of roof and coal and haulage had higher rates in the State than the average for the United States. Virginia showed 3.6 percent of the employment and 3.2 percent of the total United States production.

Washington.—Washington, where many coal seams are folded or inclined, showed reduced rates for four of the seven main causes of nonfatal accidents underground in 1942 compared with the State record in 1941. Falls of roof and coal showed a rate higher than for any other State except Arkansas and New Mexico. Employment was 0.4 percent and production 0.3 percent of the United States total.

West Virginia.—West Virginia reduced its accident-frequency rates in four of the seven main causes of underground accidents. The State record also compared favorably with the 1942 United States average in five of the seven causes. West Virginia was the leading producer of bituminous coal. About 22 percent of all employees and 24 percent of all coal produced in the United States was credited to West Virginia.

Wyoming.—Falls of roof and coal, machinery, falls of persons, and falling objects were the causes in which Wyoming made reductions in its injury rates in 1942 compared with 1941, but all seven causes showed rates better than the average for the United States. The State contributed 0.9 percent of the employment and 1.3 percent of the country's production in 1942.

TABLE 29.—Comparative nonfatal injury rates per million man-hours of employment underground for the 7 leading causes of nonfatal injuries, by States, in 1942

	United States	Alabama	Arkansas	Colorado	Illinois	Indiana	Iowa	Kansas	Kentucky	Maryland	Michigan	Missouri	Montana	New Mexico
Falls of roof and coal	22.042	17.908	53.533	31.348	23.398	17.313	42.682	10.049	22.677	37.700	15.578	14.088	29.300	50.690
Haulage	18.653	16.375	7.570	20.074	22.997	19.960	14.512	13.566	19.682	20.028	15.578	4.420	23.196	18.623
Handling materials	15.503	12.191	8.626	12.191	17.268	14.005	8.963	3.517	10.622	17.672	6.353	6.924	16.481	8.636
Hand tools	6.225	2.866	4.056	6.508	4.632	10.244	5.247	3.517	5.247	5.007	6.924	1.934	7.325	9.387
Falls of persons	4.351	2.883	2.704	5.683	5.247	4.411	3.841	4.020	7.678	6.185	2.060	2.210	5.494	4.130
Machinery	7.811	7.245	7.841	11.916	10.387	11.579	1.494	1.005	8.836	24.233	1.381	18.925	3.004	3.004
Falling objects	3.712	1.991	3.515	5.316	4.605	1.875	2.134	1.005	1.894	3.594	3.462	.276	5.494	6.759
	North Dakota	Ohio	Oklahoma	Pennsylvania (bituminous)	Pennsylvania (anthracite)	Tennessee	Texas	Utah	Virginia	Washington	West Virginia	Wyoming		United States (bituminous)
Falls of roof and coal	18.683	20.833	18.534	17.133	26.810	20.702	20.799	20.095	38.807	25.928	45.334	21.523	14.424	21.279
Haulage	29.909	15.890	4.338	17.615	18.765	18.639	15.120	25.458	34.295	18.774	19.972	20.045	9.368	18.635
Handling materials	16.200	12.265	7.492	10.834	37.671	20.732	11.507	14.547	13.296	29.483	13.441	4.610	11.955	
Hand tools	8.723	5.712	1.394	5.182	12.048	7.714	4.278	10.911	7.446	5.479	18.704	4.840	2.082	5.294
Falls of persons	2.492	3.112	1.577	3.731	11.595	6.631	1.254	3.637	6.543	17.436	1.605	2.605	1.636	3.192
Machinery	3.759	12.265	5.126	6.152	7.241	6.553	6.269	17.147	6.700	7.926	8.780	5.799	7.902	
Falling objects	1.246	3.269	.394	2.315	10.851	5.463	1.549	-----	3.159	2.652	8.560	2.533	1.487	2.570

TABLE 30.—Alabama: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground		Sur-face 1	Under-ground		Sur-face 1	Under-ground		Total
				Average days of employment per man	Total	Total	Average days of employment per man	Total	Total	Average days of employment per man	Total	Total
Bibb.....	8	10	827,066	1,177	191	1,388	259	306,768	47,389	354,147	2,147,336	331,753
Blount.....	16	16	99,681	88	74	162	207	18,880	14,705	33,855	136,081	114,474
Cullman.....	7	11	48,073	112	19	131	211	23,690	3,933	27,023	165,830	27,531
Jefferson.....	64	86	11,200,097	11,387	1,912	13,289	271	3,097,298	509	3,666	21,736,242	3,575,645
Marion.....	19	22	308,337	437	94	531	230	101,060	21,204	122,304	706,380	153,288
Shelby.....	19	19	501,171	871	171	1,042	222	202,948	39,313	212,262	1,420,645	275,191
Tuscaloosa.....	16	18	210,839	406	74	480	228	92,791	16,441	109,232	649,273	114,989
Walker.....	49	64	4,987,130	4,468	867	5,335	233	1,138,711	212,642	1,351,353	7,972,050	1,499,438
Elowah, Jackson, and Madison.....	8	8	56,526	101	21	122	217	21,680	4,765	26,445	168,751	37,126
St. Clair, and Winston.....	6	13	1,211,885	1,296	163	1,459	249	322,282	40,329	382,591	2,575,356	321,522
Total, 1942.....	267	19,390,705	20,343	3,586	23,929	261	5,326,020	910,417	6,236,437	37,878,654	6,450,987	44,129,811
Total, 1941.....	278	15,868,188	20,726	3,615	24,341	210	4,338,754	772,115	5,110,869	30,738,534	5,443,249	36,179,783
Injured												
Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Total	Killed	Injured	Total	Ton per million man-hours	Average hours of employment per ton
Bibb.....	1	2	3	145	150	0,403	60,505	1,206	181,364	0,334	2,998	7,00
Blount.....	1	1	1	12	12	.399	47,894	10,032	120,384	.398	2,514	7,46
Cullman.....	8	8	7	7	7		36,202	145,012	145,012	.249	4,022	7,00
Jefferson.....	33	101	1,094	1,203	1,304		47,523	2,935	109,164	.435	2,287	7,02
Marion.....	3	2	68	60	349		58,125	9,730	162,160	.358	2,790	7,04
Shelby.....	1	5	207	212	590		12,501	1,692	338,610	.349	2,869	1,620
Tuscaloosa.....	1	5	22	25	131		32,711	3,692	92,306	.354	2,822	7,00
Walker.....	17	1	32	596	629	1,195	66,410	3,429	126,890	.523	1,911	1,627
Elowah, Jackson, and Madison.....	5	2	213	12	12		58,287	212,292	212,292	.275	3,612	7,01
St. Clair, and Winston.....	5	2	215	215	1,727		74,268	4,126	177,410	.419	2,389	7,98
Total, 1942.....	62	11	148	2,356	2,515	1,405	56,991	3,197	129,701	.439	2,276	7,08
Total, 1941.....	55	2	105	1,645	1,762	1,520	48,425	3,466	110,410	.439	2,280	7,08
Killed												
Bibb.....	1	2	3	145	150	0,403	60,505	1,206	181,364	0,334	2,998	7,00
Blount.....	1	1	1	12	12	.399	47,894	10,032	120,384	.398	2,514	7,46
Cullman.....	8	8	7	7	7		36,202	145,012	145,012	.249	4,022	7,00
Jefferson.....	33	101	1,094	1,203	1,304		47,523	2,935	109,164	.435	2,287	7,02
Marion.....	3	2	68	60	349		58,125	9,730	162,160	.358	2,790	7,04
Shelby.....	1	5	207	212	590		12,501	1,692	338,610	.349	2,869	1,620
Tuscaloosa.....	1	5	22	25	131		32,711	3,692	92,306	.354	2,822	7,00
Walker.....	17	1	32	596	629	1,195	66,410	3,429	126,890	.523	1,911	1,627
Elowah, Jackson, and Madison.....	5	2	213	12	12		58,287	212,292	212,292	.275	3,612	7,01
St. Clair, and Winston.....	5	2	215	215	1,727		74,268	4,126	177,410	.419	2,389	7,98
Total, 1942.....	62	11	148	2,356	2,515	1,405	56,991	3,197	129,701	.439	2,276	7,08
Total, 1941.....	55	2	105	1,645	1,762	1,520	48,425	3,466	110,410	.439	2,280	7,08

	Number of mines	Men em- ployed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours		Ton per man-hour
								Killed	Injured	
Underground - - - - -	259	20,343	19,120,869	5,326,020	37,678,654	58	2,342	1,539	62,157	0.507
Open-cut - - - - -	8	232	260,866	48,779	367,472	1	31	2,721	84,380	.734
Surface - - - - -		3,354	...	861,638	6,083,436	3	142	.493	25,332	
	267	23,929	19,390,705	6,236,437	44,120,611	62	2,515	1,405	56,991	.439

¹ Includes open-felt operations.

TABLE 31.—Alaska: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

TABLE 32.—Arkansas: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground		Surface 1	Under-ground		Surface 1	Total	Under-ground		
				Under-ground	Surface 1	Total	Average days of employment per man	Under-ground	Surface 1	Total	Average hours of employment per man per day	Under-ground	
Franklin.....	13	13	149,818	236	60	296	187	43,251	12,246	55,447	302,919	85,776	
Johnson.....	31	32	328,281	561	205	766	132	76,332	25,161	101,483	324,875	180,152	
Logan.....	16	19	605,408	972	183	1,165	192	188,392	35,033	223,425	1,321,145	247,151	
Sebastian.....	43	44	943,552	1,073	247	1,320	201	217,618	48,352	265,970	1,523,795	349,914	
Pope and Scott.....	6	6	4,507	25	7	32	96	2,255	820	3,075	15,905	5,780	
Total, 1942.....		114	2,831,566	2,867	712	3,579	181	527,848	121,612	649,460	3,698,629	868,673	
Total, 1941.....		109	1,645,917	3,668	695	4,363	133	432,697	98,660	581,357	3,386,320	692,822	
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Injured			Rate per million man-hours			Rate per million man-hours			Rate per million tons			Average hours of employment per man per day	
County	Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Ton per man-hour of employment	Ton per man-hour of employment per ton	Man-hours of employment per ton	Average hours of employment per man per day	
Franklin.....	1	1	1	25	25	64	318	166,869	0.386	2,564	7,00	1,313	1,313
Johnson.....	4	4	4	45	45	139	62,935	137,046	.459	2,178	7,05	1,933	1,933
Logan.....	12	12	12	168	168	2,501	107,123	6,807	.386	2,590	7,02	1,346	1,346
Sebastian.....	3	3	3	173	176	6,405	93,937	12,718	186,529	.504	1,986	7,04	1,419
Pope and Scott.....									.208	4,811	7,05		678
Total, 1942.....	17	17	4	410	414	3,722	90,644	8,368	203,784	.445	2,248	7,03	1,276
Total, 1941.....	13	13	1	285	297	3,187	72,809	7,898	180,447	.403	2,478	7,02	935

¹ Includes open-cut operations.

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	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours	Ton per man-hour
Underground.....	101	2,867	1,837,829	527,848	3,698,629	17	385	4,586	104,093
Open-cut.....	13	173	195,737	26,513	201,011	12	12	59,698	0,497
Surface.....		539	-----	95,099	667,662	-----	17	25,462	.964
Total, 1942.....	114	3,579	2,031,566	649,460	4,567,302	17	414	3,722	90,644
									.445

TABLE 33.—Colorado: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment	
				Under-ground	Sur-face 1	Total	Average days of employment per man	Under-ground	Sur-face 1	Total	Under-ground
Boulder.....	17	17	717,816	581	111	692	236	134,822	28,664	163,486	944,373
Delta.....	8	8	96,737	61	25	86	244	14,853	6,120	20,973	147,319
El Paso.....	7	8	248,721	142	38	180	287	40,179	11,484	51,663	283,724
Fremont.....	28	32	529,946	622	146	767	202	150,088	30,038	165,126	82,368
Garnett.....	10	10	53,222	45	13	58	249	11,101	3,350	14,451	210,722
Gunnison.....	14	14	775,111	449	131	580	245	113,489	34,488	147,977	794,828
Hierfano.....	16	17	981,203	831	197	1,028	238	196,508	48,607	245,115	1,376,384
Jefferson.....	3	3	147,462	132	30	162	221	58,660	7,160	35,899	341,267
Ia Plata.....	13	13	43,501	132	33	60	245	11,416	3,308	175,395	48,998
Las Animas.....	35	36	1,459,533	1,628	286	1,924	246	44,006	70,157	1,723,190	224,393
Mesa.....	13	14	120,302	120	26	146	222	26,630	5,821	831,915	491,576
Mount.....	16	17	1,192,613	789	298	1,087	244	102,288	72,751	32,481	3,323,491
Weld.....	18	20	1,567,735	1,088	212	1,300	213	239,614	47,119	265,039	186,410
Archuleta, Montezuma, Montrose, and San Miguel.....	12	12	53,920	57	10	67	270	15,327	2,736	513,247	227,748
Elbert, Jackson, and Larimer.....	4	4	16,551	7	13	20	248	1,892	3,069	119,886	1,833,776
Moffat and Rio Blanco.....	12	12	80,441	48	12	60	231	11,033	2,799	15,140	84,590
Total, 1942.....	237	256	8,079,042	6,647	1,570	8,217	235	1,556,905	377,680	1,934,585	10,909,819
Total, 1941.....			6,955,443	6,595	1,441	8,036	204	1,338,434	304,025	1,642,459	9,357,151
										2,632,520	13,502,339
										2,140,555	11,497,706

¹ Includes open-cut operations.

TABLE 33.—Colorado: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Con.

County	Killed	Injured			Rate per million man-hours	Rate per million tons	Ton per man-hour of employ- ment	Man-hours of employ- ment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Total Tempo- rary						
Boulder	1	1	8	111	120	0.876	105,129	1,393	167,174	0.629
Delta			14	14	94,627		144,633		1,500	6.98
El Paso			26	26	71,020		104,355		1,528	7.05
Fremont	3		2	74	76		69,903	5,726	67.9	7.05
Garnfield			13	13	125,433		145,063		482	2,034
Gunnison	4		1	59	60		57,901	5,160	142,260	2,074
Huerfano			3	117	121		93,580	5,160	514	1,416
Jefferson	6	1	3	483	511		70,446	6,114	77,407	1,787
Jefferson			21	21	93,586		129,310		748	1,787
La Plata			6	6	142,410		142,410		571	1,671
Las Animas	6		6	196	202		58,556	3,426	137,928	0.557
Mesa			12	12	60,779		138,395		425	2,335
Routt	1		4	338	333		57,081	3,186	439	6.96
Weld			5	178	183		184,035	3,186	108,061	7.01
Archuleta, Montezuma, Montrose, and San Miguel			1	1	516		94,472		528	1,550
Elbert, Jackson, and Larimer			1	6	6		42,552	6,038	116,729	640
Moffat and Rio Blanco			1	1	2,682		26,815	6,038	80.9	1,715
Total, 1942	59	3	31	1,183	1,217	4,350	89,734	7,303	155,130	.596
Total, 1941	23	1	29	1,049	1,079	2,000	93,845	3,307	1,653	7.01
										1,651
										1,431
Number of mines	Men em- ployed	Production, short tons			Man-days of employment		Killed	Injured		Ton per million man-hours
235	6,647	8,066,814			1,566,905		10,906,819	59	1,111	Killed
	6,647	8,066,814			1,566,905		20,118		5,408	Injured
Underground	2	12	12,228		1,566,905		2,632,402		106	
Open-cut		1,558								40,267
Total, 1942	237	8,217	8,079,042		1,334,585		13,562,339	59	1,217	4,350
										89,734
										.596

¹ Includes open-cut operations.

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TABLE 34.—Illinois: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment				
				Under-ground	Sur-face	Total	Average days of employment per man	Under-ground	Surface	Total	Under-ground	Surface		
Bureau.....	6	6	95,127	139	41	180	146	20,142	6,149	26,291	141,905	43,931	185,836	
Christian.....	4	7	6,285,683	1,706	562	2,271	246	145,935	143,704	559,639	2,911,545	1,005,928	3,917,473	
Clinton.....	3	3	5,925,608	282	55	317	183	47,566	10,277	57,943	2,314,820	70,345	3,385,165	
Edgar.....	4	4	3,315	54	9	63	150	8,204	1,331	9,435	57,428	8,391,648	8,665	66,093
Franklin.....	6	12	13,770,002	5152	1,882	7,014	233	1,188,378	436,886	1,635,164	8,391,648	3,067,675	11,453,105	
Fulton.....	53	58	5,226,608	5683	1,165	1,748	223	115,388	14,917	140,304	832,024	2,007,675	2,839,699	
Gallatin.....	4	4	62,990	57	13	70	208	11,917	7,757	14,534	93,195	21,665	114,860	
Grundy.....	3	3	74,264	43	33	76	196	7,757	7,157	14,914	520,299	50,099	104,398	
Henry.....	13	13	712,127	147	173	320	249	712,526	47,507	79,551	220,844	348,048	568,892	
Jackson.....	12	13	2,559,857	738	272	1,040	253	133,926	69,053	263,070	1,362,195	497,201	1,889,486	
Knox.....	13	13	1,381,058	213	506	233	229	144,911	70,066	115,817	314,609	505,967	820,576	
Lia Sale.....	12	12	388,808	357	147	504	187	69,157	24,129	94,186	528,764	180,896	789,660	
Macoupin.....	7	11	4,726,354	1,978	454	2,432	246	437,088	110,124	597,212	3,410,714	770,872	4,181,586	
Madison.....	19	19	2,086,640	1,147	270	1,417	214	255,069	63,318	318,387	1,755,622	439,740	2,195,362	
Menard.....	11	11	109,701	123	22	145	214	26,375	4,625	31,000	192,617	33,762	226,379	
Peoria.....	37	38	862,081	712	90	802	215	112,735	19,738	172,473	1,077,132	139,438	1,216,570	
Perry.....	19	19	4,236,617	729	932	1,681	242	132,075	40,537	172,473	1,077,132	139,438	1,216,570	
Randolph.....	11	11	2,064,628	497	309	806	218	114,447	61,069	173,516	1,064,555	1,786,377	2,884,896	
St. Clair.....	38	38	2,685,237	1,272	451	1,723	182	241,885	101,860	313,054	1,484,927	446,228	1,247,357	
Sale.....	10	15	4,455,586	1,886	2,553	717	207	371,974	167,977	520,317	2,727,196	720,159	3,105,777	
Sangamon.....	15	21	3,289,240	2,268	349	2,617	221	436,366	82,186	575,552	3,479,395	707,079	3,707,128	
Schuylkill.....	11	11	134,454	54	59	113	181	8,727	11,701	20,428	62,441	83,268	145,706	
Tazewell.....	3	3	133,733	181	25	206	217	38,476	6,247	44,723	269,332	43,729	313,061	
Vermilion.....	45	47	2,316,022	1,638	276	1,914	203	340,296	57,908	398,394	2,375,977	406,474	2,786,451	
Washington.....	5	5	361,207	225	57	1,222	178	33,786	10,399	50,085	281,112	72,875	333,987	
Williamson.....	57	60	3,410,446	1,222	579	1,801	221	259,348	128,442	397,890	1,915,183	913,286	2,828,479	
Bond, Greene, Montgomery, Morgan, Hancock, Livingston, McDonough, and Shelby, Rock Island, and Warren Mercer, Marion, and Wabash.....	14	14	960,577	364	110	474	213	76,040	25,130	101,170	539,212	177,305	716,517	
Logan, Marshall, Stark, Will, and Woodford.....	4	4	744,073	103	46	149	131	14,543	4,972	19,515	102,593	35,860	138,383	
Total, 1942.....	512	568	65,355,304	24,338	10,058	34,566	223	5,321,138	2,358,789	7,670,927	37,352,867	16,741,535	54,094,402	
Total, 1941.....	-----	-----	55,142,503	25,839	8,602	34,501	195	4,737,141	1,957,429	6,724,570	33,412,615	13,826,619	47,239,234	

TABLE 34.—Illinois: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Continued

County	Killed	Injured		Rate per million man-hours	Rate per million Killed	Rate per million Injured	Tons per man-hour of employ- ment	Man-hours of employ- ment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability							
Bureau	1	5	8	25	5.381	134.527	10.512	262.807	0.512	1,954
Christian				466	473	120.741	.829	78.395	1,530	7.00
Clinton		1	1	86	87	25.877	—	304.333	1,338	6.65
Edgar						30.280	—	58.284	1,926	7.01
Franklin	18		46	717	768	66.619	1.307	55.410	1,320	1,049
Fulton	3		2	187	189	1.036	66.556	.506	31.895	2,087
Gallatin			1	10	11	95.768	—	174.631	479	7.28
Grundy				15	15	143.681	—	201.982	1,823	6.25
Henry						71.1	—	71.1	1,641	7.90
Jackson	8	1	33	106	130	4.302	3.125	34.766	1,252	1,374
Knox				57	58	4.227	70.682	41.997	7.99	7.15
La Salle	3		3	111	114	160.640	7.714	293.136	1,683	7.08
Macoupin	9		21	328	349	2.152	83.461	1.904	54.8	1,622
Madison			2	194	196	2.278	89.279	73.841	1,130	1,408
Menard			2	23	8	8.85	101.660	18.231	93.931	1,719
Perry	1	4	113	117	.822	96.172	1.160	209.661	485	6.90
Randolph	5		160	165	.830	57.755	1.236	38.946	1,484	1,517
St. Clair	3		135	137	2.405	109.832	1.453	66.356	1,655	7.08
Saline			2	152	154	2.260	69.615	1.862	57.351	1,548
Sangamon	5		31	283	314	1.349	84.700	1.122	70.473	1,202
Schuyler			3	474	479	.739	118.064	.912	145.626	822
Tazewell				2	2	13.726	—	14.875	1,233	7.00
Vernilion	8		16	16	16	51.108	—	119.588	427	1,284
Washington			146	154	2.871	55.267	3.454	66.498	831	7.00
Williamson			35	35	—	98.874	—	96.873	1,021	1,456
Bond, Greene, Montgomery, Morgan, and Shelby	9	14	257	271	3.182	95.811	2.639	79.462	1,206	7.07
Hancock, Livingston, McHenry, Mercer, Rock Island, and Warren, Jefferson, Marion, and Wabash, Logan and Macoupin, Marshall, Stark, Will, and Woodford	2			73	73	2.791	101.882	75.996	1.341	1,571
Total, 1942	94	3	191	4,298	4,402	1,758	83.040	1,438	68.732	7.04
Total, 1941	101	9	236	3,584	3,890	2,138	81.066	1,832	.887	1,574

	Number of mines	Men em- ployed	Production, short tons	Man-days of employment	Man-hours of employment	Rate per million man-hours		Tons per man-hour
						Killed	Injured	
Underground.....	468	24,328	49,456,054	5,321,138	37,352,867	78	3,883	2,088
Open-cut.....	44	3,837	15,899,310	932,655	6,936,201	8	286	1,183
Surface.....		6,201		1,386,134	9,866,244	8	323	.816
Total, 1942.....	512	34,366	65,355,304	7,679,927	54,094,402	94	4,492	1,758
								83.040
								1.208

¹ Includes open-cut operations.

TABLE 35.—*Indiana: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942*

County	Number of operators	Number of mines	Production, short tons	Men employed				Man-days of employment				Man-hours of employment			
				Under-ground		Surface 1	Total	Under-ground		Surface 1	Total	Under-ground		Surface 1	Total
				Average days of employment per man	Total		Total	Average days of employment per man	Total		Total	Average days of employment per man	Total		Total
Clay.	30	33	1,769,026	78	602	680	240	16,722	146,710	163,432	121,126	1,044,296	2,165,422		
Davies.	6	6	70,618	49	25	74	250	11,638	6,361	18,489	92,106	54,610	146,716		
Fountain.	7	9	89,495	10	43	53	218	1,641	9,924	11,565	12,107	72,968	85,075		
Gibson.	3	3	1,205,834	462	138	580	224	103,340	28,912	132,252	72,517	262,836	928,106		
Greene.	22	24	3,283,759	333	833	1,168	262	28,326	23,540	305,886	514,046	1,632,594	2,141,000		
Knox.	11	11	3,018,550	1,317	355	1,692	248	31,525	17,700	40,225	2,322,108	547,456	2,869,544		
Loren.	3	3	255,467	60	90	161	152	14,520	14,520	10,973	10,973	101,797	101,797		
Park.	9	11	185,001	140	53	183	226	13,922	13,922	210,924	210,924	94,444	94,444		
Perry.	9	9	39,236	43	9	49	261	10,398	2,389	12,797	80,525	18,903	90,525		
Pike.	19	21	4,389,331	28	961	970	240	6,478	23,982	23,982	17,524	1,622,583	1,720,107		
Burke.	11	11	118,622	29	53	82	230	6,372	12,532	18,859	48,631	89,088	137,668		
Sullivan.	20	21	2,186,839	1,165	441	1,636	209	28,341	103,086	391,427	1,668,387	729,636	2,397,000		
Hamilton.	10	10	42,970,709	215	429	214	128	31,639	57,732	72,715	30,348	389,063	389,063		
Hancock.	23	28	4,259,027	1,471	547	2,018	229	32,929	131,205	461,134	2,303,949	926,060	3,230,060		
Warren.	27	27	3,914,534	389	682	1,071	254	90,205	181,674	271,879	659,811	1,348,063	2,007,874		
DeBois, Martin, Vanderburg, and Warren.	10	10	118,039	97	51	148	177	17,284	8,964	26,248	121,359	62,611	183,970		
Total, 1942.		239	25,116,137	5,853	5,057	10,910	231	1,237,349	1,234,080	2,521,429	9,068,121	8,847,177	17,915,298		
Total, 1941.		318	22,434,329	5,484	4,991	10,475	215	1,143,212	1,108,786	2,251,398	8,215,478	8,060,884	16,276,312		

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Includes open-cut operations.

TABLE 36.—*Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942*

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County	Killed		Injured		Rate per million man-hours		Rate per million tons		Man-hours of employment per ton		Average hours of employment per man per day		Average hours of employment per man per year														
	Permanent total disability	Permanent partial disability	Total	Killed	Injured	Killed	Injured	Ton per man-hour of employment	Killed	Injured	Killed	Injured	Killed	Injured													
Adams.			1	1	12,317	63,524	62,250	0,198	5,055	2,982	7,60	804															
Appanoose.	2		89	1,428	51	4,257	189,448	.335	2,882	347	7,63	1,039															
Boone.			51	4	36,884	-----	184,425	.347	5,000	200	7,62	892															
Guthrie.			4	14	98,624	-----	214,412	.400	2,174	460	7,44	1,695															
Jasper.			14	15	81,871	-----	143,991	.569	1,759	1,759	7,09	1,053															
Lucas.			1	16	17	2,846	48,370	50,882	1,052	1,052	7,44	1,612															
Malaska.			1	42	46,936	-----	80,858	.580	1,723	7,50	7,50	1,484															
Marion.			29	2,258	65,472	4,227	122,591	.534	1,872	1,872	7,29	1,576															
Monroe.	1		11	7,391	37,900	416,904	.196	5,128	318	7,61	1,713																
Page.			60	61	86,436	200,386	200,386	.431	2,318	7,00	1,400																
Pott.	1		2	13,073	26,145	31,883	63,786	.410	2,440	8,16	1,443																
Ian Buren.	1		33	34	86,932	175,545	496	2,019	7,57	1,679	1,679																
Wapello.			5	5	84,798	304,562	278	3,562	7,08	7,08	694																
Warren.			6	6	73,619	307,529	.239	4,170	7,94	1,315	1,315																
Wayne.			89	8,248	146,813	15,689	279,663	.326	1,902	7,00	1,550																
Dallas, Greene, and Webster, and Taylor-Davis, Jefferson, Keokuk, and Taylor.			3	467	470	1,708	166,043	.463	2,161	7,26	1,280																
Total, 1942.	11	2	5	455	462	1,514	69,947	154,566	.453	2,210	7,16	1,116															
Total, 1941.	10																										
Underground.		Open-cut.		Surface.		Total, 1942.		Number of mines		Men employed		Production, short tons		Man-days of employment		Man-hours of employment		Killed		Injured		Rate per million man-hours		Ton per man-hour			
Underground.		Open-cut.		Surface.		Total, 1942.		213		3,816		2,141,451		654,385		4,685,862		11		412		2,347		87,924		0,457	
Underground.		Open-cut.		Surface.		Total, 1942.		38		466		689,141		102,218		806,701		23		43,387		36,788		.854			
Underground.		Open-cut.		Surface.		Total, 1942.		251		4,778		2,830,592		843,046		6,117,748		11		470		1,798		76,826		.463	

¹ Includes open-cut operations.

COAL-MINE ACCIDENTS IN THE UNITED STATES, 1942

TABLE 37.—Kansas: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground		Sur-face 1	Under-ground		Surface 1	Total	Under-ground		
				Average days of employment per man			Average days of employment per man						
Bourbon.....	3	3	198,212	62	273	16,920	16,920	16,920	16,920	126,149	126,149		
Cherokee.....	17	18	1,269,878	477	227	5,616	110,234	43,197	779,595	822,792	779,595		
Crawford.....	40	41	1,866,919	512	241	121,860	131,219	864,583	1,810,635	1,810,635	1,810,635		
Linn.....	14	14	735,791	534	175	284	42,218	49,646	55,141	304,013	339,154	339,154	
Osage.....	16	19	87,710	48	275	185	52,471	57,628	404,150	39,106	443,259	443,259	
Franklin, Labette, and Leavenworth.....	10	10	76,746	268	100	312	27,218	27,707	107,642	633,130	218,139	831,1269	
Total, 1942.....		105	4,225,256	1,144	242	267,710	333,065	601,175	1,980,211	2,423,050	4,413,261		
Total, 1941.....		134	3,494,506	1,385	195	3,024	280,056	588,289	2,321,849	2,071,731	4,393,580		
Injured													
Killed		Permanent total disability		Permanent partial disability		Temporary		Rate per million man-hours		Rate per million tons		Tons per man-hour of employment per ton	
Bourbon.....	1	1	6	6	27	47,563	0.787	30,271	1,571	0,636	7.45	2,035	
Cherokee.....	3	1	27	1,215	32,815	64,618	1,607	21,262	1,543	.638	7.08	1,807	
Crawford.....		1	116	117	117	64,618	1,607	62,070	1,031	.970	7.16	1,721	
Linn.....		1	12	13	13	36,196	1,607	17,668	2,049	.488	7.23	2,052	
Osage.....		12	6	6	12	13,536	1,607	68,407	1,98	.084	7.69	1,421	
Franklin, Labette, and Leavenworth.....		12	12	12	14,097	14,097	1,607	156,360	.090	11,092	7.91	2,313	
Total, 1942.....	4	2	179	181	906	41,013	944	42,736	.980	1,042	7.34	1,779	
Total, 1941.....	11	4	255	259	2,504	58,950	3,148	74,116	.795	1,287	7.47	1,453	
Number of mines		Men employed		Production, short tons		Man-days of employment		Man-hours of employment		Killed		Injured	
Underground.....	62	1,144	624,137	267,710	1,990,211	3	80	1,567	40,197	Killed	Injured		
Open-cut.....	43	1,160	3,611,119	250,379	2,094,338	1	101	.478	48,230				
Surface.....	177			43,086	328,912								
Total, 1942.....	105	2,481	4,235,256	601,175	4,413,261	4	181	.906	41,013				
										Tons per man-hour			

¹ Includes open-cut operations.

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TABLE 38.—Kentucky: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground	Sur-face 1	Total	Under-ground	Surface 1	Total	Under-ground	Surface 1	Total
Bell.....	45	46	3,130,718	2,996	506	3,502	244	733,406	120,322	854,328	5,151,108	859,413
Bord.....	15	15	51,830	100	21	121	164	16,332	3,731	19,863	113,913	26,119
Breathitt.....	5	5	66,424	116	21	137	223	26,059	4,314	30,573	185,450	26,027
Butler.....	9	9	38,413	57	17	74	175	10,073	2,948	12,921	71,528	20,371
Carter.....	11	11	128,969	109	39	148	229	24,086	9,857	33,943	190,399	78,136
Christian.....	5	5	69,269	57	26	88	221	12,177	6,157	18,334	85,239	28,535
Clay.....	16	16	327,038	476	105	581	223	108,123	21,298	129,421	864,708	131,910
Daviss.....	23	23	143,131	151	37	188	206	31,505	21,750	38,740	238,865	1,023,573
Floyd.....	33	37	6,410,011	5,202	913	6,115	234	1,215,203	217,016	1,432,219	55,321	233,872
Hanlen.....	56	56	14,936,395	11,932	1,785	13,728	248	2,968,956	438,590	3,407,375	8,559,427	10,052,269
Henderson.....	14	14	132,908	131	29	160	223	29,346	6,275	35,621	20,778,267	23,860,956
Hopkins.....	58	58	6,622,102	2,428	830	3,258	229	546,389	199,807	746,666	213,450	45,333
Jackson.....	12	12	243,862	2,351	64	415	230	81,224	14,268	95,442	602,119	5,221,730
Johnson.....	7	7	668,131	655	99	754	231	132,513	21,583	174,066	1,088,603	1,245,292
Knot.....	6	6	676,534	505	76	581	230	126,700	13,877	180,945	123,822	1,937,292
Knox.....	8	8	704,594	679	96	775	233	158,280	22,665	180,945	1,110,866	1,270,089
Laurel.....	15	15	112,299	149	67	207	163	21,449	12,669	38,918	120,870	312,151
Lee.....	4	4	31,167	55	9	64	235	12,940	2,120	15,050	101,470	118,020
Letcher.....	25	25	535,105	4,295	596	4,891	230	989,153	135,120	1,124,153	7,030,948	7,977,260
McCready.....	5	10	917,939	941	107	1,048	243	299,363	25,004	254,347	1,606,905	1,781,158
Martin.....	5	5	378,200	218	55	273	233	50,003	13,486	63,492	350,901	94,402
Muhlenberg.....	43	48	5,204,604	2,798	622	3,420	234	65,760	145,760	798,683	4,572,415	4,024,551
Ohio.....	18	19	217,935	216	61	277	193	32,804	9,734	53,538	134,199	506,902
Perry.....	26	32	6,185,709	4,609	725	5,394	241	1,126,345	175,219	1,300,564	7,300,427	1,226,528
Pike.....	60	69	6,945,638	5,048	1,012	6,060	232	1,171,127	235,573	1,407,500	8,340,454	1,675,569
Pulaski.....	8	8	49,020	56	15	721	236	13,180	3,611	16,701	104,086	28,437
Union.....	6	8	709,344	766	133	929	192	154,592	24,200	178,801	1,082,177	169,436
Weisner.....	10	11	1,024,201	802	144	946	232	180,001	33,338	219,839	1,307,917	237,783
Whitley.....	12	12	426,240	602	111	713	223	133,242	25,494	158,736	933,208	1,545,700
Edmonson, Hancock, and McLean.....	10	12	27,270	49	11	60	144	6,226	1,820	8,646	50,517	13,340
Greenup, Lawrence, Leslie, Magoffin, Morgan, Owsley, Rockcastle, Wayne, and Wolfe.....	21	23	264,052	241	57	298	211	51,136	11,311	62,947	400,765	92,635
Total, 1942.....	631	631	179,038	46,881	8,390	55,271	236	11,077,473	1,970,130	13,047,603	78,140,965	13,947,132
Total, 1941.....	593	593	46,358	7,972	54,330	210	9,742,405	1,683,228	11,125,723	63,861,921	11,867,241	80,399,162
Eastern district, 1942.....	494	494	47,929,870	39,396	6,480	45,876	238	9,403,500	1,533,274	10,935,774	66,394,885	10,851,980
Western district, 1942.....	207	207	13,249,168	7,485	9,395	225	1,673,973	437,356	2,111,829	11,746,080	13,096,052	14,842,132

493,430

TABLE 38.—Kentucky: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Continued.

County	Killed	Injured		Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent partial disability	Temporary	Total	Killed	Injured	Killed				
Bell	10	1	14	360	374	1,664	62,224	0.319	119,461	0.521	1,716
Boyd			2	121	121	14,242	10,264	38,588	3,369	2,708	1,761
Breathitt			13	13	178	60,178	196,712	3,071	3,071	2,392	1,577
Butler										2,392	1,242
Carter		2		11	13		48,411		100,799	.418	
Christian				5	5		37,905		72,182	.480	1,814
Davies		1	1	74	76	1,954	74,250	6,116	232,414	.525	1,589
Daviess			10	10	10		34,028		319	.905	1,762
Floyd	17	1	53	570	624	1,691	62,076	69,866	467	2,053	1,563
Harlan	44	2	147	1,697	1,846	1,845	77,397	2,362	97,348	.658	1,644
Henderson			8	8	8		30,914		124,256	.623	1,737
Hopkins		5	350	355	355	1,724	67,985	1,584	60,192	.514	1,617
Jackson		3	60	63	4,226		88,736	12,302	258,343	.088	1,603
Johnson		7	121	128	803	102,787	12,302	191,579	.343	2,911	1,743
Knott	1	1	2	54	57	1,067	60,818	1,478	537	1,864	1,711
Knox	1	8	107	115	115	1,787	90,545	84,753	722	1,822	1,652
Laird			7	7	7		22,425		162,215	.722	1,613
Lee		2	12	471	485	2,256	76,258		62,334	.635	1,639
Leitcher			12	12	157	1,561	88,150	1,089	288,767	.360	1,508
McCreary	1	3	154	22	25	2,248	56,192	2,644	90,907	.284	1,844
Martin	1	3	3	301	301	1,251	55,387	1,345	171,030	.669	1,631
Muhlenberg	1	7	1	8	6		15,560		56,103	.515	1,940
Ohio			56	528	586	2,526	64,558	3,718	122,389	.850	1,700
Perry	23	2	56	735	792	1,594	78,916	2,397	113,701	.679	1,639
Pike	16	1	56	6	6		45,275		122,389	.694	1,441
Pulaski										.370	1,656
Union				79	82	799	65,515		115,900	.567	1,867
Webster		8	1	144	146	5,176	94,456	7,811	142,550	.633	1,347
Whitley		1	3	41	44	891	39,225	2,346	103,228	.426	1,634
Edmonson, Hancock, and McLean				3	41						1,068

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¹ Includes open-cut operations.

TABLE 39.—Maryland: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground		Sur-face ¹	Under-ground		Surface ¹	Under-ground		Total
				Average days of employment per man	Total		Average days of employment per man	Total		Total		Average hours of employment per man per year
Allegany	64	76	1,153,220	1,279	192	1,471	249	321,063	45,703	366,766	2,248,837	2,569,200
Garrett	34	37	818,207	685	132	817	232	161,080	28,812	189,802	1,146,370	1,351,584
Total, 1942	113	113	1,971,427	1,964	324	2,288	243	482,143	74,515	556,688	3,385,207	3,920,784
Total, 1941	118	118	1,753,540	2,112	325	2,438	197	420,514	58,883	479,197	2,978,419	3,399,027
Injured												
County	Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Rate per million man-hours	Rate per million tons	Ton per man-hour of employment	Average hours of employment per man per day	Average hours of employment per man per year
Allegany	2	2	-	2	191	193	0.778	75.121	1.734	167,357	0.449	2,228
Garrett	1	1	-	1	194	194	0.740	143,635	1,222	237,104	.605	1,652
Total, 1942	3	3	-	2	385	387	0.765	98,705	1,522	196,305	.503	1,989
Total, 1941	6	6	-	4	290	294	1,765	86,495	3,461	168,596	.510	1,961
Production, short tons												
County	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours	Tons per man-hour	Tons per man-hour	Tons per man-hour	Tons per man-hour
Under-ground	111	1,964	1,951,748	482,143	3,395,207	2	362	0.559	106,621	1,747	1,603	0,575
Open-cut	2	9	19,679	1,754	12,278	-	2	2	162,893	7.12	44,808	1,603
Surface	-	315	-	72,761	513,299	-	1	23	1,948	-	-	-
Total, 1942	113	2,288	1,971,427	556,658	3,920,784	3	387	.765	98,705	7.09	1,714	1,394

¹Includes open-cut operations.

TABLE 40.—Michigan: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Men employed			Man-days of employment			Man-hours of employment			
			Under-ground	Sur-face	Total	Under-ground	Sur-face	Total	Under-ground	Sur-face	Total	
Total, 1942	6	6	280,020	343	384	241	82,533	10,021	92,554	577,731	70,147	647,878
Total, 1941	10	10	310,789	729	815	164	116,066	17,454	133,520	817,303	124,175	941,478
County	Killed	Injured			Rate per million man-hours	Rate per million tons			Rate per million man-hours	Ton per man-hour of employment	Average hours of employment per man per day	
		Permanent partial disability	Temporary	Total		Killed	Injured	Killed				
Total, 1942	-	-	2	47	49	-	75,632	-	213,225	0.355	2,817	7.00
Total, 1941	-	-	1	82	83	-	88,159	-	267,062	.330	3,029	7.05
	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours	Ton per man-hour	Ton per man-hour	Average hours of employment per man per year	
Under-ground	6	343	230,020	82,533	577,731	-	-	48	-	83,084	-	
Surface	-	41	-	10,021	70,147	-	-	1	-	14,256	0.398	
Total, 1942	6	384	230,020	92,554	647,878	-	-	49	-	75,632	.355	

(Comprises Bay, Saginaw, Shiawassee, and Tuscola Counties.)

TABLE 41.—Missouri: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground	Sur-face ¹	Total	Average days of employment per man	Under-ground	Surface ¹	Total	Under-ground	Surface ¹
Adair.....	6	6	158,463	189	30	219	234	44,333	6,971	51,304	354,664	55,768
Barton.....	9	11	253,557	13	101	114	238	23,751	27,161	23,870	181,555	205,425
Bates.....	11	13	137,452	17	133	150	165	3,410	21,516	24,749	165,512	180,898
Poone.....	8	8	34,933	16	43	59	207	2,920	9,385	12,205	19,492	23,390
Callaway.....	8	8	195,380	14	104	118	273	2,332	28,382	32,214	17,056	235,840
Clay.....	5	5	127,539	304	27	331	224	68,991	6,005	74,066	479,237	42,335
Henry.....	10	11	676,593	44	215	259	745	7,344	55,989	63,333	427,500	433,718
Lafayette.....	28	31	263,731	609	69	678	193	118,185	12,762	130,947	833,956	91,067
Linn.....	5	5	74,804	150	19	169	282	32,310	5,357	47,667	337,560	42,634
Macon.....	8	5	59,487	93	146	241	258	21,368	40,708	62,166	291,104	443,554
Putnam.....	16	16	46,555	105	24	129	174	18,382	4,04	22,486	136,918	30,118
Randolph.....	16	17	618,092	219	190	409	227	52,076	40,081	92,787	411,149	707,511
Ray.....	23	23	166,800	466	60	526	168	75,169	8,133	83,322	529,115	536,576
Vernon.....	9	9	85,786	6	80	86	215	1,353	17,139	18,442	10,824	136,875
Audrain, Charlton, Howard, Lincoln, Monroe and Ralls—Dade, Jasper, Johnson, Monteau, and St. Clair.....	13	13	29,972	56	32	88	173	9,290	5,916	15,206	68,788	50,468
Davies, Grundy, and Harrison.....	9	4	30,254	5	54	59	157	2,265	8,072	9,237	1,855	70,961
Total, 1942.....	193	341	3,519,130	2,398	1,341	3,739	212	402,469	298,797	792,266	3,620,114	5,903,152
Total, 1941.....	241	3,718,900	3,189	1,697	4,886	177	518,898	347,566	866,444	3,756,635	2,438,782	6,245,447

REVIEW BY STATES

County.	Killed	Injured			Rate per million man-hours			Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Adair				11	11			26,801		69,417	0.386	2,590	8.00
Barton				16	16			77,887		61,881	1.289	7,785	7.56
Bates				26	27			14,218		19,643	1.322	1,322	1,802
Boone		1		10	10			39,087		51,182	.311	2,931	1,266
Callaway				17	17			32,594		13,329	.764	7,394	7.67
Clay				31	31			64,087		45,818	1.329	1,309	2,188
Henry		1		51	51			55,134		133,379	1.398	4,080	7.04
Lafayette				6	6			15,781		80,210	.285	3,507	1,576
Linn				18	19			42,836		32,788	1.197	5,083	1,868
Macon		1		1	1			5,958		21,480	1.306	1,036	2,364
Putnam				13	14			18,788		22,650	.874	1,145	7.63
Randolph		1		13	13			22,163		82,908	.287	3,741	1,116
Ray				11	11			74,476		12,823	.581	1,722	1,717
Vernon											.251	3,979	1,355
Audrain, Charlton, Howard, Lincoln, Monroe, and Ralls											.415	2,407	7.84
Dade, Jasper, Johnson, Moniteau, and St. Clair											.244	4,100	1,234
Davies, Grundy, and Harrison											.596	1,677	1,764
Total 1942		4		227	231			21,809		89,421		7,88	1,579
Total, 1941		5		214	219	1,761		35,086	2,958	58,888	.595	1,679	7.21
													1,275
	Number of mines	Men employed	Production, short tons			Man-hours of employment		Killed	Injured			Rate per million man-hours	Tons per man-hour
												Killed	Injured
Underground	144	2,398	1,188,055			492,469						119	32,872
Open-cut	49	993	2,331,075			232,031		1,775,114				109	61,375
Surface		348				67,766		507,060				3	5,916
Total, 1942	183	3,739	3,519,130			792,266		5,903,152				231	39,132
													.596

¹ Includes open-cut operations.

TABLE 42.—Montana: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground		Sur-face 1	Under-ground		Surface 1	Total	Under-ground		
				Average days of employment per man	Total		Average days of employment per man	Total			Average days of employment per man	Total	
Carbon	10	11	629,857	223	116	339	252	55,775	29,806	85,581	392,111	217,087	
Cascade	22	22	441,842	251	442	293	211	52,933	61,914	43,044	371,344	62,518	
Musselshell	19	19	944,212	448	652	218	39,320	43,044	142,354	605,474	301,332	966,906	
Rosebud	4	4	1,711,036	5	92	87	328	898	27,654	28,562	7,184	221,232	228,416
Beaverhead, Blaine, Chouteau, Custer, Fergus, Flathead, Galatin, Golden, Valley, Hill, Judith Basin, Park, Pondera, Stillwater, and Toole	35	37	41,735	92	28	120	149	14,088	3,742	17,830	106,764	28,286	135,050
Big Horn, Dawson, McCone, Phillips, Powder River, Richland, Roosevelt, Sheridan, and Valley	27	27	48,378	69	27	96	123	8,630	3,152	11,782	65,341	23,912	89,253
Total, 1942	120	130	3,817,080	1,089	498	1,587	219	231,644	116,312	347,946	1,638,218	854,467	2,432,685
Total, 1941			3,316,521	1,140	451	1,591	192	215,329	90,213	305,542	1,535,986	650,584	2,196,570
Injured													
County	Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured	Tons per million tons	Man-hours of employment per ton	Average hours of employment per man per day	
Carbon	1	6	68	74	1,642	121,471	1,588	117,887	1,034	0.967	7.12	1,797	
Cascade	1	1	24	25	57,622	57,622	-----	56,581	1,018	.982	7.02	1,481	
Musselshell	4	4	128	132	4,012	132,410	4,236	138,798	.947	1,056	7.00	1,529	
Rosebud	4	4	24	24	105,071	105,071	-----	14,027	7,491	.133	8.00	2,625	
Beaverhead, Blaine, Chouteau, Custer, Fergus, Flathead, Galatin, Golden, Valley, Hill, Judith Basin, Park, Pondera, Stillwater, and Toole	2	1	2	3	14,809	22,214	47,921	71,882	.309	3,236	7.57	1,125	
Big Horn, Dawson, McCone, Phillips, Powder River, Richland, Roosevelt, Sheridan, and Valley	2	1	3	3	33,612	-----	62,012	-----	.542	1,846	7.58	930	
Total, 1942	7	12	249	261	104,706	1,834	68,377	1,531	.653	7.16	1,571		
Total, 1941	4	6	168	175	1,821	78,670	1,206	52,766	1,510	.662	7.19	1,281	

TABLE 43.—New Mexico: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

TABLE 43.—New Mexico: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours		Tons per man-hour
								Killed	Injured	
								Man-hours of employment		
Dolores	112	1,089	2,102,774	231,644	1,638,218	7	103	4,273	117,811	1,284
McKinley	8	93	1,714,286	28,554	228,578	24	44	104,987	70,389	7,500
Bernalillo, Sandoval, and Santa Fe		406		81,658	625,858					
Rio Arriba, San Juan, and Socorro										
Total, 1942	120	1,587	3,817,060	347,956	2,492,635	7	261	2,808	104,706	1,531
Total, 1941										

County	Killed	Injured	Permanent partial disability	Temporary	Total	Killed	Injured	Rate per million man-hours		Rate per million tons	Rate per million tons	Average hours of employment per man per day
								Killed	Injured			
								Man-hours of employment				
Dolores	3	3	3	52	55	2,468	45,245	3,257	59,718	0,758	1,320	7,01
McKinley	2	2	3	167	170	1,247	105,958	3,339	283,301	0,375	2,670	7,05
Bernalillo, Sandoval, and Santa Fe			2	78	2	6,356	188,010	23,515	630,301	0,298	3,351	7,09
Rio Arriba, San Juan, and Socorro	1						12,719	51,026	127,190	0,249	4,012	7,31
Total, 1942	6	4	3	299	307	1,763	99,220	3,558	182,074	0,496	2,018	7,05
Total, 1941	3	1	1	216	221	1,049	70,320	2,426	175,726	0,433	2,312	7,11

TABLE 43.—New Mexico: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Con.

	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours		Ton per man-hour
								Killed	Injured	
Underground	66	1,486 415	1,088,128	377,757 104,749	2,663,238 739,546	5	292 15	1,877 1,352	109,641 20,283	0.633
Surface										
Total, 1942	56	1,901	1,686,128	482,506	3,402,784	6	307	1,733	90,220	.498

TABLE 44.—North Dakota: Number of men employed, production, number of accidents, etc., at lignite mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground	Sur-face 1	Total	Under-ground	Sur-face 1	Total	Under-ground	Sur-face 1	Total
Adams	10	4	57,842	47	23	70	168	3,891	11,761	57,680	31,578	89,258
Burleigh	4	6	333,432	22	75	201	15,106	15,106	15,106	118,818	118,818	118,818
Divide	3	3	305,314	53	64	211	4,000	14,110	18,110	31,860	112,722	144,582
McLean	9	9	217,539	5	48	246	964	12,095	13,059	97,764	7,712	105,476
Mercer	8	9	137,725	38	65	103	269	7,754	19,948	27,702	61,382	159,334
Stark	13	13	685,886	90	129	219	274	23,192	36,752	59,944	297,438	220,716
Ward	25	26	130,897	67	87	267	30,850	2,385	23,944	164,568	169,557	462,006
Williams	19	20	533,433	135	117	262	23,635	27,600	51,235	185,040	220,173	405,213
Billings, Dunn, Golden Valley, McKenzie, and Mountrail	19	19	111,971	37	32	69	137	5,447	4,026	41,914	31,643	73,557
Bowman, Hettinger, and Slope	17	17	36,761	27	34	61	161	5,064	4,780	9,844	39,636	36,850
Grant, Morton, and Oliver	23	23	29,931	19	29	48	116	2,560	3,020	5,580	20,305	23,674
Total, 1942	158	202	2,657,814	524	678	2,292	106,955	148,831	255,786	802,446	1,190,734	1,993,180
Total, 1941			2,417,857	707	789	1,496	123,915	143,671	267,586	939,388	1,167,572	2,107,460

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County	Killed	Injured			Rate per million man-hours	Rate per million tons	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary					
Adams.....	1	14	14	14	156,849	242,039	0.648	1,543	1,275
Burke.....	1	3	33,665	-----	11,906	2,806	.356	7,87	1,584
Burleigh.....	12	12	82,908	-----	2,112	474	7,98	1,681	-----
Divide.....	8	8	76,847	-----	39,775	2,062	.485	8,08	1,980
McLean.....	5	5	22,634	-----	36,304	3,924	1,603	2,138	-----
Mercer.....	1	24	54,112	-----	36,461	1,485	1,074	7,71	2,110
Stark.....	2	21	135,672	-----	175,711	.772	1,295	7,29	1,949
Ward.....	2	40	103,649	-----	78,728	1,317	.760	7,91	1,608
Williams, Dunn, Golden Valley, Mc-Kenzie, and Mountain.....	1	1	13,505	-----	8,477	1,604	.624	7,76	1,066
Bowman, Hettinger, and Slope.....	8	8	104,504	-----	217,622	.481	2,081	7,77	1,254
Grant, Morton, and Oliver.....	3	3	68,214	68,214	100,231	100,231	.681	7,88	1,916
Total, 1942.....	5	5	47,808	47,808	56,296	56,296	.850	1,176	1,058
Total, 1941.....	1	1	136	136	64,533	.414	1,333	.750	7,79
							1,147	.872	7,88
									1,409
		Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours
							Killed	Injured	Tons per man-hour
Underground.....	92	524	833,113	106,955	802,446	3	67	3,739	83,495
Open-cut.....	66	544	1,824,701	121,579	975,769	1	72	1,025	73,786
Surface.....	134	-----	-----	27,252	214,935	1	10	4,653	46,526
Total, 1942.....	158	1,202	2,657,814	255,786	1,938,180	5	149	2,509	74,755
									1,333

¹ Includes open-cut operations.

TABLE 45.—Ohio: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground	Sur-face 1	Total	Average days of employment per man	Under-ground	Surface 1	Total	Under-ground	Surface 1	Total
Athens.....	29	30	2,218,263	1,444	476	1,920	233	333,920	112,806	446,726	2,339,904	790,407	3,130,311
Baldwin.....	41	45	8,536,128	5,355	6,343	256	1,376,415	248,067	1,624,482	9,642,502	1,739,137	11,381,639	9,515,227
Carroll.....	15	18	645,927	331	511	253	84,277	45,196	129,466	132,769	356,939	1,356,939	1,069,387
Columbia.....	42	44	1,028,101	273	341	614	216	5,647	81,112	378,574	630,813	137,984	627,907
Cynthian.....	42	45	388,525	308	83	391	213	6,815	18,335	83,200	489,023	124,240	277,341
Gallia.....	10	10	104,600	102	42	144	251	28,440	10,702	36,142	165,101	82,240	1,012,411
Gurnee.....	14	15	652,965	484	539	121	389	121,389	13,836	139,225	827,653	124,758	5,23,196
Harrison.....	21	23	5,163,363	1,241	724	1,965	254	318,121	180,956	499,167	2,288,127	1,298,167	3,802,77
Hocking.....	30	31	507,438	416	70	486	236	93,011	114,610	116,933	802,77	116,933	802,77
Holmes.....	11	12	30,245	47	67	184	971	3,557	12,268	67,940	26,250	54,250	54,250
Jackson.....	22	25	188,772	206	82	288	209	45,328	60,988	60,316	307,555	121,204	451,759
Jefferson.....	51	55	6,583,836	2,511	1,404	3,015	257	636,829	370,476	1,007,306	4,480,619	2,687,664	7,168,383
Lawrence.....	20	23	106,835	142	27	169	223	32,393	6,318	37,711	228,034	37,562	265,596
Mahoning.....	10	11	331,039	20	121	141	248	4,341	30,663	35,004	293,389	31,198	324,477
Meigs.....	22	24	213,823	273	46	319	199	54,261	9,099	63,380	402,448	67,334	469,782
Morgan.....	4	4	227,541	144	20	173	267	38,387	7,822	46,180	268,560	54,754	323,323
Muskingum.....	30	40	1,453,861	739	968	229	175,220	47,814	223,031	1,246,502	348,538	1,535,140	1,535,140
Noble.....	4	4	92,498	102	21	123	211	21,486	4,418	25,903	151,565	31,411	152,776
Perry.....	73	74	975,688	1,032	249	1,281	167	166,058	49,164	214,222	1,167,450	351,860	1,519,740
Stark.....	23	26	677,943	50	266	316	241	9,442	66,807	76,249	65,698	533,970	539,668
Tuscarawas.....	89	98	1,720,117	837	582	1,419	227	190,321	131,833	322,734	1,337,908	2,370,237	2,370,237
Vinton.....	16	16	84,230	42	77	119	185	8,770	13,244	22,014	59,990	106,094	166,084
Portage, Summit, Trumbull, Washington, and Wayne.....	8	8	116,735	36	74	229	7,463	9,467	16,980	56,529	76,456	132,986	132,986
Total, 1942.....		681	32,027,313	16,137	6,148	22,285	241	871,814	1,494,739	5,389,053	27,312,444	11,047,125	38,359,569
Total, 1941.....		814	29,555,283	17,140	6,784	22,924	220	3,771,196	1,283,197	5,054,393	26,554,772	9,468,337	36,023,609

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County	Killed	Injured			Rate per million man-hours			Rate per million tons			Tons per man-hour of employment			Man-hours of employment per ton			Average hours of employment per man per day			Average hours of employment per man per year		
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured	Killed	Injured	Tons per man-hour of employment	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Athens.....	2	9	189	198	0.639	63.253	0.902	89.258	0.709	1.411	7.01	1.330										
Belmont.....	22	1	20	958	0.979	86.016	2.677	114.639	.750	1.333	7.01	1.794										
Carroll.....	1	1	42	1.051	45.200	1.655	66.871	1.676	1.479	7.35	1.862											
Columbiana.....	2	2	28	1.981	29.721	1.951	29.265	1.016	.985	7.60	1.644											
Cohocton.....	2	2	27	3.190	42.062	5.429	73.285	.588	1.729	7.54	1.604											
Galilia.....	1	1	14	3.606	50.479	9.669	133.971	.377	2.654	7.67	1.826											
Gurnsey.....	3	2	43	2.963	44.448	4.697	68.948	.645	1.551	7.27	1.878											
Harrison.....	6	3	205	1.703	59.037	1.162	40.284	1.466	.682	7.06	1.793											
Hocking.....			29	31	31	38.616	1.029	61.091	.632	1.582	7.00	1.652										
Holmes.....	2	2	2	21.225	21.225	65.909	3.105	3.105	.322	3.105	7.66	1.406										
Jackson.....	1	1	24	25	57.903	129.418	.447	2.235	1.499	1.499												
Jefferson.....	11	21	455	476	1.535	66.404	1.671	72.301	.918	1.089	7.12	1.831										
Lawrence.....	3	3	11.286	11.286	11.295	28.061	28.081	40.022	2.486	7.04	1.572											
Mahoning.....		13	13	17	4.257	36.187	9.354	39.270	1.020	.980	2.301											
Meigs.....	2	17	17	19	21	64.951	64.951	92.291	.455	2.197	7.41	1.733										
Morgan.....	7	1	108	110	4.389	68.964	4.812	75.612	.912	1.421	7.00	1.869										
Muskingum.....		2	10	10	10	54.652	108.110	.506	1.978	7.15	1.648											
Noble.....	3	72	69	72	47.374	73.794	.622	1.558	7.06	1.488												
Perry.....	2	2	39	41	3.335	68.371	2.860	60.447	1.131	1.855	7.09	1.186										
Stark.....	5	6	162	168	2.109	70.879	2.907	97.668	.726	1.378	7.86	1.888										
Tuscarawas.....	1	4	4	6.021	24.084	11.872	47.489	.507	1.972	7.64	1.670											
Vinton.....		1	9	10	75.196	85.664	.878	1.139	7.85	1.797												
Portage, Summit, Trumbull, Washington and Wayne																						
Total, 1942.....	72	2	78	2,467	2,547	1.877	66.398	2.248	70.526	.835	1.198	7.14	1.721									
Total, 1941.....	56	4	73	2,088	2,165	1.555	60.099	1.884	73.233	.821	1.219	7.13	1.571									
Number of mines	Men employed	Production, short tons			Man-days of employment		Man-hours of employment		Killed	Injured												
Underground.....	565	16,137	28,399	644	3,874,814	27,312,444	62	2,232	2,270	81,721	0.854											
Open-cut.....	116	2,823	8,697	669	676,842	5,792,284	7	166	1,332	1,332	31,590	0.655										
Surface.....		3,325	8,325	817,987	817,987	3	149	149		.518	25,724											
Total 1942.....	681	22,285	32,027	313	5,369,053	38,359,589	72	2,547	1,877	66,398	.835											

1. Includes open-cut operations.
 Note.—The following coal-mine fatality occurred long after the date of the accident and does not appear in any of the above figures or calculations or in any previous bulletin.
 Ohio. Athens County, December 1942, fall of roof.

TABLE 46.—Oklahoma: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942.

County	Number of operators	Number of mines	Production, short tons	Men employed				Man-days of employment			Man-hours of employment			
				Under-ground		Sur-face 1	Total	Under-ground		Surface 1	Under-ground		Surface 1	Total
				Average days of employment per man				Average days of employment per man			Average hours of employment per man per day			
Coal.	12	12	30,598	64	16	79	145	2,926	14,558	84,841	21,206	106,170	106,170	
Fastell.	10	10	56,975	53	39	92	143	7,890	13,201	35,917	61,270	97,187	97,187	
Gainer.	5	5	18,650	49	14	63	138	6,740	1,961	47,180	13,727	60,907	60,907	
Le Flore.	33	35	452,507	726	195	864	193	26,783	26,211	166,994	990,331	183,477	1,174,008	
Mustogee.	5	5	53,448	47	64	71	124	2,765	6,031	8,826	10,355	53,297	72,552	
Draig, Sequoyah, and Wagoner.	13	12	529,701	381	59	440	249	35,314	14,419	109,733	666,243	100,492	766,735	
Pittsburg.	22	24	216,672	373	73	449	219	82,088	16,071	98,169	578,446	115,215	694,661	
Rogers.	4	4	334,338	3	189	172	287	48,824	15,556	2,902	383,391	387,276	387,276	
Tulsa.	5	5	26,507	46	17	63	124	15,548	15,548	23,116	23,350	98,264	122,350	
Draig, Sequoyah, and Wagoner.	9	10	675,925	32	117	209	234	1,320	47,552	48,872	9,180	349,279	358,459	358,459
Total, 1942.	123	127	2,985,302	1,747	755	2,502	213	359,075	174,906	533,981	2,535,942	1,304,403	3,840,345	
Total, 1941.	127	127	1,756,326	1,672	640	2,312	169	273,218	117,288	390,506	1,942,846	879,986	2,822,801	
Injured														
Killed			Rate per million man-hours				Rate per million tons				Rate per million man-hours of employment			
Killed			Permanent total disability	Temporary	Total	Killed	Injured	Killed	Injured	Injured	Killed	Injured	Injured	Killed
Coal.			2	4	2	18,841	-----	65,362	0,286	3,469	7,29	7,36	7,36	1,344
Fastell.			1	1	41,158	-----	70,206	0,586	1,706	-----	-----	-----	1,068	1,068
Gainer.			35	4,259	35	16,418	-----	53,619	3,266	7,00	9,967	9,967	9,967	1,359
Le Flore.			1	7	8	29,812	11,050	77,347	3,835	7,03	7,03	7,03	7,03	1,022
Mustogee.			1	45	49	2,608	110,220	149,734	7,36	1,359	8,22	8,22	8,22	1,733
Pittsburg.			2	20	20	2,879	63,907	92,505	6,91	1,447	6,99	6,99	6,99	1,547
Rogers.			1	35	35	2,582	99,375	9,231	3,12	3,206	7,08	7,08	7,08	2,232
Tulsa.			1	8	8	22	61,374	301,807	863	1,158	7,84	7,84	7,84	1,953
Draig, Sequoyah, and Wagoner.			7	177	184	2,604	47,912	76,817	0,624	1,603	7,19	7,19	7,19	1,535
Total, 1942.	7	102	106	2,834	37,551	4,555	60,333	60,333	0,622	1,607	7,23	7,23	7,23	1,221
Total, 1941.	4	8	8	2,834	37,551	4,555	60,333	60,333	0,622	1,607	7,23	7,23	7,23	1,221

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	Number of mines	Men em- ployed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours		Tons per man-hour
								Killed	Injured	
Underground.....	111	1,747	1,298,211	359,075	2,535,942	9	111	3,549	43,771	0.512
Open-cut.....	12	417	1,087,061	108,140	832,068	1	68	1,202	81,724	1.319
Surface.....		338		66,766	472,335		6		10,586	
Total 1942.....	123	2,502	2,395,302	533,981	3,840,345	10	184	2,604	47,912	.624

¹ Includes open-cut operations.

TABLE 47.—Pennsylvania: Number of men employed, production, number of accidents, etc., at bituminous-coal mines during the calendar year 1942

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County	Injured			Rate per million man-hours			Rate per million tons		Man-hours of employ- ment per ton		Ton per man-hour of employ- ment		Average hours of employ- ment per man per year	
	Killed	Permanent total disability	Permanent partial disability	Total	Killed	Injured	Killed	Injured	Killed	Injured	Ton per man-hour of employ- ment	Man-hours of employ- ment per day		
Allegheny	19	5	19	1,200	1,224	0.827	53.300	1.055	67.988	0.784	1.276	7.07	1,784	
Penn.	5		6	668	675	.659	89,005	.892	120,369	.759	1.352	7.02	1,719	
Mt. Pleasant			2	22	24		31,901		40,451		1.268	7.94	1,733	
Jefferson	1			56	56	.832	46,607	1.538	56,104	.551	1.847	7.00	1,695	
Blair			1	28	28		68,419		166,337		.457	2.288		
Butler	3		4	1,760	1,804		90,268	1.274	136,943		.661	1.513	7.18	
Ambria			37	2,700	2,737	.910	83,007	1.484	135,353		61.13	1.831	7.01	
Centre	4			147	147	2,165	79,558	3,637	132,056		.680	1.680	7.03	
Larion			2	187	188	.628	59,059	63,894	63,894		.924	1.082	7.26	
Westfield	7		12	607	620	.813	72,032	1,398	123,809		.532	1.719	7.07	
Harrison			21	43	43	.422	49,422		49,981		.809	1.155	7.58	
Mon.			2	149	151		99,953		184,162		.533	1.842	7.06	
Westmoreland	37		42	1,574	1,616	1,048	45,762	1.475	64,129		.710	1.403	7.01	
Greene	6		10	501	511	.598	50,908		68,190		.747	1.339	7.11	
Washington				45	45		41,157		94,230		.447	2.290	7.00	
Butler	18		16	984	980	1,480	78,573	2,001	105,595		.744	1.344	7.07	
Indiana			2	262	264	.635	86,494	1,106	146,001		.562	1.888	7.14	
Jefferson	2		1	26	26	1,751	45,536	3,275	85,152		.555	1.870	7.03	
Armstrong			2	49	48		17,719		32,111		.468	2.450	7.45	
Lawrence	1			1,028	1,043	1,665	80,616	1,960	97,307		.821	2.228		
Mon.	10					.872	90,942	1,433	149,468		.668	1.644	7.28	
Westmoreland	29		1	47	47		56,917		125,131		.445	2.198	7.01	
Fayette			26	1,104	1,107	1,031	41,486	1,392	74,111		.350	1.777	7.03	
Washington	24		12	1,065	1,079	1,536	69,042	1,953	87,793		.786	1.272	7.02	
Westmoreland				18	18		38,003		60,559		.638	1.594	6.99	
Pittston														1,716
McKean, Forest, Fulton, McKean, and Venango														1,786
Total, 1942	9	207	12,633	12,869	981	63,413	1,398	90,387	.701	1,426	7.04			
Total, 1941	17	283	11,636	11,926	.634	62,957	1,361	91,059	.691	1,446	7.04			1,547

TABLE 47.—Pennsylvania: Number of men employed, production, number of accidents, etc., at bituminous-coal mines during the calendar year 1942—Continued

	Number of mines	Men employed	Production, short tons	Man-hours of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours	Tons per man-hour
Underground	1,370	94,694	132,263,705	170,198,446	184	11,858	1,081	69,672	0.777
Open-cut	198	4,109	10,106,509	6,158,309	10	226	.812	36,698	1.641
Surface		14,871		3,768,387		785	.376	29,532	
Total, 1942		113,674	142,360,304	28,809,061	202,938,129	199	12,869	.981	63,413
									.701

¹ Includes open-cut operations.

TABLE 48.—Pennsylvania: Number of men employed, production, number of accidents, etc., at anthracite mines during the calendar year 1942

PRODUCTION, short tons	Men employed			Man-days of employment			Man-hours of employment			Total		
	Under-ground	Open-cut 1	Sur-face 2	Total	Under-ground	Open-cut 1	Surface 2	Total	Under-ground	Open-cut 1	Surface 2	
DISTRICTS												
Lewisburg	9,714,868	1,248	3,660	14,208	233	2,197,563	855,789	3,326,489	15,382,046	1,917,280	5,994,905	23,295,131
Schuylkill	17,642,866	12,261	2,833	20,440	230	2,811,529	614,887	1,231,195	4,717,611	30,134	4,402,192	32,983,585
Wyoming	30,910,075	37,094	9,331	47,118	245	9,114,437	166,284	2,289,961	11,579,682	68,910	1,184,678	16,136,517
Sullivan County	48,213	72	26	98	209	14,967	5,487	20,454	104,769	-----	38,460	143,178
Total, 1942	58,316,022	58,747	4,844	18,473	239	14,198,496	1,054,308	4,391,432	19,644,236	99,439,274	7,548,487	30,572,023
FIELDS												
Eastern Middle	5,795,071	5,594	549	2,266	8,409	235	1,335,318	110,848	588,145	1,974,311	9,347,231	777,916
Western Middle	11,440,326	8,831	1,585	3,447	14,883	223	2,375,609	302,723	788,952	3,472,584	16,683,213	5,324,747
Northern 3	10,122,327	6,206	1,987	3,333	11,486	236	1,388,165	44,463	704,887	2,597,505	9,507,156	5,371,061
30,368,288	31,066	763	9,417	4,276	245	9,129,404	166,284	2,304,448	11,600	1,356,638	9,211,674	1,184,678
Total, 1942	58,316,022	58,747	4,844	18,473	82,064	239	14,198,496	1,054,308	4,391,432	19,644,236	99,439,274	7,548,487
Total, 1941	54,114,961	65,583	4,901	18,374	88,948	207	13,601,171	986,023	3,857,133	18,444,332	80,789,322	6,988,332

TABLE 47.—Pennsylvania: Number of men employed, production, number of accidents, etc., at bituminous-coal mines during the calendar year 1942

TABLE 48.—Pennsylvania: Number of men employed, production, number of accidents, etc., at anthracite mines during the calendar year 1942

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	Injured			Rate per million man-hours			Rate per million tons		Man-hours of employment per ton		Average hours of employment per man per day		
	Killed	Permanent partial disability	Temporary	Total	Killed	Injured			Ton per million man-hours of employment				
DISTRICTS													
Lahigh	29	17	2,115	2,132	1,245	91,521	2,985	219,457	0.417	2,398	7.00	1,620	
Schuylkill	46	20	3,074	3,094	1,395	93,804	2,607	175,368	.535	1,820	6.90	1,610	
Wyoming	161	3	11,001	11,187	1,861	137,260	4,885	360,308	.381	2,625	7.01	1,720	
Sullivan County				8		55,875		165,330	.337	2,970	7.00	1,461	
Total, 1942	226	3	110	16,258	16,371	1,643	119,010	3,875	280,729	.424	2,359	7.00	1,676
FIELDS													
Eastern Middle	19	11	1,504	1,515	1,374	109,573	3,270	261,429	.419	2,386	7.00	1,644	
Western Middle	39	19	2,377	2,396	1,615	99,211	3,409	209,434	.474	2,111	6.96	1,623	
Southern ^a	17	7	1,308	1,316	.929	71,851	1,678	129,311	.553	1,808	7.05	1,592	
Northern ^b	161	3	11,069	11,145	1,838	137,116	4,878	360,001	.381	2,626	7.01	1,719	
Total, 1942	226	3	110	16,258	16,371	1,643	119,010	3,875	280,729	.424	2,359	7.00	1,676
Total, 1941	194	5	144	16,679	16,828	1,491	129,339	3,585	310,968	.416	2,404	7.05	1,463
	Men employed			Production, short tons			Man-hours of employment		Killed		Injured		
											Rate per million man-hours		
									Killed		Injured		
Underground	58,747	44,339	388	14,198	496		99,449	274	210	14,304	2,112	143,847	
Open-cut	4,360	9,026	646	942	240		6,651	583	4	135	.604	20,388	
Dredge	(4)	1,314	977	111,068			927	114		27		23,123	
Cut-bank washeries		3,675	0,011	(4)	4,391	432	30,572	023	(4)	12	(4)	(4)	
Surface		18,473									.393	62,312	
Total, 1942		82,064		58,316	092	19,644	236	137,559	994	226	16,371	1,643	119,010
											Tons per man-hour		

¹ Includes dredge operations.² Includes breaker and washer data.^a Includes Sullivan County.^b Included in surface figures.

TABLE 49.—South Dakota: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942.

Number of mines	Production, short tons	Men employed			Man-days of employment				Man-hours of employment			
		Under-ground		Total	Average days of employment per man	Under-ground	Surface 1	Total	Under-ground	Surface 1	Total	Average hours of employment per man per year
		Surface 1	Total									
Total, 1942 ²	53,034	10	26	36	201	1,182	6,038	7,220	9,066	48,161	57,687	1,063
Total, 1941	70,625	15	48	63	161	1,450	8,709	10,159	10,476	75,786	86,262	1,389
		Injured			Rate per million man-hours	Rate per million tons		Ton per million man-hour of employment	Ton per million man-hour of employment		Average hours of employment per man per day	Average hours of employment per man per year
Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured	Killed	Injured		
Total, 1942 ²					3	8	51,996	56,567	0.919	1,088	7.99	1,063
Total, 1941					3	8	92,741	113,274	.819	1,221	8.49	1,389

Underground	.....
Open-cut	.....
Face	.....
Total	1942

consists of Corson, Dewey, Harding, Meade, and Perkins Counties.

TABLE 50.—Tennessee: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground	Sur-face 1	Total	Under-ground	Surface 1	Total	Under-ground	Surface 1	Total
Anderson	16	19	1,491,808	1,306	182	1,488	239	312,564	355,257	2,187,147	298,863	2,436,803
Bledsoe	3	3	61,483	111	130	222	24,055	4,168	28,823	172,585	20,176	201,760
Campbell	33	37	2,185,005	2,227	367	2,594	220	300	600	628,900	709,389	590,966
Clayborne	8	11	1,924,198	1,681	211	1,892	250	420	1,996	55,040	472,236	3,016,620
Total, 1942.	11	36	53,084	7,220	57,697	3	—	—	—	51,996	—	.919
Underground.	5	10	4,033	1,182	9,066	3	—	—	—	63,314	—	1,034
Open-cut.	6	25	49,001	5,882	47,383	—	—	—	—	—	—	0,445
Surface.	1	1	—	156	1,238	3	—	—	—	—	—	—
Total, 1942.	11	36	53,084	7,220	57,697	3	—	—	—	51,996	—	.919

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		Injured			Rate per million man-hours			Rate per million tons			Man-hours of employment per ton			Average hours of employment per man per day			Average hours of employment per man per year		
		Killed	Permanent total disability	Permanent partial disability	Total	Killed	Injured	Killed	Injured	Injured	Ton per hour of employment								
Cumberland.....	10	10	26,236	47	13	60	196	9,210	2,551	11,761	69,741	19,275	89,016						
Fayette.....	3	4	470,227	333	76	409	253	83,848	10,708	103,556	589,356	138,617	727,973						
Grundy.....	6	6	568,169	513	569	280	128,765	13,271	132,036	901,355	92,897	904,232							
Hamilton.....	14	14	69,120	117	24	141	207	2,422	4,907	29,119	170,878	34,746	205,624						
Marion.....	21	22	616,473	663	180	145,249	833	223	40,869	186,118	1,019,641	286,461	1,306,102						
Morgan.....	8	9	163,733	290	58	348	215	60,155	14,632	74,787	568,332	132,997	70,529						
Overton.....	3	4	79,409	68	8	76	249	16,945	1,977	18,922	132,436	15,336	147,772						
Putnam.....	3	3	55,610	78	27	105	147	11,420	3,980	15,400	70,940	27,860	107,800						
Scott.....	9	9	182,308	242	40	282	230	56,115	8,840	64,964	38,440	63,000	462,500						
Sequatchie.....	8	8	197,112	227	27	254	206	46,988	5,474	52,442	328,776	38,318	361,084						
Van Buren.....	4	4	23,780	44	23	67	201	8,740	4,711	13,451	60,746	32,876	98,621						
Rhea and White.....	7	7	46,741	82	16	97	239	19,728	3,470	23,207	151,026	26,978	178,004						
Total, 1942.....	171	171	8,217,468	8,019	1,326	9,345	238	1,888,070	322,900	2,230,970	13,558,408	2,205,082	15,763,490						
Total, 1941.....	163	163	6,864,301	7,949	1,233	9,182	269	1,681,664	265,882	1,918,546	11,838,965	1,833,580	13,672,554						

TABLE 50.—Tennessee: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Con.

	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours	Ton per man-hour
Underground	170	8,019	8,216,468	1,898,070	13,558,408	26	809	1,918 238,005 .909	59,668 25,444 .238
Open-cut	4	1,000	322,309	4,300	2,200,882	1	56		0,606
Surface	1,322					2			.238
Total, 1942	171	9,345	8,217,468	2,220,979	15,763,490	29	865	1,840	.521

¹ Includes open-cut operations.

TABLE 51.—Texas: Number of men employed, production, number of accidents, etc., at bituminous and lignite mines during the calendar year 1942

	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground	Sur-face ¹	Total	Under-ground	Sur-face ¹	Total	Under-ground	Sur-face ¹	Total
Lignite ²	5	6	300,309	153	36	189	205	31,929	6,789	38,718	251,889	77,964
Bituminous ²	3	3	22,418	39	7	46	79	3,164	484	3,648	23,074	3,622
Total, 1942			322,727	192	43	235	180	35,093	7,275	42,366	274,963	81,526
Total, 1941			355,480	233	60	293	152	38,887	5,741	44,638	310,591	85,823
				Injured			Rate per million man-hours			Rate per million tons		
Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured	Killed	Ton per million man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day
Lignite ²				28	28		84,886		93,237	0.910	1,098	8.52
Bituminous ²				1	1		37,459		44,488	.842	1,188	7.32
Total, 1942				29	29		81,335		89,843	1,105	1,105	8.42
Total, 1941				42	42		117,840		118,160	.987	1,003	7.98

TABLE 51.—Texas: Number of men employed, production, number of accidents, etc., at bituminous and lignite mines during the calendar year 1942—Con.

	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours	Tons per man-hour
Underground	8	192	244,238	35,093	274,963	.	.	24	87.284
Open-cut	1	23	78,549	4,554	36,432	.	.	5	137.242
Surface	20	20	2,719	45,154	45,154	.	.	.	2.156
Total, 1942	9	235	322,787	42,366	356,549	.	.	29	81.335
									.905

¹ Includes open-cut operations.² Lignite: Bastrop, Henderson, Milam, Titus, and Wood Counties; bituminous: Palo Pinto, Wise and Young Counties.

TABLE 52.—Utah: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground		Sur-face	Average days of employ-ment per man	Under-ground	Sur-face	Total	Under-ground	Sur-face	
				Total	Sur-face	Total	Total	Total	Total	Total	Total	Total	
Carbon	31	36	5,477,076	2,159	924	274	567,636	257,553	845,589	4,114,412	1,805,981	5,920,393	
Emery	15	15	144,175	126	38	164	183	23,652	6,406	30,058	170,417	46,342	216,759
Summit, Iron, Kane, Sevier, and Uintah	4	4	46,061	33	16	49	235	7,516	3,984	11,500	60,020	31,845	91,865
Grand, Iron, Kane, Sevier, and Uintah	8	8	67,687	56	18	74	217	12,371	3,720	16,091	87,315	26,163	113,478
Total, 1942	63	63	5,734,909	2,374	966	3,370	631,175	272,063	903,238	4,432,164	1,910,331	6,342,495	
Total, 1941	61	61	4,123,359	1,975	770	2,745	425,909	179,084	604,993	3,003,955	1,268,360	4,272,645	
Injured													
County	Killed	Permanent total disability	Permanent partial disability	Tempo-rary	Total	Killed	Injured	Rate per million man-hours	Rate per million tons	Ton per man-hour of employ-ment	Man-hours of employ-ment per ton	Average hours of employment per man per day	
Carbon	16	1	15	569	585	2,703	98,811	2,921	106,809	0,925	1,081	7.00	
Emery			1	15	15	16	73,815	110,741	665	1,503	7.21	1,920	
Summit				11	11	17	119,741	125,814	501	1,904	7.99	1,322	
Grand, Iron, Kane, Sevier, and Uintah				17	17	17	149,809	251,156	.566	1,677	7.05	1,875	
Total, 1942	16	1	16	612	629	2,523	99,172	2,790	109,077	1,106	7.02	1,882	
Total, 1941	16		14	442	456	3,745	106,725	3,880	110,589	.965	1,036	7.06	

TABLE 52.—Utah: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours		Tons per man-hour
								Killed	Injured	
Underground	63	2,374	5,734,999	631,175	4,432,164	15	566	3,384	127,703	1,204
Surface		996		272,063	1,910,331	1	63	.523	32,979	
Total 1942	63	3,370	5,734,999	908,238	6,342,495	16	629	2,523	99,172	.904

Notes—The following coal mine fatalities occurred long after the date of the accident and does not appear in any of the above figures or calculations or in any previous bulletin.

TABLE 53.—Virginia: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground	Sur-face	Total	Average days of employment per man	Under-ground	Sur-face	Total	Under-ground	Sur-face	Total
Buchanan	17	20	6,164,529	3,857	577	239	924,286	136,723	1,061,006	6,472,593	957,804	7,430,397	
Dickenson	14	14	2,079,582	1,853	2,083	261	61,383	545,942	3,447,147	828	3,867,475	7,356,641	
Lee	19	23	1,683,885	1,755	2,079	243	246,469	78,230	504,639	9,988,166	548,475	10,537,508	
Montgomery	4	4	1,201,283	208	323	550	214	44,762	10,961	55,153	351,245	86,363	437,608
Russell	23	25	1,142,119	1,002	147	1,149	248,574	35,186	283,770	1,774,981	255,641	1,989,622	
Scott	3	4	42,590	76	15	91	255	19,274	3,359	152,992	30,782	183,784	227,586
Tazewell	15	20	4,755,833	3,884	475	4,356	238	924,999	113,652	1,046,631	647,602	738,384	1,006,740
Wise	38	46	4,866,135	4,107	621	4,728	244	1,000,857	151,351	1,152,208	7,033,451	1,066,740	8,100,191
Total, 1942	156	20,755,966	16,743	2,448	19,191	243	4,073,180	591,415	4,664,505	28,656,277	4,177,527	32,833,804	
Total, 1941	152	18,664,590	16,764	2,228	18,992	226	3,732,093	492,485	4,284,578	26,634,014	3,482,921	30,106,935	

County	Killed	Injured			Rate per million man-hours			Rate per million tons			Ton per man-hours of employment			Man-hours of employment per ton			Average hours of employment per man per day			Average hours of employment per man per year		
		Permanent disability	Temporary partial disability	Total	Killed	Injured	Killed	Injured	Killed	Injured	Ton per million man-hours	Killed	Injured	Ton per million tons	Killed	Injured	Ton per man-hour	Killed	Injured	Ton per man-hour		
Buchanan.....	16	1	28	628	657	2,153	88,421	2,595	106,577	0,830	1,205	.700	1,676	1,205	.538	1,860	7,08	1,676	1,848	1,701		
Dickenson.....	5	1	17	181	198	224	848	51,190	2,404	.532	1,810	1,810	1,810	1,810	.532	1,860	7,08	1,676	1,848	1,701		
Lee.....	3	1	18	205	53	2,286	63,337	1,535	114,543	.4968	2,173	7,94	1,696	1,696	.4968	2,173	7,94	1,696	1,740	1,740		
Montgomery.....	1	1	3	74	77	500	121,141	4,968	265,398	.490	1,751	7,05	1,740	1,740	.490	1,751	7,05	1,740	1,740	1,740		
Russell.....	1	1	3	9	546	561	38,505	38,505	38,505	.376	211,317	4,315	2,020	2,020	.376	211,317	4,315	2,020	2,020	2,020		
Scott.....	13	3	12	41	585	626	561	1,786	48,971	1,040	131,203	.538	1,670	1,670	1,670	1,040	131,203	.538	1,670	1,670	1,670	
Tazewell.....	10	10	41	137	119	2,281	2,405	73,248	2,361	115,370	.604	1,654	7,03	1,713	7,03	1,654	7,03	1,654	7,03	1,713		
Total, 1942.....	49	5	3	137	1,680	1,829	1,827	60,750	2,947	97,993	.620	1,582	7,04	1,711	7,03	1,582	7,04	1,582	7,03	1,711		
Total, 1941.....	55	3	137	1,680	1,829	1,827	60,750	2,947	97,993	.620	1,613	7,03	1,711	7,03	1,613	7,03	1,613	7,03	1,711			
		Number of mines			Men-employed			Production, short tons			Man-days of employment			Man-hours of employment			Rate per million man-hours			Ton per man-hour		
Underground.....	156	16,743	20,755,906	4,073,180	28,656,277	4,17,527	4,17,527	4,17,527	4,17,527	47	2,292	1,640	79,982	1,640	1,640	79,982	1,640	1,640	79,982	1,640	1,640	79,982
Surface.....	156	2,448	-----	591,115	2,448	-----	2,448	2,448	2,448	2	113	.479	27,049	.479	.479	27,049	.479	.479	27,049	.479	.479	27,049
Total, 1942.....	156	19,191	20,755,906	4,664,595	32,833,804	49	49	49	49	49	2,405	1,492	73,248	1,492	1,492	73,248	1,492	1,492	73,248	1,492	1,492	73,248

TABLE 54. Washington: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment			
				Under-ground	Sur-face ¹	Total	Average days of employment per man	Under-ground	Surface ¹	Total	Under-ground	Surface ¹	Total
King.....	18	24	652,436	677	190	867	252	171,941	46,888	218,829	1,203,590	328,215	1,531,805
Kittitas.....	5	8	979,406	725	237	962	281	103,542	66,703	270,245	1,424,794	466,921	1,891,715
Lewis.....	8	8	53,244	55	13	68	228	12,759	2,273	15,432	.88,832	18,166	107,639
Pierce, Thurston, and Whatcom.....	12	12	321,002	244	67	311	254	62,452	16,404	78,886	437,160	114,331	551,591
Total, 1942.....	52	60	2,066,088	1,701	507	2,208	264	450,694	132,718	583,412	3,154,367	938,783	4,083,150
Total, 1941.....			1,859,019	1,743	545	2,288	220	334,927	117,533	502,440	2,694,497	822,745	3,517,242
Injured				Rate per million man-hours			Rate per million tons			Rate per million man-hours of employment			
County	Killed	Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured	Ton per man-hour of employment	Ton per man-hour of employment per ton	Average hours of employment per man per day	
King.....	3	2	10	260	1,958	171,040	4,598	401,572	0,426	2,348	7,00	1,767	
Kittitas.....	2	1	12	219	1,057	121,054	2,042	233,815	.518	1,931	7,00	1,966	
Lewis.....	1	1	13	9,290	13	120,774	1,878	244,159	.446	2,022	6,95	1,683	
Pierce, Thurston, and Whatcom.....	2	2	41	41	43	77,900	---	133,056	.552	1,720	7,00	1,775	
Total, 1942.....	6	15	532	547	1,460	133,965	2,991	272,670	.491	2,035	7,00	1,849	
Total, 1941.....	2	10	509	518	569	147,559	1,076	278,180	.539	1,892	7,00	1,537	
Number of mines				Production, short tons			Man-days of employment			Killed			
Under-ground	1	1,701	1,096,577	450,694	3,154,367	6	500	500	500	Killed	Injured	Rate per million man-hours	
Open-cut.....		51	39,511	131,598	920,943	47	47	47	47			51,035	
Surface.....		503	2,028	2,006,088	533,412	4,083,150	6	547	547			133,965	
Total, 1942.....	52											.491	

¹ Includes open-cut operations.

TABLE 55.—West Virginia: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

County	Number of operators	Number of mines	Production, short tons	Men employed			Man-days of employment			Man-hours of employment		
				Under-ground	Sur-face 1	Total	Under-ground	Surface 1	Total	Under-ground	Surface 1	Total
						Average days of employ-ment per man						
Barbour.....	19	20	1,853,090	1,453	216	1,669	223	323,982	47,931	371,918	2,267,874	335,517
Boone.....	22	27	4,875,519	3,631	669	3,700	244	738,384	162,929	901,293	5,169,201	1,141,339
Braxton.....	7	12	3,381,052	41	53	53	199	8,164	2,411	10,562	63,962	83,028
Brooke.....	32	34	2,272,624	916	393	1,309	240	220,857	92,651	313,508	1,555,119	698,769
Clay.....	10	11	897,634	511	177	688	292	149,068	51,777	200,845	1,063,485	1,439,398
Fayette.....	56	79	13,860,336	10,948	1,795	12,743	2,077	2,077,836	440,987	3,118,823	18,746,938	3,087,396
Gilmer.....	3	3	75,385	70	13	83	256	18,670	2,573	21,246	121,376	18,101
Grant.....	8	8	75,439	116	18	134	282	30,778	4,396	35,174	33,967	18,537
Greenbrier.....	24	27	2,241,632	1,673	328	2,007	282	395,304	70,080	465,384	2,766,028	489,477
Hancock.....	8	8	155,324	26	51	51	252	156,032	15,032	193,806	132,896	163,707
Harrison.....	52	59	6,810,494	2,758	958	3,716	235	675,774	198,160	873,934	4,730,358	1,405,984
Kanawha.....	43	43	8,845,617	6,153	878	7,031	258	1,077,555	234,944	1,812,479	11,043,566	6,136,842
Logan.....	34	68	22,157,349	10,760	2,577	13,337	243	2,998,259	647,000	3,245,259	18,187,832	12,689,583
McDowell.....	68	68	29,955,402	17,371	4,155	21,526	257	4,664,325	1,077,944	5,532,269	31,250,914	4,635,756
Marion.....	30	40	11,971,297	5,762	1,088	6,980	261	16,686	2,766,221	1,722,907	7,054,422	38,788,266
Marshall.....	5	5	907,460	600	888	688	262	156,934	23,163	180,097	1,038,174	1,035,551
Mason.....	12	14	67,194	204	14	218	108	21,042	2,537	23,579	151,236	166,938
Mercer.....	12	15	3,492,306	2,842	637	3,797	248	70,836	159,511	802,347	4,919,354	1,116,575
Mineral.....	14	15	198,314	191	65	256	222	43,078	13,848	56,926	97,152	309,253
Mingo.....	19	24	4,986,429	3,121	591	3,712	250	1,778,574	149,456	928,030	5,456,021	1,046,102
Monongalia.....	43	51	12,066,903	4,807	1,144	5,951	270	1,303,463	301,840	1,605,243	9,180,533	6,486,218
Nicholas.....	20	22	413,913	366	48	414	281	89,325	10,778	100,103	766,823	2,113,423
Ohio.....	10	11	1,890,538	1,656	196	1,732	254	392,668	46,830	439,493	2,752,549	3,081,163
Preston.....	47	57	1,821,554	1,282	368	1,650	237	304,932	86,262	391,214	2,181,614	642,617
Putnam.....	6	6	221,305	217	31	248	243	52,895	7,449	60,344	370,365	52,143
Raleigh.....	51	51	15,933,972	11,422	2,396	13,718	249	2,844,553	574,152	3,418,685	19,913,158	4,020,144
Randolph.....	20	22	1,744,219	1,229	2,633	1,592	254	313,169	91,280	404,449	2,204,970	4,021,267
Taylor.....	21	22	928,766	570	132	702	240	140,487	27,766	168,203	991,011	196,320
Tucker.....	3	3	670,063	480	70	550	261	125,306	18,132	143,338	877,467	1,187,331
Upshur.....	12	12	359,121	234	54	288	234	54,710	12,772	67,882	384,727	89,591
Wayne.....	5	5	128,112	122	29	161	207	25,106	6,136	31,242	48,107	44,467
Webster.....	9	13	1,558,670	1,069	240	1,309	247	263,838	58,850	322,688	1,847,078	412,038
Wyoming.....	21	25	5,368,127	3,866	653	4,319	241	881,622	160,383	1,042,005	6,417,867	7,541,092
Lewis and Lincoln.....	8	8	22,453	23	5	22	183	4,200	933	5,133	22,774	6,756
Total, 1942.....		966	156,883,317	95,806	20,352	115,958	250	23,398,568	5,077,119	28,975,087	167,771,923	35,716,162
Total, 1941.....		892	159,956,065	94,869	18,362	113,251	226	21,388,087	4,205,812	25,543,409	149,531,505	29,539,874

1 Includes open-out operations.

TABLE 55.—West Virginia: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942—Con.

County	Killed	Injured			Rate per million man-hours	Rate per million tons	Injured	Man-hours of employment per ton	Average hours of employment per man per day
		Permanent partial disability	Temporary disability	Total					
Barbour.....	4	4	153	157	60,306	2,159	84,723	0,712	1,405
Braxton.....	10	32	367	399	63,227	2,050	81,787	.773	7,00
Brooke.....	1	6	6	6	72,265	—	176,201	.410	2,438
Campbell.....	1	6	160	166	—	—	73,043	1,008	.992
Clay.....	2	444	1,420	1,478	—	—	46,790	.638	7,19
Fayette.....	39	85	1,390	1,786	67,691	2,814	106,631	.655	7,12
Gilmer.....	1	17	1,19	6,687	127,059	13,444	255,348	.457	2,078
Grant.....	2	16	17	—	61,829	—	225,348	2,010	7,00
Hancock.....	3	1	243	251	922	77,100	—	2,052	1,802
Hanover.....	6	6	366	374	36,651	—	111,972	.680	7,82
Harrison.....	61	8	996	1,340	60,943	—	37,778	.970	1,622
Kanawha.....	17	2,127	2,198	1,980	96,728	1,981	54,916	1,110	2,126
Lewis.....	45	3	68	2,283	83,359	1,546	99,200	.975	1,651
McDowell.....	60	76	751	771	60,802	2,146	84,384	.721	1,805
Marion.....	13	20	751	771	1,036	64,404	—	1,388	7,00
Marshall.....	5	4	129	133	3,937	104,725	5,510	.954	1,825
Mason.....	5	5	453	455	29,563	—	146,563	.715	1,846
Mercer.....	7	2	1	1,160	75,376	2,004	130,286	.579	1,399
Mineral.....	1	22	534	558	72,636	5,017	146,499	.579	7,17
Mingo.....	8	2	228	256	85,896	1,610	112,287	.499	1,735
Montgomery.....	88	19	853	872	7,792	7,293	72,264	1,088	1,560
Nicholas.....	1	2	41	43	1,415	60,825	2,417	103,912	.555
Ohio.....	6	5	215	220	1,947	71,402	3,150	115,830	.616
Preston.....	1	106	106	106	354	37,532	.549	138,492	.655
Putnam.....	1	26	26	—	61,352	—	117,486	.524	1,550
Raleigh.....	47	8	1,567	1,673	1,964	69,903	2,950	104,996	.666
Randolph.....	4	1	269	277	97,321	—	158,310	.613	1,502
Taylor.....	2	1	68	69	3,369	58,114	4,307	74,292	1,632
Tucker.....	2	1	78	80	1,991	79,650	2,981	119,232	.782
Upshur.....	1	2	12	14	2,108	28,512	2,617	66,688	1,497
Wayne.....	2	7	174	176	—	38,634	—	86,938	1,241
Webster.....	5	571	571	571	77,906	—	53,940	.908	7,82
Wyoming.....	15	43	1	1	1,989	81,645	2,794	112,917	1,449
Lewis and Lincoln.....	—	—	—	—	—	—	144,379	1,405	7,24
Total, 1942.....	390	12	588	14,058	14,658	1,917	72,034	2,486	1,297
Total, 1941.....	283	13	610	12,444	13,067	1,636	72,971	2,093	1,279

REVIEW BY STATES

TABLE 56.—Wyoming: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1942

	Number of mines	Men employed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured	Rate per million man-hours		Tons per man-hour	
								Killed	Injured		
Underground	917	95,606	154,307,637	23,898,568	167,771,823	359	13,583	2,140	30,961	0,920	
Open-cut	49	1,026	2,575,680	1,166,543	1,596,232	2	30	1,543	23,143	1,987	
Surface	19,326	4,910,576	34,419,880	29	1,045	.843	1,045	.843	30,360	—	
Total, 1942	966	115,958	159,383,317	28,975,687	203,487,985	390	14,658	1,917	72,034	.771	
County	Number of operators	Number of mines	Production, short tons	Men employed	Average days of employment per man		Man-days of employment			Man-hours of employment	
					Under-ground	Sur-face	Total	Under-ground	Surface	Total	Total
Carbon	13	14	801,960	285	161	449	265	77,382	41,730	119,112	542,778
Fremont	9	9	20,422	42	15	57	95	3,556	1,460	5,446	206,557
Hot Springs	11	14	136,837	182	45	227	204	36,568	9,313	28,138	829,335
Lincoln	9	11	532,763	356	107	463	236	84,257	25,190	46,271	38,358
Sheridan	10	11	786,588	317	78	395	175	55,818	13,197	109,447	324,154
Sweetwater	6	18	5,649,326	2,601	623	3,224	265	690,313	163,563	853,876	176,333
Big Horn, Park, Sublette, Teton, and Uinta	11	11	18,937	33	7	40	189	6,136	1,434	7,570	766,132
Campbell, Converse, Johnson, and Natrona	20	20	154,330	30	45	75	231	5,049	12,273	17,322	391,446
Total, 1942	108	116	8,241,164	3,849	1,081	4,930	249	959,869	268,160	1,228,039	92,653
Total, 1941	108	116	6,663,844	3,706	1,052	4,758	197	732,289	206,110	5,127,818	1,156,306

TABLE 56.—Wyoming: Number of men employed, production, number of accidents, etc., at coal mines, during the calendar year 1942—Continued

County	Killed	Injured			Rate per million man-hours	Rate per million tons	Man-hours of employ- ment per ton	Average hours of employ- ment per day	Average hours of employ- ment per man per year
		Permanent total disability	Permanent partial disability	Tempo- rary					
Carbon	1	2	6	8	1,191	9,531	1,121	8,969	1,063
Fremont	1	1	24	1	26,070	48,964	48,944	.532	1,869
Hot Springs	1	25	3,085	77,124	7,308	182,690	422	7,08	1,673
Lincoln	3	2	93	3,916	121,389	5,148	158,555	7,01	1,428
Sheridan	15	2	22	24	49,577	30,512	27,497	1,315	1,655
Sweetwater	1	17	137	165	26,883	2,655	1,625	.615	1,226
Big Horn, Park, Sublette, Teton, and Uinta, Campbell, Converse, Johnson, and Natrona	1	1	4	5	92,428	264,033	.943	1,060	1,857
Total, 1942	21	1	26	285	312	2,434	2,558	.350	2,857
Total, 1941	13	22	269	291	1,974	1,183	1,351	1,170	7,15
									1,352
									1,758
Number of mines	Men em- ployed	Production, short tons	Man-days of employment	Man-hours of employment	Killed	Injured		Rate per million man-hours	Tons per man-hour
Underground	99	3,839	8,054,263	955,369	6,724,745	16	284	42,232	1,188
Open-cut	9	74	186,901	18,111	134,180	5	3	22,358	1,393
Surface		1,007		250,049	1,767,619		25	2,829	14,143
Total, 1942	108	4,830	8,241,164	1,228,029	8,626,544	21	312	2,434	36,167
									.955

¹ Includes open-cut operations.

BITUMINOUS MINES OPERATED WITHOUT FATALITIES

During 1942 there were active for production or development 6,940 bituminous-coal mines on which reports were received. These mines were in operation for periods ranging from a few weeks to nearly the full year, the average number of days for all mines being 244 per employee. Of the 6,940 mines 739 mines had fatal accidents to one or more employees, and 6,201 mines were free of fatalities; in other words, 89 percent of the bituminous mines were operated without fatalities. The fatality-free mines produced 52 percent of the total quantity of bituminous coal mined, and they employed 55 percent of the total number of men. Although the accident-free mines averaged only 40 employees per mine, the mines in which at least one fatality occurred averaged 275 employees per mine. The mines that were free of fatal accidents had a nonfatal-injury rate of 67.6 per million man-hours whereas the mines in which fatalities occurred had a rate of 70.2 per million man-hours.

Comparative data for the two groups of mines are given in tables 57 to 60, inclusive.

TABLE 57.—Comparative fatal and nonfatal accident data for bituminous-coal mines in the United States in 1942

		Mines that had fatal accidents	Mines that had no fatal accidents	All bituminous-coal mines
Number of mines.....		739	6,201	6,940
Production.....	short tons.....	278,525,775	303,179,065	581,704,840
Proportion of total tonnage.....	percent.....	47.9	52.1	100
Number of employees.....		203,155	245,642	448,797
Proportion of total employees.....	percent.....	45.3	54.7	100
Number of employees per mine.....		275	40	65
Man-days worked.....		51,964,318	57,527,053	109,491,371
Average worked per man.....	days.....	256	234	244
Man-hours worked.....		364,913,188	407,915,804	772,828,992
Average worked per man.....	hours.....	1,796	1,661	1,722
Production per man-hour.....	ton.....	.763	.743	.753
Number of men killed.....		1,245	—	1,245
Number of men injured.....		25,607	27,586	53,193
Fatality rate per million man-hours.....		3.412	—	1.611
Injury rate per million man-hours.....		70.173	67.627	68.829

TABLE 58.—Bituminous-coal mines. Number of men employed in 1942

State	At mines that had fatalities	At mines that had no fatalities	Employees represented by mines that had no fatalities, percent	State	At mines that had fatalities	At mines that had no fatalities	Employees represented by mines that had no fatalities, percent
Missouri.....	3,739	100		Ohio.....	8,565	13,720	61.6
Michigan.....	384	100		Tennessee.....	3,664	5,681	60.8
Texas.....	235	100		Pennsylvania (bituminous).....	49,245	64,429	56.7
Other States ¹	194	100		Illinois.....	15,076	19,290	56.1
South Dakota.....	26	100					
Iowa.....	353	4,425	92.6				
North Dakota.....	101	1,101	91.6	United States (bituminous).....	203,155	245,642	54.7
Maryland.....	285	2,003	87.5				
Kansas.....	393	2,088	84.2				
Arkansas.....	646	2,933	82.0	Utah.....	1,615	1,755	52.1
Oklahoma.....	476	2,026	81.0	Wyoming.....	2,371	2,559	51.9
Indiana.....	2,568	8,342	76.5	Kentucky.....	26,843	28,428	51.4
Montana.....	419	1,168	73.6	New Mexico.....	941	960	50.5
Colorado.....	2,385	5,832	71.0	Virginia.....	10,087	9,104	47.4
Washington.....	710	1,498	67.8	Alabama.....	12,677	11,252	47.0
Alaska.....	77	160	67.5	West Virginia.....	63,658	52,300	45.1

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.

TABLE 59.—Bituminous-coal mines: Number of man-hours worked in 1942

State	At mines that had fatalities	At mines that had no fatalities	Man- hours repre- sented by mines that had no fatal- ties, percent	State	At mines that had fatalities	At mines that had no fatalities	Man- hours repre- sented by mines that had no fatal- ties, percent
Missouri.....		5,903,152	100	Tennessee.....	6,493,361	9,270,129	58.8
Michigan.....		647,878	100	Ohio.....	16,087,013	22,262,556	58.0
Texas.....		356,549	100	Pennsylvania.....			
Other States ¹		345,570	100	(bituminous).....	91,539,481	111,398,648	54.6
South Dakota.....		57,697	100				
Iowa.....	520,571	5,597,177	91.5	United States (bituminous)	364,913,188	407,915,804	52.8
North Dakota.....	196,189	1,796,991	90.2				
Maryland.....	524,272	3,396,512	86.6	Illinois.....	25,547,009	28,547,393	52.8
Kansas.....	740,955	3,672,306	83.2	Kentucky.....	45,810,780	46,277,317	50.3
Oklahoma.....	784,554	3,055,791	79.6	New Mexico.....	1,707,195	1,695,589	49.8
Arkansas.....	950,961	3,616,341	79.2	Utah.....	3,215,947	3,126,548	49.3
Indiana.....	4,563,557	13,351,741	74.5	Wyoming.....	4,555,758	4,070,786	47.1
Montana.....	694,979	1,797,706	72.1	Virginia.....	17,446,538	15,387,266	46.9
Colorado.....	4,175,066	9,387,273	69.2	Alabama.....	24,003,166	20,126,445	45.6
Alaska.....	175,560	369,584	67.8	West Virginia.....	113,720,852	89,767,133	44.1
Washington.....	1,449,424	2,633,726	64.5				

TABLE 60.—Bituminous-coal mines: Number of tons of coal produced in 1942

State	At mines that had fatalities, tons	At mines that had no fatali- ties, tons	Percent of State's tonnage repre- sented by mines that had no fatali- ties	State			Percent of State's tonnage repre- sented by mines that had no fatali- ties	
Missouri.....	3,519,130	100		Ohio.....	14,204,646	17,822,667	55.6	
Texas.....	322,787	100		Alaska.....	114,933	142,236	55.3	
Michigan.....	230,020	100		Pennsylvania.....	(bituminous).....	66,060,898	76,299,406	53.6
South Dakota.....	53,034	100		Illinois.....	30,557,952	34,797,412	53.2	
Other States ¹	50,650	100		New Mexico.....	801,031	885,097	52.5	
Iowa.....	281,058	2,549,534	90.1					
Kansas.....	648,014	3,587,242	84.7	United States (bituminous).....	278,525,775	303,179,065	52.1	
North Dakota.....	435,542	2,222,272	83.6					
Maryland.....	361,196	1,610,231	81.7					
Montana.....	703,442	3,113,618	81.6					
Arkansas.....	374,672	1,656,894	81.6					
Oklahoma.....	525,064	1,870,238	78.1					
Indiana.....	6,841,406	18,574,731	73.1					
Colorado.....	2,560,843	5,518,199	68.3					
Washington.....	749,475	1,256,613	62.6					
Tennessee.....	3,585,610	4,631,858	56.4					

¹ Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.

COAL-MINE FATALITIES BY MONTHS

Fatal accidents in coal mines, when considered over a period of years (1930-42) have occurred in largest number in January and in smallest number in April. Other cold-weather months—October, December, and November—have ranked next to January in order of number of fatalities. The ratio of fatal accidents to production has been highest in December. In 1942 fatalities occurred with greatest frequency in May and with the lowest frequency in February and April; the latter months both had the same number of employees killed by accidents. The fatality rate per million tons during 1942 was highest in May and lowest in April. Considering bituminous mines alone, May had the highest rate per million tons; this was caused by the occurrence of three major disasters, in one of which 56 lives were lost. April had the lowest death rate during 1942. Pennsylvania anthracite mines reported the highest fatality rate in February and the lowest in August. (See tables 62 and 86.) Production of bituminous coal was highest in October and lowest in February. September was the highest and January the lowest month of production for Pennsylvania anthracite.

COAL-MINE FATALITIES BY MONTHS

TABLE 61.—*Coal-mine fatalities, by months and States, during 1942*

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alabama	7		5	3	4	12	4	2	6	5	11	3	62
Alaska													2
Arkansas	2				6	1	1	3	2			2	17
Colorado	36		3		2	2	1	3	2	1	5	4	59
Illinois	8	7	8	5	9	9	4	11	7	7	6	13	94
Indiana	2		1		2	3	2		3	3	2	1	18
Iowa			1	2	1	2		2	1	1		1	11
Kansas	2				1		1						4
Kentucky	14	8	13	5	18	13	14	12	16	16	22	14	165
Maryland		1						1				1	3
Michigan													
Missouri													
Montana	1			1				1		1	2	1	7
New Mexico			1	1				1			1	2	6
North Dakota									3		1	1	5
Ohio	7	5	8	3	5	8	8	8	2	7	4	7	72
Oklahoma		1		1		4	1				2	1	10
Pennsylvania (bituminous)	17	15	16	16	15	19	16	17	22	13	17	16	199
South Dakota													
Tennessee	5	1	3	4	4	5	1	1	4	1			29
Texas													
Utah	1	1		1	1	2	2	1	3		1	3	16
Virginia	4	6	2	3	2	6	1	10	1	7	7	49	
Washington	1	1		1		1				1	1		6
West Virginia	23	22	22	27	79	29	46	31	27	28	30	26	390
Wyoming	1	1	1	1		2	3	1	1	1	1	8	21
Total bituminous	131	70	85	73	149	116	105	106	102	92	113	103	1,245
Pennsylvania (anthracite)	16	24	19	21	22	21	23	13	17	14	18	18	226
Total, 1942	147	94	104	94	171	137	128	119	119	106	131	121	1,471
Total, 1941	105	89	109	28	118	113	109	122	128	123	98	124	1,266

TABLE 62.—*Coal-mine fatalities and fatality rates per million tons, by months and years, 1930-42*

FATALITIES

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bituminous:													
1930	189	132	150	130	118	103	119	117	103	157	199	102	1,619
1931	139	76	93	81	77	72	97	89	84	98	92	82	1,080
1932	88	112	79	51	50	41	65	65	68	85	76	178	958
1933	66	69	47	37	53	71	79	103	91	73	63	81	833
1934	68	90	85	66	75	54	94	85	77	80	91	93	958
1935	86	83	92	54	82	74	72	77	77	89	83	99	968
1936	105	95	66	91	50	63	80	90	106	108	106	140	1,093
1937	99	91	145	67	79	97	98	95	91	146	99	91	1,198
1938	94	72	65	95	47	56	53	74	83	69	81	91	880
1939	65	69	77	20	38	63	79	76	105	110	88	77	867
1940	190	83	146	59	71	65	148	83	91	81	105	82	1,204
1941	83	74	93	15	105	95	94	94	109	110	87	113	1,072
1942	131	70	85	73	149	116	105	106	102	92	113	103	1,245
Anthracite:													
1930	51	40	30	33	34	26	37	47	38	49	29	30	444
1931	41	42	25	45	38	23	21	30	35	43	15	25	383
1932	15	20	25	33	12	12	16	18	16	22	22	38	249
1933	26	16	23	15	5	13	15	20	19	29	29	21	231
1934	27	32	23	24	26	14	16	16	17	28	20	20	268
1935	44	21	20	20	30	28	22	13	23	18	23	12	274
1936	32	37	21	15	16	26	15	24	12	6	17	23	244
1937	18	18	18	31	17	25	12	10	12	22	12	20	215
1938	26	27	19	24	13	28	14	13	8	16	20	17	225
1939	28	18	12	22	19	8	17	17	15	27	12	16	211
1940	17	18	14	19	18	19	7	11	18	15	11	17	184
1941	22	15	16	13	13	18	15	28	19	13	11	11	194
1942	16	24	19	21	22	21	23	13	17	14	18	18	226

TABLE 62.—*Coal-mine fatalities and fatality rates per million tons, by months and years, 1930-42—Continued*

FATALITIES

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bituminous and anthracite:													
1930-----	240	172	180	163	152	129	156	164	141	206	228	132	2,063
1931-----	180	118	118	126	115	95	118	119	119	141	107	107	1,463
1932-----	103	132	104	84	62	53	81	83	84	107	98	216	1,207
1933-----	92	85	70	52	58	84	94	123	110	102	92	102	1,064
1934-----	95	122	113	90	101	68	110	101	94	108	111	113	1,226
1935-----	130	104	112	74	112	102	94	90	100	107	106	111	1,242
1936-----	137	132	87	106	66	89	95	114	118	112	123	163	1,342
1937-----	117	109	163	98	96	122	110	105	103	168	111	111	1,413
1938-----	120	99	84	119	60	84	67	87	91	85	101	108	1,105
1939-----	93	87	89	42	57	71	96	93	120	137	100	93	1,078
1940-----	207	101	160	78	89	84	155	94	109	96	116	99	1,388
1941-----	105	89	109	28	118	113	109	122	128	123	98	124	1,266
1942-----	147	94	104	94	171	137	128	119	119	106	131	121	1,471

RATES

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bituminous:													
1930-----	3.75	3.30	4.14	3.58	3.24	3.02	3.38	3.24	2.63	3.51	5.15	2.54	3.46
1931-----	3.57	2.39	2.72	2.81	2.69	2.44	3.22	2.88	2.60	2.72	3.02	2.68	2.83
1932-----	3.11	3.95	2.42	2.48	2.68	2.28	3.59	2.85	2.55	2.57	2.45	5.65	3.09
1933-----	2.38	2.47	1.93	1.86	2.35	2.78	2.66	2.99	3.06	2.41	2.02	2.67	2.50
1934-----	2.03	2.76	2.21	2.68	2.73	2.09	3.78	3.09	2.76	2.42	2.94	2.86	2.67
1935-----	2.32	2.36	2.36	2.44	3.04	2.45	3.20	2.93	3.04	2.33	2.46	2.76	2.60
1936-----	2.63	2.30	2.09	2.98	1.75	2.14	2.49	2.70	2.83	2.43	2.51	3.03	2.52
1937-----	2.38	2.13	2.78	2.55	2.60	3.02	3.03	2.77	2.30	3.54	2.69	2.42	2.68
1938-----	2.98	2.57	2.38	4.29	2.16	2.44	2.22	2.53	2.52	1.92	2.20	2.46	2.52
1939-----	1.79	2.00	2.14	2.05	2.09	2.22	2.65	2.14	2.69	2.34	2.01	2.00	2.19
1940-----	4.15	2.08	4.07	1.77	2.00	1.97	4.05	4.05	2.09	2.31	2.06	2.58	1.95
1941-----	1.84	1.73	1.89	2.45	2.40	2.18	2.12	1.99	2.28	2.12	1.94	2.30	2.08
1942-----	2.67	1.57	1.77	1.51	3.10	2.40	2.19	2.21	2.04	1.77	2.37	2.07	2.14
Anthracite:													
1930-----	7.29	6.54	6.63	6.75	5.75	5.05	6.58	7.64	7.22	6.51	5.60	4.96	6.40
1931-----	6.63	7.78	5.26	7.88	7.58	5.05	5.30	6.94	8.02	6.55	3.62	5.34	6.42
1932-----	8.81	4.92	5.17	5.80	3.02	4.66	5.24	5.14	3.85	4.16	5.10	7.39	4.99
1933-----	6.81	3.73	5.08	5.17	1.68	3.30	4.07	4.54	3.79	6.14	6.01	4.73	4.66
1934-----	4.42	5.40	4.38	4.98	4.97	3.36	4.66	4.48	4.29	5.04	4.80	4.27	4.69
1935-----	7.60	4.51	6.20	4.20	5.86	4.89	6.28	4.23	5.59	4.36	6.70	2.59	5.25
1936-----	6.01	5.31	6.87	3.15	3.13	6.05	3.83	6.86	3.10	1.30	3.93	4.66	4.46
1937-----	4.26	4.91	3.76	4.58	3.91	5.41	4.38	3.45	3.27	4.55	2.71	4.21	4.15
1938-----	5.22	7.40	4.46	7.61	2.95	6.29	5.42	4.75	2.36	3.82	5.25	3.75	4.88
1939-----	5.56	4.30	3.27	4.08	3.68	2.20	5.83	4.43	3.14	5.48	3.04	4.14	4.11
1940-----	2.94	4.93	3.61	4.93	4.42	4.23	1.54	2.83	4.31	3.44	2.76	3.52	3.57
1941-----	4.44	3.40	3.50	4.08	3.38	3.70	3.22	5.36	3.71	2.43	2.88	2.68	3.58
1942-----	3.63	5.17	3.84	4.19	4.67	4.22	2.58	3.22	2.82	3.86	4.01	3.88	
Bituminous and anthracite:													
1930-----	4.18	3.72	4.42	3.96	3.59	3.28	3.83	3.88	3.18	3.94	5.21	2.85	3.84
1931-----	3.99	3.18	3.03	3.65	3.42	2.79	3.46	3.38	3.26	3.31	3.09	3.03	3.31
1932-----	3.20	4.07	2.77	3.20	2.83	2.58	3.83	3.16	2.73	2.79	2.77	5.89	3.36
1933-----	2.92	2.64	2.43	2.29	2.27	2.85	2.82	3.16	3.17	2.91	2.55	2.93	2.78
1934-----	2.40	3.16	2.52	3.05	3.09	2.26	3.89	3.25	2.95	2.86	3.16	3.04	2.94
1935-----	3.03	2.61	2.65	2.75	3.49	2.83	3.61	3.06	3.40	2.53	2.85	2.75	2.93
1936-----	3.02	2.74	2.51	3.00	1.96	2.64	2.64	3.10	2.86	2.32	2.64	3.19	2.73
1937-----	2.55	2.35	2.86	2.96	2.76	3.32	3.14	2.82	2.38	3.65	2.69	2.62	2.83
1938-----	3.28	3.13	2.66	4.71	2.29	3.06	2.53	2.72	2.50	2.12	2.48	2.60	2.79
1939-----	2.25	2.24	2.25	2.77	2.44	2.22	2.94	2.37	2.74	2.64	2.09	2.19	2.41
1940-----	4.01	2.32	4.02	2.10	2.25	2.24	3.77	2.16	2.51	2.19	2.59	2.11	2.71
1941-----	2.09	1.89	2.03	3.01	2.48	2.33	2.22	2.33	2.42	2.15	2.01	2.33	2.22
1942-----	2.75	1.91	1.97	1.76	3.24	2.57	2.41	2.24	2.15	1.86	2.51	2.23	2.30

TABLE 62.—*Coal-mine fatalities and fatality rates per million tons, by months and years 1930-42—Continued*

PRODUCTION

	January	February	March	April	May	June	July
Bituminous:							
1930	50,414,000	40,060,000	36,230,000	36,318,000	36,413,000	34,145,000	35,158,000
1931	38,951,000	31,738,000	34,228,000	28,778,000	28,614,000	29,492,000	30,104,000
1932	28,261,000	28,384,000	32,677,000	20,588,000	18,627,000	17,984,000	18,093,000
1933	27,868,000	27,915,000	24,413,000	19,805,000	22,531,000	25,461,000	29,675,000
1934	33,462,000	32,695,000	38,574,000	24,665,000	27,459,000	25,947,000	24,937,000
1935	37,055,000	35,122,000	39,020,000	22,151,000	27,070,000	30,365,000	22,523,000
1936	39,988,000	41,289,000	31,648,000	30,580,000	28,625,000	29,467,000	32,121,000
1937	41,579,000	42,806,000	52,112,000	26,302,000	30,374,000	32,097,000	32,294,000
1938	31,505,000	28,012,000	27,303,000	22,123,000	21,765,000	22,377,000	23,854,000
1939	36,220,000	34,586,000	38,907,000	9,753,000	18,162,000	28,327,000	29,779,000
1940	45,777,000	39,977,000	35,872,000	33,374,000	35,517,000	32,977,000	36,530,000
1941	45,229,000	42,740,000	49,080,000	6,130,000	43,741,000	43,592,000	44,403,000
1942	49,061,000	44,512,000	47,944,000	48,485,000	48,008,000	48,375,000	47,985,000
Anthracite:							
1930	6,096,000	6,120,000	4,524,000	4,887,000	5,911,000	5,152,000	5,624,000
1931	8,183,000	5,400,000	4,754,000	5,709,000	5,013,000	4,552,000	3,960,000
1932	3,940,000	4,064,000	4,842,000	5,692,000	3,314,000	2,578,000	3,055,000
1933	3,818,000	4,287,000	4,532,000	2,899,000	2,975,000	3,939,000	3,688,000
1934	6,102,000	5,930,000	6,394,000	4,819,000	5,230,000	4,168,000	3,430,000
1935	5,832,000	4,616,000	3,158,000	4,925,000	5,041,000	5,781,000	3,623,000
1936	5,324,000	6,964,000	3,056,000	4,765,000	5,112,000	4,299,000	3,918,000
1937	4,227,000	3,563,000	4,785,000	6,764,000	4,352,000	4,025,000	2,742,000
1938	4,983,000	3,650,000	4,262,000	3,182,000	4,408,000	4,455,000	2,582,000
1939	5,039,000	4,186,000	3,667,000	5,388,000	5,161,000	3,639,000	2,915,000
1940	5,784,000	3,648,000	3,881,000	3,854,000	4,070,000	4,492,000	4,534,000
1941	4,955,000	4,413,000	4,575,000	3,184,000	3,841,000	4,870,000	4,661,000
1942	4,408,000	4,641,000	4,945,000	5,012,000	4,710,000	4,981,000	5,194,000
Bituminous and anthracite:							
1930	57,410,000	46,180,000	40,754,000	41,205,000	42,324,000	39,297,000	40,782,000
1931	45,134,000	37,138,000	38,982,000	34,487,000	33,627,000	34,044,000	34,064,000
1932	32,201,000	32,448,000	37,519,000	26,280,000	21,941,000	20,562,000	21,148,000
1933	31,686,000	32,202,000	28,945,000	22,704,000	25,508,000	29,400,000	33,363,000
1934	39,564,000	38,625,000	44,968,000	29,484,000	32,689,000	30,115,000	28,367,000
1935	42,887,000	39,738,000	42,178,000	27,076,000	32,111,000	36,146,000	26,146,000
1936	45,310,000	48,253,000	34,704,000	35,345,000	33,737,000	33,766,000	36,039,000
1937	45,806,000	46,469,000	56,897,000	33,066,000	34,726,000	36,722,000	35,036,000
1938	36,578,000	31,662,000	31,565,000	25,275,000	26,170,000	27,432,000	26,436,000
1939	41,259,000	38,772,000	39,574,000	15,141,000	23,323,000	31,966,000	32,694,000
1940	51,581,000	43,625,000	39,753,000	37,228,000	39,587,000	37,489,000	41,084,000
1941	50,184,000	47,153,000	53,655,000	9,314,000	47,582,000	48,462,000	49,064,000
1942	53,469,000	49,153,000	52,889,000	53,497,000	52,718,000	53,356,000	53,179,000
	August	September	October	November	December	Total	
Bituminous:							
1930	38,117,000	39,126,000	44,714,000	38,609,000	40,222,000	467,526,000	
1931	30,859,000	32,256,000	38,077,000	30,427,000	30,581,000	382,105,000	
1932	22,786,000	26,662,000	33,109,000	31,037,000	31,522,000	309,710,000	
1933	34,421,000	29,715,000	30,294,000	31,184,000	30,349,000	333,631,000	
1934	27,527,000	27,847,000	32,893,000	30,940,000	32,419,000	359,368,000	
1935	26,380,000	25,245,000	38,079,000	33,679,000	35,680,000	372,369,000	
1936	33,278,000	37,482,000	43,659,000	42,215,000	46,138,000	436,468,000	
1937	34,303,000	39,582,000	41,250,000	36,824,000	37,544,000	447,047,000	
1938	29,263,000	32,959,000	35,847,000	36,864,000	36,986,000	349,548,000	
1939	35,479,000	38,973,000	47,005,000	43,872,000	38,568,000	396,681,000	
1940	39,705,000	39,338,000	39,390,000	40,725,000	42,137,000	461,319,000	
1941	47,161,000	47,841,000	51,866,000	44,889,000	49,097,000	515,769,000	
1942	48,002,000	50,004,000	51,952,000	47,624,000	49,753,000	581,705,000	
Anthracite:							
1930	6,153,000	5,261,000	7,531,000	5,176,000	6,050,000	69,385,000	
1931	4,324,000	4,362,000	6,561,000	4,149,000	4,679,000	59,646,000	
1932	3,504,000	4,154,000	5,292,000	4,319,000	5,146,000	49,900,000	
1933	4,409,000	5,007,000	4,725,000	4,825,000	4,437,000	49,541,000	
1934	3,570,000	3,962,000	4,711,000	4,165,000	4,687,000	57,168,000	
1935	2,655,000	4,275,000	4,385,000	3,238,000	4,734,000	52,263,000	
1936	3,498,000	3,867,000	4,601,000	4,327,000	4,939,000	54,570,000	
1937	2,897,000	3,674,000	4,838,000	4,429,000	4,749,000	51,148,000	
1938	2,738,000	3,392,000	4,185,000	3,807,000	4,538,000	46,149,000	
1939	3,887,000	4,782,000	4,925,000	3,941,000	3,866,000	51,346,000	
1940	3,884,000	4,172,000	4,356,000	3,980,000	4,834,000	51,389,000	
1941	5,223,000	5,121,000	5,357,000	3,815,000	4,100,000	54,115,000	
1942	5,038,000	5,277,000	4,961,000	4,664,000	4,485,000	58,316,000	

TABLE 62.—*Coal-mine fatalities and fatality rates per million tons, by months and years 1930–42—Continued*

PRODUCTION

	August	September	October	November	December	Total
Bituminous and anthracite:						
1930	42,270,000	44,387,000	52,245,000	43,785,000	46,272,000	536,911,000
1931	35,183,000	36,618,000	42,638,000	34,576,000	35,260,000	441,751,000
1932	26,290,000	30,816,000	38,401,000	35,356,000	36,668,000	359,610,000
1933	38,830,000	34,722,000	35,019,000	36,009,000	34,786,000	383,172,000
1934	31,097,000	31,809,000	37,607,000	35,105,000	37,106,000	416,536,000
1935	29,035,000	29,520,000	42,464,000	36,917,000	40,414,000	424,632,000
1936	36,776,000	41,329,000	48,260,000	46,542,000	51,077,000	491,138,000
1937	37,200,000	43,236,000	46,088,000	41,253,000	42,293,000	498,792,000
1938	32,001,000	36,351,000	40,032,000	40,671,000	41,524,000	395,697,000
1939	39,316,000	43,755,000	51,930,000	47,813,000	42,434,000	447,977,000
1940	43,589,000	43,510,000	43,746,000	44,705,000	46,971,000	512,808,000
1941	52,384,000	52,962,000	57,223,000	48,704,000	53,197,000	569,884,000
1942	53,040,000	55,281,000	56,913,000	52,288,000	54,238,000	640,021,000

COMPARATIVE COST OF ACCIDENTS AT COAL MINES

Inasmuch as State laws differ from one another, it is not practicable to prepare from State records a compilation of data showing the comparative amounts of compensation paid to men who suffer injuries from coal-mine accidents. However, some idea of the comparative cost of accidents in the various States may be obtained by assuming a uniform cost for fatalities and a uniform cost for nonfatal injuries. For this purpose a cost of \$5,000 per fatality and \$100 per nonfatal lost-time injury was assumed. As 1,471 fatalities occurred and 69,564 men were injured in coal mines in the United States during 1942, the accidents represent a cost or payment for compensation of \$7,355,000 for fatalities and \$6,956,400 for nonfatal injuries—a combined total of \$14,311,400. This sum represents an average of 2.24 cents per ton of coal produced during 1942. The assumed cost ranged from a little more than 0.5 cent a ton in South Dakota to 6.22 cents per ton in Arkansas.

It must be emphasized that these costs are assumed for purposes of comparison only and that the figures are not intended to represent or even approximate actual payments for coal-mine accidents by the compensation commissions of the various States.

COMPARATIVE COST OF ACCIDENTS AT COAL MINES

TABLE 63.—*Theoretical comparative cost of accidents at coal mines in 1942*

State	Accidents per million man-hours	State	Accidents per million tons	State	Accident cost per man-hours	State	Accident per tons	Production, millions of tons	
Other States 2	26.04	Wyoming	40.41	Other States 2	0.26	South Dakota	0.57	West Virginia	156.9
Wyoming	38.60	Indiana	42.18	Missouri	.39	Missouri	.66	Pennsylvania (bituminous)	142.4
Missouri	39.13	Kansas	43.98	Michigan	.52	Indiana	.77	Illinois	65.4
Illinois	41.91	South Dakota	56.57	Kansas	.76	Kentucky	.90	Kentucky	61.2
Genesee	50.52	North Dakota	57.94	Texas	.81	Pennsylvania (anthracite)	.90	Pennsylvania (anthracite)	58.3
Oklahoma	52.10	Missouri	65.64	Illinois	.86	Ohio	1.41	Ohio	32.0
Tennessee	56.71	Illinois	70.17	North Dakota	1.00	Indiana	1.50	Indiana	25.4
Alabama	59.84	Montana	70.21	Pennsylvania (bituminous)	1.12	Virginia	1.60	Virginia	28.8
Indiana	64.39	Oklahoma	80.99	Montana	1.27	Alabama	1.60	Alabama	19.4
Pennsylvania (bituminous)	70.44	Ohio	81.77	Wyoming	1.37	Wyoming	1.65	Wyoming	8.2
Ohio	70.99	Tennessee	89.84	Other States 2	1.47	Tennessee	1.78	Tennessee	8.2
United States (bituminous)	71.54	Virginia	91.91	Ohio	1.48	Colorado	1.92	Colorado	8.1
Kentucky	73.95	United States (bituminous)	93.58	United States (bituminous)	1.49	Utah	1.95	Utah	7.7
West Virginia	74.74	West Virginia	95.92	Michigan	1.49	Kansas	1.95	Kansas	7.7
Tennessee	77.26	Kentucky	106.55	West Virginia	1.57	Montana	2.13	Montana	3.8
Michigan	78.03	Tennessee	108.79	United States average	1.57	Missouri	2.18	Missouri	3.5
North Dakota	78.62	Wyoming	110.99	Wyoming	1.58	Iowa	2.24	Iowa	3.5
United States average	81.34	Kentucky	110.99	Kentucky	1.59	North Dakota	2.24	North Dakota	2.7
Lowa	81.98	Ohio	112.47	Ohio	1.60	Oklahoma	2.34	Oklahoma	2.4
Texas	81.98	West Virginia	118.23	Iowa	1.67	Arkansas	2.39	Arkansas	2.4
Illinois	82.98	Illinois	132.90	West Virginia	1.68	Washington	2.49	Washington	2.0
Alaska	83.98	Oklahoma	151.65	Michigan	1.70	Maryland	2.72	Maryland	2.0
Colorado	84.98	North Dakota	157.94	Tennessee	1.73	Tennessee	2.82	Tennessee	1.7
New Mexico	85.98	North Dakota	169.33	Alabama	1.78	Alabama	2.86	Alabama	1.3
Colorado	86.98	Pennsylvania (anthracite)	177.69	Iowa	2.00	Alaska	2.90	Alaska	.3
Arkansas	87.98	Pennsylvania (anthracite)	183.63	Michigan	2.01	Michigan	3.60	Michigan	.2
Arkansas	88.98	Washington	197.83	New Mexico	2.07	New Mexico	3.60	New Mexico	.1
Maryland	89.98	Utah	212.15	Washington	2.24	Washington	4.75	Washington	.1
Arkansas	90.98	Montana	215.02	Alaska	2.51	Pennsylvania (anthracite)	4.75	Pennsylvania (anthracite)	640.0
Utah	91.98	Alaska	215.98	Alaska	2.57	Colorado	5.16	Colorado	640.0
Montana	92.98	Arkansas	216.98	Alaska	2.77	Alaska	5.33	Alaska	581.7
Pennsylvania (anthracite)	93.98	Arkansas	217.98	Arkansas	3.07	Arkansas	6.22	Arkansas	581.7
Washington	94.98	Pennsylvania (anthracite)	284.60	Colorado					

1. The cost figures in cents per man-hour and per ton available in the United States are not available. In this table, a fatality has been assigned an assumed cost of \$5,000 and a nonfatal, lost-time accident, \$100.

² Includes Arizona, Georgia, Idaho, North Carolina, and Oregon.

EMPLOYMENT AND ACCIDENTS AT BITUMINOUS-COAL MINES OF VARIOUS SIZE CLASSIFICATIONS

Although reports received by the Bureau of Mines showed that there were active during the year 6,185 underground bituminous-coal mines of various sizes, the largest number of workers was employed and the largest tonnage of coal was produced by a relatively small number of mines. Mines with 100 or more employees underground numbered 1,022, yet they produced 84 percent of the total underground bituminous tonnage and employed 77 percent of the underground bituminous workers.

Table 64 shows the employment and accident data for 6,185 mines grouped according to the number of men employed underground.

TABLE 64.—*Accident data for bituminous-coal mines in the United States, by number of men employed underground in 1942*

Number of underground employees per mine	Number of mines	Total number of underground employees	Man-hours worked underground	Production of coal (short tons)	Number killed	Number injured	Fatality rate per million man-hours underground	Injury rate per million man-hours underground	Fatality rate per million tons	Injury rate per million tons	Coal produced per man-hour underground (short ton)	Man-hours required to produce 1 ton of coal underground
1 to 4.....	2,105	5,462	6,754,644	3,717,274	42	175	6.22	25.91	11.30	47.08	0.55	1.82
5 to 9.....	1,010	6,534	8,793,305	4,786,233	20	350	2.27	39.80	4.18	73.13	.54	1.84
10 to 24.....	1,026	15,531	23,177,996	13,091,134	39	1,502	1.68	64.80	2.98	114.73	.56	1.77
25 to 49.....	522	18,186	27,999,434	18,102,728	46	2,354	1.64	84.07	2.54	130.04	.65	1.55
50 to 99.....	500	35,589	57,323,351	44,143,573	141	5,185	2.46	90.45	3.19	117.46	.77	1.30
100 to 199.....	491	70,392	119,958,362	98,713,198	228	11,102	9.90	92.55	2.31	112.47	.82	1.22
200 to 299.....	215	51,045	89,207,271	81,525,615	135	7,339	1.51	82.27	1.66	90.02	.91	1.09
300 to 399.....	137	46,231	82,010,325	76,457,646	152	6,841	1.85	83.42	1.99	89.47	.93	1.07
400 to 499.....	76	34,231	62,174,148	57,181,651	149	4,707	2.40	75.71	2.61	82.32	.92	1.09
500 to 599.....	36	19,545	35,617,889	32,107,787	55	2,291	1.54	64.32	1.71	71.35	.90	1.11
600 or more.....	67	58,315	108,455,653	86,395,525	136	6,421	1.25	59.20	1.57	74.32	.80	1.26
1942 underground total.....	6,185	361,061	621,472,377	516,222,364	1,143	48,267	1.84	77.67	2.21	93.50	.83	1.20

ACCIDENTS AT SMALL MINES

Excessive expense and difficulty would be entailed in any attempt to obtain complete data covering accidents and employment at small coal mines throughout the United States.

The Bureau of Mines receives reports from mines of all sizes, ranging from those employing one man to those employing hundreds. Although no special effort is made to obtain reports from mines having less than four employees, except in States where such mines play an important part in the industry, when reports are received from small mines they are included in the employment and accident statistics. As shown in table 65, the fatality rate in most States was considerably higher for small mines than the average for all mines. On the other hand, nonfatal injury rates were often lower for small mines than for large mines and for all mines combined (see tables 2, 64, and 65). Possible explanations for this variation in rates may be that fatalities are made a matter of record and thus cannot be forgotten, whereas minor nonfatal injuries may go unreported because, in many cases, mines of such small employment do not come under the State law, compensation is not claimed, or the injury is not considered serious enough to warrant a report to the inspector.

The figures in table 65 may serve as a basis of study of accident frequency at small mines in various coal-producing States, as the rates have all been computed upon a comparable basis.

ACCIDENTS AT SMALL MINES

TABLE 65.—Accidents and employment at bituminous-coal mines employing 4 men or less underground in 1942

State	1. Number of mines	2. Percentage of State under-ground total	3. Employee	4. Percentage of State under-ground total	5. Man-days worked	6. Percentage of State under-ground total	7. Man-hours worked	8. Percentage of State under-ground total	9. Average days active per under-ground employee	10. Average hours active per under-ground employee	11. Workday average length (hours)	12. Production Per man-hour under-ground (tons)	13. Number of men killed	14. Number of men injured (disabled) 1 day or more	15. Fatality rate per million man-hours underground	16. Injury rate per million man-hours underground in man-hours worked	17. Production (short tons)	18. Percentage of State under-ground total	19. Deaths per million tons underground	20. Injuries per million tons underground
Alabama	81	31.3	224	1.1	35,481	0.7	251,338	0.7	158	1,122	7.08	0.430	7	5	27.85	19.89	108,077	0.6	64.77	46.26
Arkansas	38	37.6	104	3.6	15,786	3.0	111,243	3.0	152	1,070	7.05	0.419	1	1	8.99	46,613	2.5	21.45	21.45	
Colorado	105	44.7	251	3.8	49,365	3.2	355,939	3.3	197	1,430	7.27	0.509	1	7	2.79	182,842	2.3	5.47	38.28	
Illinois	126	26.9	351	1.4	49,702	1.9	338,665	1.0	142	1,022	7.22	0.669	4	8	11.15	22,29	168,378	1.3	23.76	47.51
Indiana	59	36.4	164	2.8	27,445	2.1	203,948	2.2	167	1,243	7.43	0.528	7	7	107.536	1.0	14.54	65.08	14.54	
Iowa	56	23.6	159	4.2	69,033	3.5	169,869	3.6	145	1,063	7.36	0.413	1	14	5.89	82,42	70,232	1.0	19.38	19.38
Kansas	17	27.4	48	4.2	7,992	2.9	54,789	2.8	160	1,141	7.12	0.373	1	1	18.45	20,457	3.3	12.55	48.88	
Kentucky	155	25.0	414	7.3	21,212	5.6	451,654	5.6	148	1,091	7.38	0.532	3	6	6.64	24,114	5.1	12.49	16.65	
Maryland	60	54.1	143	7.3	24,897	5.2	175,725	5.2	105	1,229	7.06	0.588	1	6	5.69	99,738	5.1	10.03	60.16	
Missouri	42	29.2	113	4.7	14,187	2.9	105,690	2.9	126	935	7.45	0.290	2	2	30,682	2.6	2.6	34.01	22.67	
Montana	89	20.5	79.5	18.8	27,336	12.1	208,617	12.8	136	1,023	7.50	0.421	3	2	14.31	9.54	88,270	4.2	24.772	1.5
New Mexico	24	42.9	65	4.4	11,130	2.9	84,123	3.2	171	1,307	7.63	0.292	2	2	10.7	24,772	1.5	1.5	88.58	
North Dakota	64	69.6	142	27.1	19,942	18.6	165,000	19.3	140	1,092	7.77	0.576	8	8	51.81	27,32	89,307	2.1	14.18	46.60
Ohio	233	44.8	623	3.9	117,725	3.0	84,850	3.1	189	1,351	7.15	0.586	7	23	8.32	493,523	2.1	14.18	65.41	
Oklahoma	38	34.2	116	6.6	17,645	4.9	123,975	4.9	152	1,069	7.03	0.370	3	3	3.5	24,20	45,887	3.5	3.5	3.5
Pennsylvania (bitumi-nous)	455	33.0	1,181	1.2	246,989	1.0	1,764,920	1.0	209	1,494	7.15	0.624	6	53	3.40	30,03	1,102,067	.8	5.44	48.09
Tennessee	36	32.9	176	2.2	29,109	1.5	207,754	1.5	163	1,180	7.14	0.555	3	10	14.44	115,333	1.4	26.00	26.00	
Utah	24	38.1	64	2.7	9,676	1.5	71,125	1.6	151	1,116	7.38	0.696	1	10	14.00	140,01	49,692	.9	20.12	20.12
Virginia	39	25.0	120	7.7	21,841	5.5	160,803	5.6	182	1,340	7.36	0.459	3	1	18.66	73,835	4.4	40.63	13.54	
Washington	19	37.3	48	2.8	8,283	1.8	56,487	1.8	173	1,198	6.94	0.537	1	1	17.40	30,896	1.6	32.37	32.37	
West Virginia	228	24.9	576	6.6	88,267	4.4	636,994	4.4	153	1,104	7.21	0.672	1	12	18.87	427,666	3.3	28.06	28.06	
Wyoming	61	61.1	135	3.5	20,844	2.2	151,574	2.3	154	1,123	7.27	0.558	1	7	6.60	84,535	1.0	11.83	82.81	

RELATIVE STANDING OF COAL STATES ACCORDING TO ACCIDENT RATES FOR MAIN CAUSES OF ACCIDENTS, 1938-42

Falls of roof and coal, haulage, and gas or dust explosions continue to be the principal causes of fatal accidents among coal miners.

The relative standing of the various coal-producing States in these main causes of fatalities is shown in table 66, covering a 5-year period 1938-42. To obtain enough cases to be representative of each State, a 5-year period was selected, as the number of fatalities from these causes in some States is so small that the record for a single year might not be typical.

The fatality rate for the United States is represented in table 66 by an index number of 100. The corresponding fatality rate for each State is represented by an index number showing the percentage relationship of the State fatality rate to that of the United States. Similar information based upon nonfatal lost-time injuries is given in table 67.

RELATIVE STANDING OF COAL STATES

TABLE 66.—*Index numbers, comparing coal-mine fatality rates per million man-hours underground, for different States, with the average rate for the United States, 1938-42*

Falls of roof and coal		Haulage (underground)		Gas or dust explosions		Miscellaneous (underground including shaft)		Total underground (including shaft)	
State	Index No.	State	Index No.	State	Index No.	State	Index No.	State	Index No.
Other States 1		Maryland		Other States 1		Other States 1		Other States 1	
Alaska		Michigan		Maryland		Texas		Texas	32
North Dakota	21	Kansas		Pennsylvania (bituminous)		Pennsylvania (bituminous)		Pennsylvania (bituminous)	
Texas	29	New Mexico		Montana		West Virginia		Maryland	57
Washington	35	North Dakota		Michigan		Virginia		Missouri	63
Pennsylvania (bituminous)		Montana		Alaska		North Dakota		Michigan	65
Ohio		Texas		North Dakota		Missouri		Michigan	
Missouri		Missouri	15	Tennessee		Tennessee		Alabama	78
Alabama	70	Missouri	26	Other States 1		United States		North Dakota	83
Michigan	72	New Mexico	49	Tennessee		(0.280)		Kansas	98
Maryland	78	Kansas	60	Tennessee				Tennessee	99
Wyoming	90	Pennsylvania (bituminous)	74	Iowa	16				
		Virginia	74	Missouri	23				
		Alabama	80	Missouri	23				
United States (1.068)	100	Pennsylvania (anthracite)	92	Utah	29	New Mexico			
West Virginia	100	Iowa	92	Utah	29	Ohio			
Ohio	100	Arkansas	93	Utah	33	Ohio			
Tennessee	110	United States (0.362)	93	Illinois	37	Washington			
Kentucky	112		93	Pennsylvania (anthracite)	42	Kentucky			
Pennsylvania (anthracite)	116		93	Pennsylvania (bituminous)	53	Texas			
Iowa	118	Kentucky	110	Alabama	63	Alabama			
Kansas	119	Tennessee	110	Kentucky	75	Wyoming			
Montana	121	Ohio	115	Wyoming	87	Pennsylvania (anthracite)			
Illinois	123	West Virginia	133	Wyoming	87	Missouri			
Colorado	125	Illinois	136	United States (0.231)	100	Missouri			
Oklahoma	130	Colorado	146	West Virginia		Colorado			
Montana	136	Illinois	146	West Virginia		Michigan			
Utah	147	Oklahoma	148	West Virginia		Kansas			
Colorado	147	Montana	150	Indiana	189	Illinois			
New Mexico	157	Montana	150	Indiana	196	Utah			
Indiana	160	Wyoming	171	Iowa	373	Utah			
Kansas	165	Wyoming	171	Ohio	402	Ohio			
		Washington	171	Ohio	402	Ohio			
		Indiana	181	Arkansas	636	Indiana			
		Arkansas	225	Arkansas	680	Arkansas			
		Utah		Arkansas		Arkansas			
				North Dakota		North Dakota			
				Alaska		Alaska			

¹ Includes Arizona, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

TABLE 67.—*Index numbers, comparing coal-mine nonfatal rates per million man-hours underground, for different States, with the average rate for the United States, 1938-42*

Falls of roof and coal		Haulage (underground)		Gas or dust explosions		Miscellaneous (underground including shaft)		Total underground (including shaft)	
State	Index No.	State	Index No.	State	Index No.	State	Index No.	State	Index No.
Alabama	61	Alabama	31	Wyoming	31	Other States 1	32	Missouri	45
Kansas	65	Other States 1	31	Missouri	39	Other States 1	49	Oklahoma	49
Missouri	66	Missouri	33	Montana	43	Oklahoma	52	Wyoming	53
Wyoming	70	Wyoming	38	North Dakota	45	Kansas	53	Kansas	53
Pennsylvania (bituminous)	74	Alaska	39	Texas	49	Alabama	53	Alabama	53
Oklahoma	76	Kansas	43	Alaska	50	Tennessee	50	Tennessee	66
Tennessee	80	Kansas	51	Other States 1	50	Tennessee	52	Arkansas	72
Ohio	81	Iowa	71	Pennsylvania (bituminous)	52	Arkansas	52	Ohio	77
North Dakota	85	Texas	75	Pennsylvania (bituminous)	25	Virginia	66	Pennsylvania (bituminous)	72
Indiana	86	Alabama	79	Iowa	26	Kentucky	72	Pennsylvania (bituminous)	78
Other States 1	96	Ohio	79	New Mexico	44	Pennsylvania (bituminous)	73	Virginia	84
United States (24,107)	100	Tennessee	83	Michigan	50	Michigan	73	Kentucky	87
West Virginia	98	Pennsylvania (bituminous)	51	Colorado	51	Ohio	73	North Dakota	87
West Virginia	100	Pennsylvania (anthracite)	96	West Virginia	56	West Virginia	80	North Dakota	92
Kentucky	100	Virginia	98	Kentucky	59	Iowa	81	West Virginia	92
Montana	100	Alabama	98	Kentucky	62	West Virginia	81	West Virginia	92
Virginia	100	United States (18,065)	100	Utah	63	West Virginia	81	West Virginia	92
Michigan	115	Tennessee	100	Utah	87	United States (88,111)	100	West Virginia	92
Pennsylvania (anthracite)	131	Tennessee	100	Maryland	66	Montana	88	West Virginia	92
Colorado	134	Virginia	104	New Mexico	70	Montana	94	West Virginia	92
Arkansas	135	Illinois	98	Colorado	98	Montana	99	West Virginia	92
Maryland	135	Maryland	106	United States (45,517)	100	Montana	100	West Virginia	92
Illinois	139	West Virginia	108	United States (0,422)	100	Montana	100	West Virginia	92
Alaska	140	New Mexico	108	Montana	102	Montana	102	West Virginia	92
Utah	162	Montana	111	Indiana	205	Indiana	105	West Virginia	92
Iowa	171	North Dakota	111	Michigan	264	Michigan	108	West Virginia	92
Texas	191	Michigan	116	Indiana	271	Utah	110	West Virginia	92
Washington	217	Illinois	119	Pennsylvania (anthracite)	294	Illinois	115	West Virginia	92
New Mexico	217	Illinois	133	Oklahoma	298	Illinois	115	West Virginia	92
		Indiana	135	Alabama	321	Illinois	143	West Virginia	92
		Arkansas	162	Washington	356	Illinois	146	West Virginia	92
		Utah	217	Arkansas	217	Pennsylvania (anthracite)	188	West Virginia	92

¹ Includes Arizona, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

Although records of the quantity of coal produced in the United States have been collected annually by the Federal Government for many years, not until 1911 were uniform records obtained that showed the number of miners killed by accidents in the mines, and not until 1930 did the Federal Government begin to assemble uniform data relating to nonfatal injuries to men engaged in mining coal. Before the Federal Government began to collect uniform statistics showing causes of accidents and number of miners killed and injured at coal mines, certain State governments had gathered data concerning accidents at mines within their borders. Figures for one State usually were not comparable with those for another, because lack of uniformity in State laws often resulted in differences in the classes of mines and classes of accidents for which reports were collected. Records of different States were reasonably but not completely comparable for fatal accidents, but wide differences in the definition of a nonfatal injury in the State laws virtually destroyed the value of the figures for making State-to-State comparisons of frequency of nonfatal accidents in proportion to number of men employed. Moreover, the States had no uniform procedure for determining the volume of employment or exposure to mining hazards, hence comparable injury rates for all States could not be computed upon the basis of State records.

As already stated, uniform records for all fatal and nonfatal lost-time accidents at coal mines in the various States begin with 1930. In that year the Bureau of Mines collected reports of fatal and nonfatal accidents directly from mining companies in all States on standard forms prepared by the Bureau. Such reports made it possible to compile, for the first time, uniform and comparable figures showing the number and causes of nonfatal injuries in the entire coal-mining industry of the United States and to relate the number of accidents to the number of employees and man-hours worked. The reports supplied valuable information to supplement the fatal accident reports that previously had been and still are being received monthly by the Bureau of Mines from the official mine inspectors of all coal-producing States. Thus, through the cooperation of mining companies and State mine inspectors, the Bureau can supply industry and others interested with reliable and comparable accident rates for all mines or for any group or class of mines as a basis for the promotion of safety programs and as a yardstick for measuring the effectiveness of accident-prevention work.

With the passage of the Federal Coal-Mine Inspection Law on May 7, 1941, the Bureau prepared a report form on which all fatal and nonfatal lost-time accidents were to be reported directly to the Bureau of Mines.

Uniform statistics covering the number and causes of fatal and nonfatal injuries in and about anthracite and bituminous-coal mines from 1938 to 1942, inclusive, are presented in table 69.

Table 68 shows the number and principal causes of fatal accidents at bituminous-coal mines from 1906 to 1942. The first 5 years covered by the table relate to a period preceding organization of the statistical work of the Bureau of Mines. Data for those years were extracted from published reports of State mine inspectors for all States having a mining department. Statistics for all years after 1910 were furnished directly to the Bureau of Mines by inspectors in States having a mine-inspection department and by mining companies in States having no inspection ser-

vice. As indicated, data for the years beginning with 1930 were received from mining companies in all States and those for fatalities from State inspectors also. The data from the inspectors were received monthly, and those from the companies were received after the close of the year. The monthly reports are necessarily subject to revision, because accidents occurring during a given month may not prove fatal until after the monthly report has been made. The two sources of information furnish what is probably the most complete count that can be made of fatal accidents in coal mining. Table 70 is a companion to table 68 and shows the fatality rates that result when the number of fatalities given in table 68 is related to the number of man-hours of employment at bituminous-coal mines.

Tables 71 to 85 summarize data on accidents and employment at coal mines over a period of years.

TABLE 68.—*Bituminous-coal mines: Fatalities, by principal causes, 1906-42*¹

Year	Roof and coal	Haul- age	Gas or dust explosions	Explo- sives	Elec- tricity	All other under- ground	Total under- ground	Shaft	Under- ground and shaft	Sur- face ²	Grand total
1906-----	826	192	219	115	52	27	1,431	73	1,504	77	1,581
1907-----	911	260	911	134	49	99	2,364	59	2,423	111	2,534
1908-----	829	229	320	109	53	97	1,637	53	1,690	77	1,767
1909-----	975	240	264	122	52	312	1,965	37	2,002	73	2,075
1910-----	1,061	295	477	113	76	46	2,068	60	2,128	92	2,220
1911-----	1,007	294	331	72	92	44	1,840	31	1,871	86	1,957
1912-----	943	296	255	70	75	44	1,683	39	1,722	96	1,818
1913-----	1,007	344	464	63	79	82	2,039	32	2,071	96	2,167
1914-----	903	309	305	56	86	55	1,714	41	1,755	104	1,859
1915-----	818	269	270	76	85	35	1,553	30	1,583	100	1,683
1916-----	850	330	183	60	81	49	1,553	34	1,587	84	1,671
1917-----	965	433	319	55	76	60	1,908	44	1,952	162	2,114
1918-----	1,052	446	103	85	77	76	1,839	41	1,880	149	2,029
1919-----	878	310	149	57	64	79	1,537	39	1,576	112	1,688
1920-----	937	342	124	82	70	72	1,627	34	1,661	120	1,781
1921-----	782	275	62	74	76	71	1,340	25	1,365	83	1,448
1922-----	780	286	298	55	71	56	1,546	36	1,582	102	1,684
1923-----	948	347	330	66	70	64	1,825	31	1,856	97	1,953
1924-----	846	299	486	46	72	56	1,805	17	1,822	84	1,906
1925-----	910	310	302	49	80	76	1,727	30	1,757	77	1,834
1926-----	994	384	373	46	94	62	1,953	27	1,980	85	2,065
1927-----	924	309	187	48	94	70	1,632	22	1,654	88	1,742
1928-----	825	313	347	41	82	54	1,662	13	1,675	54	1,729
1929-----	922	349	168	45	75	56	1,615	17	1,632	73	1,705
1930-----	856	285	234	31	63	68	1,537	9	1,546	73	1,619
1931-----	624	194	68	15	62	44	1,007	19	1,026	54	1,080
1932-----	466	146	162	21	42	45	882	13	895	63	958
1933-----	458	162	27	24	46	45	762	10	772	61	833
1934-----	539	168	40	21	53	64	885	9	894	64	958
1935-----	524	198	26	31	43	70	892	13	905	63	968
1936-----	624	202	41	31	44	81	1,023	11	1,034	64	1,098
1937-----	606	244	116	31	52	64	1,113	15	1,128	70	1,198
1938-----	474	142	84	23	38	53	814	9	823	57	880
1939-----	500	155	43	15	49	56	818	5	823	44	867
1940-----	520	192	292	28	30	62	1,124	12	1,136	68	1,204
1941-----	574	191	89	24	42	65	985	9	994	78	1,072
1942-----	592	241	148	16	51	89	1,137	6	1,143	102	1,245

¹ Figures for 1906-9 cover only States having complete records of fatal accidents. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous industry.

² Includes open-cut operations.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

TABLE 69.—Number of fatalities and nonfatal injuries at coal mines in the United States for the years 1938-42

FATALITIES

Cause of accident	Bituminous				Anthracite				Total						
	1938	1939	1940	1941	1942	1938	1939	1940	1941	1942	1938	1939	1940	1941	1942
Underground:															
Falls of roof or face.....	474	500	520	574	512	128	121	105	100	132	602	621	625	674	724
Mine cars and locomotives.....	142	155	192	101	241	23	27	36	27	37	165	182	228	218	278
Explosions of gas or coal dust.....															
Local explosions.....	24	15	16	23	21	2	3	5	8	9	26	18	21	31	30
Major explosions.....	60	28	276	66	127	18	11	17	8	12	78	28	276	66	127
Explosives.....	23	15	28	24	16	11	17	12	13	13	34	32	36	36	29
Electricity.....	38	49	30	42	51	2	1	2	1	6	40	51	37	47	57
Machinery (cutters, loaders, etc.).....	27	37	40	39	49	—	—	—	—	1	27	38	42	39	50
Minefires.....	3	5	5	4	3	—	—	—	—	5	3	7	4	8	8
Miscellaneous.....	23	19	17	22	37	17	14	4	14	6	40	33	21	36	43
Total underground.....	818	1,124	985	1,137	201	185	169	166	209	1,015	1,003	1,293	1,151	1,346	1,346
Shaft.....	9	12	9	6	3	3	6	6	1	12	11	15	15	15	15
Stripping or open-cut mining ¹	18	22	34	31	9	7	5	6	4	27	16	27	40	35	35
Surface ² :															
Haulage.....	14	18	14	12	32	4	2	3	8	6	18	20	17	20	38
Machinery.....	9	4	11	13	14	2	1	1	3	3	11	5	12	14	17
Miscellaneous.....	16	13	21	19	25	6	10	3	7	3	22	23	24	26	28
Total surface.....	39	35	46	44	71	12	13	7	16	12	51	48	53	60	83
Grand total.....	880	887	1,204	1,072	1,245	225	211	184	194	226	1,105	1,078	1,388	1,266	1,471

TABLE 68.—Number of fatalities and nonfatal injuries at coal mines in the United States for the years 1938–42—Continued

NONFATAL INJURIES

Cause of accident	Bituminous						Anthracite						Total		
	1938	1939	1940	1941	1942	1938	1939	1940	1941	1942	1938	1939	1940	1941	1942
Underground:															
Pulls of roof or face.....	10,548	10,804	11,855	12,452	13,224	3,626	2,903	2,671	2,758	2,866	14,174	13,507	14,524	15,190	15,890
Mine ears and locomotives.....	7,836	8,082	9,368	9,833	11,581	1,408	1,673	1,632	1,737	1,866	9,245	9,755	10,900	11,570	13,447
Explosives.....	143	95	206	150	114	139	113	132	119	72	282	208	338	268	186
Electricity.....	253	216	292	245	318	176	200	153	134	108	429	416	445	379	426
Machinery (cutters, loaders, etc.).....	574	575	737	931	151	211	123	94	141	691	785	878	831	1,072	1,072
Mine fires.....	2,738	3,081	3,722	4,457	4,911	472	684	707	775	720	3,210	3,745	4,429	5,322	5,631
Miscellaneous.....	11,561	12,098	13,402	14,256	17,105	6,884	7,622	8,426	9,116	8,426	19,720	21,828	23,372	25,793	25,793
Total underground.....	33,628	34,758	39,605	42,148	48,198	12,857	13,387	13,744	14,713	14,295	46,485	48,145	53,349	56,861	62,463
Shaft.....	64	64	91	70	69	28	52	39	39	39	92	116	130	109	108
Stripping or open-cut mining ¹	1,036	1,133	1,339	1,450	1,460	196	183	173	173	162	1,232	1,316	1,512	1,651	1,622
Surface: ²															
Haulage.....	556	651	701	753	893	241	464	480	407	392	797	1,115	1,181	1,160	1,285
Machinery.....	210	251	363	320	345	180	229	227	217	198	330	480	537	543	543
Miscellaneous.....	1,300	1,687	1,895	1,896	2,228	1,018	1,156	1,124	1,251	1,315	2,318	2,843	3,019	3,147	3,543
Total surface.....	2,066	2,589	2,959	2,969	3,466	1,439	1,849	1,831	1,875	1,905	3,505	4,438	4,790	4,844	5,371
Grand total.....	36,794	38,544	43,994	46,637	53,133	14,520	15,471	15,787	16,828	16,371	51,314	54,015	59,781	63,465	69,564

¹ Includes dredge operations at Pennsylvania anthracite operations.² Includes washery operations at Pennsylvania anthracite operations.

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TABLE 70.—Bituminous-coal mines: *Fatality rates¹ by principal causes, per million man-hours,² 1906-42*

Year	Roof and coal	Haul- age	Gas or dust explo- sions ³	Explo- sives	Elec- tricity	All other under- ground	Total under- ground	Shaft	Under- ground and shaft	Sur- face ³	Grand total
1906	1.113	0.259	0.295	0.155	0.070	0.036	1.928	0.098	2.026	0.666	1.843
1907	1.025	.293	1.025	.151	.055	.111	2.660	.086	2.726	.802	2.467
1908	1.145	.316	.442	.150	.073	.134	2.260	.073	2.333	.682	2.111
1909	1.166	.287	.316	.146	.062	.373	2.350	.044	2.394	.560	2.147
1910	1.167	.324	.525	.124	.084	.051	2.275	.066	2.341	.650	2.113
Ave., 1906-10.	1.1222	.2965	.5343	.1446	.0688	.1417	2.3080	.0688	2.3768	.6731	2.1472
1911	1.140	.333	.375	.081	.104	.050	2.083	.035	2.118	.621	1.915
1912	1.028	.322	.278	.076	.082	.048	1.834	.043	1.877	.670	1.714
1913	1.019	.348	.470	.064	.080	.083	2.064	.032	2.096	.618	1.895
1914	1.060	.363	.358	.068	.101	.064	2.012	.048	2.060	.797	1.892
1915	.967	.318	.319	.090	.101	.041	1.836	.035	1.871	.760	1.722
1916	.900	.349	.194	.063	.086	.052	1.644	.036	1.680	.486	1.495
1917	.953	.428	.315	.054	.075	.059	1.884	.044	1.928	.759	1.724
1918	1.043	.442	.102	.084	.076	.076	1.823	.040	1.863	.616	1.622
1919	1.095	.387	.186	.071	.080	.098	1.917	.048	1.965	.628	1.722
1920	.999	.364	.132	.087	.075	.077	1.734	.036	1.770	.617	1.572
1921	1.148	.404	.091	.109	.112	.104	1.968	.037	2.005	.717	1.818
1922	1.169	.429	.447	.082	.106	.084	2.317	.054	2.371	.843	2.137
1923	1.092	.400	.380	.076	.081	.074	2.103	.038	2.139	.642	1.917
1924	1.150	.407	.661	.063	.098	.076	2.455	.023	2.478	.693	2.225
1925	1.139	.388	.378	.061	.100	.095	2.161	.038	2.199	.596	1.975
1926	1.120	.432	.420	.052	.106	.070	2.200	.030	2.230	.591	2.002
1927	1.168	.391	.236	.061	.119	.088	2.063	.028	2.091	.696	1.899
1928	1.113	.423	.468	.055	.111	.073	2.243	.017	2.260	.462	2.015
1929	1.197	.453	.218	.059	.097	.073	2.097	.022	2.119	.596	1.910
1930	1.321	.440	.361	.048	.097	.105	2.372	.014	2.386	.715	2.158
1931	1.223	.380	.133	.029	.122	.086	1.973	.037	2.010	.631	1.812
1932	1.153	.361	.401	.052	.104	.111	2.182	.032	2.214	.837	1.998
1933	.966	.342	.057	.050	.097	.095	1.607	.021	1.628	.676	1.476
1934	1.086	.338	.081	.042	.107	.129	1.783	.018	1.801	.676	1.621
1935	1.080	.408	.054	.064	.089	.144	1.838	.027	1.865	.676	1.673
1936	1.115	.361	.073	.055	.079	.145	1.828	.019	1.847	.581	1.639
1937	1.072	.432	.205	.055	.092	.114	1.970	.026	1.996	.633	1.773
1938	1.136	.340	.201	.055	.091	.127	1.950	.022	1.972	.648	1.741
1939	1.092	.338	.094	.033	.107	.122	1.786	.011	1.797	.454	1.562
1940	1.007	.372	.566	.054	.058	.120	2.177	.203	2.200	.620	1.923
1941	1.019	.339	.158	.043	.075	.115	1.749	.016	1.765	.610	1.551
1942	.953	.388	.238	.026	.082	.143	1.830	.010	1.839	.674	1.611

¹ Rates for underground based on underground man-hours. Rates for surface based on surface and open-cut man-hours. Rates for grand total based on total man-hours.

² Figures for 1906-9 cover only States having complete records of fatal accidents. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous industry.

³ Includes open-cut operations.

TABLE 71.—Bituminous-coal mines: *Man-hours of employment, 1906-42¹*

Year	Underground	Surface ²	Total	Year	Underground	Surface ²	Total
1906	742,408,300	115,654,500	858,062,800	1921	680,887,700	115,781,500	796,669,200
1907	888,859,500	138,469,100	1,027,328,600	1922	667,274,100	120,929,300	788,203,400
1908	724,269,700	112,828,800	837,098,500	1923	867,872,400	151,059,700	1,018,932,100
1909	836,278,800	130,277,900	966,556,700	1924	735,281,900	121,232,800	856,514,700
1910	909,101,400	141,622,500	1,050,723,900	1925	799,094,000	129,283,400	928,377,400
1911	883,488,300	138,458,400	1,021,946,700	1926	887,716,300	143,931,300	1,031,647,600
1912	917,461,500	143,307,800	1,060,769,300	1927	791,162,100	126,393,300	917,555,400
1913	988,063,400	155,217,500	1,143,280,900	1928	741,070,800	116,988,700	858,059,500
1914	852,064,000	130,465,100	982,529,100	1929	770,118,700	122,427,800	892,546,500
1915	845,919,300	131,548,600	977,467,900	1930	647,986,350	102,162,855	750,149,205
1916	944,417,300	172,970,500	1,117,387,800	1931	510,366,475	85,613,086	595,979,561
1917	1,012,590,000	213,332,600	1,225,922,600	1932	404,181,692	75,265,639	479,447,331
1918	1,008,932,700	242,047,000	1,250,979,700	1933	474,126,679	90,298,487	564,425,166
1919	801,920,300	178,409,200	980,329,500	1934	496,437,114	94,021,483	591,058,597
1920	938,380,400	194,357,400	1,132,737,800	1935	485,341,496	93,169,704	578,511,200

Footnotes on p. 102.

TABLE 71.—*Bituminous-coal mines: Man-hours of employment, 1906-42*¹—Continued

Year	Underground	Surface ²	Total	Year	Underground	Surface ²	Total
1936.....	559,733,518	110,167,018	669,900,536	1941.....	563,235,987	127,813,401	691,049,388
1937.....	565,070,730	110,497,465	675,568,195	1942.....	621,472,377	151,356,615	772,828,992
1938.....	417,345,108	87,971,053	505,316,161				
1939.....	457,964,957	97,019,393	554,984,350				
1940.....	516,345,602	109,627,953	625,973,555				

¹ Figures for 1906-9 cover only States having complete records of fatal accidents. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous industry. The number of man-hours for years preceding 1930, not being reported specifically by mining companies, has been estimated for each State and for the United States in the following manner: The average number of employees at 8-hour mines, 9-hour mines, etc., was multiplied by the reported number of hours constituting a standard shift, thus giving the number of man-hours worked per day; the latter figure was multiplied by the average number of workdays on which all mines within a given State or in the United States were in operation during the calendar year, thus giving an estimate of the number of man-hours worked during the year. (See Bureau of Mines Bull. 233, Coal-Mine Fatalities in the United States, 1926, p. 64.)

² Includes open-cut operations.

TABLE 72.—*Data for bituminous and anthracite mines, by years, 1911-42, inclusive, showing 5-year periods*

Year	Production	Em- ployees	Ac- tive days	Man-shifts	Man-hours ¹	Killed	Killed per mil- lion man- hours	Killed per mil- lion tons	Ton per man- hour	Hours per man per year
1911.....	496,371,126	728,348	220	160,236,560	1,302,108,000	2,656	2.04	5.35	0.381	1,788
1912.....	534,466,580	722,662	225	162,598,950	1,422,694,000	2,419	1.70	4.53	.376	1,960
1913.....	570,048,125	747,644	238	177,939,272	1,549,294,000	2,785	1.80	4.89	.368	2,072
1914.....	513,525,477	763,185	207	157,979,295	1,378,437,000	2,454	1.78	4.78	.373	1,806
1915.....	531,619,487	734,008	209	153,479,495	1,339,279,000	2,269	1.69	4.27	.397	1,825
1911-15	2,646,030,795	3,695,847	220	812,233,572	6,991,812,000	12,583	1.80	4.76	.378	1,892
1916.....	590,098,175	720,971	235	169,729,816	1,452,788,000	2,226	1.53	3.77	.406	2,015
1917.....	651,402,374	757,317	251	190,399,680	1,575,863,000	2,696	1.71	4.14	.413	2,081
1918.....	678,211,904	762,426	258	196,491,984	1,599,854,000	2,580	1.61	3.80	.424	2,098
1919.....	553,952,259	776,569	209	162,665,023	1,309,155,000	2,323	1.77	4.19	.423	1,686
1920.....	658,264,932	784,621	230	180,384,942	1,451,162,000	2,272	1.57	3.45	.454	1,850
1916-20	3,131,929,644	3,801,904	237	899,671,445	7,388,822,000	12,097	1.64	3.86	.424	1,943
1921.....	506,395,401	823,253	173	142,358,691	1,145,738,000	1,995	1.74	3.94	.442	1,392
1922.....	476,951,121	844,807	144	121,516,822	979,995,000	1,984	2.03	4.16	.487	1,160
1923.....	657,903,671	862,536	195	168,193,738	1,356,089,000	2,462	1.82	3.74	.485	1,572
1924.....	571,613,400	779,613	192	149,968,980	1,207,475,000	2,402	1.99	4.20	.473	1,549
1925.....	581,869,890	748,805	192	144,068,232	1,160,334,000	2,234	1.93	3.84	.501	1,550
1921-25	2,794,733,483	4,059,014	179	726,106,463	5,849,631,000	11,077	1.89	3.96	.478	1,441
1926.....	657,804,437	759,033	221	167,827,732	1,352,840,000	2,518	1.86	3.83	.486	1,782
1927.....	597,858,916	759,177	199	150,919,350	1,219,079,000	2,231	1.83	3.73	.490	1,606
1928.....	576,093,039	682,831	206	140,604,141	1,135,543,000	2,176	1.92	3.78	.507	1,663
1929.....	608,816,788	654,494	221	144,463,453	1,168,551,000	2,187	1.87	3.59	.521	1,785
1930.....	536,911,136	644,006	192	123,893,697	1,002,691,781	2,063	2.06	3.84	.535	1,557
26-30	2,977,484,316	3,499,541	208	727,708,373	5,878,705,000	11,175	1.90	3.75	.506	1,680
1931.....	441,750,978	589,705	168	99,264,019	804,394,130	1,463	1.82	3.31	.549	1,364
1932.....	359,565,093	527,623	149	78,745,344	636,391,330	1,207	1.90	3.36	.565	1,206
1933.....	383,171,877	523,182	171	89,225,732	719,148,559	1,064	1.48	2.78	.533	1,375
1934.....	416,536,313	566,426	184	103,940,220	769,430,678	1,226	1.59	2.94	.541	1,358
1935.....	424,632,005	565,202	180	101,571,654	732,607,581	1,242	1.70	2.92	.580	1,296
1931-35	2,025,656,266	2,772,138	171	472,746,969	3,661,972,278	6,202	1.69	3.06	.553	1,321
1936.....	491,138,762	584,582	197	114,891,493	826,386,460	1,342	1.62	2.73	.594	1,414
1937.....	498,792,928	589,856	195	114,871,072	811,422,146	1,413	1.74	2.83	.615	1,376
1938.....	395,696,632	541,528	163	88,275,518	621,168,448	1,105	1.78	2.79	.637	1,147
1939.....	447,976,639	529,375	179	96,489,871	678,195,593	1,078	1.59	2.41	.661	1,257
1940.....	512,808,119	533,267	199	106,238,918	748,420,870	1,388	1.85	2.71	.685	1,403
1936-40	2,346,413,080	2,788,608	187	520,766,872	3,685,593,517	6,326	1.72	2.70	.637	1,322
1941.....	569,884,209	546,692	213	116,443,889	821,156,793	1,266	1.54	2.22	.694	1,502
1942.....	640,020,862	530,861	243	129,135,607	910,388,986	1,471	1.62	2.30	.703	1,715

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TABLE 73.—*Coal-mine fatality rates for the United States, 1870–1942*¹
[Includes underground and surface accidents]

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1870				5.93			13.47	5.93	
1871				5.60			10.86	5.60	
1872				4.98			9.20	4.98	
1873				5.46			10.06	5.46	
1874	2.11		8.88	4.33			9.31	3.87	
1875	1.60		4.93	3.37			10.50	3.06	
Average				4.58			9.94	4.30	
									9.72
1876	1.00		4.29	3.22			9.96	2.83	
1877	2.17		5.90	2.90			7.56	2.77	
1878	1.86		3.17	2.92			8.62	2.62	
1879	2.02		3.39	3.81			8.67	3.30	
1880	1.43		2.95	2.75			7.05	2.21	
Average	1.66		3.42	3.12			8.31	2.72	
									6.68
1881	1.67		2.75	3.59	4.87		8.55	2.93	
1882	1.95		3.63	3.54	4.87		8.29	2.75	
1883	3.09		4.99	3.53	4.56		8.40	3.34	
1884	2.26		4.11	3.28	5.12		8.94	2.80	
1885	1.68		3.48	3.58	5.26		9.36	2.58	
Average	2.12		3.88	3.50	4.94		8.72	2.85	
									6.09
1886	1.85		3.89	2.70	4.13		7.12	2.25	
1887	1.55		3.08	2.95	4.25		7.46	2.20	
1888	2.23		4.38	2.98	4.10		7.81	2.55	
1889	1.77		3.44	3.11	4.81		8.45	2.36	
1890	2.15	2.85	3.56	3.00	4.50		8.13	2.52	3.50
Average	1.94		3.68	2.96	4.36		7.82	2.39	
									5.19
1891	2.86	3.85	4.94	3.39	5.01		8.45	3.08	4.30
1892	3.05	4.17	5.06	3.24	4.91		7.97	3.12	4.42
1893	2.26	3.32	4.07	3.42	5.21		8.43	2.70	4.03
1894	2.26	3.96	4.65	3.38	5.34		8.57	2.67	4.50
1895	3.09	4.78	5.46	2.95	4.51		7.26	3.04	4.68
Average	2.69	4.02	4.84	3.27	4.99		8.12	2.91	4.38
									5.87
1896	2.51	3.92	4.45	3.36	5.79		9.22	2.85	4.62
1897	2.38	3.64	3.99	2.82	5.64		8.04	2.55	4.27
1898	2.64	3.75	4.06	2.82	5.57		7.70	2.71	4.28
1899	3.05	3.91	4.25	3.30	5.72		7.63	3.14	4.40
1900	3.74	4.79	5.32	2.85	5.15		7.16	3.44	4.87
Average	2.90	4.06	4.46	3.03	5.58		7.94	2.95	4.50
									5.34
1901	3.16	4.21	4.74	3.53	5.40		7.60	3.27	4.54
1902	3.93	5.13	5.58	2.03	5.25		7.25	3.38	5.15
1903	3.47	4.63	5.07	3.44	5.01		6.94	3.46	4.72
1904	3.35	4.98	5.26	3.82	5.73		8.13	3.48	5.17
1905	3.53	5.02	5.14	3.89	5.43		8.29	3.63	5.14
Average	3.49	4.81	5.17	3.36	5.38		7.69	3.45	4.95
									5.67
1906	3.38	4.76	4.72	3.43	5.28		7.81	3.39	4.87
1907	4.99	6.40	6.46	4.23	5.77		8.27	4.81	6.25
1908	3.50	5.44	5.42	3.89	5.84		8.14	3.60	5.54
1909	4.15	5.58	5.46	3.40	4.79		6.99	3.96	5.35
1910	4.00	5.53	5.32	3.55	4.65		7.11	3.89	5.30
Average	4.01	5.57	5.50	3.70	5.25		7.67	3.94	5.89
1911	3.53	5.02	4.82	4.02	4.90		7.73	3.65	4.97
1912	3.31	4.46	4.04	3.45	4.48		7.12	3.35	4.46
1913	3.79	4.90	4.53	3.52	4.10		6.75	3.73	4.70
1914	3.19	4.90	4.40	3.31	4.05		6.55	3.22	4.66
1915	3.02	4.47	3.80	3.32	4.33		6.58	3.09	4.44
Average	3.27	4.75	4.31	3.52	4.37		6.95	3.40	4.65
									4.76

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

TABLE 73.—*Coal-mine fatality rates for the United States, 1870–1942*¹—Continued
 [Includes underground and surface accidents]

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1916.....	2.98	3.88	3.33	3.47	4.11	6.34	3.09	3.93	3.77
1917.....	3.50	4.33	3.83	3.77	3.98	5.84	3.56	4.25	4.14
1918.....	3.30	3.97	3.50	3.75	3.83	5.58	3.38	3.94	3.80
1919.....	2.71	4.16	3.62	4.11	4.64	7.21	2.99	4.28	4.19
1920.....	2.78	3.79	3.13	3.38	3.74	5.48	2.90	3.78	3.45
Average.....	3.05	4.03	3.48	3.70	4.06	6.07	3.18	4.03	3.86
1921.....	2.18	4.38	3.48	3.43	3.80	6.05	2.42	4.20	3.94
1922.....	2.45	5.16	3.99	1.91	3.81	5.49	2.35	4.90	4.16
1923.....	2.77	4.65	3.46	3.23	3.62	5.45	2.85	4.39	3.74
1924.....	3.08	5.39	3.94	3.10	3.39	5.64	3.08	4.80	4.20
1925.....	3.12	4.79	3.53	2.50	4.12	6.47	2.98	4.65	3.84
Average.....	2.70	4.87	3.67	2.83	3.71	5.80	2.73	4.58	3.96
1926.....	3.48	4.86	3.60	2.74	3.37	5.36	3.32	4.50	3.83
1927.....	2.93	4.60	3.36	2.96	3.94	6.11	2.94	4.43	3.73
1928.....	3.31	4.90	3.45	2.78	3.85	5.93	3.19	4.64	3.78
1929.....	3.39	4.63	3.19	3.18	4.24	6.53	3.34	4.54	3.59
1930.....	3.28	5.26	3.46	2.94	4.22	6.40	3.20	5.00	3.84
Average.....	3.27	4.84	3.42	2.92	3.90	6.04	3.19	4.61	3.75
1931.....	2.40	4.42	2.83	2.75	4.43	6.42	2.48	4.42	3.31
1932.....	2.36	4.85	3.09	2.05	3.83	4.99	2.29	4.60	3.36
1933.....	1.99	3.58	2.50	2.21	3.58	4.66	2.03	3.58	2.78
1934.....	2.09	3.52	2.67	2.47	3.61	4.69	2.16	3.54	2.94
1935.....	2.09	3.53	2.60	2.66	4.26	5.24	2.20	3.67	2.92
Average.....	2.18	3.93	2.73	2.44	3.96	5.23	2.24	3.93	3.06
1936.....	2.28	3.46	2.52	2.39	3.73	4.46	2.30	3.50	2.73
1937.....	2.44	3.74	2.68	2.17	3.44	4.15	2.40	3.69	2.83
1938.....	1.98	3.68	2.52	2.34	4.08	4.88	2.04	3.76	2.79
1939.....	1.95	3.29	2.19	2.24	3.61	4.11	2.00	3.35	2.41
1940.....	2.73	4.07	2.61	1.99	3.16	3.57	2.60	3.92	2.71
Average.....	2.28	3.65	2.51	2.23	3.60	4.23	2.27	3.64	2.70
1941.....	2.34	3.28	2.08	2.18	3.16	3.58	2.32	3.26	2.22
1942.....	2.77	3.41	2.14	2.75	3.45	3.88	2.77	3.42	2.30

TABLE 74.—Employment data for bituminous-coal and anthracite mines, 1930-42

Year	Number of mines	Men employed	Man-days	Man-hours	Production, short tons	Average days active	Rate per million man-hours		Productivity per man-hour, ton	Average length of shift, hours
							Killed	Injured		
1930	5,890	493,202	92,305	875	750,149,205	467,526,299	187	1,619	71,217	2,158
1931	5,652	450,274	73,349	461	555,978,361	382,105,326	163	1,080	53,975	1,812
1932	5,473	406,380	70,447	424	564,425,331	309,709,872	146	958	39,352	1,998
1933	5,629	418,752	69,881	999	564,425,331	335,630,533	167	833	43,946	1,476
1934	6,290	453,044	81,647	939	591,056,597	350,368,052	175	955	46,982	1,621
5-year average	5,787	445,330	75,292	980	566,211,972	370,468,010	169	1,090	51,094	1,828
1935	6,332	462,354	82,291	724	578,511,200	372,369,122	178	968	47,529	1,673
1936	6,572	482,500	95,261	754	659,900,336	468,333	197	1,098	50,514	1,639
1937	6,337	490,771	96,150	313	675,568,195	447,047,436	196	1,195	52,847	1,773
1938	6,531	445,246	71,747	050	505,316,161	349,547,526	161	880	36,794	1,741
1939	7,274	445,044	78,966	250	554,984,350	396,830,988	177	867	38,544	1,562
5-year average	6,659	465,183	84,879	420	596,856,088	400,412,681	182	1,002	45,246	1,679
1940	7,192	440,847	88,770	862	625,973,555	461,318,629	201	1,204	43,994	1,923
1941	7,401	457,744	97,989	557	691,049,388	515,769,248	214	1,072	46,637	1,551
1942	6,940	448,797	106,481	371	772,828,992	581,704,840	244	1,245	53,193	1,611
BITUMINOUS-COAL MINES										
1930	(1)	150,804	31,567	822	282,542,576	69,384,837	209	444	32,604	1,758
1931	(1)	139,481	25,914	553	208,414,569	50,345,652	186	383	32,374	1,833
1932	(1)	121,243	19,345	720	156,943,999	46,855,221	161	249	19,620	1,587
1933	(1)	104,430	19,343	733	154,723,393	49,541,344	185	231	17,367	1,483
1934	(1)	108,382	22,292	281	178,372,981	57,168,291	206	268	21,026	1,502
5-year average	(1)	124,858	23,720	823	190,198,324	57,119,069	190	315	23,398	1,656
1935	(1)	102,848	19,279	930	154,096,381	52,262,833	187	274	18,046	1,778
1936	(1)	102,082	19,639	739	156,485,924	54,870,429	192	244	19,062	1,556
1937	(1)	99,085	18,740	750	135,853,951	51,745,442	188	215	16,430	1,583
1938	(1)	96,282	16,538	468	115,852,166	46,352,125	172	225	14,520	1,942
1939	(1)	94,331	11,523	612	123,211,243	51,349,701	186	211	15,471	1,713
5-year average	(1)	98,926	18,340	502	137,098,957	51,234,712	185	234	16,506	1,707
1940	(1)	92,420	17,448	666	122,447,315	51,149,490	180	184	15,787	1,503
1941	(1)	88,948	18,444	332	130,107,405	54,114,961	207	184	16,828	1,491
1942	(1)	82,064	16,644	236	137,558,994	56,316,022	239	226	16,371	1,643
PENNSYLVANIA ANTHRACITE MINES										
1930	(1)	129,103	126,546	0,276	8,00					
1931	(1)	125,013	121,913	286	8,04					
1932	(1)	126,246	121,813	8,05	8,05					
1933	(1)	122,245	121,813	320	8,00					
1934	(1)	117,877	117,877	321	8,00					
5-year average	(1)	123,018	123,018	300	8,02					
1935	(1)	117,109	117,109	339	7,99					
1936	(1)	121,813	121,813	349	7,97					
1937	(1)	113,578	113,578	388	7,25					
1938	(1)	125,332	125,332	398	7,04					
1939	(1)	126,665	126,665	417	7,03					
5-year average	(1)	120,394	120,394	374	7,48					
1940	(1)	128,929	128,929	421	7,01					
1941	(1)	128,339	128,339	416	7,05					
1942	(1)	119,010	119,010	424	7,00					

TABLE 74.—Employment data for bituminous-coal and anthracite mines, 1930-42—Continued

TOTAL

Year	Number of mines	Men em- ployed	Man-days	Man-hours	Production, short tons	Average days active	Killed	Injured	Rate per million man-hours	Productiv- ity per man-hour, ton	Average length of shift, hours
1930		644,006	123,893,697	1,062,691,781	538,911,136	192	2,063	103,821	2,057	103,542	8.09
1931		589,705	99,264,019	804,394,130	441,750,978	168	1,463	80,340	1,810	99,888	5.44
1932		527,623	78,745,344	636,391,330	356,565,093	149	1,207	58,972	1,897	92,666	8.10
1933		523,182	89,225,732	719,148,559	388,171,877	171	1,064	61,313	1,480	85,258	8.06
1934		566,426	103,940,220	769,430,678	416,536,313	184	1,226	68,008	1,593	88,387	7.40
5-year average		570,188	99,013,802	756,411,296	427,587,079	174	1,405	74,493	1,787	94,725	.544
5-year average		565,202	101,571,654	732,607,681	424,632,005	180	1,242	65,575	1,695	89,509	.580
1935		584,532	114,801,493	826,386,460	491,138,752	197	1,342	69,576	1,624	84,193	.594
1936		589,836	114,871,072	811,422,146	498,792,938	185	1,413	68,277	1,741	84,145	.616
1937		541,628	88,275,518	621,168,448	395,696,632	163	1,105	51,314	1,779	82,609	7.04
1938		539,375	96,489,871	678,195,593	447,976,639	179	1,078	54,015	1,590	79,645	.637
1939		564,109	103,219,922	733,956,046	451,647,383	183	1,236	61,751	1,684	84,134	.661
5-year average		533,267	106,238,918	748,420,570	512,308,119	199	1,388	59,781	1,855	79,876	.686
1940		546,692	116,443,889	821,155,793	569,384,206	213	1,266	63,465	1,542	77,287	.694
1941		530,861	129,135,607	910,388,986	640,020,862	243	1,471	69,564	1,616	76,411	.703
1942											

1 Not available.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

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TABLE 75.—Number of men employed, by States, during the years ended December 31, 1933 to 1942

	Men employed									
	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	18,237	18,851	18,888	20,495	22,789	21,137	21,809	23,241	24,341	23,929
Alaska	100	93	95	111	133	144	91	98	167	237
Arkansas	3,073	3,418	3,743	4,094	3,820	3,739	4,130	3,952	4,363	3,579
Colorado	7,910	8,094	8,157	9,063	9,508	8,449	8,866	8,036	8,501	8,217
Illinois	44,147	46,067	43,752	45,855	43,606	39,136	38,200	35,938	34,501	34,366
Indiana	11,201	11,177	11,349	11,025	10,882	9,780	9,696	9,857	10,475	10,910
Iowa	7,083	7,721	8,038	8,424	8,498	7,689	7,076	5,920	4,778	4,778
Kansas	3,811	3,747	3,896	3,990	3,642	3,503	3,269	3,051	3,024	2,481
Kentucky	43,726	52,509	52,341	55,606	55,817	54,082	53,060	52,330	55,271	55,271
Maryland	2,880	2,976	2,962	2,925	2,541	2,447	2,651	2,633	2,438	2,288
Michigan	1,186	1,556	1,416	1,416	1,338	1,199	1,153	815	815	384
Missouri	5,694	5,544	5,714	5,698	5,558	5,477	5,523	4,814	4,886	3,799
Montana	1,226	1,500	1,573	1,424	1,469	1,576	1,683	1,586	1,581	1,587
New Mexico	2,340	2,332	2,355	2,382	2,668	2,539	2,385	1,924	1,861	1,801
North Dakota	1,601	2,018	1,365	1,503	1,511	1,377	1,383	1,370	1,496	1,202
Ohio	25,448	29,255	29,528	29,231	26,126	26,189	21,904	22,212	22,924	22,285
Oklahoma	2,976	3,225	3,151	3,242	3,081	2,336	2,171	2,162	2,312	2,502
Pennsylvania (bituminous)	115,461	126,086	124,121	128,495	131,071	114,590	117,829	116,554	122,472	113,674
South Dakota	147	91	55	50	49	52	51	53	63	36
Tennessee	7,051	7,308	7,535	8,328	8,150	8,575	8,770	8,592	9,182	9,345
Texas	8,03	8,05	7,92	7,775	8,21	8,04	7,21	6,651	7,293	7,255
Utah	2,906	2,807	2,754	2,880	3,288	2,981	2,855	2,651	2,745	3,370
Virginia	9,761	12,211	13,045	14,889	16,933	11,037	17,115	17,506	18,992	19,191
Washington	2,555	2,161	2,275	2,621	2,879	2,542	2,733	2,426	2,388	2,208
West Virginia	92,472	105,906	109,221	118,377	115,783	102,750	105,922	113,251	115,958	115,958
Wyoming	3,753	3,760	3,966	4,443	4,786	4,999	4,288	4,997	4,758	4,930
Other States 1	184	226	212	155	164	121	198	206	220	194
Total bituminous	418,752	458,044	462,354	482,500	490,771	445,266	445,044	440,847	457,744	448,707
Pennsylvania anthracite	104,430	108,332	102,848	102,682	99,985	96,283	94,331	92,420	88,948	82,064
Grand total	523,182	566,426	565,202	584,582	589,856	541,528	539,375	533,267	546,692	530,861

1 Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 76.—Number of man-days worked, by States, during the years ended December 31, 1933 to 1942

	Man-days									
	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama.....	2,687,625	3,442,991	3,003,418	4,298,988	4,561,271	3,783,494	3,991,402	4,997,768	5,110,869	6,236,437
Alaska.....	20,015	20,164	23,771	27,208	27,380	28,988	26,014	31,566	45,723	68,143
Arkansas.....	343,961	347,520	453,289	615,324	520,132	427,713	431,884	530,266	581,357	619,460
Colorado.....	1,177,582	1,207,311	1,399,433	1,679,350	1,875,859	1,478,532	1,522,404	1,562,617	1,642,459	1,934,585
Illinois.....	6,254,530	7,384,190	7,455,561	8,039,803	7,563,630	5,963,227	6,317,177	6,416,183	6,744,570	7,670,927
Indiana.....	1,855,950	1,885,082	1,934,984	1,998,595	1,945,917	1,633,448	1,760,892	1,944,728	2,231,998	2,521,429
Iowa.....	1,060,893	1,129,250	1,302,657	1,386,646	1,247,307	1,040,109	1,030,126	931,965	833,046	601,175
Kansas.....	555,719	647,647	638,634	706,824	682,222	564,098	588,269	601,175	601,175	13,603
Kentucky.....	7,428,367	8,886,229	9,498,705	10,987,506	10,677,066	8,439,279	11,322,131	10,346,678	11,475,723	13,603
Maryland.....	460,465	523,769	510,736	640,322	407,380	479,197	427,961	479,197	556,658	556,658
Michigan.....	154,405	244,813	232,431	233,560	196,829	196,769	170,479	175,359	133,520	92,554
Missouri.....	848,349	775,972	893,741	979,347	1,002,577	790,348	888,272	828,208	866,464	792,266
Montana.....	222,571	250,555	291,521	284,483	282,468	271,573	285,087	295,015	306,542	317,506
New Mexico.....	386,163	367,496	320,620	486,852	568,334	375,932	333,181	332,147	402,351	482,506
North Dakota.....	224,953	266,635	256,403	260,370	266,823	241,299	260,829	259,944	267,586	285,786
Ohio.....	4,314,251	4,868,316	4,720,915	5,269,038	5,111,848	3,743,503	3,844,542	4,054,184	5,054,393	5,369,983
Oklahoma.....	378,314	388,043	383,277	405,571	451,153	322,166	364,458	380,506	380,506	533,981
Pennsylvania (bituminous).....	18,633,852	22,613,961	22,344,784	25,951,617	26,542,220	17,809,196	20,715,541	24,676,195	26,913,741	28,809,061
South Dakota.....	14,697	13,916	11,550	8,080	8,753	8,730	10,155	632	7,220	7,220
Tennessee.....	1,123,723	1,354,300	1,361,446	1,641,631	1,635,155	1,421,692	1,603,396	1,918,738	2,220,979	2,220,979
Texas.....	150,137	142,374	138,487	154,276	160,405	151,534	114,706	104,181	44,638	42,366
Utah.....	513,594	412,011	494,982	527,164	660,904	488,933	527,912	604,993	903,238	903,238
Virginia.....	1,799,313	2,444,674	2,457,489	2,964,920	3,560,022	2,334,753	3,242,230	3,492,320	4,234,578	4,664,595
Washington.....	438,252	394,797	433,048	525,535	590,403	450,191	433,827	460,598	502,460	533,412
West Virginia.....	18,145,711	20,837,301	20,727,689	24,245,027	24,108,955	17,937,196	20,019,257	22,761,603	25,533,900	28,935,687
Wyoming.....	655,381	698,473	861,581	944,079	975,825	802,286	823,406	848,880	938,399	1,228,029
Other States ¹	34,226	42,848	31,902	33,941	27,004	14,349	28,230	40,232	45,642	44,219
Total bituminous.....	69,881,999	81,647,939	82,291,724	95,261,754	96,130,313	71,747,050	78,986,259	88,770,852	97,999,557	109,491,371
Pennsylvania anthracite.....	19,333,733	22,292,281	19,279,930	19,629,739	18,746,759	16,528,488	17,523,612	17,468,066	18,444,332	19,644,236
Grand total.....	89,225,732	103,940,220	101,571,684	114,891,493	114,871,072	83,275,518	96,489,871	106,238,918	116,443,889	129,135,607

¹ Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

TABLE 77.—Number of man-hours worked, by States, during the years ended December 31, 1933 to 1942

	Man-hours									
	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama.....	23,756,427	24,978,681	21,123,384	30,367,325	32,063,373	26,652,920	28,031,204	35,264,776	36,179,783	44,129,611
Alaska.....	160,120	161,312	150,964	217,664	216,927	202,916	182,068	220,962	320,061	545,144
Arkansas.....	2,755,888	2,497,832	3,173,023	4,306,269	3,640,910	2,998,524	3,042,760	3,731,769	4,079,142	4,567,302
Colorado.....	9,487,080	9,181,664	9,851,770	11,833,733	13,183,684	10,368,514	10,670,226	10,939,339	11,487,706	12,562,339
Illinois.....	49,873,191	53,570,589	51,960,340	56,413,544	53,134,902	41,779,275	43,388,291	47,239,234	54,094,402	54,094,402
Indiana.....	13,740,044	13,541,425	14,148,078	13,795,729	11,672,729	12,416,795	13,829,288	16,276,312	17,915,298	20,276,312
Iowa.....	8,502,908	8,755,500	9,151,937	9,581,533	8,798,352	7,366,248	6,890,457	6,905,037	6,117,748	6,117,748
Kansas.....	4,275,776	4,048,573	4,448,530	4,773,721	5,206,141	4,258,008	4,025,884	4,268,915	4,393,580	4,413,261
Kentucky.....	60,711,231	64,324,560	66,895,024	77,276,094	75,389,220	59,617,611	65,687,097	72,674,628	80,399,162	92,088,067
Maryland.....	3,925,109	3,786,755	3,728,364	3,904,778	3,724,315	2,845,643	3,415,934	3,034,356	3,399,097	3,320,784
Michigan.....	1,228,667	1,762,908	1,670,783	1,684,922	1,368,295	1,375,247	1,183,568	1,220,619	944,478	647,832
Missouri.....	6,827,638	5,753,452	6,433,334	7,201,442	7,205,155	5,739,747	6,049,789	6,046,381	6,245,447	5,903,152
Montana.....	1,784,420	2,047,219	2,097,301	2,030,169	2,007,387	1,977,948	2,058,085	2,115,355	2,196,570	2,492,635
New Mexico.....	3,146,025	2,660,733	2,951,938	3,441,854	3,922,522	2,655,885	2,343,205	2,356,887	2,859,008	3,402,784
North Dakota.....	1,868,604	1,967,748	1,882,888	2,230,833	2,104,354	1,865,313	1,944,242	2,000,967	2,107,460	1,993,180
Ohio.....	34,467,686	35,233,788	33,205,660	37,609,140	38,683,792	26,988,058	27,041,738	28,755,334	36,023,600	38,559,589
Oklahoma.....	3,049,883	2,902,269	2,709,047	3,476,791	3,186,451	2,778,350	2,159,967	2,628,025	2,822,801	3,840,345
Pennsylvania (bituminous).....	149,670,855	163,232,997	156,751,626	181,389,272	185,421,466	124,728,766	145,013,846	173,798,263	189,262	202,938,139
South Dakota.....	116,768	117,744	112,560	87,998	74,573	71,632	68,956	86,262	86,262	86,262
Tennessee.....	9,031,264	9,389,529	9,456,306	11,709,216	11,759,392	10,247,945	11,272,766	11,996,730	13,672,554	15,763,490
Texas.....	4,056,613	3,286,837	1,251,280	1,298,622	1,267,105	1,259,060	916,258	903,950	356,444	356,549
Utah.....	14,491,862	12,966,371	3,481,982	3,692,704	4,636,523	3,454,936	3,743,880	3,787,674	4,272,645	6,342,495
Virginia.....	3,365,170	2,833,505	3,007,991	3,676,626	2,073,077	25,047,795	20,110,766	22,738,908	24,548,441	30,106,935
West Virginia.....	146,768,734	150,390,672	145,918,223	169,821,188	168,947,582	125,886,728	140,380,559	139,533,354	3,517,232	4,083,150
Wyoming.....	5,081,773	5,049,640	5,327,635	6,070,736	6,848,082	5,639,977	5,776,525	6,386,192	8,626,544	10,071,379
Other States 1.....	323,233	224,564	248,302	194,990	23,600	224,802	318,302	362,792	345,570	345,570
Total bituminous.....	564,425,166	591,058,597	578,511,200	660,000,556	675,568,195	505,316,161	554,984,350	635,973,555	772,828,902	772,828,902
Pennsylvania anthracite.....	154,725,383	178,321,081	154,056,381	155,485,944	135,853,051	115,852,287	123,211,243	132,447,315	137,559,994	137,559,994
Grand total.....	719,145,559	769,430,678	732,607,581	826,386,460	811,422,146	621,168,448	678,195,593	748,420,870	821,156,738	910,388,986

1 Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 78.—*Production of coal, by States, during the years ended December 31, 1930 to 1939*

	Short tons							1942
	1933	1934	1935	1936	1937	1938	1939	
Alabama.....	8,759,989	9,142,117	8,500,510	12,255,876	13,167,790	11,179,210	12,103,839	15,498,125
Alaska.....	96,467	107,508	119,425	136,593	131,908	154,301	146,005	15,868,188
Arkansas.....	888,924	886,924	1,133,279	1,621,194	1,335,260	1,188,060	1,134,948	241,187
Colorado.....	5,229,933	5,210,511	5,910,511	6,810,511	7,184,534	5,888,442	5,969,784	2,031,566
Illinois.....	37,413,145	41,272,348	41,761,677	45,754,649	50,806,235	42,440,218	42,515,703	47,670,447
Indiana.....	13,761,052	14,733,643	15,754,214	16,808,893	17,382,981	14,788,540	16,676,145	18,715,979
Iowa.....	3,194,983	3,366,992	3,650,163	3,851,938	3,655,889	3,163,449	3,073,771	2,484,329
Kansas.....	2,217,692	2,598,554	2,886,164	2,962,937	3,132,332	2,855,554	3,088,290	2,889,023
Kentucky.....	38,099,729	38,555,235	40,760,393	47,489,572	47,211,030	38,886,635	42,599,022	3,494,505
Maryland.....	1,430,748	1,637,312	1,697,355	1,697,355	1,549,888	1,391,332	48,288,476	53,325,399
Michigan.....	406,584	621,741	628,384	621,634	564,260	490,662	439,451	1,733,540
Missouri.....	3,432,212	3,332,283	3,645,995	3,954,397	3,914,658	3,283,885	3,280,361	409,139
Montana.....	2,152,207	2,505,797	2,758,906	2,990,797	2,955,995	2,744,228	2,880,273	3,604,660
New Mexico.....	1,226,296	1,259,323	1,388,877	1,594,219	1,737,113	1,251,171	1,207,979	2,891,588
North Dakota.....	1,782,272	1,733,888	1,955,150	2,243,466	2,250,388	1,949,525	1,159,323	1,236,528
Ohio.....	19,388,763	20,600,564	21,163,151	23,580,292	25,202,238	18,633,046	19,381,550	2,417,857
Pennsylvania (bituminous).....	1,238,244	1,228,289	1,322,388	1,531,020	1,572,189	1,225,549	1,202,106	2,417,857
South Dakota.....	70,26,944	89,855,875	91,404,675	109,321,501	111,321,811	75,221,170	93,442,037	1,627,124
Tennessee.....	59,375	42,407	13,243	41,325	48,958	48,761	52,190	1,756,326
Texas.....	3,774,761	4,155,790	4,137,802	5,068,282	5,150,118	4,647,150	5,228,646	5,994,655
Utah.....	821,828	769,289	757,529	844,133	894,077	878,925	826,952	621,472
Virginia.....	2,644,986	2,406,183	2,946,918	3,163,833	3,750,444	2,030,884	3,275,108	3,620,526
Washington.....	8,178,642	9,376,681	9,667,018	11,850,731	14,278,843	12,469,619	13,895,967	15,634,099
West Virginia.....	1,394,068	1,332,981	1,559,206	1,813,665	2,034,198	1,580,050	1,702,139	1,665,090
Wyoming.....	94,343,535	98,134,393	99,179,061	117,428,256	118,240,266	92,330,783	107,787,895	1,859,019
Other States 1.....	4,013,167	4,367,961	5,177,142	5,731,982	5,932,734	5,220,533	5,401,068	130,993,085
Total bituminous.....	333,630,533	359,368,022	372,369,122	436,468,333	447,947,526	396,630,938	461,318,629	515,769,248
Pennsylvania anthracite.....	49,541,344	57,188,291	52,262,883	54,670,429	51,745,442	46,149,106	51,345,701	54,114,961
Grand total.....	383,17,877	416,536,313	424,632,005	491,138,762	498,792,928	395,696,632	447,976,639	512,808,119

¹ Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.19,390,705
287,169
2,031,566
8,079,064
65,335,364
25,416,137
2,850,592
4,225,256
61,179,038
1,971,427
250,020
3,519,130
3,817,060
1,686,128
2,637,814
32,027,313
142,350,304
53,034
8,217,468
322,787
5,734,999
20,755,986
1,859,019
2,006,085
156,883,317
8,241,164
50,65058,316,022
58,384,290
640,020,862

SUMMARIZED ACCIDENT DATA FOR COAL MINES

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TABLE 79.—Number of men killed and injured, by States, during the years ended December 31, 1930 to 1942

	Killed												
	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	63	29	21	23	35	24	35	70	37	36	37	55	62
Alaska													2
Arkansas	11	8	4	5	5	8	15	13	6	18	21	13	17
Colorado	35	21	28	19	22	25	29	25	32	27	22	23	59
Illinois	113	92	119	77	90	80	97	84	83	78	84	101	94
Indiana	34	57	31	38	21	36	35	59	30	21	38	10	18
Iowa	20	11	18	6	11	14	24	11	11	15	12	10	11
Kansas	10	5	11	10	11	10	10	7	3	5	1	11	4
Kentucky	189	110	102	100	118	124	115	148	103	102	8	136	147
Maryland	6	6	3	3	10	7	3	9	5	1	1	2	6
Michigan	1	—	3	2	2	5	—	1	1	2	3	—	3
Missouri	11	6	7	11	14	9	18	14	7	1	7	11	—
Montana	3	4	3	3	4	3	8	3	5	2	4	4	7
New Mexico	15	5	20	4	8	9	10	11	5	2	7	3	6
North Dakota	4	6	2	6	6	6	—	—	2	2	1	1	5
Ohio	148	61	36	54	48	44	47	70	44	39	47	56	72
Oklahoma	66	10	11	7	7	5	15	4	7	3	10	8	10
Pennsylvania (bituminous)	303	210	162	144	164	174	200	196	132	128	207	177	199
South Dakota	22	17	9	16	19	12	22	23	21	12	22	24	29
Tennessee													
Texas	56	12	1	2	1	8	13	13	1	9	4	16	16
Utah	46	31	74	11	9	30	40	47	92	38	45	55	49
Virginia	23	9	9	23	47	5	5	7	5	4	4	2	6
Washington	414	361	267	253	286	315	341	312	239	273	372	293	390
West Virginia	23	15	6	9	15	20	16	1	9	8	13	13	21
Wyoming	3	3	1	1	—	—	—	—	—	—	—	—	—
Total bituminous	1,610	1,080	958	833	958	998	1,008	1,198	880	867	1,204	1,072	1,245
Pennsylvania anthracite	444	383	249	231	268	274	244	215	225	211	184	194	226
Grand total	2,063	1,463	1,207	1,064	1,226	1,242	1,342	1,413	1,105	1,078	1,388	1,266	1,471

Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

COAL-MINE ACCIDENTS IN THE UNITED STATES, 1942

TABLE 79.—Number of men killed and injured, by States, during the years ended December 31, 1930 to 1942—Continued

							Injured				
		1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Alabama	2,262	1,805	958	1,178	1,396	1,118	1,360	1,271	1,056	1,158	1,454
Alaska	5	14	2	96	7	12	115	147	114	15	34
Arkansas	194	184	150	1,128	1,081	983	1,076	1,174	138	89	87
Colorado	1,421	1,172	5,332	6,988	6,251	6,680	6,724	6,306	4,771	5,250	5,207
Illinois	9,378	8,309	5,332	1,713	1,882	1,781	1,506	1,522	904	869	1,079
Indiana	2,519	1,989	1,882	987	987	905	1,020	1,162	767	951	1,297
Iowa	1,184	230	234	230	253	253	275	344	253	602	1,054
Kansas	4,432	4,333	3,864	3,635	4,088	4,337	4,583	5,132	4,133	4,593	5,286
Kentucky	7,034	501	222	303	345	380	343	283	235	243	278
Maryland	251	90	100	182	295	145	192	228	154	121	83
Michigan	555	424	571	410	323	237	358	326	286	227	218
Missouri	247	167	137	117	149	159	139	152	130	130	151
Montana	331	236	166	203	196	176	219	247	189	299	288
New Mexico	223	106	155	144	145	169	175	174	156	109	109
Ohio	3,891	2,861	1,871	2,683	2,466	2,472	2,476	2,476	1,537	1,369	1,582
Oklahoma	730	517	309	230	268	140	236	231	200	140	130
Pennsylvania (bituminous)	20,414	14,614	9,584	11,165	12,513	12,122	13,229	14,561	8,647	9,788	10,222
South Dakota	1	1	1	1	1	2	2	7	2	3	3
Tennessee	610	620	395	486	479	490	666	701	562	666	589
Texas	150	192	184	166	204	189	195	172	138	83	865
Utah	891	593	456	409	392	415	440	516	358	280	429
Virginia	1,670	1,400	838	819	1,346	1,608	1,517	1,495	1,255	1,925	1,829
Washington	600	427	344	298	241	340	471	582	434	363	446
West Virginia	14,733	11,389	9,456	10,101	11,698	11,905	12,803	13,308	9,189	12,017	13,007
Wyoming	956	722	281	273	278	285	267	323	240	236	219
Other States ¹	33	4	15	4	4	1	3	4	5	19	16
Total bituminous	71,217	53,975	39,352	43,946	46,982	47,539	50,514	52,847	36,794	43,994	46,637
Pennsylvania (anthracite)	32,604	26,374	16,620	17,387	21,026	18,046	19,062	15,430	14,520	15,471	15,787
Grand total	103,821	80,349	58,972	61,313	68,008	65,575	69,576	68,277	51,314	54,015	59,781

¹ Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

TABLE 80.—*Fatality rates per million man-hours*

State	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	1.543	0.998	1.051	0.968	1.401	1.136	1.153	2.183	1.388	1.284	1.049	1.120	1.405
Alaska	2.564	2.235	1.259	1.814	2.002	2.521	3.433	69.148	5.916	5.627	3.187	3.669	3.722
Arkansas	2.309	1.710	2.703	2.003	2.396	2.538	2.451	3.086	2.530	2.012	2.000	4.350	4.350
Colorado	1.689	1.682	2.803	1.544	1.682	1.540	1.719	1.987	1.757	1.860	2.338	1.738	1.738
Illinois	1.949	2.307	2.514	2.607	1.528	2.659	2.474	2.570	1.691	2.748	2.042	1.005	1.005
Indiana	2.039	1.114	1.838	2.706	1.256	1.630	2.449	1.250	1.493	2.177	1.625	1.514	1.798
Iowa	2.048	1.326	3.120	2.337	2.717	2.238	1.466	1.470	1.987	1.171	2.504	1.906	1.906
Kansas	2.130	1.760	1.915	1.647	1.837	1.854	1.488	1.963	1.728	2.131	1.871	1.828	1.792
Kentucky	1.107	1.187	2.805	1.765	2.441	1.877	1.788	2.738	1.757	2.93	1.659	1.765	1.765
Maryland	.517	—	2.505	1.632	1.134	2.983	—	731	1.727	1.676	2.446	—	—
Michigan	1.450	—	962	948	1.611	2.433	1.388	2.469	1.943	1.220	1.166	1.158	1.761
Missouri	1.020	1.899	1.687	1.681	2.165	1.397	3.941	1.494	2.528	.972	1.891	1.821	2.808
New Mexico	3.607	1.376	7.490	1.271	3.007	3.049	2.905	2.755	1.883	.854	2.966	1.049	1.763
North Dakota	2.103	3.265	3.956	3.211	3.049	3.346	4.475	1.072	1.029	1.500	2.509	—	—
Ohio	3.831	1.735	1.515	1.667	1.361	1.325	1.270	1.810	1.667	1.442	5.113	1.877	1.877
Oklahoma	10.223	2.327	3.702	2.295	2.412	4.316	1.251	3.072	1.402	3.808	2.834	2.604	2.604
Pennsylvania (bituminous)	1.457	1.286	1.262	.962	1.005	1.110	1.100	1.057	1.055	.883	1.190	.884	.981
South Dakota	—	—	—	—	—	—	—	—	—	—	—	—	—
Tennessee	1.818	1.563	.974	1.772	1.921	1.269	1.879	1.956	2.049	1.065	1.834	1.755	1.840
Texas	11.688	3.098	1.068	1.728	2.496	2.712	3.004	2.298	3.520	.794	1.056	1.106	—
Utah	2.432	1.812	6.158	1.687	2.625	1.738	1.916	2.804	2.804	2.404	3.745	2.523	2.523
Virginia	5.009	2.376	2.494	1.783	1.765	1.663	1.680	1.680	4.464	1.671	1.833	1.492	1.492
Washington	2.375	2.528	2.319	1.724	1.902	1.519	2.008	2.143	1.588	1.241	1.569	1.469	1.469
West Virginia	2.928	2.556	1.195	1.771	3.204	2.414	1.314	1.897	1.945	2.332	1.696	1.917	1.917
Wyoming	8.417	13.779	4.232	3.549	4.453	—	—	1.596	1.386	2.180	1.974	2.434	2.434
Total bituminous	2.158	1.812	1.998	1.476	1.621	1.673	1.639	1.773	1.741	1.562	1.923	1.611	1.611
Pennsylvania anthracite	1.758	1.838	1.587	1.493	1.502	1.778	1.559	1.559	1.942	1.713	1.503	1.491	1.643
Grand total	2.057	1.819	1.897	1.480	1.593	1.695	1.624	1.741	1.779	1.590	1.855	1.542	1.616

¹ Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 81.—Nonfatal injury rates per million man-hours

State	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	55.413	62.101	47.931	49.587	55.888	52.927	44.705	39.640	39.620	41.311	41.231	48.425	56.991
Alaska	29.935	38.191	77.195	12.491	45.394	63.170	45.942	64.538	73.922	82.373	163.373	106.230	67.874
Arkansas	45.217	51.399	47.213	34.835	32.428	36.243	55.268	40.375	46.019	29.249	23.313	72.809	90.644
Colorado	93.764	108.410	108.874	113.944	107.061	109.223	99.208	101.413	87.144	81.442	75.078	93.844	89.734
Illinois	140.187	151.927	125.601	140.316	116.796	128.174	119.191	118.679	114.195	118.274	115.314	81.056	83.040
Indiana	144.406	152.369	152.648	117.509	121.179	131.522	106.446	98.004	80.615	76.590	93.714	69.947	58.832
Iowa	120.735	99.996	94.886	113.726	110.216	90.105	104.065	132.070	104.124	87.360	78.283	76.826	76.826
Kansas	88.462	64.718	79.620	50.132	62.491	60.374	57.607	66.038	59.417	58.869	75.663	58.950	41.013
Kentucky	79.290	72.526	67.073	59.874	63.070	64.833	58.666	68.073	69.325	69.922	72.694	69.901	69.186
Maryland	92.469	86.161	59.565	77.235	91.107	101.921	90.150	87.499	82.582	71.137	91.615	86.496	75.632
Michigan	74.616	74.798	83.512	148.471	167.337	86.786	117.447	166.631	111.980	101.377	74.188	88.159	75.632
Missouri	73.179	68.003	77.370	60.050	56.140	36.555	49.712	45.245	49.828	37.772	36.061	35.066	39.132
Montana	83.792	79.947	77.283	77.049	65.562	80.662	76.175	68.467	75.723	63.166	71.383	79.670	104.706
New Mexico	79.587	64.938	62.171	64.526	72.562	59.622	63.638	61.866	71.163	122.041	77.300	90.220	74.755
North Dakota	117.254	57.633	74.083	77.063	73.968	78.446	82.665	83.632	56.063	54.474	64.633	55.022	66.398
Ohio	100.720	81.108	78.715	77.341	69.910	74.445	65.308	64.039	58.224	50.625	49.504	47.912	47.912
Oklahoma	113.078	120.394	103.980	75.413	92.342	51.669	67.808	72.268	87.774	65.422	49.504	62.727	63.413
Pennsylvania (bituminous)	98.148	80.489	74.594	76.657	77.333	72.727	78.529	69.326	61.911	59.897	72.920	43.506	39.609
South Dakota	50.396	57.926	61.093	9.861	22.728	93.888	27.920	43.506	39.609	92.741	51.996	52.221	54.874
Tennessee	189.152	153.102	113.814	100.923	120.813	119.185	110.155	135.732	109.606	54.840	59.080	49.099	51.356
Texas	88.290	81.842	69.733	36.914	75.188	93.169	72.677	59.686	65.742	78.416	93.389	106.725	99.172
Utah	130.682	112.735	95.317	88.354	86.054	113.061	128.107	139.685	137.814	107.186	138.353	147.559	133.965
Virginia	84.530	82.029	82.127	68.822	77.784	81.587	75.391	78.770	72.936	71.074	75.326	72.936	72.034
West Virginia	121.700	123.034	55.971	53.721	55.053	43.652	40.286	47.166	42.553	40.855	36.728	44.183	36.167
Wyoming	92.591	18.373	63.476	14.198	12.375	4.453	12.082	35.211	22.242	50.692	44.102	26.044	26.044
Total bituminous	94.937	90.565	82.078	77.860	82.157	75.405	78.226	72.814	69.451	70.281	67.487	68.829	68.829
Pennsylvania anthracite	129.03	126.546	125.013	112.245	117.877	117.106	121.813	113.578	125.332	128.929	129.339	119.010	119.010
Grand total	103.542	99.888	92.666	85.258	88.387	89.500	84.145	82.609	79.645	79.876	77.287	76.411	76.411

¹ Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

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TABLE 82.—Fatality rates per million tons

State	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	4.046	2.417	2.073	2.626	3.828	2.823	2.856	5.316	3.310	2.974	2.388	3.466	3.197
Alaska								113.716					
Arkansas	7.173	6.935	3.870	5.663	5.888	7.050	9.252	9.736	5.063	15.860	14.635	7.777	8.368
Colorado	4.270	3.180	3.001	3.633	4.222	4.230	4.288	4.480	5.625	4.523	3.308	7.303	
Illinois	2.103	2.077	3.555	2.058	2.181	1.797	1.906	1.602	1.952	1.636	1.640	1.832	1.438
Indiana	2.062	2.327	2.327	1.420	1.420	2.285	2.082	3.394	2.097	1.259	2.037	1.917	.708
Iowa	5.138	3.246	4.660	1.878	3.267	3.856	6.231	3.026	3.477	4.880	3.748	3.346	3.886
Kansas	4.115	2.517	5.633	4.509	4.386	3.723	2.363	1.988	2.705	2.616	1.611	3.148	3.944
Kentucky	3.679	2.753	2.890	2.770	3.063	3.042	2.422	3.195	2.662	3.286	2.816	2.697	
Maryland	2.642	2.991	2.099	1.960	6.724	4.116	4.171	1.767	5.807	3.872	3.884	3.313	3.461
Michigan	1.513	1.557	1.720	3.205	4.919	4.176	2.458	4.652	1.772	2.038	4.550	1.732	1.522
Missouri	2.854	6.724	6.724	3.205	4.176	3.026	2.422	3.576	2.132	.305	1.942	2.958	
Montana	7.616	1.682	1.412	3.394	1.559	1.087	6.675	1.015	1.822	1.707	1.383	1.206	
New Mexico	3.220	15.830	3.262	6.353	6.480	6.273	6.332	3.996	1.656	6.275	2.426	1.834	
North Dakota													
Ohio	2.353	3.949	1.150	3.366	3.421	1.337	4.44	1.976	1.935	4.450	4.414		
Oklahoma	6.563	2.988	2.588	2.757	2.320	2.080	1.982	2.778	2.361	1.592	3.378	1.881	2.248
Pennsylvania (bituminous)	23.622	5.240	8.762	5.653	5.703	4.987	7.07	5.544	5.712	2.496	6.146	4.356	4.175
South Dakota	2.434	2.150	2.166	1.816	1.826	1.904	1.828	1.761	1.688	1.370	1.770	1.351	1.398
Tennessee	4.288												
Texas													
Utah	13.153	3.582	3.506	4.112	3.740	2.715	4.109	3.466	1.138	2.748	1.105	3.880	2.790
Virginia	4.217	3.193	9.620	2.812	5.012	3.103	3.375	3.262	7.378	2.735	2.378	2.947	2.361
Washington	9.992	4.874	5.655	4.304	3.615	3.207	2.757	3.411	3.164	2.350	2.402	1.076	2.991
West Virginia	3.413	3.459	3.119	2.914	2.882	3.176	2.904	3.002	2.675	2.533	2.944	2.093	2.486
Wyoming	3.778	3.004	1.439	2.243	3.434	3.863	2.767	1.519	1.724	1.481	2.226	1.951	2.548
Other States	47.458	61.922	19.119	16.331	21.018								
Total bituminous	3.463	2.826	3.093	2.497	2.666	2.600	2.516	2.680	2.518	2.186	2.610	2.078	2.140
Pennsylvania anthracite	6.399	6.421	4.994	4.663	4.688	5.243	4.463	4.155	4.876	4.109	3.574	3.586	3.875
Grand total	3.842	3.312	3.357	2.777	2.943	2.925	2.732	2.833	2.793	2.406	2.707	2.222	2.298

¹ Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 83.—Nonfatal injury rates per million tons

State	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	145.279	150.432	121.920	134.475	152.700	131.522	110.967	96.523	94.461	95.672	93.848	110.410	129.701
Alaska	58.285	47.214	136.319	65.111	100.481	73.210	106.135	97.213	102.736	195.489	140.369	143.874	140.369
Arkansas	126.513	153.507	145.142	108.730	94.578	101.475	146.805	110.091	116.450	178.418	60.631	180.447	203.784
Colorado	173.358	201.475	177.458	159.548	187.047	188.642	182.049	172.384	186.094	158.919	125.566	125.453	155.130
Illinois	174.535	152.760	139.138	141.253	124.432	112.548	149.577	132.112	120.251	112.217	110.131	102.072	69.438
Indiana	152.760	201.475	291.392	240.522	286.696	248.482	204.892	210.627	242.457	77.773	65.765	57.028	46.298
Iowa	177.783	122.806	148.498	114.086	100.867	115.406	92.813	109.822	89.224	177.494	104.080	174.116	142.736
Kansas	161.918	101.631	113.428	100.633	105.533	106.401	95.495	102.581	108.833	106.833	105.391	104.153	104.153
Kentucky	220.647	196.382	155.380	197.942	212.032	226.442	202.074	182.594	181.983	166.833	169.535	162.527	169.305
Maryland	250.415	224.140	209.663	144.038	474.474	347.632	308.863	404.069	313.418	267.062	222.303	213.025	213.025
Michigan	91.734	70.226	64.464	354.363	96.332	65.003	90.532	83.277	87.092	69.200	60.478	58.888	65.644
Missouri	188.069	151.961	165.357	155.639	126.721	137.371	142.174	151.476	47.372	45.932	52.220	52.766	68.377
Montana	131.164	69.769	89.098	80.736	82.673	86.422	77.305	76.115	50.851	247.521	258.165	178.726	182.074
New Mexico	172.535	138.647	134.513	136.966	119.185	116.862	102.457	98.245	82.488	73.233	68.513	73.233	73.526
North Dakota	261.278	270.908	246.124	185.747	221.801	113.877	154.477	146.929	163.192	116.462	96.060	79.836	60.333
Oklahoma	164.017	149.644	128.170	140.802	139.303	132.619	120.942	130.801	110.546	99.114	91.059	90.397	90.397
Pennsylvania (bituminous)	118.598	131.313	111.639	123.750	115.818	118.430	142.980	141.906	57.482	51.490	113.274	56.567	56.567
South Dakota	179.884	206.276	177.013	159.881	152.888	150.446	140.825	139.072	132.377	150.934	127.375	98.985	104.016
Tennessee	153.107	144.210	108.942	100.139	143.548	166.339	128.009	104.700	108.664	122.147	100.369	118.150	89.843
Texas	231.253	216.158	213.763	174.200	218.080	259.635	286.108	274.675	213.261	123.128	97.388	116.577	109.577
Utah	260.651	112.237	110.456	107.066	119.204	120.026	109.028	112.550	98.987	92.569	267.853	279.180	116.870
Virginia	121.451	67.371	68.026	63.645	51.187	46.175	54.526	45.972	43.696	95.105	93.340	93.432	93.432
West Virginia	157.027	144.583	144.583	144.583	144.583	144.583	144.583	144.583	144.583	37.560	43.668	37.859	37.859
Wyoming	522.036	82.563	286.785	65.334	54.016	21.018	82.232	-----	119.976	113.173	301.731	272.033	177.690
Total bituminous	152.327	141.257	127.061	131.721	130.735	127.639	115.733	118.213	105.262	97.179	95.346	90.422	91.443
Pennsylvania anthracite	469.901	442.178	395.540	350.536	367.791	345.293	348.671	298.191	314.632	301.311	306.606	310.968	280.729
Grand total	193.367	181.888	164.009	160.014	163.270	154.438	141.663	136.884	129.680	120.575	116.576	111.385	108.690

¹ Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

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TABLE 84.—Widows and orphans, 1933-42, resulting from coal-mine fatalities, by States¹

State	1933		1934		1935		1936		1937		1938		1939		1940		1941		1942	
	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans
Alabama	12	23	21	27	10	24	21	53	42	61	23	35	18	30	25	35	34	41	34	46
Arkansas	2	1	15	38	6	8	4	5	7	11	19	14	30	12	25	14	5	8	13	23
Colorado	11	18	15	38	17	29	19	34	10	19	14	30	83	55	89	59	15	18	40	71
Illinois	55	111	66	91	59	89	76	133	63	82	74	10	25	15	23	18	27	62	70	68
Indiana	7	16	4	8	12	20	15	18	25	25	10	1	2	1	4	6	8	5	22	33
Iowa	16	4	14	9	22	8	15	3	3	1	2	1	4	1	4	6	8	5	7	5
Kansas	4	10	6	8	9	4	5	126	93	236	57	117	82	211	88	188	84	225	103	270
Kentucky	58	168	49	99	63	136	50	12	1	6	17	1	1	5	1	2	1	2	4	1
Maryland	3	1	7	18	5	12	6	3	2	5	5	6	2	1	4	1	2	3	2	1
Michigan	2	1	13	39	5	12	5	15	6	5	6	2	3	9	5	2	1	4	1	3
Missouri	1	1	5	6	7	2	1	5	1	5	4	14	4	4	5	2	2	3	2	16
Montana	2	2	1	5	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Mexico	1	1	2	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
North Dakota	2	2	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ohio	25	57	19	27	26	37	21	36	21	29	15	20	11	21	109	193	30	50	34	92
Oklahoma	4	5	5	9	1	4	1	1	1	1	3	2	1	1	5	4	4	2	8	16
Pennsylvania (bituminous)	70	181	106	249	84	160	108	230	122	201	69	140	74	140	121	202	100	178	121	192
Tennessee	12	23	7	20	8	16	7	11	10	31	14	46	4	6	6	11	19	13	28	13
Texas	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	34
Utah	9	21	8	11	5	15	6	12	7	17	17	17	3	7	2	3	8	14	7	7
Virginia	14	42	29	82	20	58	22	66	24	68	60	143	32	30	76	36	91	41	90	1
Washington	4	6	3	6	5	8	3	8	7	8	4	5	3	3	4	1	1	4	33	269
West Virginia	135	248	140	290	171	440	196	344	207	418	143	278	138	289	245	387	163	8	10	13
Wyoming	6	6	5	8	8	5	11	12	6	2	1	4	1	9	14	8	10	13	16	
Other States ²							1	2												
Total (bituminous)	439	941	518	1,057	533	1,105	585	1,113	657	1,247	406	934	454	908	770	1,309	604	1,329	797	1,684
Pennsylvania (anthracite)	107	225	150	301	118	273	108	221	95	172	77	166	90	180	72	117	86	129	99	156
Grand total	546	1,166	668	1,358	651	1,378	693	1,334	752	1,410	573	1,100	544	1,088	842	1,426	690	1,268	896	1,840
Total fatalities	1,064		1,226		1,242		1,342		1,413		1,105		1,078		1,388		1,266		1,471	

¹ As some companies reporting fatalities fail to report the number of widows and orphans, the figures given fall far short of the full number of persons widowed or orphaned by mine accidents.² Includes Arizona, California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

COAL-MINE ACCIDENTS IN THE UNITED STATES, 1942

TABLE 85.—Number of active open-cut bituminous-coal mines in the United States, 1930-42

State	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
Alabama	11	8	5	6	9	2	3	6	5	6	6	6	8
Arkansas	1	1	1	2	2	2	2	7	6	4	4	4	13
Colorado	1	2	3	4	2	1	1	1	1	2	1	1	2
Illinois	27	43	50	48	72	70	63	61	58	66	58	49	44
Indiana	19	20	25	41	46	54	59	69	79	82	91	92	77
Iowa													
Kansas													
Kentucky	44	32	35	42	28	25	26	21	34	37	43	44	38
Maryland	6	3	1		49	51	57	54	55	59	50	49	43
Michigan													
Missouri	28	27	27	24	21	27	27	35	30	64	7	7	12
Montana	2	4	4	2	2	4	3	5	6	64	64	64	2
New Mexico													
North Dakota	37	41	39	36	46	45	68	75	64	72	74	66	7
Ohio	18	21	18	29	40	39	57	77	78	95	133	116	66
Oklahoma	8	11	10	11	8	8	11	11	13	14	12	12	
Pennsylvania (bituminous)	7	7	10	6	14	12	14	13	45	104	100	101	108
South Dakota	3	10	10	10	5	5	4	4	6	5	2	7	6
Tennessee	1	2	4	2	1	1	1	1	1	1	1	1	1
Texas													
Utah													
Virginia													
Washington													
West Virginia	2	1	1	2	3	4	1	2	3	9	10	15	1
Wyoming	1	1	1	2	3	4	3	4	5	4	8	11	49
Total (bituminous)	215	235	253	293	342	363	380	433	515	626	640	784	755

MAJOR DISASTERS

As defined by the Bureau of Mines, a major disaster is an accident that results in the loss of five or more lives. During the calendar year 1942 seven such disasters occurred, six of which were explosions and one a surface haulage accident; all told, these caused the death of 132 men.

A complete list of major disasters that occurred since 1839 was published in Bureau of Mines Bulletin 437, Coal-Mine Accidents in the United States (pp. 111-118). Some information has been obtained covering several disasters that occurred in coal mines before 1839, but the information thus far available is incomplete and therefore the disasters are not included in the list.

TABLE 86.—*Coal-mine disasters in the United States during the calendar year 1942*

Date	Name of mine	Location of mine	Nature of accident	Killed
Jan. 27	Wadge	Mt. Harris, Colo.	Explosion	34
May 11	Peerless	Greenwood, Ark.	do	6
May 12	Christopher No. 3	Osage, W. Va.	do	56
May 18	Hitchman	Benwood, W. Va.	do	5
July 9	No. 2	Furglove, W. Va.	do	20
Nov. 30	No. 10	Providence, Ky.	do	6
Dec. 15	Laing No. 1	Laing, W. Va.	Surface man trip	5

SPECIFIC CLASSIFICATION OF MINES BY VARIOUS GROUPINGS

Rock dust.—During 1942, the year covered by this bulletin, 838 mines reported the use of rock dust for the prevention of explosions. These mines represented 14 percent of the total number of underground bituminous-coal mines in operation during the year; they employed 200,728 men or more than 55 percent of the total number of underground employees. The fatal and nonfatal accident rates for the rock-dusted mines were lower and therefore better than for the non-rock-dusted mines and also better than the United States underground average.

Gassy mines.—Mines rated by State mining departments as gassy employed 44 percent of the men and produced 49 percent of the total underground output of coal. The fatal accident rate per million man-hours of employment underground was only slightly higher than the United States average underground, but the nonfatal accident rate was lower than the general average for the country. The gassy mines employed an average of 248 men underground. Eighty-five percent of the rock dust used was used in gassy mines.

Nongassy mines.—This group represented 50 percent of the employment and 47 percent of the production of the country, with a fatal accident rate lower and a nonfatal injury rate higher than the general average. These mines average 42 employees per mine.

Shaft mines.—Mines in which the men, materials, and coal are lowered or hoisted by cages are included in this group of mines; they totaled 901 mines during 1942, with 24 percent of the employment and 27 percent of the total underground bituminous production. Fatal and nonfatal accident rates were lower than the national average. Production from shaft mines was 0.94 per man-hour compared with the general average productivity of 0.83 ton per man-hour. Underground employees average 97 per mine.

Slope mines.—Numbering 1,543 mines this group employed 17 percent of the men and produced 16 percent of the country's bituminous coal. Compared with shaft mines, the accident rates were higher for the slope mines. These men had an average of 40 underground employees per mine.

Drift mines.—This type of mine is the most common in the country; 3,342 mines of this class were active during 1942. They employed slightly more than 55 percent of the men and produced over 53 percent of the underground bituminous tonnage. The combined fatal and non-fatal accident rate for drift mines was 80.8 per million man-hours of exposure, which compares very favorably with the general United States average rate of 79.5. The average number of underground employees was 60 per mine.

Shifts.—Eighty-six percent of the bituminous mines in the United States reported working only one shift per 24 hours. This does not mean that these mines all started at a certain time in the morning and quit at a specified time in the afternoon but rather that, in general, most of the employees were on a single shift per day. By reference to table 87, groups E and F, it will be seen that the 7-hour day and single-shift mines were the predominating types of operations in the country. The 7-hour mines produced 97 percent of the underground tonnage and employed 96 percent of the underground men. The single-shift mines produced 39 percent of the tonnage and employed 46 percent of the men. Two-shift mines, while fewer in actual number, produced 45 percent of the coal and employed 41 percent of the men. The two-shift mines were generally the larger mines having an average of 232 underground employees per mine, while the one-shift mines averaged 31 underground employees per mine.

Days of operating.—Group G of table 87 discloses the fact that the majority of mines (1,821) worked 200 to 249 days, while the next larger group (1,676) worked 250 to 299 days. These two classes represented 57 percent of the number of mines, 83 percent of the men working, and 88 percent of the total tonnage mined underground.

Mines that operated 1 to 49 days had a fatal accident rate nearly six times as high as the average for the United States; they were, as a rule, small mines, averaging only 15 employees per mine, as against an average of 58 employees per mine in the United States as a whole. The best fatal accident rate developed was that of mines that were active for 300 or more days, the fatal accident rate being 1.44 per million man-hours worked underground.

Production of coal.—Among 6,185 underground mines, 5,069 mines produced 63 million tons of coal in 1942, an average of 12,437 tons per mine. They included 22 percent of the men employed and but only 12 percent of the tonnage. Mines that produced 250,000 to 599,999 tons during 1942, although few in number, represented 26 percent of the employment and 27 per cent of the tonnage. Seventy-five mines, each having a production of 1,000,000 or more tons during 1942, accounted for 16 percent of the men working underground and 21 percent of the total underground tonnage. Both the fatal and nonfatal accident rates per million man-hours underground at these large mines were more favorable than the corresponding rates for the country as a whole.

Explosives.—A little more than 20 percent of the underground mines of the country reported using "permissible" explosives exclusively. These mines employed 178,694 men, which was 49 percent of the total number of men underground at all mines. Their production was 53 percent of the country's total output. The accident rates for mines using permissible explosives exclusively were more favorable than the average rates for all mines in the country as a whole. The mines that used only permissible explosives were large mines, averaging 140 employees per mine. Mines in which black powder was used also had rates more favorable than the United States average; these mines averaged 13 underground men per mine.

Thickness of seams.—Figures in group J of tables 87 and 88 show that the greatest number of mines operated in coal seams having an average thickness of 3 to 4 feet. Mines in this class accounted for a greater number of employees and a greater output of coal than any class operating in seams of greater or less thickness. Mines working in 3-to 4-foot seams had a lower fatality rate but a higher nonfatal injury rate than the average for the United States. Productivity per man-hour was 12 percent lower than the average for the country.

Lamps used.—Carbide lamps were used in 58 percent of the underground mines and electric cap lamps were in use in only 19 percent of the mines. Nevertheless, 67 percent of the underground employees were in mines in which electric cap lamps were used. These mines were generally large mines, having an average of 205 underground employees per mine, while mines using carbide lamps were generally smaller, averaging 19 men per mine. It is interesting to note that 96 percent of the rock dust used in bituminous-coal mines in 1942 was used in mines in which only electric cap lamps were used. Open-flame lamps (other than carbide lamps) were in use in 44 mines; these mines had an average of 23 employees per mine and an annual production of 21,000 tons per mine. No fatalities were reported from these mines, and the injury rate was more favorable than for the United States as a whole.

TABLE 87.—Classification of accident and employment reports covering underground bituminous-coal mines in the United States, 1942

GROUP A: MINES CLASSIFIED AS TO THE USE OR NONUSE OF ROCK DUST						
	Number of mines	Average number of men per mine	Number of men employed	Man-days of employment	Man-hours of employment	Production (short tons)
Rock dust used.....	5,347	240	200,728	51,702,332	362,934,727	328,621,730
Rock dust not used or not reported.....	5,347	30	160,333	36,387,838	258,537,650	187,860,634

GROUP B: MINES CLASSIFIED ACCORDING TO RATING BY STATE INSPECTOR AS GASSY OR NONGASSY						
	Gas	Non-gassy	Gas	Non-gassy	Killed	Injured
Gassy.....	639	248	40,696,982	285,699,067	251,564,704	222,245
Nongassy.....	4,334	42	181,781	33,368,333	244,339,213	37,460
Not reported.....	1,212	17	20,856	4,224,705	16,816,357	84

GROUP C: SUBCLASSIFICATION OF GROUP B ACCORDING TO USE OF ROCK DUST						
	Gassy					
Rock dust used.....	436	313	136,371	35,483,114	249,101,458	221,019,741
Rock dust not used or not reported.....	203	108	22,053	5,213,868	36,597,609	30,546,043
Nongassy.....						
Rock dust used.....	396	161	63,810	16,079,816	112,854,575	106,946,530
Rock dust not used or not reported.....	3,938	30	117,971	27,286,567	193,023,859	137,892,683
Rating not stated.....						
Rock dust used.....	6	91	547	139,402	978,694	655,459
Rock dust not used or not reported.....	1,206	17	20,309	4,085,383	28,916,182	19,162,908

GROUP D: MINES CLASSIFIED ACCORDING TO KIND OF OPENING TO MINE						
	Shaft					
Slope.....	901	97	87,763	21,374,206	150,285,426	140,472,920
Drift.....	1,543	40	60,979	14,851,715	104,734,740	83,036,617
All other.....	3,342	60	169,702	49,113,325	345,645,125	276,247,236
Not reported.....	55	163	8,434	2,228,233	15,655,951	13,80,444
	344	12	4,183	722,381	5,181,235	3,004,017

GROUP E: MINES CLASSIFIED ACCORDING TO LENGTH OF SHIFT

EDWARD F. MINES CHARGED ACCORDING TO NOTARIZED STATEMENTS WHICH HE MADE ON HONOR

one shift	5,331	31	165,757	37,733,546	267,024,939	203,644,893	38,627	463	20,859
two shifts	632	31	146,948	37,805,474	205,11,555	231,85,553	177,235	414	16,090
three shifts	192	237	45,333	12,004,258	84,902,234	76,712,013	44,491	202	7,679
one and two shifts	15	82	1,228	3,075,915	2,165,210	1,661,711	192	2	196
other	15	120	1,795	438,967	3,075,915	2,347,794	10	2	434

C. MUNICIPAL GOVERNMENT AS A SYSTEM **MUNICIPAL GOVERNMENT AS A SYSTEM**

to 49 days	272	15	3,965	128,309	907,707	613,982	234	8	70
to 99 days	577	10	6,058	441,754	3,134,414	1,902,676	28	7	237
to 149 days	689	13	9,300	1,577,686	8,199,489	5,390,463	586	44	442
to 199 days	881	18	15,727	2,759,275	19,811,075	13,991,176	891	48	1,494
to 249 days	1,821	60	108,985	25,503,249	155,445,727	97,754	380	14	832
to 299 days	1,676	114	191,704	50,552,568	355,492,755	207,219,708	177,310	508	27,551
to 349 days or more	269	94	225,222	7,607,316	54,138,581	41,608,632	36,752	78	3,431

GROUP H: MINES CLASSIFIED ACCORDING TO THE PRODUCTION OF COAL

TABLE 87.—Classification of accident and employment reports covering underground bituminous-coal mines in the United States, 1942—Continued

GROUP I: MINES CLASSIFIED ACCORDING TO THE KIND OF EXPLOSIVES USED

	Number of mines	Average number of men per mine	Number of men employed	Man-days of employment	Man-hours of employment	Production (short tons)	Tons of rock dust	Killed	Injured
Permissible explosives	1,278	140	178,694	45,551,259	320,051,503	271,380,032	195,288	531	23,308
"Other high" explosives	196	21	4,211	828,537	6,033,976	2,292,690	49	12	504
Black powder, granular	818	8	6,648	1,289,167	9,241,083	5,211,439	50	15	577
Black powder, pellet	1,017	17	17,024	3,767,057	26,776,347	18,078,914	889	43	1,926
Permissible and others	747	135	100,988	26,005,233	175,646,589	155,104,602	54,976	369	15,502
Others and not reported	2,120	25	33,896	11,848,937	83,723,179	64,185,187	9,303	173	5,902

GROUP J: MINES CLASSIFIED ACCORDING TO THICKNESS OF COAL SEAM

2 feet and less	236	21	5,050	1,061,482	7,651,485	2,654,611	103	13	418
2 to 3 feet	1,039	32	33,581	7,838,538	55,271,795	33,010,829	12,601	90	4,366
3 to 4 feet	1,712	58	99,240	24,058,289	169,285,209	124,254,209	58,152	283	14,427
4 to 5 feet	1,112	65	72,781	17,805,758	125,298,137	98,212,672	41,610	230	9,711
5 to 6 feet	744	72	55,722	12,373,222	94,167,166	86,440,473	32,402	141	7,553
6 to 7 feet	369	125	46,145	11,687,123	82,157,850	80,574,075	55,378	159	5,776
Over 7 feet	497	91	45,330	11,660,811	81,206,709	87,197,334	38,383	180	5,890
Not reported	476	11	5,072	904,927	6,433,690	3,878,161	383	47	326

GROUP K: MINES CLASSIFIED ACCORDING TO THE KINDS OF LAMPS USED BY THE MEN

Electric	1,174	205	240,878	61,533,027	431,908,062	379,137,113	250,090	328	33,599
Carbide	3,612	10	67,811	14,951,338	106,186,480	70,695,452	1,955	142	7,049
Other open flame	44	23	1,632	230,401	1,771,684	923,948	1	-----	118
Electric and carbide	174	165	28,718	48,794,879	44,117,648	6,883	-----	87	4,826
Other and not reported	1,181	19	22,622	4,635,668	32,811,322	21,348,201	1,626	86	1,975
Total for each group	6,185	58	361,061	88,290,160	631,472,377	516,222,364	260,555	1,143	48,267

TABLE 88.—Classification of accident and employment reports covering underground bituminous-coal mines in the United States, 1942

GROUP A: MINES CLASSIFIED AS TO THE USE OR NONUSE OF ROCK DUST					
	Rate per million man-hours	Rate per million tons	Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per year
	Killed	Injured	Killed	Injured	
Rock dust used.....	1.766	76.601	1.951	84.599	0.905
Rock dust not used or not reported.....	1.942	79.161	2.676	109.093	.726
GROUP B: MINES CLASSIFIED ACCORDING TO RATING BY STATE INSPECTOR AS GASSY OR NONGASSY					
Gassy.....	1.915	72.336	2.174	82.150	0.881
Nongassy.....	1.674	84.641	2.091	105.743	.800
Not reported.....	2.810	57.234	4.238	86.334	.663
GROUP C: SUBCLASSIFICATION OF GROUP B ACCORDING TO USE OF ROCK DUST					
Gassy					
Rock dust used.....	1.742	70.742	1.964	79.730	0.887
Rock dust not used or not reported.....	3.088	83.175	3.099	99.686	.835
Nongassy					
Rock dust used.....	1.834	89.602	1.936	94.552	.948
Rock dust not used or not reported.....	1.580	81.741	2.212	114.422	.714
RATING NOT STATED					
Rock dust used.....	2.905	68.459	4.383	102.218	.670
Rock dust not used or not reported.....		56.854		85.791	.663
GROUP D: MINES CLASSIFIED ACCORDING TO KIND OF OPENING TO MINE					
Shaft.....	1.464	75.986	1.566	81.240	0.935
Slope.....	2.282	77.529	2.878	97.758	.793
Drift.....	1.856	78.983	2.320	98.824	.799
All other.....	1.216	75.152	1.411	87.212	.861
Not reported.....	4.632	50.374	7.889	86.884	.580

TABLE 88.—Classification of accident and employment reports covering underground bituminous-coal mines in the United States, 1942—Continued

GROUP E: MINES CLASSIFIED ACCORDING TO LENGTH OF SHIFT

	Rate per million man-hours		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
	Killed	Injured				
6 hours.....	3.193	102.980	3.315	106.925	0.963	6.02
7 hours.....	1.854	78.363	2.200	92.981	.843	7.01
8 hours.....	1.302	58.384	2.499	112.042	.521	8.00
All other.....	2.273	72.077	3.396	107.712	.660	7.58

GROUP F: MINES CLASSIFIED ACCORDING TO THE NUMBER OF SHIFTS WORKED PER 24 HOURS

	Killed	Injured	Tons per shift worked	Average hours of employment per man per day	Average hours of employment per man per year
One shift.....	1.734	78.116	2.274	102.428	0.763
Two shifts.....	1.562	72.041	1.786	82.385	.874
Three shifts.....	3.116	91.316	3.414	100.063	.913
One and two shifts.....	.924	90.522	1.204	117.951	.767
All other.....	.650	141.118	.852	184.854	.763

GROUP G: MINES CLASSIFIED ACCORDING TO THE NUMBER OF DAYS THE MINES WERE ACTIVE

	Killed	Injured	Tons per day worked	Average hours of employment per man per day	Average hours of employment per man per year
1 to 49 days.....	8.813	77.117	13.030	114.010	0.676
50 to 99 days.....	5.233	75.612	3.679	124.561	1.478
100 to 149 days.....	5.366	72.200	8.163	109.824	.667
150 to 189 days.....	2.423	75.412	3.441	107.088	.704
200 to 249 days.....	2.002	82.698	2.316	95.545	.865
250 to 299 days.....	1.682	77.613	2.012	92.830	.836
300 days or more.....	1.441	63.374	1.871	82.281	.770

GROUP H: MINES CLASSIFIED ACCORDING TO THE PRODUCTION OF COAL

	Killed	Injured	Tons produced	Average hours of employment per man per day	Average hours of employment per man per year
Less than 100,000 tons.....	2.390	71.429	4.299	128.483	0.556
100,000 to 249,999 tons.....	1.631	91.732	2.059	123.367	.744
250,000 to 599,999 tons.....	1.803	87.638	2.111	102.643	.854
600,000 to 999,999 tons.....	1.704	70.273	1.761	72.584	1.171
900,000 to 999,999 tons.....	1.569	74.185	1.568	74.179	.968
1,000,000 tons or more.....	1.828	60.964	1.780	59.713	1.021

Less than 100,000 tons.....	2.390	71.429	4.299	128.483	0.556	1.790	7.14	1,444
100,000 to 249,999 tons.....	1.631	91.732	2.059	123.367	.744	1.345	7.04	1,744
250,000 to 599,999 tons.....	1.803	87.638	2.111	102.643	.854	1.171	7.01	1,774
600,000 to 999,999 tons.....	1.704	70.273	1.761	72.584	1.033	1.033	7.00	1,824
900,000 to 999,999 tons.....	1.569	74.185	1.568	74.179	1.000	1.000	7.05	1,889
1,000,000 tons or more.....	1.828	60.964	1.780	59.713	1.021	.979	7.01	1,860

GROUP I: MINES CLASSIFIED ACCORDING TO THE KIND OF EXPLOSIVES USED

	Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
	Killed	Injured	Killed	Injured				
Permissible explosives—								
“Other high” explosives—								
Black powder, granular	1.639	74.700	1.957	88.104	0.848	1.179	7.03	1,791
Black powder, Pellet	1.623	83.531	6.257	220.722	.375	2.643	7.28	1,433
Black powder, Pellet	1.606	62.439	2.878	110.718	.564	1.773	7.17	1,390
Permissible and others—	1.101	71.529	2.370	106.536	.675	1.481	7.11	1,573
Other and not reported—	2.101	97.961	2.379	99.610	.853	1.332	7.02	1,746
	2.086	70.494	2.656	91.953	.767	1.304	7.07	1,563

GROUP J: MINES CLASSIFIED ACCORDING TO THICKNESS OF COAL SEAM

2 feet and less—	1.699	54.630	4.897	157.462	0.347	2.882	7.21	1,616
2 to 3 feet—	1.628	78.991	2.726	132.260	.597	1.074	7.05	1,646
3 to 4 feet—	1.672	85.223	2.278	116.109	.734	1.362	7.04	1,705
4 to 5 feet—	1.836	77.503	2.342	98.877	.784	1.276	7.04	1,722
5 to 6 feet—	1.497	84.456	1.631	92.006	.918	1.089	7.04	1,748
6 to 7 feet—	1.835	63.001	1.973	64.239	.981	1.020	7.03	1,780
Over 7 feet—	2.217	72.531	2.064	67.648	1.074	.981	7.02	1,791
Not reported—	7.305	50.671	12.119	84.060	.603	1.659	7.11	1,268

GROUP K: MINES CLASSIFIED ACCORDING TO THE KINDS OF LAMPS USED BY THE MEN

Electric—	1.917	77.792	2.184	88.620	0.878	1.139	7.02	1,733
Carbide—	1.337	74.859	2.006	112.440	.666	1.502	7.10	1,566
Other open flame—	68.605	-----	-----	127.733	.522	1.917	7.08	1,717
Electric and carbide—	94.905	1.872	-----	104.856	.804	1.106	7.05	1,689
Other and not reported—	60.193	4.028	92.514	.661	1.637	7.08	1,460	
Total for each group—	1.839	77.666	2.214	93.500	.831	1.204	7.04	1,721

IDENTICAL MINES

As the accident rate for an industry rises and falls from year to year, a question is suggested as to whether the changes in the annual rates are experienced by the great body of the industry that is active on a more-or-less permanent basis or whether they are due to higher or lower accident rates being brought into the industry's experience by new mines entering into production or old mines reopened or to the disappearance of mines that cease operation because of exhaustion of their coal supply or for other reasons. Some light on this question as it relates to the bituminous-coal mining in the United States is afforded by an analysis of reports from mining companies that operated their mines during the calendar year 1942. The reports relate to underground operations only.

Of 361,061 men who were employed underground in bituminous-coal mines in 1942, a total of 13,940 men worked in mines that were not in operation in 1941 and the remainder, 347,121 men, worked in mines that were active both in 1942 and 1941. The mines that were active during both years reported a decrease of 3.5 percent in number of workers underground, an increase of nearly 10 percent in total man-hours worked, and a gain of almost 12 percent in the total quantity of coal produced. For this same group of mines active in both years, the number of fatal accidents underground increased by more than 14 percent (from 936 to 1,071) and the number of nonfatal lost-time injuries by slightly less than 14 percent (from 41,262 to 46,972.)

The mines that entered into operation during 1942 but that were not active during 1941 numbered 749, employed 13,940 men, and produced more than 12 million tons of coal. The mines that were active during the preceding year but did not continue their operations into 1942 totaled 1,184, employed 15,280 men, and produced 9.8 million tons of coal. The mines active in 1941 but not in 1942 reported 58 employees killed by accidents and 956 injured nonfatally; those active in 1942 but not in 1941 reported 72 men killed by accidents and 1,295 injured. Excluding the old mines lost and the new mines gained, the bulk of the bituminous-coal industry (mines active in 1941 and 1942) reported 936 employees killed by accidents in 1941 and 1,071 killed by accidents in 1942; they also reported 41,262 nonfatal injuries during 1941 and 46,972 during 1942.

The new mines entering the field in 1942 had a fatality rate per million man-hours worked by their employees that was slightly more favorable and an injury rate that was somewhat worse than the rates reported by mines that were active during 1941 but not in 1942.

The new mines starting operations in 1942 did not greatly affect the accident rate of the industry as a whole; with them, the industry's rate per million man-hours underground was 79.50, without them the rate underground was 79.74 (including fatalities and injuries). Likewise the old mines active in 1941 but inactive in 1942 did not greatly affect the industry's accident rate: with them the rate was 76.72 per million man-hours worked underground and without them the rate was 76.98.

Most of the mines that the industry acquired in 1942 were small averaging 19 employees per mine (underground). Most of the mines that the industry lost in 1942 were also small, averaging 13 underground employees per mine.

TABLE 89.—*Accident and employment data for underground bituminous-coal mines in the United States, 1941 and 1942, covering identical mines*

	Number of mines	Number of men employed	Average number of men per mine	Man-days of employment	Man-hours of employment	Production (short tons)	Tons of rock dust used	Killed	Injured
Active 1941, inactive 1942-----	1,184	15,280	13	2,129,549	15,041,016	9,758,646	1,658	58	956
Identical mines, active both years, 1941-----	5,433 ¹	359,673	66	77,936,758	548,194,971	450,532,864	170,644	936	41,262
Identical mines, active both years, 1942-----	5,436 ¹	347,121	64	85,633,593	602,496,623	504,042,895	257,584	1,071	46,972
Active 1942, inactive 1941-----	749	13,940	19	2,656,587	18,975,754	12,179,469	2,971	72	1,295
<hr/>									
	Rate per million man-hours			Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
	Killed	Injured		Killed	Injured				
Active 1941, inactive 1942-----	3.856	63.560		5.943	97.964	0.649	1.541	7.06	984
Identical mines, active both years, 1941-----	1.707	75.269		2.078	91.585	.822	1.217	7.03	1,524
Identical mines, active both years, 1942-----	1.778	77.962		2.125	93.190	.837	1.195	7.04	1,736
Active 1942, inactive 1941-----	3.794	68.245		5.912	106.326	.642	1.558	7.14	1,361

¹ Figures cover identical mines including several properties combined into 1 mine or separated into 2 mines in either year. The number of mines unaffected by these changes was 5,422. Figures relate to underground operations only.

STANDARD ACCIDENT REPORT FORM

A standard accident report form, for the use of mining companies in reporting accidents to their employees, has been adopted by the Bureau of Mines of the United States Department of the Interior and the mining departments and compensation or industrial commissions of States that produce about 85 percent of the annual output of coal in the United States. The standard form was adopted for use beginning January 1, 1943, at the close of 1942, the year covered by this bulletin. Companies that operate coal mines in States whose officials have not as yet adopted the report form as standard nevertheless use the report form in furnishing accident reports to the Bureau of Mines in accordance with the national mine-inspection law of May 7, 1941.

The purpose of the standard form is to reduce the burden of multiplicity of reporting of accident facts to Federal and State mining officials. The form was adopted after a series of conferences with State mine officials by a representative of the Bureau of Mines, a representative of the National Coal Association, and a representative of the coal-mine operators' association in the respective States in which conferences were held.

The standard form includes 38 questions regarding each accident on which a report is required. Reports are required on all accidents causing death, permanent disability, or temporary disability lasting more than

the remainder of the day on which the accident occurred. The report form is known as Bureau of Mines form 6-637. At the top is printed the name and address of the Bureau and brief directions for supplying the information required. Similar forms, without such heading or directions, are supplied to State mine officials, the space being left blank for the printing of the name and address of the State office and for such directions as State officials deem necessary. In all other respects the forms supplied to the States are identical with form 6-637—identical as to the 38 questions, spacing of questions on the form, and as to width of left margin and bottom edge of the form. These features make it possible for a mining company to make an original and as many carbon copies of an accident report as may be required to meet its own needs and to furnish copies to State mine officials and the Federal Bureau of Mines.

It is hoped that the use of the standard form may spread to those States (representing about 15 percent of the Nation's yearly production of coal) that, because of legislative requirements or for other reasons, have not yet been able to replace State forms with the standard form.

The standardization of the form applies to the "face" of the form only; additional questions that may be required in one State but not in other States will, as a result of agreement reached at the conferences, be printed on the "back" of the standard form and thus maintain the "face" of the form as standard on a Nation-wide basis.

An illustration of the standard form is given as figure 1.

STANDARD ACCIDENT-REPORT FORM

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6-627

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON**

EMPLOYER'S REPORT OF COAL-MINE INJURY

This report is required by the Coal-Mine Inspection Law of May 7, 1941, Public Law 49, 77th Congress. A return should be made for each accident that disabled an employee for more than the remainder of the day on which the accident occurred. This report (6-627) should be sent to the Bureau of Mines, Washington, D. C., at the end of each month. If disability extends beyond the end of the month, continue reporting monthly on Monthly Summary Sheet (Form 6-627a), until injured employee returns to work, provided that reports of injury need not be continued beyond 6 months following date of injury.

		Budget Bureau No. 62-R227-42 Approved January Dec. 31, 1941	
		Do not use this column	
		Company	
		Mine	
		State and County	
		Type of mine U. S. or O. C.	
		Kind of coal	
		Shifts, hours per day	
		Year	
		Month and day	
		Day wk.	Hour a. m. p. m.
		Shift began	
		Age	Sex
		Nat.	U. S. C. H.
		Marital status	
		Dependents (all)	
		Occupation when injured	
		Regular Occupation	
		Experience Your Co. Total Minns	
		Co. property	
		Place	
		Solid	Pillar
		Flat	Pitch
		Agency	
		Agency part	
		Condition	
		Accident type	
		Unsafe act	
		Personal defect	
		Nature	
		Location	
		Date return Physically	Actually
		Occupation return	
		Fatal date	
		Regulation	
		Failure	
		Prevention	
EMPLOYER NAME AND ADDRESS			
MINE NAME			
TIME OF ACCIDENT			
INJURED EMPLOYEE			
PLACE			
CAUSE			
RETURN TO DUTY LOCATION OF INJURY			
PRE- VENTION			
<p>(Signed) _____ <small>(Company official to whom correspondence should be addressed)</small> <small>(Official position)</small> <small>(Date of this report)</small></p>			

FIGURE 1.—Standard accident report form.

**STATE MINE INSPECTORS AND OTHER OFFICIALS CONNECTED
WITH THE MINING INDUSTRY OF THE UNITED STATES**

[COMPILED BY V. E. WRENN]

Name	Designation	Address
ALABAMA		
H. J. Gentry.....	Acting chief, division of safety and inspection.....	203 Protective Life Bldg., Birmingham.
J. H. Chapman.....	Mine inspector.....	Do.
J. A. Ivie.....	do.....	Do.
F. L. Weston.....	do.....	Do.
O. H. Youngblood.....	do.....	Quinton.
Dabney Ramseur.....	do.....	Jasper.
A. G. Crane.....	do.....	Warrior.
J. R. Wilson.....	do.....	Pinson.
Frank R. Broadway.....	Director, department of industrial relations.....	Montgomery.
Walter B. Jones.....	State geologist.....	University of Alabama, University.
Stewart J. Lloyd.....	Assistant State geologist.....	Do.
ALASKA		
B. D. Stewart.....	Commissioner of mines.....	Juneau.
Charles R. Garrett, Jr.....	Associate mining engineer (deputy inspector of mines).....	Anchorage.
ARIZONA		
Tom C. Foster.....	State mine inspector.....	Phoenix.
C. C. Newens.....	Deputy mine inspector.....	Bisbee.
William Kucher.....	do.....	305 8th Ave., Safford.
Clifford J. Murdock.....	do.....	Phoenix.
Ray Gilbert.....	Chairman, industrial commission.....	Do.
B. F. Hill.....	Chief clerk, industrial commission.....	Do.
T. G. Chapman.....	Director, Arizona Bureau of Mines.....	Tucson.
ARKANSAS		
W. J. McCain.....	Commissioner of labor.....	Little Rock.
J. W. Fitzjarrell.....	State mine inspector.....	505 First Nat. Bank Bldg., Fort Smith.
Joe W. Kinsey.....	State geologist, geological survey.....	446 State Capitol, Little Rock.
CALIFORNIA		
Paul Scharenberg.....	Chairman, industrial accident commission.....	State Bldg., San Francisco, 2.
Frank J. Burke.....	Secretary, industrial accident commission.....	Do.
Charles R. Macdonald.....	Statistician, industrial accident commission.....	Do.
C. H. Fry.....	Chief, industrial accident prevention bureau.....	Do.
J. Wesley Gebb.....	Assistant chief, industrial accident prevention bureau.....	State Bldg., Los Angeles, 12.
C. E. Johnson.....	Supervising mine safety engineer.....	State Bldg., San Francisco, 2.
Emory Smith.....	Assistant mine safety engineer.....	Do.
A. T. Brozik.....	do.....	Do.
J. C. Franz.....	do.....	Do.
Kyle J. Lutz.....	do.....	Do.
R. A. Elder.....	do.....	State Bldg., Los Angeles, 12.
A. L. Foss.....	do.....	Do.
C. V. Hopkins.....	do.....	Do.
A. V. Smith.....	do.....	Do.
M. L. Beauchamp.....	Assistant petroleum safety engineer.....	State Bldg., San Francisco, 2.
J. E. Crail.....	do.....	State Bldg., Los Angeles, 12.
D. E. Fisher.....	do.....	Do.
W. J. Hobba.....	do.....	Do.
L. R. Hodge.....	do.....	Do.
Joseph C. Hoyt.....	do.....	Do.
Walter W. Bradley.....	State mineralogist, chief, division of mines.....	Ferry Bldg., San Francisco, 11.
R. D. Bush.....	Chief, division of oil and gas.....	Do.
COLORADO		
Fred Jones.....	Commissioner of mines, State of Colorado.....	220 State Museum, Denver.
Metal mines		
George Becker.....	Inspector, district No. 1.....	Denver.
Fred Theobald.....	Inspector, district No. 2.....	Victor.
R. J. Murray.....	Inspector, district No. 3.....	Salida.
Dan C. McNaughton.....	Inspector, district No. 4.....	Silverton.
Coal mines		
Thomas Allen.....	Chief inspector of coal mines.....	230 Argonaut Hotel, Denver, 2.
Hugo H. Machin.....	Deputy inspector.....	1021 University Ave., Boulder.
J. J. Roddy.....	do.....	1404 White Ave., Grand Junction.
George H. Smith.....	do.....	1110 Macon St., Canon City.
Myron D. Williams.....	do.....	Box 411, Walsenburg.
Finlay McCallum.....	do.....	Box 401, Steamboat Springs.

STATE MINE INSPECTORS AND OTHER OFFICIALS

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Name	Designation	Address
COLORADO—Continued		
Thomas Allen.....	President, board of examiners.....	Capitol Bldg., Denver.
Henry Thomas.....	Board of examiners.....	1918 Pine St., Boulder.
Albert Daniels.....	do.....	Haybro.
Tom Bodencomb.....	do.....	Walsenburg.
Fred W. Whiteside.....	Mining engineer and secretary, board of examiners.	Equitable Bldg., Denver.
William I. Reilly.....	Chairman, industrial commission.....	Capitol Annex, Denver.
Albert E. Zarlenko.....	Secretary, industrial commission.....	Do.
M. F. Coolbaugh.....	Secretary, Geological Survey Board of the State of Colorado.	Golden.
CONNECTICUT		
Leo J. Noonan.....	Chairman, board of compensation commis- sioners.	54 Church St., Hartford.
Dr. Edward L. Troxell.....	Superintendent, State geological and natural history survey.	Trinity College, Hartford.
DELAWARE		
John G. Leach.....	President, industrial accident board.....	306 Equitable Trust Bldg., Wil- mington.
D. D. Wharton.....	Member, industrial accident board.....	Dover.
John L. Barr.....	do.....	Georgetown.
Francis D. Buck.....	Secretary, industrial accident board.....	306 Equitable Trust Bldg., Wil- mington.
FLORIDA		
Herman Gunter.....	Director, geological survey, Florida State Board of Conservation.	Tallahassee.
B. A. Williams.....	Chairman, Florida Industrial Commission.....	Do.
GEORGIA		
Capt. Garland Peyton.....	Director, department of mines, mining and geology, State division of conservation.	425 State Capitol, Atlanta, 3.
HAWAII		
Charles M. Wright.....	Chairman, commission of labor and industrial relations.	Honolulu.
L. W. Jongeneel.....	Chairman, labor and industrial relations board.	Do.
Paul F. Lada.....	Chairman, industrial accident board for the city and county of Maui.	Wailuku.
H. K. Kellner.....	Chairman, industrial accident board for the county of Hawaii.	Hilo.
James Y. Ishii.....	Chairman, industrial accident board for the county of Kauai.	Kapaa.
IDAHO		
W. L. Robison.....	Chairman, industrial accident board.....	Boise.
Benj. F. Harrison.....	Secretary, industrial accident board.....	Do.
Arthur Campbell.....	State mine inspector, mining department.....	Do.
A. W. Fahrenwald.....	Director, Idaho Bureau of Mines and Geology	Moscow.
ILLINOIS		
Robert M. Medill.....	Director, department of mines and minerals.....	Springfield.
Robert Weir.....	Assistant director, department of mines and minerals.	Do.
Pierre Thomas.....	Chief clerk, department of mines and minerals.....	857 South Columbia Ave., Spring- field.
Charles Van Schaick.....	Mine inspector, district No. 1.....	207 West Cleveland St., Spring- Valley.
Arthur P. Riedlinger.....	Mine inspector, district No. 2.....	117 Amsler St., Bartonville.
Robert Taggart.....	Mine inspector, district No. 3.....	Route 1, Farmington.
George Hall.....	Mine inspector, district No. 4.....	1809 South Lincoln St., Springfield.
Charles Blakeney.....	Mine inspector, district No. 5.....	Route 6, Box 148, Danville.
Frank Stank.....	Mine inspector, district No. 6.....	Taylor Springs.
Rudolph R. Schiber.....	Mine inspector, district No. 7.....	Glen Carbon.
Fred Lippert.....	Mine inspector, district No. 8.....	920 Centerville Ave., Belleville.
John Golden.....	Mine inspector, district No. 9.....	Duquoin.
J. R. Wilson.....	Mine inspector, district No. 10.....	107 W. Lindell, West Frankfort.
George C. Bagwill.....	Mine inspector, district No. 11.....	506 North Main St., Harrisburg.
Ray McCluskey.....	Mine inspector, district No. 12.....	Carterville.
Driscoll O. Scanlon.....	Mine inspector, district No. 13.....	Nashville.
William L. Morgan.....	Mine inspector, district No. 14.....	Chandler Apts., Macomb.
Joe Harris.....	Inspector-at-large.....	811 Ledford, Harrisburg.
Elmer Edmonds.....	do.....	Royalton.
Thomas S. English.....	Economic investigator.....	2013 South 4th St., Springfield.
Oscar Rice.....	Fluorspar inspector.....	Elizabethtown.
Robert M. Medill.....	Chairman, ex-officio, State mining board.....	Springfield.
B. H. Schull.....	Mine officer.....	Binkley Coal Co., Pinckneyville.
Walter Gill.....	do.....	129 Edgehill Court, Peoria.
Murrell Reak.....	do.....	1605 East Oak, West Frankfort.
Byron O'Neil.....	Secretary.....	408 E. North St., Staunton.

Name	Designation	Address
ILLINOIS—Continued		
Richard McAllister.....	President, miners' examining board.....	Duquoin.
Joseph J. Boetta.....	Member, miners' examining board.....	Gillespie.
Lloyd Owens.....	do.....	R. R. 3, Peoria.
Joseph Turner.....	Secretary, miners' examining board.....	Edgemont Station, East St. Louis.
Alfred J. Borah.....	Chairman, industrial commission.....	205 West Wacker Drive, Chicago.
M. M. Leighton.....	Chief, State geological survey division.....	University of Illinois Campus, Urbana.
INDIANA		
Henry S. Wallace.....	Director, bureau of mines and mining.....	Room 9, State House Annex, Indianapolis.
Patrick McGuigan.....	Assistant mine inspector.....	Carbon.
W. Edward Powers.....	do.....	Bicknell.
Henry Ahlemann.....	do.....	Mackey.
William Butts.....	do.....	Terre Haute.
Warren W. Martin.....	Chairman, industrial board.....	432 State Capitol, Indianapolis.
Delbert E. Platt.....	Secretary, industrial board.....	Do.
Prof. Ralph E. Esarey.....	State geologist, department of conservation, division of geology.	415 Indiana State Library Bldg., Indianapolis, 9.
IOWA		
Jacob Ritter.....	President, State board of examiners.....	Centerville.
William Anderson.....	Member, State board of examiners.....	Route 5, Albia.
William Jarvis.....	do.....	Route 5, Des Moines.
James Smith.....	Secretary, State board of examiners.....	Lovilia.
E. A. Farnsworth.....	Mine inspector, district No. 1.....	Centerville.
A. Everett Erskine.....	Mine inspector, district No. 2.....	R. F. D. 3, Ottumwa.
John E. Jeffreys.....	Mine inspector, district No. 3.....	Des Moines.
George Duckworth.....	Secretary, State mining department.....	Do
Elmer P. Corwin.....	Industrial commissioner, workmen's compensation service.	Fruitland.
Ralph Young.....	Deputy industrial commissioner, workmen's compensation service.	Des Moines.
Charles H. Greenley.....	Secretary, industrial commissioner, workmen's compensation service.	Do.
W. J. Scarborough.....	Claims auditor, workmen's compensation service.	Do.
Charles W. Harness.....	Commissioner of labor.....	Statehouse, Des Moines.
Dr. A. C. Trowbridge.....	Director and State geologist, Iowa Geological Survey, geology annex.	Iowa City.
KANSAS		
John Delplace.....	Chief mine inspector.....	302 East Cleveland Ave., Pittsburgh.
Ernest Shaw.....	Deputy mine inspector.....	Weir.
Robert Archibald.....	do.....	Burlingame.
Dow Y. Downing.....	Deputy metal mine inspector.....	Baxter Springs.
John J. Cartwright.....	Superintendent, rescue station.....	Scammon.
Erskine Wyman.....	Workmen's compensation commissioner.....	Room 210, 801 Harrison St., Topeka.
John C. Frye.....	Acting State geologist.....	University of Kansas, Lawrence.
KENTUCKY		
G. M. Patterson.....	Chief, department of mines and minerals.....	Lexington.
Rufus J. Bailey.....	District mine inspector.....	Harlan.
Henry Hamblin.....	do.....	Do.
L. R. Buckner.....	do.....	Hazzard.
R. D. Brock.....	do.....	Do.
Frank Rhodes.....	do.....	Pikeville.
A. O. DeMoss.....	do.....	Madisonville.
G. W. McCormick.....	do.....	Do.
Earl B. Acuff.....	Safety engineer.....	Pikeville.
Harry Thomas.....	do.....	Paintsville.
W. C. Burrow.....	Commissioner, department of industrial relations.	Frankfort.
D. J. Jones.....	State geologist, department of mines and minerals.	Lexington.
Louise B. Freeman.....	Assistant State geologist, department of mines and minerals.	Do.
LOUISIANA		
A. P. Harvey.....	Commissioner, Louisiana State Labor Department.	2103 State Capitol, Baton Rouge.
H. W. Bell.....	Director, division of minerals.....	900 State Capitol, Baton Rouge.
J. Huner, Jr.....	State geologist, Louisiana State Geological Survey.	University Station, Baton Rouge, 3
MAINE		
Jesse W. Taylor.....	Commissioner of labor and industry.....	Augusta.
Donald D. Garcelon.....	Chairman, industrial accident commission.....	Do.
Dr. J. M. Treteethen.....	State geologist, department of civil engineering, University of Maine.	Orono.

STATE MINE INSPECTORS AND OTHER OFFICIALS

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Name	Designation	Address
MARYLAND		
Dr. Joseph T. Singewald.....	Director, department of geology, mines and water resources.	State office Bldg., Annapolis.
John J. Rutledge.....	Chief mine engineer, department of geology, mines and water resources.	Do.
Frank T. Powers.....	District mine inspector.....	Frostburg.
Clyde J. Rowe.....	do.....	Westernport.
L. C. Huston.....	Vocational mining instructor.....	Kitsmiller.
J. DeSales Maher.....	Mine scale inspector.....	Midland.
<i>State mine-examining board</i>		
G. O. Tarleton.....	Representing operators.....	Frostburg.
Stephen Cesnick.....	Representing miners.....	Lord.
John J. Rutledge.....	Representing State, chairman ex-officio.....	State Office Bldg., Annapolis.
Emanuel Gorline.....	Chairman, industrial accident commission.....	Equitable Bldg., Baltimore.
De Lancey B. Scrivner.....	Secretary, industrial accident commission.....	Do.
Dr. Joseph T. Singewald.....	State geologist.....	Johns Hopkins University, Baltimore.
MASSACHUSETTS		
Mrs. Emma Sanborn Toussant.....	Chairman, department of industrial accidents.....	Statehouse, Boston.
Edward P. Doyle.....	Secretary, department of industrial accidents.....	Do.
MICHIGAN		
George W. Dean.....	Chairman, commissioner of labor, department of labor and industry.	Lansing.
Joe M. Moore.....	Secretary, department of labor and industry.	Do.
John Murray.....	Coal mine inspector.....	1503 Lyon St., Saginaw.
John T. Been.....	Mine inspector, Baraga County.....	Skanee.
David Hagberg.....	Mine inspector, Dickinson County.....	Iron Mountain.
Hjalmer Saari.....	Mine inspector, Gogebic County.....	114 West McLeod Ave., Ironwood.
James G. Pearce.....	Mine inspector, Houghton County.....	Calumet.
Frank J. Carlson.....	Mine inspector, Iron County.....	Crystal Falls.
Emil F. Jaaskelainen.....	Mine inspector, Keweenaw County.....	Box 9, Mohawk.
Richard Johns.....	Mine inspector, Marquette County.....	Negaunee.
Jacob Jacobson.....	Mine inspector, Ontonagon County.....	Paynesville.
Dr. Richard A. Smith.....	State geologist and chief, geological survey division, department of conservation.	Lansing.
MINNESOTA		
J. D. Williams.....	Chairman, Minnesota Industrial Commission.	137 State Office Bldg., St. Paul.
E. D. McKinnon.....	Secretary, Minnesota Industrial Commission.	Do.
Joseph Harkness, Jr.....	Chief, division of workmen's compensation.	State Office Bldg., St. Paul.
A. T. Evans.....	Chief, division of accident prevention.....	Do.
Harry Brunson.....	Chief, division of boiler inspector.....	Do.
Ray D. Nolan.....	Director, division of lands and minerals.....	14 State Office Bldg., St. Paul.
Oliver Stark.....	Mine inspector, Crow Wing County.....	Box 143, Crosby.
John A. Beecroft.....	Mine inspector, Itasca County.....	Keewatin.
A. F. Benson.....	Mine inspector, St. Louis County.....	Court House, Virginia.
W. H. Emmons.....	Director, Minnesota Geological Survey.....	University of Minnesota, Minneapolis.
MISSISSIPPI		
Dr. J. W. Dugger.....	Director, bureau of industrial hygiene and factory inspection.	Jackson.
Mrs. Johnnie Love Myers.....	Secretary, bureau of industrial hygiene and factory inspection.	Do.
William Clifford Morse.....	Director, Mississippi Geological Survey.....	University.
MISSOURI		
John A. Skinner.....	Chief inspector, bureau of mines.....	Jefferson City.
Ralph Bowen.....	Deputy inspector, coal mines.....	Windsor.
Elmer Evans.....	do.....	Macon.
Clarence E. Moore.....	Deputy inspector, lead and zinc mines.....	Flat River.
H. Robert Cohn.....	Chairman, Missouri Workmen's Compensation Commission.	Jefferson City.
Herman Lufey.....	Secretary, Missouri Workmen's Compensation Commission.	Do.
Dr. E. L. Clark.....	State geologist	Rolla.
MONTANA		
Edward Davies.....	State coal-mine inspector.....	1020 North 29th St., Billings.
Dennis Murphy.....	State metal-mine inspector.....	810 Waukesha St., Butte.
Ben Henry.....	do.....	822 9th Ave., Helena.
J. Burke Clements.....	Chairman, State industrial board.....	Helena.
W. W. Casper.....	Secretary, State industrial board.....	Do.
Francis A. Thomson.....	Director, bureau of mines and geology.....	Butte.

Name	Designation	Address
NEBRASKA		
Donald P. Miller.....	Commissioner of labor.....	State Capitol, Lincoln.
O. M. Olsen.....	Presiding judge, workmen's compensation court.	Do.
G. E. Condra.....	Dean, conservation and survey division, and State geologist.	University of Nebraska, Lincoln.
NEVADA		
Matt Murphy.....	State mine inspector.....	Carson City.
Arthur E. Bernard.....	Deputy mine inspector.....	East Ely.
Mervin J. Gallagher.....	do.....	Virginia City.
Dan J. Sullivan.....	Chairman, Nevada Industrial Commission.	Carson City.
Jay A. Carpenter.....	Director, Nevada State Bureau of Mines.....	Reno.
NEW HAMPSHIRE		
William H. Riley.....	Commissioner, bureau of labor.....	Concord.
NEW JERSEY		
Albert Gamble.....	State mine inspector.....	Oxford.
John J. Toohey, Jr.....	Commissioner of labor.....	Wallach Bldg., Trenton.
John Roach.....	Deputy commissioner of labor, bureau of mines.	Do.
C. George Krueger.....	Deputy commissioner of labor, bureau of explosives.	Do.
James A. T. Gribbin.....	Deputy commissioner of labor, bureau of statistics and records.	Do.
Daniel A. Spair.....	Deputy commissioner of labor, workmen's compensation bureau.	Do.
Joseph F. Scott.....	Deputy commissioner of labor, engineers' license, steam boiler, pressure vessel and refrigeration inspection bureau.	Do.
Charles P. Wilber.....	Director and State forester, department of conservation and development.	Statehouse Annex, Trenton
Meredith E. Johnson.....	State geologist and emergency coordination of mines.	Do.
NEW MEXICO		
Warren Bracewell.....	State mine inspector.....	612 Ridge Place, Albuquerque.
Charles Lembke.....	Chairman, labor and industrial commission.....	Albuquerque.
H. H. Williams.....	Member, labor and industrial commission.....	Raton.
Joe Granito.....	Member, labor and industrial commission.....	Santa Fe.
R. H. Reece.....	President, New Mexico School of Mines; director, New Mexico Bureau of Mines and Mineral Resources.	Socorro.
NEW YORK		
Edward Corsi.....	Industrial commissioner, State department of labor.	80 Centre St., New York.
Michael J. Murphy.....	Deputy industrial commissioner, State department of labor.	Do.
Rose Schneiderman.....	Secretary, State department of labor.....	Do.
Eugene B. Patton.....	Director, statistics and information, State department of labor.	Do.
N. H. Hertzberger.....	Acting director of inspection.....	Do.
Gustav Werner.....	Supervising mine and tunnel inspector, bureau of mines, tunnels, quarries, and explosives.	Hotel Alamac, 71st & Broadway, New York City.
E. J. McGrath.....	Mine and tunnel inspector, State department of labor.	365 New Scotland Ave., Albany.
R. E. Callahan.....	do.....	47 William St., Gouverneur.
Harold J. Brunette.....	do.....	601 West 144th St., New York City.
W. K. Kollak.....	do.....	P. O. Box 45, Parsonage St., Rhinebeck.
G. W. Schuler.....	do.....	Greiner Road, Clarence.
L. F. Worsell.....	do.....	Ludlowville.
Ralph E. Boyer.....	Director, workmen's compensation.....	150 Leonard St., New York City.
Chris A. Hartnagel.....	State geologist, State department of education.....	Albany.
NORTH CAROLINA		
Forrest H. Shuford.....	Commissioner of labor.....	Raleigh.
Lewis P. Sorrell.....	Chief inspector, division of standards and inspections, department of labor.	Do.
L. F. Lyon.....	Safety engineer and mine inspector, department of labor.	Asheville.
R. C. Ellis.....	do.....	Spruce Pine.
T. A. Wilson.....	Chairman, North Carolina Industrial Commission.	Raleigh.
E. W. Price.....	Secretary, North Carolina Industrial Commission.	Do.
Jasper L. Stuckey.....	State geologist, department of conservation and development.	Do.

STATE MINE INSPECTORS AND OTHER OFFICIALS

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Name	Designation	Address
NORTH DAKOTA		
J. B. Crowe.....	State mine inspector.....	Bismarck.
Adolph Michelson.....	Chairman, workmen's compensation commission.....	Do.
Leonard H. Miller.....	Secretary, workmen's compensation commission.....	Do.
Wilson M. Laird.....	State geologist, State geological survey.....	University Sta., Grand Forks.
OHIO		
George A. Strain.....	Director, department of industrial relations.....	Columbus.
Fred F. Braun.....	Chief, division of labor statistics.....	Do.
Harry P. Sain.....	Superintendent, Industrial Commission of Ohio, division of safety and hygiene.....	Do.
W. T. Blake.....	Chairman, industrial commission.....	Do.
R. H. Hildebrandt.....	Secretary, industrial commission.....	Do.
Marcus Kerr.....	Chief, division of mines.....	Do.
John A. Ryan.....	Inspector, district No. 1.....	Jackson.
Arnold E. Snowden.....	Inspector, district No. 2.....	Pomeroy.
Gerald Martin.....	Inspector, district No. 3.....	Smithfield.
Thomas A. Richards.....	Inspector, district No. 3.....	New Lexington.
Joshua Matheny.....	Inspector, district No. 4.....	Logan.
Isaac Vaughn.....	Inspector, district No. 5.....	Athens.
Wm. B. Morris.....	Inspector, district No. 6.....	Gloster.
Henry P. Ley.....	Inspector, district No. 7.....	Gloster.
Elmer Sage.....	Inspector, district No. 9.....	Roseville.
Roy E. Smith.....	Inspector, district No. 10.....	Caldwell.
Gilbert E. Archer.....	Inspector, district No. 11.....	Dresden.
Thomas McFarlane.....	Inspector, district No. 12.....	Byesville.
Richard McGee.....	Inspector, district No. 13.....	Shady-side.
Domenic Stanchina.....	Inspector, district No. 14.....	St. Clairsville.
Alfred Nardo.....	Inspector, district No. 15.....	Bridgeport.
John Harris.....	Inspector, district No. 16.....	Steubenville.
Wm. E. Farms.....	Inspector, district No. 17.....	Cadiz.
Stephen Williams.....	Inspector, district No. 18.....	Cochonton.
John H. Price.....	Inspector, district No. 19.....	Midvale.
David J. Coneybeer.....	Inspector, district No. 20.....	Carrollton.
Thomas E. McCartney.....	Inspector, district No. 21.....	Steubenville.
Thomas G. Reese.....	Inspector, district No. 22.....	Salem.
L. L. Lodwick.....	Inspector, district No. 23.....	Poland.
George H. Foster.....	Inspector, district No. 24.....	Massillon.
P. W. Moore.....	Superintendent, rescue stations.....	Cambridge.
A. D. Bradley.....	Station No. 1.....	Athens.
Henry C. Roberts.....	Station No. 2.....	Flushing.
Jos. D. M. Chadwick.....	Station No. 3.....	Shady-side.
J. C. Wilson.....	Oil and gas-well inspector.....	Columbus.
Wilbur Stout.....	State geologist.....	Do.
OKLAHOMA		
Robert H. Brown.....	Chief mine inspector (mines, coal, lead, asphalt, gypsum, clay, etc.).	State Capitol, Oklahoma City.
Otto Sandman.....	Assistant mine inspector, district No. 1.....	Coalgate.
John W. Moore.....	Assistant mine inspector, district No. 2.....	1 West Park, North McAlester.
Joe Johnson.....	Assistant mine inspector, district No. 3.....	1018 Cummings, Henryetta.
Joe Hobson.....	Assistant mine inspector, district No. 4.....	Cardin.
Vancil K. Greer.....	Chairman, industrial commission.....	State Capitol, Oklahoma City.
Frank Grayson.....	Secretary, industrial commission and custodian of records.....	Do.
Robert H. Dott.....	Director, Oklahoma Geological Survey.....	Norman.
OREGON		
L. O. Arens.....	Chairman, State industrial accident commission, representing public.....	State Office Bldg., Salem.
T. Morris Dunne.....	Commissioner, State industrial accident commission, representing employer.....	Do.
Paul E. Gurske.....	Commissioner, State industrial accident commission, representing labor.....	Do.
Earl K. Nixon.....	Director, State department of geology and mineral industries.....	702 Woodlark Bldg., Portland.
PENNSYLVANIA		
Richard Maise.....	Secretary of mines, department of mines.....	Harrisburg.
Joseph J. Walsh.....	Deputy secretary of mines, department of mines (anthracite). .	Do.
W. Garfield Thomas.....	Deputy secretary of mines, department of mines (bituminous). .	Do.
Anthracite inspectors.....		
James F. Munley.....	Mine inspector, district No. 1.....	166 Spruce St., Archbald.
Theodore L. Wackley.....	Mine inspector, district No. 2.....	1801 N. Washington Ave., Scranton.
Willard G. Ward.....	Mine inspector, district No. 3.....	119 First St., (Blakely), Olyphant.
F. B. Magovern.....	Mine inspector, district No. 4.....	117 S. Lincoln Ave., Scranton.
Theodore D. Rees.....	Mine inspector, district No. 5.....	R. D. No. 1, Box 54, Scranton.

Name	Designation	Address
PENNSYLVANIA—Continued		
John J. Bonner-----	Mine inspector, district No. 6-----	448 Harrison Ave., Scranton.
Andrew Wilson-----	Mine inspector, district No. 7-----	1491 River Road, Pittston.
Daniel H. Connelly-----	Mine inspector, district No. 8-----	25 E. Bennett St., Kingston.
John D. Edwards-----	Mine inspector, district No. 9-----	55 Butler St., Wyoming.
Joseph C. Hines-----	Mine inspector, district No. 10-----	27 James St., Pittston.
Henry R. Owens-----	Mine inspector, district No. 11-----	50 Carverton Road, Trucksburg.
Edwin C. Curtis-----	Mine inspector, district No. 12-----	52 Poplar St., Kingston.
Frank Kettle-----	Mine inspector, district No. 13-----	311 Brooks Bldg., Wilkes-Barre.
Kenneth C. Lee-----	Mine inspector, district No. 14-----	88 Old River Road, Wilkes-Barre.
Wm. R. Bottomley-----	Mine inspector, district No. 15-----	66 James St., Hazleton.
Wm. J. Clements-----	Mine inspector, district No. 16-----	25 Ruddie St., Coaldale.
James J. Shober-----	Mine inspector, district No. 17-----	227 W. Ridge St., Lansford.
T. A. Ryan-----	Mine inspector, district No. 18-----	1243 W. Norwegian St., Pottsville.
John H. Morgan-----	Mine inspector, district No. 19-----	322 Washington St., Frackville.
Harvey Hilbert-----	Mine inspector, district No. 20-----	1919 W. Market St., Pottsville.
Robert O. Schneider-----	Mine inspector, district No. 21-----	24 Laurel St., Tremont.
James Quigley-----	Mine inspector, district No. 22-----	45 N. Chestnut St., Mt. Carmel.
P. J. Friel-----	Mine inspector, district No. 23-----	133 E. Dewart St., Shamokin.
Ralph Ditzler-----	Mine inspector, district No. 24-----	609 Grant St., Hazleton.
<i>Bituminous inspectors</i>		
William J. Ivill-----	Mine inspector, district No. 1-----	437 Alexander St., Monongahela.
James D. Walker-----	Mine inspector, district No. 3-----	530 Second St., Butler.
Francis Schroyer-----	Mine inspector, district No. 4-----	153 E. Long Ave., DuBois.
E. W. Wilkinson-----	Mine inspector, district No. 5-----	49 Evergreen Terrace, Uniontown.
Lester D. Kimmel-----	Mine inspector, district No. 6-----	1007 Somerset St., Windber.
David B. Millward-----	Mine inspector, district No. 7-----	Hill Crest, Philipsburg.
Olen S. E. Conrad-----	Mine inspector, district No. 8-----	813 Fifth St., California.
Samuel Cortis-----	Mine inspector, district No. 9-----	704 High St., Ebensburg.
Clarence B. Losaw-----	Mine inspector, district No. 10-----	507 Brandon St., Greensburg.
T. J. Lewis-----	Mine inspector, district No. 11-----	235 Front St., Punxsutawney.
J. V. McKenna-----	Mine inspector, district No. 12-----	130 Sherman Ave., Waynesburg.
William Filer-----	Mine inspector, district No. 13-----	400 McCargo St., New Kensington.
Dennis J. Keenan-----	Mine inspector, district No. 14-----	807 Philadelphia Ave., Barnesboro.
George J. Steinheiser-----	Mine inspector, district No. 15-----	67 Union St., Uniontown.
W. J. McGregor-----	Mine inspector, district No. 16-----	29 Walnut St. (Crafton), Pittsburgh.
Richard E. George-----	Mine inspector, district No. 17-----	715 Roosevelt Ave., Roaring Spring.
James R. Waithour-----	Mine inspector, district No. 18-----	Box 388, Irwin.
John B. Moore-----	Mine inspector, district No. 19-----	Box 52, Jennerstown.
William P. Powers-----	Mine inspector, district No. 20-----	3328 Beaumont Ave. (Dormont), Pittsburgh.
George S. Struble-----	Mine inspector, district No. 21-----	67 Tower Hill Road, Republic.
M. W. Thomas-----	Mine inspector, district No. 22-----	509 Bedford St., Windber.
Andrew J. Bengston-----	Mine inspector, district No. 23-----	636 Wayne Ave., Indiana.
P. J. Callaghan-----	Mine inspector, district No. 24-----	677 Chartiers St., Bridgeville.
Spurgeon S. Johns-----	Mine inspector, district No. 25-----	116 Montour Ave., Johnstown.
George S. McCaa-----	Mine inspector, district No. 26-----	1113 DeVictor Pl., Pittsburgh.
W. B. Wardrop-----	Mine inspector, district No. 27-----	455 Church St., Indiana.
John F. Conrad-----	Mine inspector, district No. 28-----	210 Highland Ave., Ebensburg.
William H. Chesnut-----	Mine inspector, district No. 29-----	304 South Office Bldg., Harrisburg.
Daniel G. Murphy-----	Mine inspector, district No. 30-----	1809 Finance Bldg., Philadelphia.
William H. Chesnut-----	Electrical inspector-----	304 South Office Bldg., Harrisburg.
J. S. Arnold-----	Secretary, department of labor and industry-----	Do.
Thomas J. Quigley-----	Chairman, workmen's compensation board-----	Room 801, Feller Bldg., Harrisburg.
George H. Ashley-----	Chairman, industrial board-----	Harrisburg.
	Secretary, industrial board-----	
	Director, bureau of inspector, Pennsylvania Department of Labor and Industry-----	
	State geologist, topographic and geologic survey-----	
PUERTO RICO		
Manuel A. Perez-----	Commissioner, department of labor-----	San Juan.
Epifanio Fiz Jimenez-----	Assistant commissioner, department of labor-----	Do.
Luis R. Polo-----	Chairman, industrial commission-----	Do.
RHODE ISLAND		
William L. Connolly-----	Director department of labor-----	State House, Providence.
SOUTH CAROLINA		
R. L. Gamble-----	Commissioner, department of labor-----	Wade Hampton Office Bldg., Columbia.
John H. Dukes-----	Commissioner, industrial commission-----	Columbia.
Stephen Taber-----	State geologist-----	University of South Carolina, Columbia.
SOUTH DAKOTA		
George T. Mickelson-----	Industrial commissioner-----	Pierre.
H. H. Stewart-----	State mine inspector-----	Deadwood.
E. P. Rothrock-----	State geologist, State geological survey-----	Vermillion.

Name	Designation	Address
TENNESSEE		
S. E. Bryant David Hanley	Commissioner, department of labor Superintendent, division of workmen's compensation.	Cotton States Bldg., Nashville. Do.
J. A. Welch J. R. Miller R. L. Grimes Dewy Litton L. E. Emory Ben Donelson Walter F. Pond	Chief inspector, division of mines District mine inspector do do do State geologist	Nashville. Inskip. Palmer. Jellico. Briceville. Crossville. Nashville.
TEXAS		
B. C. Wilmot John W. Laird Mary Frances Ferguson E. H. Sellards	Deputy labor commissioner, bureau of labor statistics Chairman, industrial accident board Secretary, industrial accident board Director, bureau of economic geology	Austin. Do. Do. The University of Texas, Austin, 12.
UTAH		
E. M. Royle Lorraine Rich C. Arthur Carlson Robert J. Henderson Charles W. Spence E. H. Burdick	Chairman, industrial commission Secretary, industrial commission State coal-mine inspector Deputy State coal-mine inspector State metal-mine inspector Consulting geologist for the State	State Capitol, Salt Lake City. Do. Price. Do. State Capitol, Salt Lake City, 625 Judge Bldg., Salt Lake City
VERMONT		
Howard E. Armstrong Elbridge C. Jacobs	Commissioner of industrial relations State geologist	Montpelier. University of Vermont, Burlington.
VIRGINIA		
John Hopkins Hall, Jr. Mildred W. Woody C. P. Kelly W. J. Elgin E. F. Fullen Frank B. Penrod A. G. St. Clair S. P. Wright W. H. Nichols, Jr. Parke P. Deans W. F. Robinson W. F. Bursey Arthur C. Bevan	Commissioner, department of labor and industry Secretary, department of labor and industry Chief mine inspector Mine inspector do do do do Commissioner, industrial commission, department of workmen's compensation. do do Secretary, industrial commission State geologist, Virginia Geological Survey	Finance Bldg., Richmond. Do. Big Stone Gap. Richlands. Appalachia. St. Charles. Tazewell. Baden. Richmond. Do. Do. Do. Box 1428, University Station, Charlottesville.
WASHINGTON		
Robert H. Harlin John E. Morgan George T. Wake Clarence Holmes J. R. Lewis L. M. Larson Harold E. Culver	Director, department of labor and industries Supervisor of safety, department of labor and industries Chief coal-mine inspector Deputy coal-mine inspector Chief metal-mine inspector Secretary to mining board Supervisor of geology	Olympia. Do. 1123 Smith Tower, Seattle, 4. Do. Do. Do. Pullman.
WEST VIRGINIA		
Jesse Redyard Peter McLinden G. R. Waddell James Sharkey Alex Bryce P. J. McGraw M. G. Dobbie George McIntyre John J. Durkin Ed. Stipe Thurman B. Horner G. I. Bennett Kenneth Williams J. S. Mason Marvin W. Kessler W. M. Derenge	Chief, department of mines Inspector at large, districts Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. Mine inspector, district No. 1 Mine inspector, district No. 2 Mine inspector, district No. 3 Mine inspector, district No. 4 Mine inspector, district No. 5 Mine inspector, district No. 6 District inspector Mine inspector, district No. 7 Mine inspector, district No. 8 Mine inspector, district No. 9 Mine inspector, district No. 10 Inspector at large, districts Nos. 11, 12, 13, 14, 15, and 16. Mine inspector, district No. 11 Mine inspector, district No. 12	Capitol Bldg., Charleston, 5. Fairmont. Wellsburg. Box 94, Philadelphia. Box 521, Morgantown. Farmington. 615 Fairmont Ave., Fairmont. Box 527, Kingwood. 512 Cobun Ave., Morgantown. Davis. Shinnston. 208 Wood St., Philippi. Box 86, Buckhannon. Oak Hill. Summersville. Box 13, Quinwood.

Name	Designation	Address
WEST VIRGINIA—Continued.		
James G. Page.....	Mine inspector, district No. 13.....	Fayetteville.
George Bryan.....	Mine inspector, district No. 14.....	Oak Hill.
W. L. Kidwell.....	Mine inspector, district No. 15.....	Kilsyth.
J. H. Carter.....	Mine inspector, district No. 16.....	Prince.
C. M. Meadows.....	Inspector at large, districts Nos. 17, 18, 19, 20, 21, and 22.....	Beckley.
J. L. Bailey.....	Mine inspector, district No. 17.....	Do.
B. H. Pinson.....	Mine inspector, district No. 18.....	Do.
Jay Philpott.....	Mine inspector, district No. 19.....	103 Vine St., Beckley.
W. Virgil Cook.....	Mine inspector, district No. 20.....	Box 56, Mullens.
Fred Deal.....	Mine inspector, district No. 21.....	Mullens.
Lelan Phillips.....	Mine inspector, district No. 22.....	Pineville.
E. L. Chatfield.....	Inspector at large, districts Nos. 23, 24, 25, 26, 27, 28, and 29.....	Welch.
Lawrence G. Hurst.....	Mine inspector, district No. 23.....	Matoaka.
Edward Smith.....	Mine inspector, district No. 24.....	Box 186, Northfork.
J. W. Hall.....	Mine inspector, district No. 25.....	Northfork.
Walter E. White.....	Mine inspector, district No. 26.....	Box 832, Welch.
Robert J. Marrs.....	Mine inspector, district No. 27.....	Welch.
W. C. Sturgill.....	Mine inspector, district No. 28.....	War.
Cecil C. Bailey.....	Mine inspector, district No. 29.....	Asco.
Jeff Chafin.....	Inspector at large, districts Nos. 30, 31, 32, and 33.....	Logan.
Pat Heartherman.....	Mine inspector, district No. 30.....	Man.
R. H. Tinsley.....	Mine inspector, district No. 31.....	Williamson.
Vera Hamb.....	Mine inspector, district No. 32.....	Logan.
Hurstle White.....	Mine inspector, district No. 33.....	117 Morgan St., Logan.
C. L. Milligan.....	Inspector at large, districts Nos. 35, 36, 37, 38, 39, 40, and 41.....	Saint Albans.
Lawrence C. Loud.....	Mine inspector, district No. 35.....	Box 488, Madison.
C. P. Humphreys.....	Mine inspector, district No. 36.....	Whiteville.
W. H. Pridemore.....	Mine inspector, district No. 37.....	Montgomery.
C. O. Martin.....	Mine inspector, district No. 38.....	Glasgow.
James Alexander.....	Mine inspector, district No. 39.....	Chelyan.
Roy Shekey.....	Mine inspector, district No. 40.....	Charleston.
H. E. Taylor.....	Mine inspector, district No. 41.....	Saint Albans.
John H. Hansford.....	Special inspector.....	Ruffner Hotel, Charleston, 1.
R. V. Waldron.....	do.....	Charleston, 5.
Joseph Bierer.....	Special inspector.....	Do.
W. E. Stinnette.....	Inspector at large, quarry and strip mining.....	1007 Circle Way, So. Charleston.
William Moore.....	Quarry inspector.....	412 Kingwood St., Morgantown.
Estell Thomas.....	Inspector of oil and gas wells.....	Greenville.
L. W. Young.....	do.....	Spencer.
H. A. Sumney.....	do.....	Gore Hotel, Clarksburg.
C. N. Hall.....	do.....	Charleston, 5.
E. Y. McVey.....	Examiner.....	Do.
C. L. Heaberlin.....	Commissioner, workmen's compensation de- partment.....	Charleston.
Chauncey Browning.....	Secretary, workmen's compensation depart- ment.....	Do.
R. C. Tucker.....	Acting State geologist.....	Morgantown.
WISCONSIN		
Voyta Wrabetz.....	Chairman, industrial commission.....	Madison.
Harry J. Burcsyk.....	Commissioner, industrial commission.....	Do.
C. L. Miler.....	do.....	Do.
R. A. McA. Keown.....	Chief engineer, industrial commission.....	Do.
A. H. Findeisen.....	Mining engineer, industrial commission.....	Do.
H. A. Nelson.....	Director, workmen's compensation depart- ment, industrial commission.....	Do.
E. F. Bean.....	State geologist, science hall, State geological and natural history survey.....	Do.
WYOMING		
Hugh McLeod.....	State coal-mine inspector.....	Box 1084, Rock Springs.
Edward Sutton.....	Deputy coal-mine inspector.....	Do.
Thomas Harrison.....	do.....	Sheridan.
Earl Wright.....	State treasurer, workmen's compensation department.....	Capitol Bldg., Cheyenne.
William P. Petry.....	Manager, workmen's compensation depart- ment.....	Do.
Horace D. Thomas.....	State geologist.....	University of Wyoming, Laramie