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QUARRY ACCIDENTS IN THE
UNITED STATES

DURING THE CALENDAR YEAR 1915

COMPILED BY

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QUARRY ACCIDENTS IN THE UNITED STATES DURING THE CALENDAR YEAR 1915.

Compiled by ALBERT H. FAY.

INTRODUCTION.

Returns received by the Bureau of Mines covering accidents at quarries for 1915 show a gratifying decrease in the number of fatalities as well as the fatality rate per 1,000 men employed. The number of fatalities reported was 148, as compared with 180 in 1914, whereas the total number of men reported employed was 100,740, as compared with 87,936 in 1914. As shown in the accompanying table, the number of employees has been reduced to the equivalent of 300-day workers and the fatality rate calculated on this basis was 1.80 per 1,000 in 1915, as compared with 2.64 in 1914.

The report for 1915 is based upon a revised classification of accidents, wherein mills, rock-dressing plants, and crushers have been considered. These were not given the attention and prominence in previous years that they deserve, hence the figures for outside works for 1915 are more definite than were those in previous years. The report also contains a 5-year summary of labor and accident data reclassified on the new schedule that was adopted for 1915.

Number of men employed, days' work performed, and number of men killed at all quarries in the United States.

Year.	Average days active.	Men employed.		Total shifts.	Number killed.	
		Actual number.	Equivalent in 300-day workers (calculated).		Total.	Per 1,000 300-day workers (calculated).
1911.....	228	110,954	84,417	25,325,094	188	2.23
1912.....	249	113,105	93,837	28,151,043	213	2.27
1913.....	246	106,278	87,141	26,142,237	183	2.10
1914.....	233	87,936	68,187	20,456,157	180	2.64
1915.....	246	100,740	82,447	24,734,224	148	1.80
Average for five years.....	240	103,802	83,205	24,961,751	182	2.19

The 1915 returns show a slight decrease in the number of active operators from whom returns were obtained, as compared with previous years. The total amount of labor reported, however, was more than 4,200,000 days greater than in 1914, so that the slight decrease in the number of operators is negligible. Reports for 1915 were rendered by 2,674 operators, of which number 1,026 reported the operation of some outside plant, as crusher, mill, etc.

The principal hazards of quarrying in the order of their importance are as follows: Falls of rock, which cause 30 per cent of the fatalities; explosives, which cause 19 per cent; haulage, which causes 15 per cent; and falls of persons, which cause 11.48 per cent.

In coal mines the number of fatalities due to falls of roof and pillar is from 45 to 49 per cent of the total, and in metal mines, 32 to 37 per cent (see Table 19). As quarry work is done chiefly in the open, workers, as a rule, have ample room and light and there seems to be no reason why such a large percentage of the fatalities should be due to falls of rock.

The fatality rate in open quarries in the United States is higher than in the coal and metal mines in a number of foreign countries. This higher fatality rate is probably the result of less stringent regulations and less systematic inspection.

ACKNOWLEDGMENTS.

The bureau takes pleasure in acknowledging the prompt cooperation of the operators who have kindly furnished the information summarized in this report. As a result of this cooperation the bureau is able to assemble a set of quarry-accident statistics on a uniform basis for five calendar years. W. W. Adams, of the Bureau of Mines, assisted in the compilation of the figures herein presented, and prepared the chapter on State laws relating to the reporting of accidents at quarries.

SCOPE OF STATISTICS.

The tables giving the accidents in the quarries in the United States for the calendar year 1915 have been compiled by the Bureau of Mines from reports received directly from the operators and represent all stages of the industry.

Although the Bureau of Mines is authorized to collect data relating to accidents at mines and quarries, there is no Federal law compelling operators to render such reports. The reports received from operators are voluntary responses to the bureau's requests for this information. The majority of these requests were answered cheerfully and immediately. The statistics herein tabulated represent 2,674 operators who actually worked their quarries during the year, thus supplying statistics that are thoroughly representative of the industry.

It is hoped that the distribution of the data contained herein will help to establish a uniform basis for recording and reporting quarry accidents, the number of men employed, and the number of days' work performed. By all of the statistics being thus placed on the same basis, the making of comparisons between different kinds of quarries or between quarries in different States, and the drawing of conclusions, will be made easier.

The Bureau of Mines will be glad to receive suggestions from State inspectors and other persons interested in quarrying as to the form in which statistical data can be presented most effectively and as to methods of making such data of most use to the quarry industry.

CLASSIFICATION OF INJURIES.

Many of the States now have compensation laws, and in order to conform with their classifications, the bureau's new classification of serious and slight injuries is on a 14-day (2 weeks) basis, not 20-day as in former reports.

The classification and the number of injuries in each group for 1915 are as follows:

1. Fatal.....	148
2. Serious injury (time lost, more than 14 days):	
(a) Permanent disability—	
Total <i>a</i>	16
Partial <i>b</i>	507
(b) Others.....	1,365
3. Slight injury (time lost, 1 to 14 days, inclusive).....	7,783
Total.....	9,819

STANDARDIZATION OF MINE AND QUARRY STATISTICS.^c

In accordance with an invitation issued by the Secretary of the Interior to the governors of the various States, a convention of State mine inspectors and representatives of industrial compensation commissions was held in Washington February 24 and 25, 1916. The meeting was enthusiastic and all delegates and members showed the spirit of cooperation, all being thoroughly convinced of the necessity of standardizing all data relating to the reporting and classification of accidents. One of the principal objects of the meeting was to

^a *Permanent total disability*.—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis or other condition permanently incapacitating workman from doing any work of a gainful occupation.

^b *Permanent partial disability*.—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

^c Report of the conference of State and Government officials regarding the standardization of mining statistics and mine regulations, Washington, D. C., Feb. 24-25: Bureau of Mines, 1916, 85 pp.

bring about a cooperative arrangement between the various State organizations and Federal bureaus interested in the collection of statistics relating to the mining and quarrying industry.

With the view of simplifying the collection of statistics and, at the same time, relieving the operator of rendering so many reports, it was the consensus of opinion that figures once collected by a State organization should be sufficient for all purposes and that the operator should not be called upon to render another report of a similar nature. It was the purpose of this meeting so to standardize and broaden the requests for data as to include in one report sufficient information for the State mine inspector, the State industrial compensation commission, and Federal bureaus.

The subject of the calendar year was brought up, and all members of the conference agreed that the calendar year should be adopted. The representatives of the States wherein the fiscal year is now at variance with the calendar year pledged themselves to do all they could to bring about legislative enactment to have the calendar year substituted. One of the principal arguments in favor of the calendar year was that, with the enactment of the Federal income-tax law, a report under oath was required of the exact financial conditions of the reporting company on December 31. This law being Federal applies to all of the States and is an important argument in favor of the calendar year.

The discussion at the meeting during the first day of the conference related principally to proposed standard forms for recording and publishing data relating to mine and quarry equipment, labor, and accidents. The forms relating to equipment provide for a directory of mines and quarries in actual operation during a calendar year and for comprehensive data relating to power equipment, ventilating equipment, mining methods, and haulage systems.

With reference to accidents, a standard form was discussed that should so cover fatal and nonfatal accidents that complete and comparable information would be available in the published reports of the States for anyone interested in the study of accidents. The forms discussed were so grouped and general in their character as to include not only coal and metal mines, but metallurgical plants, quarries, and coke ovens.

The result of the meeting was the appointment of a committee to prepare standard forms along the lines proposed and discussed at this meeting. The coal-mining industry is represented on this committee by J. E. Roderick, chief of the Department of Mines, Harrisburg, Pa., who was named chairman, and James Dalrymple, chief inspector of mines, Denver, Colo. The metal-mining industry is represented by G. H. Bolin, State mine inspector, Phoenix, Ariz., and W. B. Orem, State metal-mine inspector, Helena, Mont. The other members of the committee are L. W. Hatch, chief statistician,

New York Industrial Commission, Albany, N. Y.; John Bohlander, president, Illinois State mining board, Pekin, Ill.; and A. H. Fay, mining engineer, Bureau of Mines, who was named secretary of the committee.

QUARRIES CLASSIFIED.

The quarries are classified according to the rock quarried, as follows: Cement rock, granite, limestone, marble, sandstone and blue-stone, slate, and trap rock. The tables show the number of persons killed, seriously injured, and slightly injured, the number of operators reporting, the number of men employed both in and out of the quarries, the days' labor performed, and the rates of deaths and injuries per 1,000 300-day workers.

A summary of the more important figures for all quarries in the United States during the year 1915 and 1914 is given in Tables 1, 2, and 3. The causes of the accidents are shown in Tables 4, 5, 6, and 7, and the percentage of accidents due to any one cause is given in Table 16. Wherever possible, comparative figures for previous years are given with the tables for 1915.

GRANITE QUARRIES.

The figures for granite quarries, by causes and States (Tables 8 and 9), are compiled from reports of 448 operators, employing 18,404 men, of whom 12,313 were employed in and about the quarries and 6,091 at outside works. When reduced to a 300-day basis the total number of full-time workers becomes 14,568, on which figure the rates are based. The totals of deaths and injuries due to accidents reported are as follows: Number of deaths, 33, or 2.27 per 1,000 (300-day workers) number of injuries, 1,409, or 96.72 per 1,000 (300-day workers).

LIMESTONE QUARRIES.

The figures for limestone quarries, by causes and States (Tables 10 and 11), are compiled from the reports of 1,439 operators, employing 42,947 men (34,136 300-day workers), of whom 34,471 were employed in the quarries and 8,476 outside of the quarries. The average number of days worked in 1915 was 238, as compared with 233 in 1914. The totals of deaths and injuries due to accidents reported are as follows: Number of deaths, 58, or 1.70 per 1,000 (300-day workers); and number of injuries, 4,350, or 127.43 per 1,000 (300-day workers).

TABLE 1.—All Quarries: Men employed, number killed and injured, and days worked, by States, during the year ended Dec. 31, 1915.

State.	In and about quarry.					In outside works.					Total.					Widows.	Orphans.				
	Men employed.	Days of labor per- formed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Men employed.	Days of labor per- formed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Active operators.	Men employed.	Days of labor per- formed.			Average days active.	Killed.	Seriously injured.	Slightly injured.
Alabama.....	1,067	262,739	246	2	10	61	204	61,280	300	2	8	25	1,271	324,019	255	2	12	69	2	6	
Arizona.....	51	9,778	192	.....	3	3	14	4,420	316	.....	.....	8	65	14,198	218	0	0	3	.....	.....
Arkansas.....	246	56,424	229	.....	5	13	41	8,862	216	1	1	16	287	65,286	227	1	5	14	1	.....
California.....	2,596	658,104	254	9	99	399	1,096	282,700	258	1	22	150	96	3,692	940,804	255	10	121	549	6	8
Colorado.....	641	172,714	269	1	11	78	465	156,980	338	3	39	38	1,106	329,694	298	1	14	117	.....	.....
Connecticut.....	804	207,624	258	4	13	142	345	89,359	259	4	10	42	1,149	296,983	258	4	17	152	2	6	
Delaware.....	133	32,050	241	.....	1	0	58	12,704	219	.....	1	3	191	44,754	234	0	1	1	.....	.....
Florida.....	104	27,360	263	.....	1	3	164	47,180	288	.....	1	2	8	268	74,540	278	0	2	5	.....
Georgia.....	1,305	303,907	233	2	10	16	610	147,051	241	3	21	30	1,915	450,958	235	2	13	37	1	.....
Idaho.....	106	18,652	176	.....	3	4	19	3,465	182	.....	1	2	9	125	22,117	177	0	4	6	.....
Illinois.....	3,163	740,385	234	1	87	326	425	105,006	247	8	73	70	3,588	845,391	236	1	95	399	1	1	
Indiana.....	2,970	696,056	234	1	46	213	1,870	476,466	255	.....	31	176	82	4,840	1,172,522	242	1	77	389	.....
Iowa.....	855	173,584	203	.....	18	85	1,222	392,489	321	2	24	193	43	2,077	566,073	273	2	42	278	1	2
Kansas.....	869	164,085	189	.....	10	58	349	78,706	226	1	4	16	45	1,218	242,791	199	1	14	74	.....
Kentucky.....	1,740	296,375	170	.....	12	49	189	30,280	160	.....	8	62	1,929	326,655	169	0	12	57	.....	.....
Maine.....	1,020	227,198	223	3	7	20	831	202,041	243	.....	7	8	51	1,851	429,239	232	3	14	28	2	.....
Maryland.....	973	232,368	239	6	33	149	586	168,207	287	1	13	134	45	1,569	400,575	257	7	46	283	3	10
Massachusetts.....	2,293	570,648	249	9	75	351	990	266,333	269	.....	17	99	106	3,283	836,981	255	9	92	450	7	15
Michigan.....	933	224,276	240	.....	37	118	569	148,810	262	3	20	84	30	1,502	373,086	248	3	57	202	2	2
Minnesota.....	1,127	253,319	225	.....	26	125	664	178,311	269	.....	10	84	63	1,791	431,630	241	0	36	209	.....	.....
Missouri.....	2,516	527,478	210	4	27	255	762	209,732	275	2	3	96	111	3,278	737,210	225	6	30	351	3	3
Montana.....	183	53,253	291	1	7	26	16	3,276	205	.....	.....	1	12	199	56,529	284	1	7	27	1	3
Nebraska.....	410	81,564	199	.....	2	18	63	14,242	226	.....	.....	15	473	95,806	203	0	2	18	.....	.....
Nevada.....	22	6,537	287	.....	5	.....	5	1,775	355	.....	.....	3	27	8,312	308	0	0	6	.....	.....
New Hampshire.....	671	150,358	224	1	3	18	786	174,918	223	.....	5	58	31	1,457	325,276	223	1	8	76	.....	.....
New Jersey.....	2,179	493,429	226	2	53	149	658	88,752	135	2	15	61	77	2,837	582,181	205	4	68	210	1	4
New Mexico.....	216	47,953	222	2	23	26	10	600	60	.....	.....	8	226	48,553	215	2	23	26	2	2	
New York.....	4,203	955,192	227	7	110	430	1,542	375,916	244	.....	13	60	161	5,745	1,331,108	232	7	123	490	2	4
North Carolina.....	1,259	332,952	264	.....	4	39	287	74,318	259	.....	3	7	29	1,546	407,270	263	0	7	46	.....	.....
Ohio.....	5,125	1,284,725	251	6	189	530	2,375	678,286	286	7	96	181	167	7,500	1,963,011	262	13	285	531	4	4
Oklahoma.....	376	88,187	235	.....	7	76	254	70,729	278	.....	2	23	19	630	158,916	252	0	9	99	.....	.....
Oregon.....	257	40,834	159	2	4	31	50	5,987	120	.....	2	7	19	307	46,821	153	2	6	38	1	1
Pennsylvania.....	15,628	3,831,570	245	31	188	946	6,990	1,952,221	279	7	72	223	656	22,618	5,783,791	256	38	260	1,169	19	44

QUARRY ACCIDENTS DURING 1915.

Rhode Island.....	504	128,617	255	1	6	11	213	59,561	280	15	717	188,178	262	1	6	11	.....
South Carolina.....	151	22,696	150	.....	7	29	55	5,260	96	10	12	27,956	136	0	7	39	.....
South Dakota.....	285	59,120	207	.....	9	40	54	10,851	201	3	23	69,971	206	0	9	43	.....
Tennessee.....	1,769	420,472	238	.....	9	79	853	192,117	225	6	18	2,622	612,589	234	0	15	97
Texas.....	1,009	227,637	226	3	25	74	204	39,066	192	5	22	1,213	266,703	220	3	30	96	
Utah.....	243	59,155	243	.....	4	20	8	1,502	188	1	21	60,657	242	0	4	21	4
Vermont.....	2,992	789,995	264	8	64	354	3,602	1,054,046	293	1	64	6,594	1,844,041	280	9	128	566	
Virginia.....	1,909	464,001	243	1	15	59	274	60,845	222	3	69	2,183	524,846	240	1	15	62	
Washington.....	897	225,232	251	5	32	108	268	69,656	260	3	9	1,165	294,888	253	5	35	117	
West Virginia.....	962	210,031	218	2	31	87	230	60,791	264	1	22	1,192	270,822	227	3	53	120	
Wisconsin.....	2,695	598,063	222	5	71	153	906	219,245	242	11	47	3,601	817,308	227	5	82	200	
Wyoming.....	80	15,435	193	.....	1	2	2	250	125	.....	.....	15,685	191	0	1	2	3
Other States.....	25	7,500	300	.....	1	.....	.....	.....	.....	.....	.....	7,500	300	0	1	.....	.....
Total, 1915.....	69,562	16,449,632	236	119	1,396	5,599	31,178	8,284,592	266	29	492	2,184	2,674	100,740	246	148	1,888	7,783
Total, 1914.....	67,784	(b)	145	1,033	5,415	20,152	(b)	35	256	1,132	2,729	87,936	233	180	1,289	6,547
Total, 1913.....	75,387	(b)	139	818	5,399	30,891	(b)	44	274	1,248	2,941	106,278	246	183	1,092	6,647
Total, 1912.....	75,962	(b)	161	680	4,307	37,143	(b)	52	219	1,346	3,163	113,105	249	213	899	5,653
Total, 1911.....	79,879	(b)	136	729	3,708	31,075	(b)	52	133	820	3,920	110,954	228	188	862	4,528

^a The New York State Industrial Commission reported 4,918 men employed in quarries and 1,520 at outside works. The accident data in this table was collected by the Bureau of Mines direct from the operators, and in order that the accident rates may be comparable with the number of men employed, the number employed as collected by the bureau has been used throughout this report.

^b Not segregated previous to 1915.

TABLE 2.—All Quarries: Fatalities and injuries per 1,000, 300-day workers employed, by States, during the year ended Dec. 31, 1915.

State.	In and about quarry.				In outside works.				Total.			
	Number of 300-day workers.	Killed.	Seriously injured.	Slightly injured.	Number of 300-day workers.	Killed.	Seriously injured.	Slightly injured.	Number of 300-day workers.	Killed.	Seriously injured.	Slightly injured.
Alabama.....	876	2.28	11.42	69.63	204	.....	9.80	39.22	1,080	1.85	11.11	63.89
Arizona.....	32	.....	.....	93.75	15	.....	.....	.....	47	.....	.....	63.83
Arkansas.....	188	.....	26.60	69.15	30	33.33	.....	33.33	218	4.59	22.94	64.22
California.....	2,194	4.10	45.12	181.86	942	1.06	23.35	159.24	3,136	3.19	38.58	175.06
Colorado.....	576	1.74	19.10	135.42	523	.....	5.74	74.57	1,099	.91	12.74	106.46
Connecticut.....	692	5.78	18.79	205.20	298	.....	13.42	33.56	990	4.04	17.17	153.54
Delaware.....	107	.....	9.35	.....	42	.....	.....	23.81	149	.....	6.71	6.71
Florida.....	91	.....	10.99	32.97	157	.....	6.37	12.74	248	.....	8.06	20.16
Georgia.....	1,013	1.97	9.87	15.79	490	.....	6.12	42.86	1,503	1.33	8.65	24.62
Idaho.....	62	.....	48.39	64.52	12	.....	83.33	166.67	74	.....	54.05	81.08
Illinois.....	2,468	.41	35.25	132.09	350	.....	22.96	208.57	2,818	.35	33.71	141.59
Indiana.....	2,320	.43	19.83	91.81	1,588	.....	19.52	110.83	3,908	.26	19.70	99.54
Iowa.....	579	.....	31.09	146.80	1,308	1.53	18.35	147.55	1,887	1.06	22.26	147.32
Kansas.....	547	.....	18.28	106.03	262	3.82	15.27	61.07	809	1.24	17.31	91.47
Kentucky.....	988	.....	12.15	49.60	101	.....	.....	79.21	1,089	.....	11.02	52.34
Maine.....	757	3.96	9.25	26.42	674	.....	10.39	11.87	1,431	2.10	9.78	19.57
Maryland.....	774	7.75	42.64	192.51	561	1.78	23.17	238.86	1,335	5.24	34.46	211.99
Massachusetts.....	1,902	4.73	39.43	184.54	888	.....	19.14	111.49	2,790	3.23	32.97	161.29
Michigan.....	748	.....	49.47	157.75	496	6.05	40.32	169.35	1,244	2.41	45.82	162.38
Minnesota.....	845	.....	30.77	147.93	594	.....	16.84	141.41	1,439	.....	25.02	145.24
Missouri.....	1,758	2.28	15.36	145.05	699	2.86	4.29	137.34	2,457	2.44	12.21	142.86
Montana.....	177	5.65	39.55	146.89	11	.....	.....	90.91	188	5.32	37.23	143.62
Nebraska.....	272	.....	7.35	66.18	47	.....	.....	.....	319	.....	6.27	56.43
Nevada.....	22	.....	.....	272.73	6	.....	.....	.....	28	.....	.....	214.29
New Hampshire.....	501	2.00	5.99	35.93	583	.....	8.58	99.49	1,084	.92	7.38	70.11
New Jersey.....	1,645	1.22	32.22	90.58	296	6.76	50.68	206.08	1,941	2.06	35.03	108.19
New Mexico.....	160	12.50	143.75	162.50	2	.....	.....	.....	162	12.35	141.98	160.49
New York.....	3,184	2.20	34.55	135.05	1,253	.....	10.38	47.89	4,437	1.58	27.72	110.43
North Carolina.....	1,110	.....	3.60	35.14	248	.....	12.10	28.23	1,358	.....	5.15	33.87
Ohio.....	4,283	1.40	44.13	81.72	2,261	3.10	42.46	80.05	6,544	1.99	43.56	81.16
Oklahoma.....	294	.....	23.81	258.50	236	.....	8.47	97.46	530	.....	16.98	186.79
Oregon.....	136	14.71	29.41	227.94	20	.....	100.00	350.00	156	12.82	38.46	243.59
Pennsylvania.....	12,772	2.43	14.72	74.07	6,508	1.08	11.06	34.27	19,280	1.97	13.49	60.64
Rhode Island.....	429	2.33	13.99	25.64	198	.....	.....	.....	627	1.59	9.57	17.54
South Carolina.....	76	.....	92.11	381.58	17	.....	.....	588.24	93	.....	75.27	419.35
South Dakota.....	197	.....	45.69	203.05	36	.....	.....	83.33	233	.....	38.63	184.55
Tennessee.....	1,402	.....	6.42	56.35	640	.....	9.38	28.13	2,042	.....	7.35	47.50
Texas.....	759	3.95	32.94	97.50	130	.....	38.46	169.23	889	3.37	33.75	107.99
Utah.....	197	.....	20.30	101.52	5	.....	.....	200.00	202	.....	19.80	103.96
Vermont.....	2,633	3.04	24.31	134.45	3,514	.28	18.21	60.33	6,147	1.46	20.50	92.08
Virginia.....	1,546	.65	9.70	38.16	203	.....	.....	14.78	1,749	.57	8.58	35.45
Washington.....	751	6.66	42.61	143.81	232	.....	12.93	38.79	983	5.09	35.61	119.02
West Virginia.....	700	2.86	44.29	124.29	203	4.93	108.37	162.56	903	3.32	58.69	132.89
Wisconsin.....	1,993	2.51	35.62	76.77	731	.....	15.05	64.30	2,724	1.84	30.10	73.42
Wyoming.....	51	.....	19.61	39.22	1	.....	.....	.....	52	.....	19.23	38.46
Other States.....	25	.....	40.00	.....	.....	.....	.....	.....	25	.....	40.00	.....
Total.....	54,832	2.17	25.44	102.11	27,615	1.05	17.85	79.09	82,447	1.80	22.90	94.40

TABLE 3.—*All Quarries: Men employed and number killed and injured, by kinds of quarry, during the years ended Dec. 31, 1915 and 1914.*

1915.									
Kind of quarry.	Active operators.	Men employed.		Killed.		Injured.		Widows.	Orphans.
		Actual number.	Equivalent in 300-day workers (calculated).	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.		
Cement rock.....	80	12,030	11,224	18	1.60	1,664	148.25	6	8
Granite.....	448	18,404	14,568	33	2.27	1,409	96.72	14	32
Limestone.....	1,439	42,947	34,136	58	1.70	4,350	127.43	34	72
Marble.....	75	6,037	5,981	6	1.00	561	93.80	4	10
Sandstone and bluestone.....	347	8,385	6,475	6	.93	431	66.56	4	3
Slate.....	122	7,044	5,442	11	2.02	180	33.08	5	9
Trap rock.....	163	5,893	4,621	16	3.46	1,076	232.85	7	11
Total or average, 1915.	2,674	100,740	82,447	148	1.80	9,671	117.30	74	145
1914.									
Cement rock.....	81	5,715	5,062	20	3.95	1,145	226.20	12	15
Granite.....	442	14,905	11,318	38	3.36	1,236	109.21	20	47
Limestone.....	1,472	42,730	33,145	79	2.38	3,786	114.23	38	81
Marble.....	65	2,848	2,572	7	2.72	312	121.31	5	9
Sandstone and bluestone.....	374	8,642	6,196	9	1.45	425	69.08	5	9
Slate.....	133	6,003	4,683	14	2.99	134	28.61	9	11
Trap rock.....	162	7,093	5,211	13	2.49	795	152.56	6	6
Total or average, 1914.	2,729	87,936	68,187	180	2.64	7,836	114.92	95	178

TABLE 4.—All Quarries: Fatalities and injuries, by causes and kinds of quarry, during the year ended Dec. 31, 1915.

Kind of quarry.	In and about quarry.															In outside works.													Grand total.			
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledging.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.).	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledging or crushing.	Flying or falling objects (rocks, timbers, etc.).	Burns.		Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26	27	28			
Killed:																																
Cement rock.....	5			2		1			2	1					1	11	1		1		1						1	3		7	18	
Granite.....	15	2	1	5	2		3			1					3	33															33	33
Limestone.....	10	2		15	5	5	1	1		2					3	42		6			3	3		1						16	58	
Marble.....	1				2	1				1						5										1	1	1	1	1	6	
Sandstone and blue-stone.....	2			1	1											4			1							1				2	6	
Slate.....	5			2		2									1	10										1				2	11	
Trap rock.....	7	1		3		1				1	1					14					1					1	1			1	16	
Total.....	45	5	1	28	11	10	4	1	2	6	1				5	119	1	6	2		5	3		1		4	5	2	29	148		
Injured:																																
Cement rock.....	134	298	85	31	142	20	25	45	1	19	65	14		18	202	1,099	21	7	9	10	48	47	43	2	15	19	83	35	226	565	1,664	
Granite.....	91	187	43	30	56	19	30	97	2	78	153	18		3	196	1,003	7	2	15	27	35	19	59	1	37	87	42	6	69	406	1,409	
Limestone.....	369	867	162	130	404	66	65	140	12	122	413	67		3	41	428	74	23	49	43	197	85	109	2	42	52	162	44	179	1,061	4,350	
Marble.....	3	46	37	5	10	2	5	32		41	13	11		3	28	236	9	9		9	78	18	56		13	12	88	2	31	325	561	
Sandstone and blue-stone.....	41	70	16	9	20	11	11	8		14	44	5	1		88	338	4	1	1	5	14	6	7	1	1	5	18		30	93	431	
Slate.....	29	36	7	5	1	6	9	3		11	3	3			15	128	5			6	9	3	11		2	2	5	1	8	52	180	
Trap rock.....	116	281	33	17	43	17	8	31	4	17	235	8	2	6	84	902	11	7	13	6	17	13	19	2	8	19	22	32	5	174	1,076	
Total.....	783	1,785	383	227	676	141	153	356	19	302	926	126	6	71	1,041	6,995	131	49	87	106	398	191	304	8	118	196	420	120	548	2,676	9,671	

SANDSTONE AND BLUESTONE QUARRIES.

The figures for sandstone and bluestone quarries by States (Tables 12 and 13) are compiled from reports of 347 operators, employing 8,385 men, of whom 6,214 were employed in the quarries and 2,171 outside of the quarries. The total number of employees, reduced to the equivalent of 300-day workers, becomes 6,475, on which figure the ratios are based. The totals of deaths and injuries due to accidents reported are as follows: Number of deaths, 6, or 0.93 per 1,000; number of injuries, 431, or 66.56 per 1,000 (300-day workers).

CEMENT-ROCK QUARRIES.

The cement-rock quarries (Table 14) are represented by 80 operators, who employed 12,030 men, of whom 4,395 were employed in the quarries, and 7,635 employed in mills and other outside work. The total number of employees, reduced to a 300-day basis, is equivalent to 11,224 300-day workers, on which accident ratios are based. The totals of deaths and injuries due to accidents reported are as follows: Deaths, 18, or 1.60 per 1,000; and injuries, 1,664, or 148.25 per 1,000 (Table 3). The high ratio of injuries in the cement-rock quarries as compared with other quarries is probably due to many cement quarries being operated by companies that keep better records and render more detailed reports. Many small quarry operators keep no record of injuries, hence the seemingly low ratio of nonfatal accidents in quarries other than cement rock, limestone, and trap rock. It must also be taken into consideration that the men in the cement-rock industry worked 280 days during the year, or 5 to 7 weeks more than some of the other groups.

MARBLE, SLATE, AND TRAP-ROCK QUARRIES.

Table 15 shows fatalities by causes and States for marble, slate, and trap-rock quarries. Table 4 shows by causes the total number of injuries in each group. Table 3 shows the number of men employed, days worked, and the fatality and injury rate per 1,000 for 300-day workers.

QUARRY AND MINE ACCIDENTS COMPARED.

Table 17 shows the number of men employed and number killed in the quarries and in the coal and metal mines of the United States, with the fatality rate based on the actual number employed and the time worked. It also compares these industries on the equal 300-day basis.

Table 18 shows the total number employed and number killed in these industries during the five-year period 1911 to 1915, inclusive. The fatality rates are based on the actual number of men reported employed.

TABLE 5.—All Quarries: Fatalities, by causes and States, during the year ended Dec. 31, 1915.

State.	In and about quarry.															In outside works.																
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).	Haulage accidents (by quarry cars, and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledging.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.).	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledging or crushing.	Flying or falling objects (rocks, timbers, etc.).	Burns.	Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	Grand total.	
Alabama.....					1					1					2															2		
Arizona.....																														1		
Arkansas.....																														1		
California.....			1	4											9			1												1		
Colorado.....	4														1															1		
Connecticut.....				1						1					4																1	
Delaware.....	1					1																										
Florida.....										1																						
Georgia.....	1			1											2																	
Idaho.....															1																	
Illinois.....	1														1																	
Indiana.....					1										1																	
Iowa.....																	2															
Kansas.....																							1								2	
Kentucky.....																															1	
Maine.....	1				1									1	3																3	
Maryland.....	2			4											6																1	
Massachusetts.....	3	2		2							1			1	9													1			7	
Michigan.....																					1										3	
Minnesota.....																	1											1			3	
Missouri.....	3			1											4								1						1		2	
Montana.....						1									1																1	
Nebraska.....																																1
Nevada.....																																1
New Hampshire.....							1								1																	1

TABLE 6.—All Quarries: Serious injuries, by causes and States, during the year ended Dec. 31, 1915.

State.	In and about quarry.															In outside works.													Grand total.		
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledging.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.).	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledging or crushing.	Flying or falling objects (rocks, timbers, etc.).	Burns.		Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26	27		28	
Alabama					2				6					1	10						2								2	12	
Arizona															5															0	
Arkansas	2														1															5	
California	29	27	1	4	13	2	4	2	2	2	3		1	9	99			2			3	3			1	2			22	121	
Colorado	1	1			1			1	1	1				1	11	2					1								3	14	
Connecticut	1	4		1	4			1		2				1	13	1					1					1			4	17	
Delaware	1														1														1	1	
Florida					1										1														1	2	
Georgia				2						5					10					2							1		3	13	
Idaho															3														1	1	
Illinois	3	23	1	4	19	3	2	7	3	6	3			13	87			1	2	1	3			1	1	2		1	8		
Indiana	3	3		5	8	3	6	1	6	1	1			9	46	4	2	2	4		6	3	4		2	1	2	1	31	77	
Iowa	4	2	1		2	1	1	2		1	1			1	18			1			6				1	1		13	24		
Kansas	2	2		2	2				1	1				1	10					1	1			1			1		4	14	
Kentucky	2	2		2	2				1	1				1	12															12	
Maine	2	1		1	1	1								7	7	1			3						1	1			7	14	
Maryland	3	6	3	3	3				2	6	1		2	3	33					6	1	1			1	3		1	13	46	
Massachusetts	9	13	5	1	6	2			3	11			2	14	75				1	4		2			2		1	1	17	92	
Michigan	5	2	1		5		5		2	1	1		2	11	37	3	3	3			4			2	2			1	20	57	
Minnesota	5			2	3		4		2	3				2	26				1		1		1		1		2		10	36	
Missouri	3	6	1	1	6		3		1	2				2	27	1				1	1			1	1				3	30	
Montana		4			1					1					7														7	2	
Nebraska															2															0	
Nevada			2																											0	

New Jersey	3	35	19	1	6	1	6	3	3	1	49	2	3	20	149	3	1	2	3	4	9	3	2	10	15	9	61	210						
New Mexico	6	6		1	1			3		1	1			8	26												26	26						
New York	50	106	20	6	30	8	2	15		15	57	6	2	113	430	4	1	3	2	5	3	8	2	4	4	4	20	60	490					
North Carolina	1	7								3	27			1	39			1									46	46						
Ohio	34	96	16	5	36	11	8	24		21	30	5	2	62	350	19	1	13	2	16	15	29	2	6	10	15	4	49	181	531				
Oklahoma		46	1	2	5	1		3		2	10	1		3	2						1					5	12	23	93					
Oregon	28						3								31			1						6	6			7	38	38				
Pennsylvania	103	306	56	59	106	15	23	40		17	104	12	2	13	90	946	9	4	6	6	21	24	30	1	4	8	48	35	27	223	1,169			
Rhode Island	3	1			1						1	2		2	3	11												1	11	11	11			
South Carolina	3	5	2	1				2		5	10			1	29			3		1	1	2		1	1		1	10	3	33	33			
South Dakota	4	7	2	1	2	1	5			4	12	2			40													18	3	43	43			
Tennessee	7	26	8		6	2	3	5		3	13	3			79			1	1	10			1	3	1		1	18	3	97	97			
Texas	9	28		3	12		1	5		2	6	1		1	6	2		3		2		1	2		2		10	22	21	96	96			
Utah	4	7	1	1							4			1	2	20			1									1	21	21	21			
Vermont	18	28	26	6	20	5	2	48	1	48	8	9		135	354	2	3		8	45	15	47		8	18	48	18	212	568	568				
Virginia	4	18	3		16	3		1		1	5			3	5	59			1	1							2	2	3	9	62	62		
Washington	2	61	2	2	3	6	1	5		8	8	1		1	8	108			1	1	2	1	1		2	1	1	1	1	117	117			
West Virginia	14	29	1	1	12	2	1	10			8			1	9	87	2		3	3	3	1	1			20	1	1	33	120	120			
Wisconsin	13	31	8	2	14	6	2	25		2	32	1		1	16	153	1		1	2	5			8	6	4	3	47	200	200	200			
Wyoming															2	2																0	0	
Other States																																		
Total, 1915	581	1,495	327	137	475	102	101	285	16	221	833	105	4	56	861	5,599	87	25	64	77	308	141	266	7	100	171	338	105	495	2,184	7,783			
Percentage of total	7.47	19.21	4.20	1.76	6.10	1.31	1.30	3.66	.21	2.84	10.70	1.35	.05	.72	11.06	71.94	1.12	.32	.82	.99	3.96	1.81	3.42	.09	1.28	2.20	4.34	1.35	6.36	28.06	100.00			

INJURIES AT QUARRIES.

TABLE 8.—Granite Quarries: Men employed, number killed and injured, and days worked, by States, during the year ended Dec. 31, 1915.

State.	In and about quarry.						In outside works.						Total.						Widows.	Orphans.	
	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.			Slightly injured.
California.....	1,101	267,931	243	4	33	89	451	98,617	219	6	59	38	1,552	366,548	236	4	39	148	3	3	
Colorado.....	53	11,606	219	1	1	.....	37	9,860	266	.....	.....	.....	90	21,466	239	1	1	2	.....	.....
Connecticut.....	289	54,634	203	.....	7	9	177	35,583	201	2	3	26	446	90,217	202	0	9	12	.....	.....
Georgia.....	870	187,843	216	1	2	5	346	73,251	212	.....	7	20	1,216	261,094	215	1	2	12	.....	.....
Maine.....	747	146,907	197	1	4	3	654	151,535	232	.....	6	6	1,401	298,442	213	1	10	9	1	1
Maryland.....	309	65,395	212	3	15	43	40	9,974	249	.....	1	5	349	75,369	216	3	16	48	1	1
Massachusetts.....	923	227,473	246	3	31	81	542	142,139	262	.....	12	64	1,465	369,612	252	3	43	145	3	10
Minnesota.....	497	114,739	231	.....	16	71	515	138,910	270	.....	4	64	1,012	253,649	251	0	20	135	.....	.....
Missouri.....	74	15,840	214	.....	.....	.....	64	15,840	248	.....	.....	4	138	31,680	230	1	0	0	.....	.....
New Hampshire.....	664	149,357	225	1	3	18	783	174,756	223	.....	5	57	1,447	324,113	225	1	8	75	.....	.....
New Jersey.....	157	26,358	168	1	4	9	14	2,566	183	.....	.....	7	171	28,924	169	1	4	9	.....	.....
New York.....	563	136,793	243	3	2	36	244	59,090	242	.....	7	15	807	195,883	243	3	2	43	.....	.....
North Carolina.....	909	243,048	267	.....	3	11	152	38,258	252	.....	1	3	1,061	281,306	265	0	4	14	.....	.....
Oklahoma.....	55	8,903	162	.....	.....	1	7	1,610	230	.....	.....	6	62	10,513	170	0	0	2	.....	.....
Oregon.....	111	14,997	135	2	4	3	48	5,927	123	.....	2	7	159	20,924	132	2	6	10	1	1
Pennsylvania.....	665	166,853	251	.....	6	6	52	14,315	275	.....	1	22	717	181,168	253	1	7	6	.....	.....
Rhode Island.....	454	118,133	260	1	6	7	209	58,269	279	.....	.....	12	663	176,402	256	1	6	7	.....	.....
South Carolina.....	143	22,196	155	.....	7	29	30	4,770	159	.....	10	9	173	26,966	156	0	7	39	.....	.....
South Dakota.....	43	7,590	177	.....	.....	6	20	3,419	171	.....	2	4	63	11,009	175	0	0	8	.....	.....
Texas.....	47	9,178	195	1	.....	.....	15	3,620	241	.....	1	7	62	12,798	206	1	1	0	.....	.....
Vermont.....	1,219	294,044	241	3	10	226	845	246,829	292	.....	2	31	29	540,873	282	3	12	257	2	9
Virginia.....	577	126,435	219	1	3	5	86	19,400	226	.....	.....	1	17	663	220	1	3	6	.....	.....
Washington.....	574	163,696	285	3	20	79	67	14,750	220	.....	3	10	641	178,446	278	3	20	82	2	5
Wisconsin.....	1,168	264,618	227	2	24	65	629	162,469	258	.....	3	27	13	427,087	238	2	27	92	1	3
Other States.....	121	25,934	214	.....	.....	.....	64	14,304	224	.....	.....	7	185	40,238	218	.....	.....	1	.....	.....
Total, 1915.....	12,313	2,870,501	233	33	201	802	6,091	1,500,061	246	46	360	448	18,404	4,370,562	237	33	247	1,162	14	32
Total, 1914.....	11,012	(a)	.....	32	187	919	3,893	(a)	.....	6	27	103	442	4,905	228	38	214	1,022	20	47
Total, 1913.....	11,575	(a)	.....	17	118	695	6,142	(a)	.....	4	29	152	495	4,284,479	242	21	147	847	8	19
Total, 1912.....	12,090	(a)	.....	25	98	454	6,845	(a)	.....	4	29	116	502	4,660,234	246	29	127	570	11	17
Total, 1911.....	13,234	(a)	.....	21	87	557	6,714	(a)	.....	8	23	134	605	4,527,863	227	29	110	691	9	8

a Not segregated prior to 1915.

ACCIDENTS DUE TO EXPLOSIVES.

The number of fatalities due to the use of explosives in quarries varies from about 19 to 27 per cent (Table 19) of the total, or it is about five times as great as in coal mines, and twice as large as in metal mines. As quarries are operated in the open and the larger part of the work is done during daylight, it would seem that the number of fatalities due to the use of explosives could be greatly reduced. As shown in Table 33 only 10 per cent of the fatalities in the quarries of France is due to explosives. In the coal-mining industry and in many of the larger metal mines the handling of explosives is usually delegated to only a few men, the promiscuous handling of explosives being prohibited.

In all quarries employing, say, 10 men, one experienced man should be delegated to handle all explosives and to do all the loading and firing. When each driller loads and fires his shot there is the possibility of other workers being near who may fail to hear or heed the warning. Sometimes the man who fires the shot may fail to give any warning whatever. If all of the firing is under the direction of one man much confusion and misunderstanding will be eliminated. Furthermore, whenever practicable, all blasting should be done at a certain hour each day. Under such practice the men soon become accustomed to the established routine and are on their guard. Danger signals should be placed in conspicuous places wherever explosives are used or stored.

VALUE OF QUARRY PRODUCTS.

Tables 20 and 21, compiled from statistics published by the United States Geological Survey, are printed to show the magnitude of the quarrying industry in the United States.

FATALITY AND INJURY RATIOS COMPARED ON BASIS OF YEAR OF 300 WORKING DAYS.

Table 23 in this report shows wide differences in the number of days different quarries were worked during the year. Therefore the actual time of operation should be taken into account in computing accident ratios. It is evident that if a group of men in one State, South Carolina, for example, works only 136 days during the year and a similar group in another State, say Nevada, works 308 days in the same industry, the hazard is not equal and the accident rates are not fairly comparable. To make them comparable, they must have a common denominator in the number of days worked.

TABLE 9.—*Granite Quarries: Fatalities, by causes and States, during the year ended Dec. 31, 1915.*

State.	In and about quarry.															In outside works.															
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledgeing.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.).	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledgeing or crushing.	Flying or falling objects (rocks, timbers, etc.).	Burns.	Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26	27	28		
California.....	2		1	1												4															4
Colorado.....										1						1															1
Connecticut.....																															1
Georgia.....	1															1															1
Maine.....															1																1
Maryland.....	1			2												3															3
Massachusetts.....		1		1											1	3															3
Minnesota.....																															1
Missouri.....	1															1															1
New Hampshire.....							1									1															1
New Jersey.....						1										1															1
New York.....	1	1						1								3															3
North Carolina.....																															1
Oklahoma.....																															1
Oregon.....	1														1	2															2
Pennsylvania.....							1									1															1
Rhode Island.....	1															1															1
South Carolina.....																															1
South Dakota.....																															1
Texas.....	1															1															1
Vermont.....	2				1											3															3
Virginia.....	1															1															1
Washington.....	2			1												3															3
Grand total.																															41

TABLE 10.—Limestone Quarries: Men employed, number killed and injured, and days worked, by States, during the year ended Dec. 31, 1915.

State.	In and about quarry.					In outside works.						Total.						Widows.	Orphans.		
	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.			Seriously injured.	Slightly injured.
Alabama.....	788	182,574	231	.....	3	53	129	37,280	289	.....	2	19	917	219,854	240	0	3	55	.....	.....
Arizona.....	28	9,120	326	.....	.....	3	12	4,380	365	.....	.....	3	40	13,500	338	0	0	3	.....	.....
Arkansas.....	143	35,620	249	.....	5	11	29	6,220	214	.....	1	9	172	41,840	243	0	5	12	.....	.....
California.....	310	81,309	262	1	15	38	26	5,470	210	.....	4	14	336	86,779	258	1	15	42	1	2
Colorado.....	303	83,833	277	.....	7	49	6	366	61	.....	.....	12	309	84,199	272	0	7	49	.....	.....
Connecticut.....	107	31,065	290	1	.....	1	122	39,660	325	.....	1	4	229	70,725	309	1	0	2	1	3
Florida.....	104	27,360	263	.....	1	3	164	47,180	288	.....	1	2	268	74,540	278	0	2	5	.....	.....
Idaho.....	21	5,280	251	.....	.....	1	6	1,500	250	.....	.....	3	27	6,780	251	0	0	1	.....	.....
Illinois.....	2,884	655,180	227	.....	66	283	381	91,949	241	.....	7	66	3,265	747,129	229	0	73	349	.....	.....
Indiana.....	2,832	658,277	232	.....	40	200	1,051	268,950	256	.....	20	159	3,883	927,227	239	0	60	359	.....	.....
Iowa.....	738	140,452	190	14	77	549	174,324	318	2	11	60	39	1,287	314,776	245	2	25	137	1	2
Kansas.....	672	122,798	183	.....	7	32	39	7,195	184	1	.....	37	711	129,993	183	1	7	32	.....	.....
Kentucky.....	1,608	264,507	102	.....	12	42	149	23,604	158	.....	1	54	1,757	288,111	164	0	12	43	.....	.....
Maine.....	110	34,097	310	1	.....	1	11	.....	.....	.....	.....	3	110	34,097	310	1	0	11	1	.....
Maryland.....	461	121,422	263	2	10	95	413	124,012	300	1	9	123	28	374	245,434	281	3	19	218	2	9
Massachusetts.....	211	60,597	287	1	15	39	233	69,054	296	2	4	10	444	129,651	292	1	17	43	1	3
Michigan.....	804	202,154	251	36	105	300	71,308	238	2	16	73	24	1,104	273,462	248	2	52	178	1
Minnesota.....	418	76,730	184	2	26	97	25,388	262	3	13	26	515	102,118	198	0	5	39
Missouri.....	2,045	403,511	197	3	12	122	599	170,800	285	2	3	83	94	2,644	574,311	217	5	15	205	3	3
Montana.....	147	43,972	299	1	7	26	.....	.....	.....	.....	.....	7	147	43,972	299	1	7	26	1	3
Nebraska.....	410	81,564	199	.....	2	18	63	14,242	226	.....	.....	15	473	95,806	203	0	2	18	.....	.....
New Jersey.....	471	117,127	249	1	14	13	162	13,188	81	.....	15	18	633	130,315	206	1	14	28	1	4
New Mexico.....	60	6,868	114	.....	.....	1	10	600	60	.....	.....	4	70	7,468	107	0	0	1	.....	.....
New York.....	2,206	495,061	224	2	68	219	626	148,486	237	4	21	79	2,832	643,547	227	2	72	240	1	1
North Carolina.....	178	41,916	235	28	5,820	208	2	6	6	206	47,736	232	0	2	0
Ohio.....	3,364	804,634	239	6	116	311	1,099	310,146	282	6	62	163	131	4,463	1,114,780	250	12	178	474	3	3
Oklahoma.....	285	71,016	249	6	72	72	17,144	238	2	8	11	357	88,160	247	0	8	80
Oregon.....	12	360	30	.....	.....	.....	2	60	30	.....	.....	3	14	420	30	0	0	0	.....	.....
Pennsylvania.....	7,798	1,999,632	256	16	72	518	1,213	355,361	293	2	7	41	389	9,011	2,354,993	261	18	79	559	11	34
South Dakota.....	65	12,735	196	.....	.....	1	10	3,440	344	.....	.....	9	75	16,175	216	0	0	1	.....	.....
Tennessee.....	812	174,285	215	.....	4	22	210	41,867	199	.....	.....	33	1,022	216,152	211	0	4	22	.....	.....
Texas.....	591	132,783	225	1	5	39	179	32,886	184	4	16	24	770	165,669	215	1	9	55	1	1
Utah.....	163	41,729	256	.....	2	18	4	302	76	.....	.....	13	167	42,031	252	0	2	18	.....	.....
Vermont.....	153	36,192	237	.....	1	12	70	19,855	284	.....	.....	13	223	56,047	251	0	1	14	.....	.....
Virginia.....	927	248,770	268	7	40	77	22,639	294	2	40	1,004	271,409	270	0	7	42
Washington.....	50	13,044	261	.....	.....	11	14	3,600	257	.....	.....	7	64	16,644	260	0	0	11	.....	.....

West Virginia.....	586	137,679	235	2	13	71	38	8,155	215	9	18	27	624	145,834	234	2	22	89	2	3	
Wisconsin.....	1,419	314,740	222	3	42	80	245	51,130	209	5	13	74	1,664	365,870	220	3	47	93	2	1	
Other States.....	187	44,972	240	1	8	14	49	8,307	170	1	2	7	236	53,279	226	1	9	16	1	....
Total, 1915.....	34,471	8,014,965	233	42	612	2,677	8,476	2,225,865	263	16	168	893	1,439	42,947	10,240,833	238	58	780	3,570	34	72
Total, 1914.....	32,771	(a)	.....	59	445	2,524	9,959	(a)	.....	20	144	673	1,472	42,730	9,943,594	233	79	589	3,197	38	81
Total, 1913.....	39,121	(a)	.....	70	389	2,784	14,868	(a)	.....	23	135	580	1,575	53,989	13,097,930	243	93	524	3,364	36	67
Total, 1912.....	40,979	(a)	.....	75	364	2,603	15,397	(a)	.....	26	99	631	1,760	56,376	13,866,713	246	101	463	3,234	32	61
Total, 1911.....	40,740	(a)	.....	62	363	1,851	13,836	(a)	.....	28	73	487	2,144	54,576	12,240,691	224	90	436	2,338	48	75

a Not segregated prior to 1915.

TABLE 12.—*Sandstone and Bluestone Quarries: Men employed, number killed and injured, and days worked, by States, during the year ended Dec. 31, 1915.*

State.	In and about quarry.						In outside works.						Total.						Widows.	Orphans.	
	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.			Slightly injured.
Arizona.....	11	298	27				2	40	20				3	13	338	26	0	0	0		
Arkansas.....	84	16,254	194			1	12	2,642	220		1		5	96	18,896	197	1	0	1	1	
California.....	45	3,264	73				54	8,900	165				7	99	12,164	123	0	0	0	0	
Colorado.....	122	21,993	180			4	16	1,202	75				15	138	23,195	168	0	0	0	4	
Connecticut.....	88	26,360	300		1	11							3	88	26,360	300	0	0	1	11	
Idaho.....	15	1,262	84				8	1,200	150		1		5	23	2,462	107	0	0	1	2	
Kentucky.....	52	9,248	178			3	30	5,876	196				6	82	15,124	184	0	0	0	10	
Maryland.....	27	4,650	172				3	750	250				3	30	5,400	180	0	0	0	0	
Massachusetts.....	228	59,210	260			11	25	4,500	180				7	253	63,710	252	0	0	0	11	
Missouri.....	48	10,414	217				38	6,624	174				4	86	17,038	198	0	0	0	0	
New Jersey.....	88	19,865	226		1		20	2,100	105		1		6	108	21,965	203	0	0	2	0	
New York.....	636	123,323	294		4	23	282	57,783	205		1	15	46	918	181,106	197				38	
Ohio.....	1,674	460,606	175		69	37	1,256	364,495	290	1	34	13	32	2,930	825,101	282	1	103	55	1	1
Pennsylvania.....	1,770	368,389	208	1	15	28	270	53,847	199		4	5	132	2,040	422,236	207	1	19	33		
South Dakota.....	177	38,795	219		9	33	24	3,992	166				1	10	42,787	213	0	0	9	34	
Texas.....	225	46,100	205		1								3	225	46,100	205	0	0	1	0	
Utah.....	20	4,780	239										3	20	4,780	239	0	0	0	0	
West Virginia.....	279	46,302	166		1	2	57	7,816	137				16	336	54,118	161	0	0	1	2	
Wisconsin.....	78	14,145	181		3	4	27	4,886	181				17	105	19,031	181	0	0	3	4	
Wyoming.....	25	2,660	106				2	250	125				4	27	2,910	108	0	0	0	0	
Other States.....	522	127,198	244	3	33	44	45	10,459	242		1	3	20	567	137,657	243	3	34	47	2	2
Total, 1915.....	6,214	1,405,116	226	4	137	201	2,171	537,362	248	2	42	51	347	8,385	1,942,478	232	6	179	252	4	3
Total, 1914.....	7,489	(a)		8	62	309	1,153	(a)		1	6	51	374	8,642	1,858,779	215	9	68	360	5	9
Total, 1913.....	7,037	(a)		8	52	411	1,966	(a)		1	6	39	422	9,003	2,049,541	228	9	58	450	4	11
Total, 1912.....	7,240	(a)		6	46	200	2,513	(a)		2	15	51	462	9,753	2,067,939	212	8	61	251	4	7
Total, 1911.....	8,628	(a)		11	39	200	2,705	(a)		3	3	25	686	11,333	2,309,256	204	14	42	225	6	8

a Not segregated prior to 1915.

TABLE 13.—Sandstone and Bluestone Quarries: Fatalities, by causes and States, during the year ended Dec. 31, 1915.

State.	In and about quarry.															In outside works.															
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.)	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledging.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.)	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledging or crushing.	Flying or falling objects (rocks, timbers, etc.)	Burns.	Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	Grand total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			
Arizona.....																															0
Arkansas.....																		1												1	1
California.....																															0
Colorado.....																															0
Connecticut.....																															0
Idaho.....																															0
Kentucky.....																															0
Maryland.....																															0
Massachusetts.....																															0
Missouri.....																															0
New Jersey.....																															0
New York.....																															0
Ohio.....																										1					1
Pennsylvania.....	1																														1
South Dakota.....																															1
Texas.....																															0
Utah.....																															0
West Virginia.....																															0
Wisconsin.....																															0
Wyoming.....	1			1	1											3															3
Other States.....																															0
Total, 1915.....	2			1	1										4		1													2	6
Total, 1914.....	4			2	1	1								1	2															1	9
Total, 1913.....	2			2	2		1								3																9
Total, 1912.....	2		1		1	1					1				6						1										12
Total, 1911.....	2			1	3	5									13						2										14

TABLE 14.—Cement Rock, Marble, Slate, and Traprock Quarries: Men employed, number killed and injured, and days worked, by States, during the year ended Dec. 31, 1915.

State.	In and about quarry.						In outside works.						Total.						Widows.	Orphans.	
	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.	Slightly injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Seriously injured.			Slightly injured.
Cement rock:																					
California.....	366	109,685	300	1	27	181	398	133,985	337	1	7	56	6	764	243,670	319	2	34	237	1	3
Illinois.....	246	77,780	316	1	20	42	37	11,132	301			6	5	283	88,912	314	1	20	48	1	1
Kansas.....	194	40,567	209		3	26	310	71,511	231		4	16	7	504	112,078	222	0	7	42		
Michigan.....	43	10,510	244		1	1	253	75,140	297	1	4	9	3	296	85,650	289	1	5	10	1	2
Missouri.....	279	78,443	281		15	130	28	7,410	265			7	4	307	85,853	280	0	15	137		
New York.....	345	95,938			23	113	274	81,146			6	10	6	619	177,084		0	29	123		
Ohio.....	87	19,485	224		4	2	20	3,645	182			4	4	107	23,130	216	0	4	2		
Pennsylvania.....	1,433	426,153	297	7	70	281	3,624	1,094,304	302	4	49	127	15	5,057	1,520,457	301	11	119	408	3	2
Washington.....	105	18,682	178	1	3	7	183	50,436	276		3	6	4	288	69,118	240	1	6	13		
Other States.....	1,297	313,147	241	1	48	102	2,508	648,087	258	1	47	208	26	3,805	961,234	253	2	95	310		
Total, 1915.....	4,395	1,190,390	271	11	214	885	7,635	2,176,796	285	7	120	445	80	12,030	3,367,186	280	18	334	1,330	6	8
Total, 1914.....	4,296	(a)		17	160	772	1,419	(a)	3	40	173	81	5,715	1,518,709	266	20	200	945	12	15	
Total, 1913.....	4,637	(a)		13	135	870	2,590	(a)	8	72	386	84	7,227	2,110,320	292	21	207	1,256	7	21	
Total, 1912.....	3,784	(a)		13	71	653	5,678	(a)	17	48	431	86	9,462	2,585,465	273	30	119	1,084	7	13	
Total, 1911.....	5,700	(a)		19	133	745	1,893	(a)	10	17	106	93	7,593	2,199,552	290	29	150	851	12	14	
Marble:																					
California.....	43	9,825	228				5	1,160	232				4	48	10,985	229	0	0	0		
Colorado.....	132	45,790	347		2	23	400	144,400	361		37	3	532	190,190	358	0	5	60			
Georgia.....	328	91,824	280		2	4	159	45,850	288		2	6	7	487	137,674	283	0	4	10		
Massachusetts.....	74	20,172	273	1		7	90	27,626	307		10	6	6	164	47,798	291	1	0	17	1	2
Missouri.....	70	19,270	275			3	33	9,058	274			6	5	103	28,328	275	0	0	9		
New York.....	91	21,041	231		4	9	45	12,966	288		1	7	19	136	34,007	250	0	4	10		
Tennessee.....	698	193,867	278		4	42	318	85,250	268		4	17	9	1,016	279,117	275	0	8	59		
Vermont.....	787	235,596	299	2	29	85	2,210	673,994	305	1	59	167	6	2,997	909,590	304	3	88	252	1	2
Other States.....	382	106,987	280	2	8	14	172	49,605	288		3	10	18	554	156,592	283	2	11	24	2	6
Total, 1915.....	2,605	744,372	286	5	49	187	3,432	1,049,909	306	1	71	254	75	6,037	1,794,281	297	6	120	441	4	10
Total, 1914.....	2,558	(a)		7	40	234	290	(a)		10	28	65	2,848	771,478	271	7	50	262	5	9	
Total, 1913.....	2,667	(a)		4	31	148	335	(a)		1	4	7	64	3,002	830,099	277	5	35	155		
Total, 1912.....	2,963	(a)		12	37	116	1,603	(a)		7	45	63	4,566	1,452,447	318	12	44	161	9	6	
Total, 1911.....	2,383	(a)		2	15	94	764	(a)			13	80	3,147	843,564	268	2	15	107	1		

Slate:																			
Maine.....	163	46,194	283	1	3	6	177	50,506	285	1	2	3	340	96,700	284	1	4	8	
Maryland.....	57	13,761	241	1	5		102	25,071	246	2	3	3	159	38,832	244	1	7	3	
New York.....	15	3,066	204				14	3,245	232		1	4	29	6,311	218	0	0		
Pennsylvania.....	3,096	669,849	216	5	15	43	1,695	402,981	238	1	6	22	4,791	1,072,830	224	6	21	65	4
Vermont.....	833	224,163	269	3	24	31	477	113,368	238	3	12	31	1,310	337,531	258	3	27	43	1
Virginia.....	275	55,420	202			1	111	18,806	169			9	386	74,226	192	0	0	1	3
Other States.....	29	6,276	216									4	29	6,276	216	0	0	0	
Total, 1915.....	4,468	1,018,729	228	10	47	81	2,576	613,977	238	1	12	40	122	7,044	1,632,706	232	11	59	121
Total, 1914.....	4,081	(a)		11	32	82	1,922	(a)		3	7	13	133	6,003	1,404,931	234	14	39	95
Total, 1913.....	3,763	(a)		16	22	45	3,274	(a)		2	4	40	140	7,037	1,770,233	252	18	26	85
Total, 1912.....	4,073	(a)		16	21	61	3,754	(a)		2	7	14	152	7,827	2,059,223	263	18	28	75
Total, 1911.....	4,368	(a)		15	28	61	3,652	(a)		1	7	13	162	8,020	1,845,151	230	16	35	74
Traprock:																			
California.....	731	186,090	255	3	24	91	162	34,568	213	9	31	27	893	220,658	247	3	33	122	1
Connecticut.....	340	95,565	281	3	5	121	46	14,116	307	2	6	9	386	109,681	284	3	7	127	1
Massachusetts.....	857	208,196	237	4	29	213	100	23,014	230	3	21	30	957	226,210	236	4	32	234	2
New Jersey.....	1,333	312,163	234		31	118	196	41,408	211	2	6	27	43	1,529	353,571	231	2	37	145
New York.....	347	79,970	230	2	9	30	57	13,200			2	5	4	404	93,170	232	2	11	35
Oregon.....	126	25,265	201			28						4	126	25,265	201	0	0	28	
Pennsylvania.....	860	198,924	231	1	10	70	127	28,758	226	5	28	29	987	227,682	231	1	15	98	1
Washington.....	48	8,210	171		2	5	4	870	218			4	52	9,080	175	0	2	5	
Other States.....	454	96,176	212	1	26	90	105	24,685	235	6	23	13	559	120,861	216	1	32	113	1
Total, 1915.....	5,096	1,205,559	237	14	136	766	797	180,619	227	2	33	141	163	5,893	1,386,178	235	16	169	907
Total, 1914.....	5,577	(a)		11	107	575	1,516	(a)		2	22	91	162	7,033	1,563,234	220	13	129	666
Total, 1913.....	6,587	(a)		11	71	446	1,716	(a)		5	24	44	161	8,303	1,999,635	241	16	95	490
Total, 1912.....	4,833	(a)		14	43	220	1,353	(a)		1	14	58	138	6,186	1,459,022	236	15	57	278
Total, 1911.....	4,826	(a)		6	64	200	1,511	(a)		2	10	42	150	6,337	1,359,017	214	8	74	242

(a) Not segregated prior to 1915.

TABLE 15.—*Cement Rock, Marble, Slate, and Traprock Quarries: Fatalities, by causes and States, during the year ended Dec. 31, 1915.*

State.	In and about quarry.															In outside works.															
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledgeing.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.).	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledgeing or crushing.	Flying or falling objects (rocks, timbers, etc.).	Burns.	Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	Grand total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			
Cement rock:																															
California.....	1														1																2
Illinois.....	1														1																1
Kansas.....																															1
Michigan.....																															1
Missouri.....																															1
New York.....																															0
Ohio.....																															0
Pennsylvania.....	2			1					2	1					1	7	1	1												4	11
Washington.....	1														1	1															1
Other States.....	1			1											1	1														1	2
Total, 1915.....	5			2					2	1					1	11	1		1											7	18
Total, 1914.....	5			5					1						18	1													1	2	20
Total, 1913.....	1	2		4						1					13	2					4									8	21
Total, 1912.....	6	1		2		4				1					13	2					6								6	17	30
Total, 1911.....	9			7		2									19	3	1				2							4	10	29	
Marble:																															
California.....																															0
Colorado.....																															0
Georgia.....																															0
Massachusetts.....	1																														1
Missouri.....																															0
New York.....																															0

TABLE 16.—*All Quarries: Causes of fatalities and injuries, showing percentage due to each cause and corresponding rates per 1,000 300-day workers employed during the year ended Dec. 31, 1915.*

Cause of accident.	Number killed.		Number injured.	
	Per cent of total.	Per 1,000 300-day workers.	Per cent of total.	Per 1,000 300-day workers.
In and about quarry:				
1. Falls or slides of rock or overburden.....	30.41	0.55	8.10	9.50
2. Rock while loading at working face.....	3.38	.06	18.46	21.65
3. Timber or hand tools.....	.68	.01	3.96	4.65
4. Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).....	18.92	.34	2.35	2.75
5. Haulage accidents (by quarry cars and locomotives).....	7.43	.13	6.99	8.20
6. Falling into quarry from surface, benches, or face.....	6.76	.12	1.46	1.71
7. Falling from hoists, derricks, ladders, etc.....	2.70	.05	1.58	1.86
8. Drilling accidents (by machine or hand drills).....	.68	.01	3.68	4.32
9. Electricity (shock or burns).....	1.35	.02	.20	.23
10. Machinery (pumps and hoisting machinery).....	4.05	.07	3.12	3.66
11. Flying pieces of rock from sledging.....	.68	.01	9.58	11.23
12. Nails, splinters, etc.....			1.30	1.53
13. Boiler explosions.....			.06	.07
14. Animals.....			.73	.86
15. Other causes.....	3.38	.06	10.76	12.63
Total number killed or injured at quarry.....	80.41	1.44	72.33	84.84
In outside works:				
16. Haulage system (cars, motors, etc.).....	.68	.01	1.35	1.59
17. Railway cars or locomotives.....	4.05	.07	.51	.59
18. Crushers.....	1.35	.02	1.90	1.06
19. Cranes, derricks, etc.....			1.10	1.29
20. Other machinery.....	3.38	.06	4.12	4.83
21. Falls of persons.....	2.03	.04	1.97	2.32
22. Hand tools.....			3.14	3.69
23. Electricity (shock or burns).....	.68	.01	.08	.10
24. Nails, splinters, etc.....			1.22	1.43
25. Flying pieces of rock from sledging or crushing.....			2.03	2.38
26. Flying or falling objects (rocks, timbers, etc.).....	2.70	.05	4.34	5.09
27. Burns.....	3.38	.06	1.24	1.46
28. Other causes.....	1.35	.02	5.67	6.65
Total number killed or injured at outside works.....	19.59	.35	27.67	32.46
Grand total.....	100.00	1.80	100.00	117.30

TABLE 17.—*Quarries, Metal Mines, and Coal Mines: Comparative statement of fatality rates based on actual number of men employed and the equivalent of 300-day workers.*

Basis of figures.	1914			1915		
	Number of men employed.	Number killed.	Number killed per 1,000 employed.	Number of men employed.	Number killed.	Number killed per 1,000 employed.
<i>Quarries.</i>						
Average number employed.....	87,936	180	2.05	100,740	148	1.47
Number of 300-day workers.....	68,187	180	2.64	82,447	148	1.80
<i>Metal mines.</i>						
Average number employed.....	158,115	559	3.54	152,118	553	3.64
Number of 300-day workers.....	142,619	559	3.92	141,997	553	3.89
<i>Coal mines.</i>						
Average number employed.....	763,185	2,454	3.22	734,008	2,269	3.09
Number of 300-day workers.....	526,597	2,454	4.67	511,598	2,269	4.44

TABLE 18.—*Quarries, Metal Mines, and Coal Mines: Men employed, number killed, and fatality rates per 1,000 men employed, by years, 1911 to 1915.*

Year.	Coal mines.			Metal mines.		
	Number employed.	Number killed.		Number employed.	Number killed.	
		Total.	Per 1,000 employed.		Total.	Per 1,000 employed.
1911.....	728,348	2,656	3.65	165,979	695	4.19
1912.....	722,662	2,419	3.35	169,199	661	3.91
1913.....	747,644	2,785	3.73	191,276	683	3.57
1914.....	763,185	2,454	3.22	158,115	559	3.54
1915.....	734,008	2,269	3.09	152,118	553	3.64

Year.	Quarries.			Total, mines and quarries.		
	Number employed.	Number killed.		Number employed.	Number killed.	
		Total.	Per 1,000 employed.		Total.	Per 1,000 employed.
1911.....	110,954	188	1.69	1,005,281	3,539	3.52
1912.....	113,105	213	1.88	1,004,966	3,293	3.28
1913.....	106,278	183	1.72	1,045,198	3,651	3.49
1914.....	87,936	180	2.05	1,009,236	3,193	3.16
1915.....	100,740	148	1.47	986,866	2,970	3.01

TABLE 19.—*Quarries, Metal Mines, and Coal Mines: Principal causes of fatalities, showing percentage due to each cause, by years, 1911 to 1915.*

	Cause of death.								Total.
	Falls of overburden, roof, quarry material, ore, or coal.	Explosives.	Haulage and handling rock, ore, or coal.	Falls of person.	Electricity.	Machinery.	Gas and dust explosions.	Other causes.	
1911:									
Quarries.....	25.53	26.60	20.21	8.51	1.07	9.04	.....	9.04	100.00
Metal mines.....	32.52	11.22	7.63	15.39	2.45	3.16	.....	27.63	100.00
Coal mines.....	47.40	6.02	17.13	1.28	3.73	1.51	13.74	9.19	100.00
1912:									
Quarries.....	17.37	22.06	27.70	8.92	1.87	11.74	.....	10.33	100.00
Metal mines.....	34.49	14.22	10.28	13.92	3.78	3.78	.....	19.52	100.00
Coal mines.....	49.03	6.08	19.14	1.36	3.64	1.65	11.99	7.11	100.00
1913:									
Quarries.....	14.75	24.04	23.50	9.29	2.73	12.57	.....	13.12	100.00
Metal mines.....	34.70	13.03	12.88	12.30	3.81	4.39	.....	18.89	100.00
Coal mines.....	45.39	4.95	18.31	1.80	3.16	1.80	18.45	6.14	100.00
1914:									
Quarries.....	29.45	19.44	18.33	12.78	1.67	6.11	.....	12.22	100.00
Metal mines.....	36.32	10.73	10.20	16.10	3.04	2.50	.....	21.11	100.00
Coal mines.....	46.09	5.95	18.79	2.85	4.07	1.87	14.22	6.16	100.00
1915:									
Quarries.....	30.40	18.92	15.55	11.48	2.03	9.46	.....	12.16	100.00
Metal mines.....	36.71	14.10	10.49	15.91	2.53	1.99	.....	18.26	100.00
Coal mines.....	47.55	6.83	18.64	1.37	4.36	1.68	13.40	6.17	100.00

TABLE 20.—*All Quarries: Value of quarry products, by years, 1891 to 1915.*^a

Year.	Limestone.	Lime.	Granite.	Trap rock.	Portland cement.
1891.....	b \$15,792,000	(c)	\$13,867,000	.....	\$967,429
1892.....	b 18,342,000	(c)	12,642,000	.....	1,153,600
1893.....	b 13,947,222	(c)	8,808,934	.....	1,158,138
1894.....	b 16,190,118	(c)	10,029,156	.....	1,383,473
1895.....	9,974,222	\$8,588,822	8,894,328	.....	1,586,830
1896.....	8,387,900	6,327,900	7,944,994	.....	2,424,011
1897.....	9,135,567	6,390,487	8,905,075	.....	4,315,891
1898.....	9,956,417	6,888,549	9,324,406	.....	5,970,773
1899.....	13,889,302	6,983,067	10,343,298	\$1,275,041	8,074,371
1900.....	13,556,523	6,797,496	10,969,417	1,706,200	9,280,525
1901.....	18,202,843	8,204,054	14,266,104	1,710,857	12,532,360
1902.....	20,895,385	9,335,618	16,083,475	2,181,157	20,864,078
1903.....	22,372,109	9,255,882	15,703,793	2,732,294	27,713,319
1904.....	22,178,964	9,951,456	17,191,479	2,823,546	23,355,119
1905.....	26,025,210	10,941,680	17,563,139	3,074,554	33,245,867
1906.....	27,327,142	12,480,653	18,562,806	3,736,571	52,466,186
1907.....	31,737,631	12,656,705	18,064,708	4,594,103	53,992,551
1908.....	27,682,002	11,091,186	18,420,080	4,282,406	43,547,679
1909.....	32,070,401	13,846,072	19,581,597	5,133,842	52,858,254
1910.....	34,603,678	14,088,039	20,541,967	6,452,141	68,205,800
1911.....	33,897,612	13,689,054	21,194,228	6,739,141	66,248,817
1912.....	36,729,800	13,970,114	19,223,302	7,560,049	67,016,928
1913.....	38,745,429	14,648,362	20,793,800	9,289,809	d 89,106,975
1914.....	33,894,155	13,268,938	20,028,919	7,865,998	d 80,118,475
1915.....	.....	14,336,756	.....	.....	d 74,756,674

Year.	All other cement.	Marble.	Sandstone.	Slate.	Bluestone.	Total.
1891.....	\$5,704,008	\$3,610,000	\$8,700,000	\$3,825,746	e \$1,500,000	\$53,966,183
1892.....	5,999,150	3,705,000	8,315,500	4,117,125	e 1,600,000	55,874,375
1893.....	3,251,757	2,411,082	5,295,151	2,523,173	e 1,000,000	38,595,467
1894.....	3,635,731	3,199,585	3,955,847	2,790,324	e 900,000	42,084,234
1895.....	3,895,424	2,825,719	4,211,314	2,698,700	e 750,000	41,425,559
1896.....	4,049,202	2,859,136	4,023,199	2,746,205	e 750,000	39,512,547
1897.....	3,862,392	3,870,594	4,065,445	3,524,614	e 900,000	44,970,055
1898.....	3,888,728	3,629,940	4,724,412	3,723,540	e 1,000,000	49,104,765
1899.....	4,814,771	4,021,681	4,924,870	3,962,733	815,284	59,094,218
1900.....	3,728,848	4,267,253	5,272,865	4,240,466	1,198,519	61,018,112
1901.....	4,302,302	4,965,699	6,974,199	4,787,525	1,164,481	76,062,551
1902.....	4,526,022	5,044,182	9,430,958	5,696,051	1,163,525	95,196,731
1903.....	4,228,022	5,362,686	9,482,802	6,256,685	1,799,457	104,887,249
1904.....	2,676,801	6,297,835	8,482,162	5,617,195	1,791,729	110,366,286
1905.....	2,685,676	7,129,071	8,075,149	5,496,207	1,831,625	116,168,178
1906.....	2,836,091	7,582,938	7,147,439	5,668,346	2,021,898	139,830,070
1907.....	1,911,300	7,837,685	6,753,762	6,019,220	2,117,916	145,935,581
1908.....	929,977	7,733,920	5,831,231	6,316,817	1,762,860	127,598,158
1909.....	772,209	6,548,905	6,564,052	5,441,418	1,446,402	144,263,252
1910.....	546,292	6,992,779	6,994,832	6,236,759	1,535,187	165,597,474
1911.....	456,319	7,546,718	5,854,395	5,728,019	1,876,473	165,230,776
1912.....	444,585	7,786,458	5,887,848	6,043,318	1,505,763	165,868,165
1913.....	443,552	7,870,890	5,752,205	6,175,476	1,280,862	194,107,360
1914.....	414,728	8,121,412	f 7,501,808	5,706,787	(g)	176,921,220
1915.....	398,428	.....	.....	4,958,915	.....	.....

^a Compiled from Mineral Resources of the United States, U. S. Geological Survey.

^b Includes limestone used for manufacture of lime.

^c Included in limestone.

^d Value of shipments.

^e Estimated.

^f Includes bluestone.

^g Included in sandstone.

As a quarry can be worked only about 300 days in a year, if Sundays, holidays, and a few days for repairs be excluded, a 300-day year has been used throughout this report. The same basis has been used in compiling the summary for the five years 1911 to 1915, so that this report presents detailed accident data for an entire industry on a uniform-time basis over a period of years, thus making the rate of one State comparable with that of another, and the rate of one State for a certain year comparable with that of the same State for some other year.

PRECAUTIONS TO BE TAKEN IN THE USE OF EXPLOSIVES.

The following precautions, adapted from Miners' Circular 7^a to suit quarry conditions, are given again for the purpose of calling attention to some of the principal dangers in handling explosives:

Never open a metal keg of powder with a pick or metal object. Use the opening provided by the manufacturer of the keg.

Never return to a shot that has failed to explode until at least 10 minutes after lighting it, if squibs were used, or 12 hours after lighting if fuse was used. When shots are fired electrically be sure that all wires are disconnected from the battery, and wait at least 5 minutes before returning to the face.

Never allow powder or other explosive to remain exposed. Keep it in a well-locked box at least 100 feet from the working face and in an unfrequented place.

Never go nearer than 5 feet to a powder box or powder when smoking.

Never allow the point of the drill to become dull or to become of less than the standard gage, so that a drill hole may be made with it into which the cartridge may always be pushed freely.

Never withdraw a shot that has missed fire. Drill a fresh hole at least 2 feet from it but parallel to the old hole and fire this new hole. After the shot a careful search should be made for the unexploded charge to prevent its being struck by a pick and perhaps causing an explosion.

Never use iron or steel tampers or needles. Have at least 6 inches of hard-drawn copper on the tamping end of the bar or, better still, use a hardwood tamping stick. The needle should be made entirely of hard-drawn copper.

Never tamp shots with an iron or steel scraper, and do not push a cartridge into the drill hole with the scraper. The scraper rod should be tipped with at least 6 inches of brass or copper on the scraping end.

Never take more than one day's supply of explosives into the quarry at one time.

Never leave explosives in the quarry overnight.

Never attempt to use frozen dynamite.

Never crimp a "cap" with the teeth. This practice is dangerous. Use the crimper.

^a Rutledge, J. J., The use and misuse of explosives in coal mining: Miners' Circular 7, Bureau of Mines, 1913, pp. 32-33.

TABLE 21.—All Quarries: Value of quarry products, by States, during year ended Dec. 31, 1914.

[Compiled from Mineral Resources of the United States for 1914, U. S. Geological Survey.]

State.	Limestone.	Lime.	Granite.	Basalt and related rocks (traprock).	Portland cement (shipments).	All other cement.	Marble.	Sandstone (including bluestone and quartzite).	Slate.	Total.
Alabama.....	\$787,214	\$199,814			(a)	(a)	\$370,766	\$161,773		\$1,519,567
Arizona.....	(a)	122,324	\$5,741		(a)		23,760	452,802		154,825
Arkansas.....	47,390	92,067		\$233,987			79,358	452,802		452,802
California.....	286,273	430,792	2,386,579	1,589,821	\$6,698,905		70,451	277,657		11,740,478
Colorado.....	340,059	36,996	74,774		(a)		(a)	97,029		548,858
Connecticut.....	(a)	338,601	405,655	549,156				(a)		1,293,412
Delaware.....			131,086							131,086
Florida.....	343,779	64,531								408,310
Georgia.....	89,216	(a)	958,831		(a)	(a)	1,190,742			2,238,789
Idaho.....	28,032	(a)	(a)					22,837		50,869
Illinois.....	2,861,340	383,989			4,848,522	(a)		72,738		8,166,589
Indiana.....	4,115,557	358,738			8,342,164	(a)		(a)		12,816,459
Iowa.....	537,362	(a)			4,008,915			1,319		4,547,596
Kansas.....	598,302				2,643,415	(a)		2,274		3,243,991
Kentucky.....	1,196,046	26,762					(a)	60,926		1,283,734
Louisiana.....	(a)									(a)
Maine.....	(a)	512,842	1,717,110						\$277,419	2,507,371
Maryland.....	204,276	390,298	846,838		(a)		(a)	8,128	77,391	1,526,931
Massachusetts.....	(a)	652,067	2,091,417	691,330			206,883	428,926		4,070,623
Michigan.....	1,457,961	287,648		34,406	4,064,781			(a)		5,844,796
Minnesota.....	489,849	104,195	735,753	77,338		(a)		210,099		1,617,284
Missouri.....	2,160,958	686,051	77,971		4,485,744		(a)	3,588		7,414,312
Montana.....	207,821	(a)	25,977		(a)			(a)		233,798
Nebraska.....	302,862							(a)		302,862
Nevada.....		(a)								(a)
New Hampshire.....			1,383,325							1,383,325
New Jersey.....	240,937	41,226	74,808	1,164,529	3,081,205			53,394	(a)	4,656,099
New Mexico.....		(a)						(a)		(a)
New York.....	3,158,617	396,494	797,297	895,147	5,020,720	(a)	248,787	412,845	112,776	12,105,069
North Carolina.....	58,754	36,356	1,286,345				(a)	1,475,231		1,381,455
Ohio.....	4,131,917	1,880,836			1,913,797	(a)		1,523,796		9,450,346
Oklahoma.....	237,044	11,130	24,695		(a)			1,934		274,805
Oregon.....	(a)	21,576	36,852	397,824				(a)		456,252
Pennsylvania.....	5,270,458	2,740,238	511,013	1,076,001	20,944,787	(a)	(a)	1,140,182	3,609,959	35,292,638
Rhode Island.....	(a)	(a)	621,620							621,620
South Carolina.....	(a)	(a)	357,657							357,657
South Dakota.....	12,488	36,976						126,413		175,877
Tennessee.....	678,068	266,881					1,253,549	(a)		2,198,498
Texas.....	549,567	200,788	115,857		2,686,653			197,800		3,750,665
Utah.....	308,081	74,212	(a)		1,317,575			67,578	(a)	1,762,446

Vermont.....	24,049	142,034	3,120,452				3,490,971		1,414,247	8,191,753
Virginia.....	1,194,261	763,775	805,287		(a)		(a)	150,469	204,139	3,117,931
Washington.....	10,008	189,260	72,079	1,068,042	2,303,433		(a)	450,436		4,093,258
West Virginia.....	778,749	680,065			(a)			142,459		1,601,273
Wisconsin.....	1,007,106	871,820	1,238,734					167,595		3,285,255
Wyoming.....	50,500							11,831		62,331
Other States.....	134,254	227,556	122,166	b 88,417	7,757,859	\$414,728	1,289,263	129,433	10,856	10,174,532
Total, 1914.....	33,894,155	13,268,938	20,028,919	7,865,998	80,118,475	414,728	8,121,412	7,501,808	5,706,787	176,921,220
Total, 1913.....	38,745,429	14,648,362	20,733,217	9,134,494	89,106,975	443,552	7,870,890	7,248,965	6,175,476	194,107,360

a Included in "Other States."

b Hawaii only.

SUMMARY OF QUARRY ACCIDENTS FOR THE FIVE YEARS 1911-1915.

Detailed information relating to labor and accidents at quarries during the five-year period 1911 to 1915, inclusive, is given in tables 22 to 29 following. Table 22 shows the number of men actually employed and the equivalent number of 300-day workers by States and years. Table 23 shows by States the number of days' labor performed, with the average number of days active for each year.

Table 24 shows the actual number of men killed and injured by States and by years. In the accident reports of the bureau, injuries are classified as serious and slight. The serious injuries (1911 to 1914) are those injuries wherein a disability of 20 or more days resulted from the accident, whereas the figures for 1915, being on the 14-day basis, are not comparable with those for previous years. In order that the data for nonfatal injuries may be comparable for the five-year period, the serious and slight injuries have been combined into one group.

Table 25 shows the fatality and injury rates by States and years for 1911 to 1915, inclusive, calculated on a 300-day basis, so that these rates are comparable one year with another, as well as one State with another. The table also shows the average fatality and injury rate for the five-year period by States, together with the average for the United States as a unit. In 1911, the fatality rate for the United States as a whole was 2.23 per 1,000, whereas the average for the period 1911 to 1915 was 2.19. The nonfatal injury rate in 1911 was 63.85, in 1915 it was 117.30 per 1,000 300-day workers, and the average for the five-year period 1911 to 1915 was 89.39 per 1,000. The fact that the injury rate has increased does not necessarily signify an increasing hazard, but does indicate that quarry companies are keeping better records and rendering more complete reports than in previous years. The fatality rate in 1915 was considerably lower than in previous years, and no doubt reflects the results of the safety campaign that is in progress among the quarry operators and workers.

Table 26 shows 912 fatalities for the five-year period 1911 to 1915, classified by causes and States, of which 724 occurred in and about the quarries and 188 at outside works. Table 27 shows 37,188 nonfatal injuries classified by causes and States, of which 29,402 resulted from accidents in and about quarries and 7,786 occurred at outside works. With so large a number of injuries classified by causes, a reliable set of data is made available pointing out the principal hazards in the quarry industry.

Tables 28 and 29 show in detail the number of fatalities and number of injuries by causes and years in certain groups in the quarry industry, such as cement-rock, granite, limestone, marble, slate, and trap-rock quarries.

The injuries resulting from accidents at outside works for the years 1911 to 1914 are not strictly comparable with those for 1915. In the earlier years, the bureau's requests for accident statistics did not specifically call for data relating to accidents at rock crushers and rock-dressing plants, whereas the form for 1915 specifically mentioned rock-dressing plants, mills, and crushers, and in some cases, as in the limestone industry, the number of injuries reported was considerably more than in the previous years.

TABLE 22.—All Quarries: Men employed and the equivalent in 300-day workers, by States, 1911 to 1915.

State.	Actual number employed.					Equivalent in 300-day workers (calculated).				
	1911	1912	1913	1914	1915	1911	1912	1913	1914	1915
Alabama.....	2,152	1,895	1,787	1,362	1,271	1,941	1,827	1,590	1,120	1,080
Arizona.....	201	285	133	130	65	127	251	99	69	47
Arkansas.....	674	813	257	376	287	365	640	165	235	218
California.....	3,845	4,412	3,496	3,863	3,692	3,427	4,177	3,068	3,179	3,136
Colorado.....	783	1,475	928	750	1,106	669	1,509	843	671	1,099
Connecticut.....	1,169	1,787	2,227	1,250	1,149	761	1,529	1,874	934	990
Delaware.....	270	(a)	(a)	161	191	206	(a)	(a)	131	149
Florida.....	111	(a)	(a)	291	268	86	(a)	(a)	271	248
Georgia.....	2,029	1,996	2,015	1,632	1,915	1,144	1,634	1,760	1,393	1,503
Idaho.....	139	210	228	232	125	57	142	172	114	74
Illinois.....	4,508	4,153	5,647	3,380	3,538	3,776	3,363	3,906	2,601	2,818
Indiana.....	5,059	5,910	5,244	3,665	4,840	3,653	4,947	4,300	2,953	3,908
Iowa.....	1,134	1,271	1,169	974	2,077	793	1,224	1,191	674	1,887
Kansas.....	2,410	2,482	2,100	1,157	1,218	1,481	1,617	1,308	770	809
Kentucky.....	2,828	2,304	2,318	2,087	1,929	1,786	1,538	1,480	1,357	1,089
Maine.....	2,563	1,914	2,257	1,613	1,851	2,155	1,428	1,966	1,339	1,431
Maryland.....	2,291	3,028	2,419	1,744	1,559	1,760	2,700	1,908	1,307	1,335
Massachusetts.....	3,666	4,287	4,245	3,169	3,283	2,947	3,633	3,480	2,349	2,790
Michigan.....	1,225	1,832	1,811	1,731	1,502	737	1,448	1,486	1,311	1,244
Minnesota.....	2,201	2,458	2,161	1,576	1,791	1,499	2,012	1,746	1,057	1,439
Missouri.....	4,850	4,063	4,042	4,492	3,278	3,496	3,377	3,119	3,557	2,457
Montana.....	277	307	165	267	199	220	239	156	198	188
Nebraska.....	227	530	533	453	473	213	334	384	302	319
Nevada.....	(a)	43	59	64	27	(a)	34	36	41	28
New Hampshire.....	1,097	1,451	865	966	1,457	847	1,128	726	786	1,084
New Jersey.....	3,073	3,766	3,180	2,748	2,837	2,260	3,153	2,614	1,954	1,941
New Mexico.....	570	436	182	176	226	355	322	140	111	162
New York.....	7,750	4,688	5,190	4,902	5,745	5,511	3,267	4,122	3,675	4,437
North Carolina.....	1,561	1,183	992	935	1,546	1,250	1,005	786	675	1,358
Ohio.....	8,779	8,021	7,930	6,328	7,500	6,924	6,243	6,488	5,044	6,544
Oklahoma.....	1,207	814	448	388	630	1,108	735	403	294	530
Oregon.....	407	262	228	246	307	233	126	89	125	156
Pennsylvania.....	21,111	21,845	22,009	18,726	22,618	15,956	18,817	18,795	14,942	19,280
Rhode Island.....	949	956	1,007	572	717	820	863	826	487	627
South Carolina.....	432	380	365	298	206	369	332	316	243	93
South Dakota.....	290	291	346	172	339	231	206	208	115	233
Tennessee.....	2,566	3,171	2,373	2,174	2,622	2,004	2,480	2,113	1,680	2,042
Texas.....	1,748	1,826	1,211	1,084	1,213	1,316	1,443	957	810	889
Utah.....	520	630	380	429	251	446	504	314	321	202
Vermont.....	3,786	4,613	4,036	3,675	6,594	3,295	4,251	3,837	3,391	6,147
Virginia.....	2,711	2,870	2,760	2,433	2,183	2,205	2,603	2,217	1,905	1,749
Washington.....	2,353	1,699	1,078	1,430	1,165	1,935	1,330	980	1,000	983
West Virginia.....	1,403	2,571	2,619	1,039	1,192	1,078	2,188	2,276	727	903
Wisconsin.....	3,879	3,650	2,916	2,612	3,601	2,865	2,736	2,105	1,860	2,724
Wyoming.....	72	195	125	74	82	46	92	98	60	52
Other States.....	78	332	797	110	25	64	300	694	49	25
Total.....	110,954	113,105	106,278	87,936	100,740	84,417	93,837	87,141	68,187	82,447

a Included in "Other States."

TABLE 23.—All Quarries: Days of labor performed and average number of days quarries were operated, by States, 1911 to 1915.

State.	Days of labor performed.					Average days active.				
	1911	1912	1913	1914	1915	1911	1912	1913	1914	1915
Alabama.....	582,204	547,966	476,934	386,187	324,019	271	289	267	247	255
Arizona.....	38,994	75,404	29,796	20,762	14,198	190	265	224	160	218
Arkansas.....	109,506	192,129	49,380	70,858	65,286	162	236	192	187	227
California.....	1,028,087	1,253,144	920,500	853,650	940,804	267	284	263	247	255
Colorado.....	200,782	452,772	252,948	201,280	329,694	256	307	273	268	298
Connecticut.....	228,308	458,641	562,344	280,023	296,983	195	257	255	224	258
Delaware.....	61,815	(c)	(a)	39,241	44,754	229	(c)	(c)	244	234
Florida.....	25,835	(c)	(a)	81,320	74,540	233	(c)	(c)	279	278
Georgia.....	343,192	490,183	528,001	418,015	450,958	169	246	262	256	235
Idaho.....	17,174	42,593	51,736	34,237	22,117	124	203	227	145	177
Illinois.....	1,132,731	1,009,042	1,171,720	785,165	845,391	251	243	207	231	236
Indiana.....	1,985,923	1,484,092	1,289,934	885,824	1,172,522	217	251	246	232	242
Iowa.....	237,762	367,190	357,308	202,141	566,073	210	289	306	208	273
Kansas.....	444,159	485,085	392,310	230,888	242,791	184	195	187	200	199
Kentucky.....	535,874	461,475	443,859	407,205	326,655	189	200	181	195	169
Maine.....	646,876	428,380	589,666	401,830	429,239	252	224	261	249	232
Maryland.....	528,097	809,894	572,477	392,088	400,575	231	267	237	225	257
Massachusetts.....	884,171	1,089,879	1,043,995	704,890	836,981	241	254	246	222	255
Michigan.....	220,960	434,351	445,651	393,273	373,086	180	237	246	227	248
Minnesota.....	449,846	603,501	523,922	317,063	431,630	240	246	242	201	241
Missouri.....	1,048,675	1,012,982	935,792	1,067,133	737,210	216	249	232	233	225
Montana.....	66,040	71,819	46,883	59,444	56,529	238	234	284	223	284
Nebraska.....	63,786	100,141	115,126	90,457	95,806	281	189	216	200	203
Nevada.....	(c)	10,236	10,650	12,190	8,312	(a)	238	181	190	308
New Hampshire.....	254,189	338,257	217,873	235,948	325,276	232	233	252	244	223
New Jersey.....	678,102	945,999	784,152	586,230	582,181	221	251	247	213	205
New Mexico.....	106,570	96,591	42,000	33,231	48,553	187	222	231	189	215
New York.....	1,653,417	980,178	1,236,571	1,102,610	1,331,108	213	210	238	225	232
North Carolina.....	375,060	301,604	235,686	202,630	407,270	240	255	238	217	263
Ohio.....	2,077,323	1,872,848	1,946,262	1,513,392	1,963,011	237	233	245	239	262
Oklahoma.....	332,283	220,474	120,998	88,256	158,916	275	271	270	227	252
Oregon.....	69,904	37,739	26,724	37,439	46,821	172	144	117	152	153
Pennsylvania.....	4,786,378	5,645,157	5,638,616	4,482,573	5,783,791	227	258	256	239	256
Rhode Island.....	246,104	253,916	247,798	146,249	188,178	259	271	246	256	262
South Carolina.....	110,605	99,551	94,747	72,826	27,956	256	262	260	244	136
South Dakota.....	69,404	61,650	62,266	34,534	69,971	239	212	180	201	206
Tennessee.....	601,185	744,137	633,848	503,869	612,589	234	235	267	232	234
Texas.....	394,771	432,924	287,020	242,932	266,703	226	237	237	224	220
Utah.....	133,927	169,274	94,250	96,343	60,657	258	269	248	225	242
Vermont.....	988,553	1,275,218	1,151,218	1,017,244	1,844,041	261	276	285	277	280
Virginia.....	661,376	790,897	665,052	571,355	524,846	244	272	241	235	240
Washington.....	580,632	393,871	293,894	299,888	294,888	247	235	273	210	253
West Virginia.....	323,329	656,387	682,927	218,216	270,322	230	255	261	210	227
Wisconsin.....	859,527	835,859	631,605	558,130	817,303	222	229	217	214	227
Wyoming.....	13,653	27,608	29,520	17,928	15,685	190	142	236	242	191
Other States.....	19,175	90,005	208,278	14,700	7,500	246	271	261	134	300
Total.....	25,325,094	28,151,043	26,142,237	20,456,157	24,734,224	228	249	246	233	246

^a Included in "Other States."

TABLE 24.—All Quarries: Fatalities and injuries, by States and years, 1911 to 1915.

State.	Number killed.						Number injured.					
	1911	1912	1913	1914	1915	Total.	1911	1912	1913	1914	1915	Total.
Alabama.....	3	2	2	2	2	11	111	102	120	78	81	492
Arizona.....			1			1	19	8	5	4	3	39
Arkansas.....	1	2			1	4	23	4	5	20	19	71
California.....	22	7	19	8	10	68	254	273	255	511	670	1,963
Colorado.....	3	7	1		1	12	48	61	256	40	131	536
Connecticut.....	2		3	3	4	12	26	22	93	122	169	432
Delaware.....						0	12			6	2	20
Florida.....						0				3	7	10
Georgia.....	1		1	1	2	5	89	45	50	55	50	289
Idaho.....						0		2	21	14	10	47
Illinois.....	12	11	9	10	1	43	476	536	579	513	494	2,598
Indiana.....	6	6	5	5	1	23	393	520	434	451	466	2,264
Iowa.....	4	2	1	1	2	10	61	88	107	89	320	665
Kansas.....	2	5	2	4	1	14	187	113	100	128	88	616
Kentucky.....	4	8	4	4		20	78	87	115	95	69	444
Maine.....	3	2	3	3	3	14	40	65	26	38	42	211
Maryland.....	6	7	2	7	7	29	94	151	99	116	329	789
Massachusetts.....	4	8	5	4	9	30	151	187	415	468	542	1,763
Michigan.....	3	3	5	7	3	21	64	131	262	283	259	999
Minnesota.....	2	2	2	5	5	11	69	94	164	136	245	708
Missouri.....	9	9	5	7	6	36	282	483	433	263	381	1,842
Montana.....		1	1		1	3	10	20	14	16	34	94
Nebraska.....	3			1		4	2	6	5	9	20	42
Nevada.....						0		1		1	6	8
New Hampshire.....			1		1	2	12	39	45	42	84	222
New Jersey.....	3	7	1	8	4	23	241	316	304	257	278	1,396
New Mexico.....		2	2	2	2	8	10	17	2	101	49	179
New York.....	4	15	7	12	7	45	284	269	381	496	613	2,043
North Carolina.....	2		1	2		5	135	33	44	108	53	373
Ohio.....	15	8	12	6	13	54	624	601	539	686	816	3,266
Oklahoma.....	1		1			2	85	40	57	44	108	334
Oregon.....	3	2			2	7	10	2	7	13	44	76
Pennsylvania.....	33	49	42	31	38	193	640	1,072	1,409	1,889	1,429	5,939
Rhode Island.....		2	2	2	1	7	15	8	22	32	17	84
South Carolina.....	1			1		2	40	57	57	54	46	254
South Dakota.....		1				1	13	18	7	2	52	82
Tennessee.....	3	6	5	2		16	75	124	95	99	112	505
Texas.....	6	3	1	3	3	16	87	200	321	158	126	892
Utah.....	3	1	1			5	76	76	41	39	25	256
Vermont.....	3	16	14	9	9	56	240	250	341	376	694	1,901
Virginia.....	1	5	7	8	1	22	74	54	104	115	77	424
Washington.....	9	7	5	7	5	33	100	115	147	132	152	646
West Virginia.....	1	6	2	7	3	19	45	149	75	81	173	523
Wisconsin.....	4	1	8	7	5	25	92	100	154	145	282	773
Wyoming.....	1					1	3	7	7	5	3	25
Other States.....				1		1	1	6	22	3	1	33
Total.....	188	213	183	180	148	912	5,390	6,562	7,739	7,836	9,671	37,188

TABLE 25.—All Quarries: Fatalities and injuries per 1,000 300-day workers employed, by States, 1911 to 1915.

State.	Number killed per 1,000 300-day workers.						Number injured per 1,000 300-day workers.					
	1911	1912	1913	1914	1915	Average.	1911	1912	1913	1914	1915	Average.
Alabama.....	1.55	1.09	1.26	1.79	1.85	1.46	57.19	55.83	75.47	69.64	75.00	65.10
Arizona.....	.....	.....	10.10	.....	.....	1.69	149.61	31.87	50.51	57.97	63.83	65.77
Arkansas.....	2.74	3.13	.....	.....	4.59	2.46	63.01	6.25	30.30	85.11	87.16	43.75
California.....	6.42	1.68	6.19	2.52	3.19	3.89	74.12	65.36	83.12	160.74	213.65	115.56
Colorado.....	4.48	4.64	1.19	.....	.91	2.50	71.75	40.42	303.68	59.61	119.20	111.88
Connecticut.....	2.63	.....	1.60	3.21	4.04	1.97	34.17	14.39	49.63	130.62	170.71	70.96
Delaware.....	.....	.....	.....	.....	.....	.....	58.25	.....	.....	45.80	134.23	41.15
Florida.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.07	28.23	16.53
Georgia.....	.87	.....	.57	.72	1.33	.67	77.80	27.54	28.41	39.48	33.27	38.88
Idaho.....	.....	.....	.....	.....	.....	.....	.....	14.09	122.09	122.81	135.14	84.08
Illinois.....	3.18	3.27	2.30	3.84	.35	2.61	126.06	159.38	148.23	197.23	175.30	187.80
Indiana.....	1.64	1.21	1.16	1.69	.26	1.16	107.58	105.11	100.93	152.73	119.24	114.57
Iowa.....	5.04	1.63	.84	1.48	1.06	1.73	76.92	71.90	89.84	132.05	169.58	115.27
Kansas.....	1.35	3.09	1.53	5.19	1.24	2.34	126.27	69.88	76.45	166.23	108.78	102.92
Kentucky.....	2.24	5.20	2.70	2.95	.....	2.76	43.67	56.57	77.70	70.01	63.36	61.24
Maine.....	1.39	1.40	1.53	2.24	2.10	1.68	18.56	45.52	13.22	28.38	29.35	25.36
Maryland.....	3.41	2.59	1.05	5.36	5.24	3.22	53.41	55.93	51.89	88.75	246.44	87.57
Massachusetts.....	1.36	2.20	1.44	1.70	3.23	1.97	51.24	51.47	119.25	199.23	194.27	115.99
Michigan.....	4.07	2.07	3.36	5.34	2.41	3.37	86.84	90.47	176.31	215.87	208.20	160.46
Minnesota.....	1.33	.99	1.15	1.73	.....	1.42	46.03	46.72	93.93	128.67	170.26	91.32
Missouri.....	2.57	2.67	1.60	1.97	2.44	2.25	80.66	143.03	38.83	73.94	155.07	115.08
Montana.....	.....	4.18	6.41	.....	5.32	3.00	45.45	83.68	89.74	80.81	180.85	93.91
Nebraska.....	14.08	.....	.....	3.31	.....	2.58	9.39	17.96	13.02	29.80	62.70	27.06
Nevada.....	.....	.....	.....	.....	.92	.44	.....	29.41	.....	24.39	214.29	57.55
New Hampshire.....	.....	.....	1.38	.....	.....	.....	14.17	34.57	61.98	53.44	77.49	48.57
New Jersey.....	1.33	2.22	.38	4.09	2.06	1.93	106.64	100.22	116.30	131.53	143.23	117.09
New Mexico.....	.....	6.21	14.29	18.02	12.35	7.34	28.17	52.80	14.29	909.90	302.47	164.22
New York.....	.73	4.59	1.70	3.27	1.58	2.14	51.53	82.34	92.43	134.97	138.16	97.23
North Carolina.....	1.60	.....	1.27	2.96	.....	.99	108.00	32.84	55.98	160.00	39.03	73.51
Ohio.....	2.17	1.28	1.85	1.19	1.99	1.73	90.12	96.27	83.08	136.00	124.69	104.54
Oklahoma.....	.90	.....	2.48	.....	.....	.65	76.71	54.42	41.44	149.66	203.77	108.79
Oregon.....	12.88	15.87	.....	.....	12.82	9.60	42.92	15.87	78.65	104.00	282.05	104.25
Pennsylvania.....	2.07	2.60	2.23	2.07	1.97	2.20	40.11	56.97	74.97	92.96	74.12	67.65
Rhode Island.....	.....	2.32	2.42	4.11	1.59	1.93	18.29	9.27	26.63	65.71	27.11	25.95
South Carolina.....	2.71	.....	.....	4.12	.....	1.48	108.40	171.69	180.38	222.22	494.62	187.73
South Dakota.....	.....	4.85	.....	.....	.....	1.01	56.28	87.38	33.65	17.39	223.18	92.65
Tennessee.....	1.50	2.42	2.37	1.19	.....	1.55	37.45	50.00	44.96	58.93	54.85	48.94
Texas.....	4.56	2.08	1.04	3.70	3.37	2.95	66.11	138.60	335.42	195.06	141.73	184.73
Utah.....	6.73	1.77	3.18	.....	.....	2.71	168.16	134.75	30.57	121.50	123.76	138.30
Vermont.....	2.43	3.76	3.65	2.65	1.49	2.68	72.84	58.81	88.87	110.88	112.90	90.87
Virginia.....	.45	1.92	3.16	4.20	.57	2.08	33.56	20.75	46.91	60.37	44.03	39.70
Washington.....	4.65	5.26	5.10	7.00	5.09	5.30	51.68	86.47	150.00	132.00	154.63	103.73
West Virginia.....	.93	2.74	.88	9.63	3.32	2.65	41.74	68.10	32.95	111.42	191.58	72.92
Wisconsin.....	1.40	.36	3.80	3.76	1.84	2.03	32.11	35.89	73.16	77.96	103.52	62.64
Wyoming.....	21.74	.....	.....	.....	.....	2.87	65.22	76.09	71.43	83.33	57.69	71.84
Other States.....	.....	.....	.....	20.41	.....	.88	15.63	20.00	31.70	61.22	40.00	29.15
Total.....	2.23	2.27	2.10	2.64	1.80	2.19	63.85	69.82	88.81	114.92	117.30	89.39

TABLE 27.—All Quarries: Injuries, by causes and States, during the 5-year period, 1911 to 1915.

State.	In and about quarry.															In outside works.															
	Falls or slides of rock or overburden.	Rock while leading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.)	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledging.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulage system (cars, motors, etc.)	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledging or crushing.	Flying or falling objects (rocks, timbers, etc.)	Burns.	Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	Grand total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			
Alabama	64	95	48	15	75	8	5	30	19	8	9	2	1	36	422	14	3			25	1	16		1						10	70
Arizona	4	4	1	10	8	2	1	1	1	2	1			2	33					8	3	3								3	6
Arkansas				3	14	7	2	1	1	1					58					1	1									13	71
California	323	431	51	68	188	57	23	45	10	37	202	17	17	105	1,574	31	17	7	2	91	32	27	12	10	16	12	4	128	389	1,963	
Colorado	28	10	64	15	60	9	10	9	7	64	2	1	3	170	452	11	2		6	17	4	13		2	3	11	15	84	536		
Connecticut	31	132	12	13	35	5	4	14	1	11	84	3	2	40	387	4	3			13	3	7		1	2				12	45	
Delaware	2				11	1								1	18						1									2	20
Florida		1			1	1									2					2	2									6	10
Georgia	66	29	10	10	35	9	1	15	2	12	13	2		18	222	6	3		1	29	2	4		1	1	3	2	15	67	289	
Idaho	8	6	1	1	6	1	1	1		3	3			11	42					2	1								1	5	47
Illinois	314	390	126	60	385	64	40	116	18	99	155	26	4	10	182	1,980	44	2	6	97	48	82	11	9	5	18	3	178	609	2,598	
Indiana	178	105	118	39	221	71	35	86	19	158	77	18	14	269	1,408	66	27	2	23	176	90	123	10	28	11	44	5	251	856	2,264	
Iowa	53	81	31	14	100	8	11	28	1	25	24	4		10	28	418	4	6	2	1	27	12	11		1	20	2	161	247	665	
Kansas	67	120	12	37	211	2	2	3	1	8	21	2		2	51	542	13	2	1	20	8	3		2	2	3	2	18	74	616	
Kentucky	114	86	11	41	47	6	2	7	1	46	4	2	3	21	401	4	3			11	5	1		1	2			16	43	444	
Maine	49	15	5	11	35	6	4	4	2	15	5			17	169	5	4		3	5	7	3		2	2	1	1	12	42	211	
Maryland	101	101	33	32	90	15	3	27	1	23	58	7	1	12	66	570	21	3	3	99	22	12	2	3	17	11	27	219	789		
Massachusetts	143	369	81	32	95	49	15	91	2	37	290	5		10	172	1,391	11	6	4	39	50	34	2	35	19	6	146	372	1,783		
Michigan	48	65	75	31	117	17	20	48	3	33	23	12	4	6	84	583	42	2	2	75	24	85	4	22	1	9	3	118	416	999	
Minnesota	97	107	27	19	46	20	18	16	24	93	3	3	1	5	70	546	12	8	2	15	11	25	1	5	31	4	1	53	162	708	
Missouri	380	234	118	75	247	71	9	78	7	50	178	12		35	99	1,593	53		6	50	22	15	1	12	5	28	2	41	249	1,842	
Montana	23	13	3	2	14	1		1	1	1	15	1		1	82	1				3	1		2	1				4	12	94	
Nebraska	10	9		5	4	1	1	2		1	3			1	39	1				2									3	42	
Nevada			3		2	1				1	1			2	8														8	8	
New Hampshire	17	11	9	5	23	6	5	10	23	9	3	1		22	144	1		1	8	9	5	13		5	11	17		8	78	222	

New Jersey.....	182	255	61	34	205	25	24	39	2	47	184	9	12	62	1,141	24	27	3	49	22	31	3	3	3	12	15	63	255	1,396		
New Mexico.....	15	94	2	14	17	2	2	5		1	2			16	170	5	1										3	9	1,179		
New York.....	193	536	100	91	278	38	21	85	6	64	115	21	1	16	275	1,840	17	3	38	29	17	1	4	4	6	4	72	203	2,043		
North Carolina.....	22	26	15	16	103	4	1	8		6	90			2	48	341	6	1	9	1	1	1	1	1	2	4	32	373			
Ohio.....	255	368	134	114	453	83	49	138	4	180	121	16	4	20	392	2,331	121	31	22	8	174	85	141	7	17	15	33	6	275	935	3,256
Oklahoma.....	37	80	3	14	39	3	2	6		7	64	2		13	32	302	2	1	3		3		2			5	14	32	334		
Oregon.....	34	9		5	4	1	4			1	4	1			2	65			2		1						1	11	76		
Pennsylvania.....	1,174	1,160	263	354	756	175	47	168	2	92	513	18	4	68	304	5,098	121	48	7	9	157	90	130	5	8	8	61	41	156	841	5,939
Rhode Island.....	25	8	4	2	8		3	1	1	2	7			3	4	72					6	2					12	22	94		
South Carolina.....	17	35	9	37	40	4	1	12		22	37			4	218	2	2	3		1	4	10		6	1	1	6	36	254		
South Dakota.....	21	11	4	5	6	4	5	1		7	14	3			4	85	1		3		1						1	5	7	92	
Tennessee.....	99	87	22	20	60	12	8	22	2	15	69	8		5	21	450	7	3	1	3	25	2	3	1	1	1	3	1	55	505	
Texas.....	102	174	33	29	71	5	3	8		8	19	1		5	11	469	6	6	5	1	70	9	271	11	3	1	2	38	423	892	
Utah.....	43	40	1	11	26	6	1	4		10	11			5	12	171	1	5		1	41	4	11	5			16	85	256		
Vermont.....	96	128	212	49	179	62	19	121	1	112	27	18	1	4	448	1,477	20	8		9	77	37	65		18	20	68	102	424	1,901	
Virginia.....	73	57	10	22	75	20		6		8	42	1		4	20	338	34	7		18	1	7		4			15	86	424		
Washington.....	149	163	26	28	56	27	14	26		40	31	4		6	29	599	4	3		1	15	7	5		1	2	9	47	646		
West Virginia.....	94	106	8	31	65	13	5	26	1	7	41			4	29	430	21	4		1	10	9	6	1	2	2	6	93	523		
Wisconsin.....	78	131	33	37	93	25	14	50		17	80	10		7	78	653	6	4	1	2	21	8	25		8	9	4	120	773		
Wyoming.....	6	2		3	6					1	3				3	24		1									1	25	35		
Other States.....	2	3			2		1	1		1	18				3	33														23	
Total.....	4,842	5,893	1,780	1,453	4,612	962	437	1,360	88	1,242	2,869	248	26	307	3,283	29,402	805	318	87	106	1,525	648	1,225	80	208	198	420	120	2,048	7,786	37,188
Percentage of total.....	13.02	15.85	4.79	3.91	12.40	2.59	1.17	3.66	.23	3.34	7.71	.67	.07	.82	8.83	79.06	2.16	.86	.23	.29	4.10	1.74	3.29	.22	.56	.53	1.13	.32	5.51	20.94	100.00

a This total includes, in the year 1911, 862 serious injuries causing 20 or more days' disability and 4,528 slight injuries causing disability of more than one day and less than 20 days; in 1912, 899 serious and 5,653 slight injuries; in 1913, 1,092 serious and 6,647 slight injuries; in 1914, 1,289 serious and 6,547 slight injuries. In 1915, when the classification of serious and slight injuries was changed, there were 1,888 serious injuries causing disability of more than 14 days and 7,783 slight injuries causing disability of two weeks or less, but more than one day. In 1915 the 1,888 serious injuries may be further classified as follows: Sixteen causing permanent total disability; 507 causing permanent partial disability; and 1,365 other injuries causing disability of more than 14 days.

TABLE 28.—All Quarries: Fatalities, by causes and years, in each branch of the quarry industry, 1911 to 1915.

Year.	In and about quarry.															In outside works.																
	Falls or slides of rock or overburden.	Rock while loading at working face.	Timber or hand tools.	Explosives (includes premature blasts, explosion of misfires, flying pieces from blasts, etc.).	Haulage accidents (by quarry cars and locomotives).	Falling into quarry from surface, benches, or face.	Falling from hoists, derricks, ladders, etc.	Drilling accidents (by machine or hand drills).	Electricity (shock or burns).	Machinery (pumps and hoisting machinery).	Flying pieces of rock from sledging.	Nails, splinters, etc.	Boiler explosions.	Animals.	Other causes.	Total number of persons killed or injured at quarry.	Haulagesystem (cars, motors, etc.).	Railway cars or locomotives.	Crushers.	Cranes, derricks, etc.	Other machinery.	Falls of persons.	Hand tools.	Electricity (shock or burns).	Nails, splinters, etc.	Flying pieces of rock from sledging or crushing.	Flying or falling objects (rocks, timbers, etc.).	Burns.	Other causes.	Total number of persons killed or injured at rock-dressing plants and mills.	Grand total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
Cement rock:																																
1911.....				7	2										1	19	3	1			2									4	10	29
1912.....	9			2	4										13	2	1			3									6	17	30	
1913.....	1	2		4	4					1					13	2				4									2	8	21	
1914.....				2	3		1								18					1									1	2	20	
1915.....				2					2	1					11	1	1	1		1						1	3		7	2	18	
	29	3		20	13		1		3	2					3	74	8	2	1		14	4					1	3	11	44	118	
Granite:																																
1911.....	10			5	2	2									2	21	1	3			2								2	3	29	
1912.....	1	5		10	2	3	1	1		1					1	25	2			1								1	1	4	29	
1913.....	1	1		3	4	4									1	17	1				1							1	1	4	21	
1914.....	15	2	1	10	4	4				1				1	3	34	1	1		1									1	4	38	
1915.....				5	2	1	3			1				1	3	33														4	33	
	41	10	1	33	14	11	4	1	1	3				1	10	130	5	5			4	2						4	20	150		
Limestone:																																
1911.....	19			30	9	6							1		1	66	6	3			11								2	24	90	
1912.....	16	2	2	28	12	5	1	1	3	3					1	79	6	6			6							2	22	101		
1913.....	10			33	4	4				2					1	73	6	6			6							2	20	83		
1914.....	21	1	1	15	7	7	1	1	1	5			1		4	63	6	6			3	1	3				5	6	16	79		
1915.....	10	2		15	6	5	1	1		2				2	1	42	6	6			3					1	1	1	16	58		
	76	10	3	121	41	27	3	5	5	16	2	1	1	5	7	323	13	26			24	8	2	7		1	1	16	98	421		

FORM FOR QUARRY-ACCIDENT RECORDS.

As a result of the work already done by the Bureau of Mines in collecting accident statistics, the obtaining of more information regarding the various kinds of accidents has been found desirable. For example, the explosives accidents have all been reported under one item as "Accidents due to explosives," but the safety engineer, the superintendent, and others in authority, who are making a study of safety methods in quarrying, feel that there should be more detailed information concerning such accidents. Thus, "Accidents due to explosives" have included accidents due to transportation, premature shots, thawing explosives, etc.; but if many explosives accidents are due to some one cause, this cause should be brought to the attention of the safety engineer. To assemble all explosives accidents in one group makes it impossible to determine just where the principal hazard lies.

In order that more detailed information may be had, the bureau presents herewith a form (Pl. I) for recording accidents at quarries, in the hope that many of the operators will consider its adoption. Should they do so, a long step will be taken toward the unification of accident records in different parts of the country. This form, therefore, is presented with two objects in view: First, that more detailed information on different kinds of accidents may be obtained; and, second, that the adoption of the form will help to standardize the records.

The form herein submitted shows how the daily record would appear, giving the man's name and the date of the accident, and simply a check mark under the cause of the accident. At the end of the form the accident would be classified as causing a fatality, permanent or temporary disability, or a slight injury. The time lost due to disability may also be inserted. There is ample room under "Remarks," if further information is desirable, to show what the man was doing at the time of the accident, etc.

The Bureau of Mines has had a number of copies of this form printed (Form 6-843) and will gladly furnish on request copies to any operator who is sufficiently interested to consider its adoption. Requests for copies should be addressed to the Director, Bureau of Mines, Washington, D. C.

TABLE 30.—All Quarries: Number of active operators, by years, 1911 to 1915.

State.	Number of active operators.					State.	Number of active operators.				
	1911	1912	1913	1914	1915		1911	1912	1913	1914	1915
Alabama.....	32	29	31	28	25	New Hampshire..	29	28	27	27	31
Arizona.....	17	13	9	13	8	New Jersey.....	92	81	92	80	77
Arkansas.....	28	36	17	14	16	New Mexico.....	11	9	6	10	8
California.....	130	122	113	112	96	New York.....	353	181	178	138	161
Colorado.....	55	39	42	41	38	North Carolina..	34	30	27	24	29
Connecticut.....	48	49	49	45	42	Ohio.....	231	193	178	163	167
Delaware.....	4	(a)	(a)	4	3	Oklahoma.....	33	19	16	13	19
Florida.....	4	(a)	(a)	7	8	Oregon.....	28	18	16	13	19
Georgia.....	44	34	38	32	30	Pennsylvania.....	966	735	710	675	656
Idaho.....	20	17	16	14	9	Rhode Island.....	15	16	15	15	15
Illinois.....	95	90	86	77	70	South Carolina..	13	10	11	11	12
Indiana.....	114	102	94	82	82	South Dakota.....	20	21	19	18	23
Iowa.....	75	69	54	45	43	Tennessee.....	71	75	59	56	55
Kansas.....	99	68	66	54	45	Texas.....	49	41	42	41	38
Kentucky.....	104	88	73	66	62	Utah.....	40	32	27	23	21
Maine.....	82	63	66	52	51	Vermont.....	107	98	94	87	79
Maryland.....	59	64	56	54	45	Virginia.....	85	72	69	67	69
Massachusetts.....	126	122	121	108	106	Washington.....	48	28	25	24	26
Michigan.....	30	32	31	33	30	West Virginia....	61	46	43	40	45
Minnesota.....	91	76	62	62	63	Wisconsin.....	166	136	114	113	105
Missouri.....	171	134	107	112	111	Wyoming.....	9	9	3	3	5
Montana.....	16	15	14	13	12	Other States.....	4	7	11	2	1
Nebraska.....	11	12	10	15	15	Total.....	3,920	3,163	2,941	2,729	2,674
Nevada.....	(a)	4	4	3	3						

^a Included in "Other States."

QUARRY ACCIDENTS IN FOREIGN COUNTRIES.

Tables 31 to 35 contain the latest available data concerning the number of men employed, number killed, etc., in the quarries of Algeria, Belgium, France, Great Britain, and Italy. These tables are given to show the low fatality rate in those countries and also as showing what it is possible to attain with proper precaution and inspection. In Algeria the industry is comparatively small, but the fatality rate is higher than in any of the other countries named.

TABLE 31.—Number of men employed and number killed in and about the quarries of Algeria, 1900-1913, inclusive.^a

Year.	Number em- ployed.	Number killed.				Per 1,000 em- ployed.
		By falls of rock, etc.	By ex- plosives.	By other causes.	Total.	
1900.....	2,718	3	.....	4	7	2.53
1901.....	3,033	1	2	.....	3	.99
1902.....	3,286	9	1	4	14	4.26
1903.....	4,398	8	5	.....	13	2.96
1904.....	6,232	5	1	1	7	1.12
1905.....	6,714	3	1	.....	4	.59
1906.....	6,945	9	2	.....	11	1.53
1907.....	7,228	1	2	3	6	.83
1908.....	7,032	10	3	3	16	2.28
1909.....	7,235	12	1	2	15	2.07
1910.....	6,236	13	4	2	19	3.05
1911.....	8,705	1	5	6	12	1.38
1912.....	8,813	5	3	2	10	1.13
1913.....	.....	.....	.....	.....	.....	.....

^a Statistique de l'industrie minière en France et en Algérie.

TABLE 32.—Number of men employed and number of men killed in and about the quarries of *Belgium*, 1901–1912, inclusive.^a

Year.	Number employed.	Number killed.		Year.	Number employed.	Number killed.	
		Total.	Per 1,000 employed.			Total.	Per 1,000 employed.
1901.....	37,270	25	0.67	1907.....	36,909	41	1.11
1902.....	36,469	21	.58	1908.....	36,877	26	.71
1903.....	37,117	32	.86	1909.....	35,482	30	.85
1904.....	37,913	33	.87	1910.....	35,711	30	.84
1905.....	38,641	27	.70	1911.....	35,809	31	.87
1906.....	37,927	31	.82	1912.....			

^a Annales de mines de Belgique.TABLE 33.—Number of men employed and number killed and injured in and about the quarries of *France*, 1900–1913, inclusive.^a

Year.	Number employed.	Number killed or injured.									
		By falls of rocks, etc.		By explosives.		By other causes.		Total.		Per 1,000 employed.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured. ^b	Killed.	Injured. ^b
1900.....	110,291	87	120	8	29	32	161	127	310	1.15	2.81
1901.....	111,672	65	491	10	91	20	3,426	95	4,008	.85	35.89
1902.....	111,666	78	603	10	68	18	3,049	106	3,720	.95	33.31
1903.....	114,363	74	577	11	62	23	3,058	108	3,697	.95	32.33
1904.....	108,535	73	540	13	46	26	2,669	112	3,255	1.03	29.99
1905.....	104,837	69	601	4	68	20	2,896	93	3,565	.88	34.01
1906.....	109,981	59	687	6	59	23	3,249	88	3,995	.81	36.32
1907.....	110,272	77	683	9	58	19	3,240	105	3,981	.95	36.10
1908.....	111,690	86	820	8	79	24	3,682	118	4,581	1.00	41.01
1909.....	111,679	63	840	14	77	16	3,922	97	4,839	.83	43.33
1910.....	106,728	79	1,033	9	91	19	3,845	103	4,969	1.00	46.56
1911.....	109,398	59	1,210	18	67	25	4,276	102	5,553	.93	50.76
1912.....	113,906	65	1,411	14	65	25	4,905	104	6,381	.91	58.33
1913.....											

^a Statistique de l'industrie minière en France et en Algérie. Only accidents in open quarries are given, including a few open-pit iron mines in which 1,000 to 1,200 men are employed. Underground quarries employing about 20,000 men are excluded.^b The number injured in 1900 is on the basis of 20 days off duty by reason of the accident. From 1901 to 1913, inclusive, the injury basis is incapacity for work 4 days or more.TABLE 34.—Death rate from accidents at all quarries in *Great Britain* under the quarries act, from 1895 to 1914, inclusive.^a

Year.	Number of employees.			Number killed.					
	In quarry.	Outside of quarry.	Total.	In quarry.		Outside of quarry.		Total.	
				Number.	Per 1,000 employed.	Number.	Per 1,000 employed.	Number.	Per 1,000 employed.
Average for 10 years, 1895 to 1904, inclusive.....	60,399	45,023	105,422	95	1.57	20	0.45	115	1.09
1905.....	59,978	34,841	94,819	85	1.42	14	.40	99	1.04
1906.....	58,385	33,131	91,516	85	1.46	12	.36	97	1.06
1907.....	55,894	31,920	87,814	75	1.34	14	.44	89	1.01
1908.....	54,449	31,026	85,475	76	1.40	16	.52	92	1.08
1909.....	53,064	30,873	83,937	73	1.38	11	.36	84	1.00
1910.....	54,408	31,429	85,837	75	1.38	9	.29	84	.98
1911.....	52,053	30,810	82,863	81	1.56	18	.58	99	1.19
1912.....	51,055	28,832	79,887	56	1.10	19	.66	75	.94
1913.....	51,266	29,643	80,909	69	1.35	16	.54	85	1.05
1914.....	50,074	28,834	78,908	77	1.54	18	.62	95	1.20

^a Compiled from Mines and Quarries General Report, with statistics.

TABLE 35.—*Number of men employed and number killed in and about the quarries of Italy, 1896-1913, inclusive.*^a

Year.	Number employed.	Number killed.				Per 1,000 employed.
		By falls of rock, etc.	By explosives.	By other causes.	Total.	
1896.....	30,945	15	2	7	24	0.78
1897.....	31,520	17	1	7	25	.79
1898.....	32,153	20	1	8	29	.90
1899.....	33,205	25	.....	9	34	1.02
1900.....	31,535	15	1	7	23	.73
1901.....	56,948	13	2	9	24	.42
1902.....	57,950	42	.....	11	53	.91
1903.....	58,837	34	2	8	44	.75
1904.....	59,063	40	3	16	59	1.00
1905.....	59,342	35	3	11	49	.83
1906.....	65,648	47	6	16	69	1.05
1907.....	67,921	33	2	16	51	.75
1908.....	69,108	40	5	15	60	.87
1909.....	69,143	38	2	16	56	.81
1910.....	69,335	38	4	21	63	.91
1911.....	70,767	53	8	19	80	1.13
1912.....	.....	.....	.....	.....	.....	.....
1913.....	.....	.....	.....	.....	.....	.....

^a Rivista del Servizio Minerario.

STATE LAWS RELATING TO REPORTING OF ACCIDENTS AT QUARRIES.

By W. W. ADAMS.

Some features of the laws relating to the reporting of accidents at quarries are given in the following pages. In addition to providing compensation for injuries after a certain period of disability, usually two weeks, it is generally provided that hospital service and medical supplies shall be furnished by the employer to the injured workman from the date of injury to the day upon which compensation begins. Compensation for injuries causing death is also a provision common to all States having compensation laws, except Oklahoma. The constitution of Oklahoma prohibits any statutory limitation as to the amount recoverable for injuries resulting in death.

ALABAMA.

By a resolution passed by the Alabama State Senate, February 1, 1915, a special judiciary committee was appointed, consisting of five members of the house and three from the senate, to consider and report on various questions, including workmen's compensation acts.

ALASKA.

An act of the Legislature of Alaska, approved April 30, 1913, authorized the appointment of a Territorial mine inspector, subject to instructions of the Federal mine inspector, and provided that all serious or fatal accidents at any mine employing six or more persons should be reported immediately by the person in charge of the mine to the mine inspector of the district in which the mine was located. Each mine inspector was required to render to the governor a monthly report of all accidents in his district which resulted in serious injury or death.

As amended April 25, 1915, the law now provides that the Territorial inspector shall have jurisdiction over all branches of mining, shaft sinking, tunneling, quarrying, and dredging, and the machinery incident to the reduction of ores or the treatment of the material, provided that such jurisdiction shall apply only to the safety of the

workers in such mining, etc., and provided also that the Territorial inspector shall have no jurisdiction over coal mines worked under lease from the United States Government. The inspector is required to distribute statistical blanks to mine operators, requiring statistics of accidents, labor, and production to be filled in and returned to the inspector on or before December 31 of each year, under the same conditions as now required by the United States Bureau of Mines and the United States Geological Survey.

A compensation law, approved April 29, 1915, effective July 28, 1915, provides compensation for injuries to persons engaged in "mining operations," which are stated in the act to include "underground workings, underground mines, open-cut workings, and surface workings." Employers of five or more men are presumed to have elected to accept the provisions of the act unless they file notice to the contrary with the United States commissioner. Compensation for injury begins on the fifteenth day of disability; but if the injured employee is disabled for eight weeks or longer, compensation is computed from the date of the injury. Disagreements concerning compensation to be paid under the act are settled by the judge of the district court.

ARIZONA.

By the act of the State legislature, approved June 8, 1912, as amended May 13, 1913, compulsory compensation is provided for accidental death, or injuries causing disability for at least two weeks, in all especially dangerous employments, including mining, quarrying, and tunneling. The law is elective as to industries not listed as especially dangerous.

CALIFORNIA.

Under a State act, approved April 8, 1911, as amended May 26, 1913, and August 10, 1913, compensation is provided for injury to any person engaged regularly in any occupation except that of farm, dairy, agricultural, viticultural, or horticultural labor. Since January 1, 1914, the law has been compulsory as regards all employments except those named; and employers of persons engaged in the excepted classes of labor may, together with their employees, affirmatively elect to become subject to the law by filing notice to that effect with the State industrial accident commission. Compensation for injury begins on the fifteenth day of disability. Written notice of injury must be given to the employer within 30 days by the injured employee or his representative. Every employer and every insurance company is required to report all accidents to the commission. The commission reports annually to the governor.

COLORADO.

A workmen's compensation law was enacted April 10, 1915, effective August 1, 1915, applying to all employers of **four or more persons**, not including private domestic servants and farm and ranch laborers, engaged in a common employment. Employers are conclusively presumed to have accepted the provisions of the act unless prior to August 1, 1915, they have filed with the industrial commission a notice of their election not to be subject thereto. The law requires employers to keep a "record of all injuries, fatal or otherwise," and to report each accident within 10 days to the commission under penalty for failure so to do. In January and July of each year all employers are required to report to the commission the number of their employees during the preceding six months and to state the number of employees in each kind of employment; also to report the aggregate wages paid. Compensation is provided for employees whose injuries result in disability for more than three weeks, or for their dependents if the injuries result fatally. The industrial commission is required to report annually to the governor on or before December 15 for the preceding fiscal year and to include in its report a statement of the number of awards made by it and a general statement of the causes of accidents leading to the injuries for which the awards were made.

CONNECTICUT.

By a State act approved May 29, 1913, effective January 1, 1914, compensation for injured workmen is provided. The act applied to all employers of **five or more persons**, whose election to accept its provisions was presumed in the absence of notice to the contrary. An act of May 20, 1915, provides that employers of less than five persons may, if they desire, elect to become subject to the law. Under the act of 1913, compensation for injury began on the fifteenth day of disability, but this has been changed to the eleventh day by the law of 1915. The governor was authorized to appoint five compensation commissioners, each to be assigned to a separate district, and who, when acting together, constitute the State board of commissioners. If the employer and the injured employee, or his representative, reach an agreement within two weeks as to the compensation to be paid, the agreement shall be submitted by the employer to the commission for approval. The injured employee must, however, file his claim for compensation within one year. Employers are required to keep a record of all injuries causing disability of one day or more, and make duplicate reports of such injuries to the commissioner, the duplicate reports to be transmitted to the factory inspector. The law provides that no State office other than the compensation commission shall require reports of injuries from employers who report such injuries to the commission.

ILLINOIS.

The law of Illinois (Acts of 1907, p. 308, sec. 1) requires **every employer of labor** to report, within 30 days, to the State bureau of labor statistics every accident causing death or serious injury involving a loss of 30 or more days' time.

By an act approved June 28, 1913, as amended June 28, 1915, compensation is provided for injured employees, and an industrial board established for the administration of the law. The law applies to all employers engaged in certain enumerated industries, including mining, surface mining or **quarrying**; any enterprise in which explosive materials are manufactured, handled or used in dangerous quantities; and any enterprise wherein molten metal, or explosive or injurious gases or vapors, or inflammable vapors, or fluids, or corrosive acids are manufactured, used, generated, stored or conveyed in dangerous quantities.

It is made the duty of all employers to report to the industrial board all accidents which entailed a loss to the injured person of one week's time, or which caused death, for which compensation has been paid under the law. The application of the law is elective on the part of the employer. Election is presumed unless a written notice to the contrary is filed with the industrial board and notice of such declination is given to the employees.

INDIANA.

The "Indiana workmen's compensation act," approved March 8, 1915, effective September 1, 1915, applies to **all employers of labor**, except those engaged in farm labor or domestic service and casual employees, unless notice of the employer's refusal to accept the provisions of the law is filed with the industrial board at least 30 days prior to an accident. Employers in the excepted class may also affirmatively elect to come within the scope of the law. Compensation for injury begins on the fifteenth day of disability. Notice of injury must be given to the employer as soon as practicable by the injured employee or his representative. Employers must furnish all necessary information called for by the industrial board. The above act abolishes the bureau of inspection and provides that the deputies formerly under that bureau, including the inspector of mines, shall continue their work under the industrial board until their successors shall have been appointed by the board. All employers, whether or not they elect to come under the compensation law, are required to keep a record of all injuries, fatal or otherwise, and in one week after receiving knowledge of such injuries, to report to the industrial board all injuries causing absence from work for more than one day. Reports of the board are published annually.

IOWA.

Under an act of the Legislature of Iowa approved April 18, 1913, and effective July 1, 1914, providing compensation for injuries to workmen, **all employers** are presumed to have elected to become subject to the law unless they file a notice to the contrary with the industrial commissioner. Compensation begins on the fifteenth day of disability. The injured employee, or his representative, must give notice of injury to the employer within 15 days, unless the employer already has actual knowledge of the accident. Employers are required to keep a record of all injuries, fatal or otherwise, and within 48 hours after receiving knowledge of an injury, to make a written report of the injury to the industrial commissioner. The commissioner reports biennially to the governor, who transmits the commissioner's report to the general assembly.

KANSAS.

A State act approved March 14, 1911, provided compensation for injuries to workmen employed in any "factory, mine or **quarry**, natural gas plant, and all employments wherein a process requiring the use of any dangerous explosive or inflammable materials is carried on." As originally passed, the law applied only to employers of 15 or more workmen who had been engaged continuously for more than one month at the time of an accident, but an act approved March 10, 1913, broadened the scope of the law to include employers of five or more men. Compensation for injury begins on the fifteenth day of disability. Under the act of 1913 the employer's election to become subject to the law is presumed unless notice to the contrary is filed with the Secretary of State at Topeka. Notice of injury must be given to the employer within 10 days, and employers are required to render an annual report of accidents to the State commissioner and factory inspector.

KENTUCKY.

An act of the Legislature of Kentucky approved March 21, 1914, effective January 1, 1915, applies to **all employers of six or more persons** engaged in the operation of "coal mines; oil and gas wells; iron and steel mills, including blast furnaces, smelters, tube works, and rolling mills; foundries; **quarries**, stone crushers, gravel pits; and mines other than coal mines." Election by the employer to become subject to the law is presumed unless a notice to the contrary has been filed by November 1, 1914, with the workmen's compensation board, a body consisting of the attorney general, commissioner of insurance, and the commissioner of agriculture, labor, and statistics.

No compensation is allowed for the first week of disability. Injured employees, or their representatives, must send notice of injury to the employer within one week; and employers are required to keep a record of all injuries, fatal or otherwise, and to make written report thereof within one week to the workmen's compensation board. The board reports annually to the governor.

LOUISIANA.

A State act approved June 18, 1914, effective January 1, 1915, provides compensation for injuries to employees in "foundries, forges, smelters, blast furnaces, coke burning plants; phosphate and sulphur works; marble or stone cutting or polishing plants; mines; mining plants; quarries; oil, gas, sulphur, salt, or other wells; and any occupation entailing the manufacture, transportation, care of, use of, or regular proximity to dangerous quantities of explosives." Election to become subject to the law is presumed as regards employers in the industries enumerated unless they have notified their employees to the contrary at least 30 days prior to the accident. Other employers may affirmatively elect to come within the scope of the law. Compensation for injury begins on the fifteenth day of disability. Within 15 days of an injury, notice must be given to the employer by the injured employee or his representative. If death results from the injury the employer must be notified within 30 days by the person entitled to compensation.

MAINE.

The "Maine workmen's compensation act," approved April 1, 1915, applies to all **employers of more than five persons** who elect to become subject to the act. Compensation for injury begins on the fifteenth day of disability. Election to accept the provisions of the act is indicated by filing a notice to that effect with the State industrial accident commission, an organization consisting of the insurance commissioner, the commission of labor and industry, and a third member, who must be an attorney, appointed by the governor. Written notice of an injury must be given within 30 days by the injured employee, or another in his behalf, to the employer, and employers are required to report all accidents to the commission. The commission renders annual reports to the governor.

MARYLAND.

On April 16, 1914, the Legislature of Maryland enacted a workmen's compensation law, to be administered by the State industrial accident commission. The act applies to an enumerated list of industries which are considered extra-hazardous, including "mining,

reduction of ores and smelting; preparation of metals or minerals; tunneling and shaft-sinking; quarries; clay or gravel pits; iron, steel, or metal foundries; rolling mills; and the manufacture of explosives and dangerous chemicals." No compensation is provided for the first two weeks of disability, except medical and hospital services and supplies. The act became effective to cover injuries sustained on or after November 1, 1914. Employers are required to report all accidents to the commission, and the commission renders annual reports to the governor on or before January 1 showing, among other things, the number and causes of all accidents.

MASSACHUSETTS.

A Massachusetts act approved July 28, 1911, and effective July 1, 1912, created the Employees' Insurance Association, to which any employer of labor may become a subscriber. Compensation for injury begins on the fifteenth day of disability. Written notice of injury must be given as soon as practicable by the injured employee, or some other person in his behalf, to the employer or the association. Employers are required to keep a record of "all injuries, fatal or otherwise," and to make a report of each injury to the State industrial accident board within 48 hours, excluding Sundays and legal holidays. The law authorizes any insurance company, as well as the Employees' Insurance Association, to insure the payment of compensation to injured employees. An act approved June 25, 1914, effective October 1, 1914, directs the association and all insurance companies to furnish, upon request, written information to the industrial accident board, including statistical facts and figures and the names of all employers insured by them.

MICHIGAN.

An act of the Legislature of Michigan approved March 20, 1912, and effective September 1, 1912, provides compensation for injured workmen, and applies to all employers who have any person in service under contract of hire, who elect to be subject to the law. Election is indicated by filing with the State industrial accident board a written statement to that effect. Compensation for injury begins on the fifteenth day of disability, but if disability continues eight weeks or longer, compensation is computed from the date of injury. Employers are required to keep a record of all injuries to their employees, and to report such injuries within 10 days after any accident to the industrial accident board.

Certain amendments by the acts of April 10, 1913, and April 28, 1915, do not alter the provisions of the law as given above.

MINNESOTA.

An elective compensation law of the State of Minnesota provides compensation for injuries causing death or causing disability for more than two weeks. The law (act of Apr. 24, 1913) applies to all industries except farm and domestic service and interstate or foreign commerce.

MONTANA.

The "Montana workmen's compensation act," approved March 8, 1915, effective July 1, 1915, applies to all hazardous occupations, including "shaft sinking, tunnels, marble, stone, or brick work; blast furnaces; quarries; stone crushers; smelters; gas works; coal mines; mines other than coal; and rolling mills, provided the employers elect to become subject to the law." Compensation for injury begins on the fifteenth day of disability. An injured employee, or some other person in his behalf, is required to send notice of the injury to the employer within 60 days. Every employer and every insurer must report all accidents to the State industrial accident board, an organization consisting of the commissioner of labor and industry, the State auditor, and a third member appointed by the governor.

NEBRASKA.

The "Nebraska workmen's compensation law of 1913," approved April 21, 1913, applies to all employers of five or more persons, except household servants, farm laborers, and employees on interstate railways. The employers' election to accept the provisions of the law is presumed in the absence of notice to the contrary. Compensation for injury begins on the fifteenth day of disability; but if disability continues for eight weeks or longer, then compensation commences on the date of the injury. The injured employee, or another person in his behalf, must notify the employer of the injury as soon as practicable.

NEVADA.

In Nevada compensation for injuries to employees of all employers of two or more persons is provided for by an act of the State legislature approved March 15, 1913, effective July 1, 1913, as amended by the act approved March 22, 1915. Election by employers to become subject to the law is presumed unless notice to the contrary is filed with the State industrial commission. Compensation begins on the eighth day of disability; but if disability continues for three weeks, compensation is computed from the date of the injury. Employers are required to send to the industrial commission an immediate report of any accidents to their employees.

NEW HAMPSHIRE.

A State act approved April 15, 1911, effective January 1, 1912, providing compensation for injuries to employees, applies to certain enumerated industries considered dangerous, including "all work necessitating dangerous proximity to gunpowder, blasting powder, dynamite, or other explosives where the same are used as instrumentalities of the industry; and work in or about any quarry, mine, or foundry." The employer's election to become subject to the act is indicated by filing a notice to that effect with the State commissioner of labor, and a bond as security for the employer's liability to pay compensation for injuries to his workmen. No compensation is provided for injuries that do not disable the employee for at least two weeks from earning full wages. Notice of injury must be given by the injured employee as soon as practicable to his employer; and the employer is required to render such reports to the commissioner of labor as are required by him.

NEW JERSEY.

An act approved by the Legislature of New Jersey March 24, 1904, as amended March 26, 1912, provides that all accidents resulting in death, or that prevent the injured person from resuming work within 2 weeks, shall be reported to the commissioner of labor within 24 hours after the expiration of 4 weeks or after the death of the person injured. An act approved April 17, 1914, and effective that date, amended the act of March 24, 1904, by creating the office of inspector of mines and quarries and authorized the appointment of an inspector.

The State has an elective compensation act (Laws of 1911, chap. 95), and the statutes require every employer to report all accidents to the "Employers' Liability Commission," and to state whether the employer is subject to the compensation law.

NEW YORK.

An act by the Legislature of New York, approved May 22, 1915, provided for the creation of the industrial commission, consisting of five members appointed by the governor, to have jurisdiction over the department of labor. The department of labor is divided into bureaus, as follows: Inspection, statistics and information, mediation and arbitration, industries and immigration, employment, and workmen's compensation. The industrial commission is required to submit all questions of general policy to the industrial council, an advisory body consisting of 10 members, representing employers and employees. It is provided that wherever, in previous laws, reference is made to the "department of labor," "commissioner of labor,"

“industrial board,” or “workmen’s compensation commission,” such references shall hereafter be understood to mean the industrial commission.

The New York law (Laws of 1910, chap. 15) provides that all accidents causing loss of life, or injury incapacitating any person for work in the operation of a mine or quarry, or in the construction or repair of a tunnel, shall be reported within 48 hours to the commissioner of labor.

Under the workmen’s compensation law, approved March 16, 1914, effective July 1, 1914, compensation is provided for accidents causing injury or death to persons engaged in certain enumerated industries classed as hazardous, among which are included mining; reduction of ores and smelting; preparation of metals or minerals; quarries; sand, shale, clay, or gravel pits; lime kilns; iron, steel, or metal foundries; and rolling mills. The law is compulsory as to the industries enumerated. Compensation begins on the fifteenth day of disability. All accidents, fatal or otherwise, must be reported by the injured person or by another person in his behalf to the employer, and by the employer to the compensation commission. Nonfatal accidents must be reported to the commission by the employer within 10 days after injury and fatal accidents within 30 days after the death of the injured employee.

OHIO.

A State law approved June 15, 1911, as amended March 14, 1913, provides compensation for injuries to workmen, and applies to all employers of five or more persons in the same business or establishment. The law is compulsory as to employers of five or more men, and employers of less than five persons may elect to become subject thereto by paying the proper premiums into the State insurance fund. No compensation is provided for the first week of disability. Employers are required to keep a record of “all injuries, fatal or otherwise,” and to report such injuries within one week to the State liability board of awards. The board reports annually to the governor.

OKLAHOMA.

The “Oklahoma workmen’s compensation law,” approved March 22, 1915, effective September 1, 1915, applies to all hazardous employments in which more than two persons are engaged, including factories, powder works, foundries, blast furnaces, reduction works, smelters, dredges, wells, mines, and quarries, and is compulsory in its application to these industries. Compensation for injuries begins on the fifteenth day of disability. Compensation for injuries causing death is not provided for by this law, being prohibited by article 23,

section 7, of the State constitution, which provides, "The right of action to recover damages for injuries resulting in death shall never be abrogated and the amount recoverable shall not be subject to any statutory limitation."

Notice of injury must be given by the injured employee, or some one in his behalf, within 30 days, to his employer and to the State industrial commission. Employers are required to keep a record of "all injuries, fatal or otherwise," and to report such injuries within 10 days or a reasonable time thereafter to the commission. The commission is required to render an annual report to the governor.

OREGON.

An act of the Legislature of Oregon approved February 18, 1911, provides that **any employer of labor who employs more than three persons at a time shall report to the commissioner of labor statistics and inspector of factories and workshops all accidental deaths, or injuries causing the injured person to cease work.**

An act approved February 25, 1913, created a State industrial accident commission and provided for an industrial accident fund consisting of premiums paid by employers who accept the provisions of the act.

Election on the part of operators to be subject to the law is presumed in the case of certain hazardous industries, including foundries, blast furnaces, mines, wells, smelters, powder works, and quarries, unless notice of the employer's declination is filed with the commission, and employers in all other industries may accept the law by affirmative election. Employers are required to report to the commission "any accident" to any workman. This act was approved by the electors at a referendum held November 4, 1913. An amendment of February 24, 1915, does not alter the provisions of the law as given above.

PENNSYLVANIA.

On June 2, 1915, the Legislature of Pennsylvania passed a workmen's compensation law applicable to **all accidents** occurring on or after January 1, 1916. The employer's election to become subject to the law is conclusively presumed unless he files notice to the contrary with the bureau of workmen's compensation of the department of labor and industry. No compensation is provided for the first 14 days of disability except medical and hospital services and supplies. Compensation for death is provided if death occurs within 300 weeks after the injury. The bureau prepares and publishes all necessary blank forms and distributes these to employers, insurers, and employees applying therefor. Funds paid by employers who elect to become subject to the law constitute the workmen's insurance fund, which is

administered by the workmen's insurance board. The State treasurer is custodian of the fund. The workmen's insurance board files with the bureau of workmen's compensation a notice of the names and business addresses of all **employers who are subscribers** to the fund. Within seven days after an accident to an employee, employers are required to send notice of such accident to the workmen's insurance board, but this requirement is satisfied if within seven days the employer files a notice of the accident with the department of labor and industry as required by the act of July 19, 1913. The board shall, if necessary, investigate all accidents reported, and is authorized to appoint a manager, inspectors, and other assistants to administer the fund and to perform the duties imposed on the board.

The board is authorized to divide the State into "compensation districts" and to appoint for each district a referee to whom employees' claims for compensation are referred by the bureau when the employer and employee can not themselves agree as to the compensation to be paid.

When the bureau receives notice from the board that any employer has become a subscriber to the fund, the bureau shall promptly transmit to the board a copy of any accident notice received by the bureau from any subscribing employer. The board is authorized to supervise and direct the work of the bureau and to hear all appeals from the decisions of referees.

TENNESSEE.

A State law approved April 19, 1913, effective the same date, authorized the creation of the workmen's compensation commission, consisting of five members appointed by the governor, the members to serve for two years or until their report is submitted. The commission was directed to study the subject of workmen's compensation and to report thereon to the next meeting of the general assembly. No compensation law has yet been enacted.

TEXAS.

Compensation for injured employees is provided by the act of the Legislature of Texas approved April 16, 1913, effective September 1, 1913, covering all **employers of more than five persons**, except those engaged in farm labor, operating railways as common carriers, or those working for a cotton gin. Compensation begins on the eighth day of disability. Election by employers to become subject to the law is indicated by subscribing to the Texas Employees Insurance Association. Notice of injury must be sent by the injured employee, or by some other person in his behalf, to the subscribing employer or to the insurance association. Employers are required to keep a record of all injuries, fatal or otherwise, and within eight days of each injury to

make a written report thereof to the State industrial accident board, consisting of three members appointed by the governor.

The law also authorizes any insurance company to issue policies to pay compensation as provided for under the act, and the holders of such policies are regarded as subscribers so far as applicable under the act.

VERMONT.

The "Vermont workmen's compensation act," approved April 1, 1915, effective July 1, 1915, applies to all **employers of more than 10 persons**, except domestic and casual employees, and those earning over \$1,500 annually. Election by the employer to become subject to the law is presumed in the absence of notice to the contrary; and employers of 10 or less than 10 persons may also affirmatively elect to accept the provisions of the act. Compensation for injury begins on the fifteenth day of disability, and compensation for death is limited to cases where death results within two years of the accident. Notice of injury must be given to the employer as soon as possible by the injured employee, or some other person in his behalf. Employers are required to keep a record of "all injuries, fatal or otherwise," and to report all injuries causing disability of one day or more to the State industrial accident board within 72 hours, excluding Sundays and legal holidays. The board reports biennially to the general assembly.

WASHINGTON.

By an act approved March 14, 1911, amended March 22, 1915, the Legislature of Washington established an industrial insurance department to administer a compulsory compensation law applicable to an enumerated list of extra-hazardous industries, among which are included mining, **quarrying**, dredges, tunnels, blast furnaces, foundries, rolling mills, and powder works. Section 14 requires all employers who are subject to the provisions of the law to render an immediate report of any accident to the industrial insurance department.

WEST VIRGINIA.

An act of the Legislature of West Virginia (Laws of 1913, chap. 10), which became effective October 1, 1913, provides compensation for injuries to all persons employed in "coal mines, oil and gas wells, iron and steel mills, blast furnaces, smelters, rolling mills, **quarries**, stone crushers, mines other than coal mines, explosive works, tunnels, and shafts." An act approved February 26, 1915, broadened the law to include all works in which articles of an explosive nature are mixed or manufactured and provided for the organization of the office of State compensation commissioner to administer the compensation fund which had theretofore been administered by the Public Service Commission. No compensation is paid for the first week of

disability. The act is elective on the part of employers, and employees are required to apply for compensation within six months after date of injury. Employers are required to furnish the commissioner with all information required by him. The commissioner renders annual reports to the governor, showing causes of accidents for which awards have been granted.

WISCONSIN.

The Legislature of Wisconsin passed an elective workmen's compensation law, approved May 3, 1911, applying to all employers of four or more persons, election to be made by filing with the State industrial accident board a notice that the employer elects to become subject to the provisions of the law, the election to be binding for one year and thereafter presumed to continue without further notice in the absence of notice of withdrawal. Compensation is provided for injuries resulting in disability for more than one week.

An act approved June 27, 1911, requires that every employer of four or more persons shall keep a record of all accidents causing death or disability to any employee and that a similar record shall also be kept by all casualty insurance companies and all other societies or persons indemnifying employers against liability, and that within the first five days of each month all such accidents shall be reported to the industrial accident board.

An act of June 30, 1911, created the "industrial commission of Wisconsin" and provided that the commission should supersede and assume the duties of the industrial accident board.

By an act approved June 26, 1913, the law was amended to provide that on and after September 30, 1913, all employers of four or more persons shall be presumed to have elected to accept the provisions of the act unless notice to the contrary is filed with the industrial commission.

WYOMING.

The "Wyoming workmen's compensation law," approved February 27, 1915, effective April 1, 1915, applies to extra-hazardous industries, including foundries, blast furnaces, smelters, natural-gas plants, oil wells, dredges, mines, quarries, and powder works, provided five or more men are employed therein continuously for more than one month at the time of the accident; but if dangerous explosives are used, the law is applicable even if less than five men are employed. Compensation for injuries begins on the eleventh day of disability. Employers must report within 20 days all injuries received by employees to the clerk of the district court of the county where the accident occurred, on blanks supplied by the State treasurer, who has the custody of the industrial accident fund. Compensation is paid by the treasurer upon an order signed by the judge of the district court.

PUBLICATIONS ON MINE ACCIDENTS AND QUARRYING.

PUBLICATIONS AVAILABLE FOR FREE DISTRIBUTION.

A limited supply of the following publications of the Bureau of Mines is available for free distribution at the date of issuance of this report. Requests for all publications can not be granted, and to insure equitable distribution applicants are requested to limit their selection to publications that may be of especial interest to them. Requests for publications should be addressed to the Director, Bureau of Mines.

BULLETIN 48. The selection of explosives used in engineering and mining operations, by Clarence Hall and S. P. Howell. 1913. 50 pp., 3 pls., 7 figs.

BULLETIN 62. National mine-rescue and first-aid conference, Pittsburgh, Pa., September 23-26, 1912, by H. M. Wilson. 1913. 74 pp.

BULLETIN 69. Coal-mine accidents in the United States and foreign countries, compiled by F. W. Horton. 1913. 102 pp., 3 pls., 40 figs.

BULLETIN 80. A primer on explosives for metal miners and quarrymen, by C. E. Munroe and Clarence Hall. 1915. 125 pp., 15 pls., 17 figs.

BULLETIN 92. Feldspars of the New England and north Appalachian States, by A. S. Watts. 1914. 180 pp., 3 pls., 12 figs.

BULLETIN 115. Coal-mine fatalities in the United States, 1870-1914, with statistics of coal production, labor, and mining methods, by States and calendar years, compiled by A. H. Fay. 1916. 370 pp., 3 pls., 13 figs.

TECHNICAL PAPER 46. Quarry accidents in the United States during the calendar year 1911, compiled by A. H. Fay. 1913. 32 pp.

TECHNICAL PAPER 48. Coal-mine accidents in the United States, 1896-1912, with monthly statistics for 1912, compiled by F. W. Horton. 1913. 74 pp., 10 figs.

TECHNICAL PAPER 61. Metal-mine accidents in the United States during the calendar year 1912, compiled by A. H. Fay. 1914. 76 pp., 1 fig.

TECHNICAL PAPER 92. Quarry accidents in the United States during the calendar year 1913, compiled by A. H. Fay. 1914. 76 pp.

TECHNICAL PAPER 111. Safety in stone quarrying, by Oliver Bowles. 1915. 48 pp., 5 pls., 4 figs.

TECHNICAL PAPER 118. Coke-oven accidents in the United States during the calendar years 1913 and 1914, compiled by A. H. Fay. 1915. 16 pp.

TECHNICAL PAPER 124. Accidents at metallurgical works in the United States during the calendar years 1913 and 1914, compiled by A. H. Fay. 1915. 28 pp.

TECHNICAL PAPER 128. Quarry accidents in the United States during the calendar year 1914, compiled by A. H. Fay. 1915. 45 pp.

TECHNICAL PAPER 129. Metal-mine accidents in the United States during the calendar year 1914, compiled by A. H. Fay. 1915. 96 pp., 1 pl., 3 figs.

TECHNICAL PAPER 151. Coke-oven accidents in the United States during the calendar year 1915, compiled by A. H. Fay. 1916. 18 pp.

TECHNICAL PAPER 164. Accidents at metallurgical works in the United States during the calendar year 1915, compiled by A. H. Fay. 1916. 20 pp.

Coal-mine fatalities in the United States, 1914, with detailed figures for December, compiled by A. H. Fay. 1915. 31 pp.

MINERS' CIRCULAR 5. Electrical accidents in mines, their causes and prevention, by H. H. Clark, W. D. Roberts, L. C. Ilsley, and H. F. Randolph. 1911. 10 pp., 3 pls.

MINERS' CIRCULAR 8. First-aid instructions for miners, by M. W. Glasgow, W. A. Raudenbush, and C. O. Roberts. 1913. 67 pp., 51 figs.

MINERS' CIRCULAR 10. Mine fires and how to fight them, by J. W. Paul. 1912. 14 pp.

MINERS' CIRCULAR 11. Accidents from mine cars and locomotives, by L. M. Jones. 1913. 16 pp.

MINERS' CIRCULAR 13. Safety in tunneling, by D. W. Brunton and J. A. Davis. 1913. 19 pp.

PUBLICATIONS THAT MAY BE OBTAINED ONLY THROUGH THE SUPER-
INTENDENT OF DOCUMENTS.

The editions for free distribution of the following Bureau of Mines publications are exhausted, but copies may be obtained by purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., or can be consulted at public libraries. Prepayment of the price is required and should be made in cash (exact amount) or by postal or express money order to the Superintendent of Documents.

The Superintendent of Documents is an official of the Government Printing Office and is not connected with the Bureau of Mines.

BULLETIN 53. Mining and treatment of feldspar and kaolin in the southern Appalachian region, by A. S. Watts. 1913. 170 pp., 16 pls., 12 figs. 35 cents.

TECHNICAL PAPER 40. Metal-mine accidents in the United States during the calendar year 1911, compiled by A. H. Fay. 1913. 54 pp. 5 cents.

TECHNICAL PAPER 73. Quarry accidents in the United States during the calendar year 1912, compiled by A. H. Fay. 1914. 45 pp. 5 cents.

TECHNICAL PAPER 94. Metal-mine accidents in the United States during the calendar year 1913, compiled by A. H. Fay. 1914. 73 pp. 10 cents-

Coal-mine fatalities in the United States during the calendar year 1915, with detailed figures for December, compiled by A. H. Fay. 1916. 80 pp., 3 figs. 10 cents.



