State inspector of coal mines reports

Section 69, Pages 2041 - 2070

These reports of the Kansas State Mine Inspector mostly concern coal mining, though by 1929 the scope of the reports broadens to include metal mines. The content of individual reports will vary. The reports address mining laws and mining districts; industry production and earnings; fatal and non-fatal accidents; accident investigations and transcripts of oral interviews; labor strikes; mine locations; mining companies and operators; and proceedings of mining conventions. The reports document the political, economic, social, and environmental impacts of more than seventy years of mining in southeastern Kansas.

Creator: Kansas. Inspector of Coal Mines

Date: Between 1884 and 1956

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State inspector of coal mines reports

COAL-MINING INDUSTRY IN CHEROKEE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1908.—CONCLUDED.

Office No.	Wages paid. Mining price	Underground day wage	Top day wage	Number of kegs of powder used	Gross earnings of miners	Gross expense of miners	Net earnings of miners	Earnings per miner per year	Expense per miner per year	Net earnings per miner per year	Earnings of day men underground	Earnings of day men above-ground	Net earnings per day man underground	Net earnings per day man above-ground	Number of days worked
1	$0 72	$2 56	$2 02½	5,172	$63,224 64	$13,978 60	$49,346 04	$559 51	$123 70	$435 81	$10,616 32	$4,053 98	$366 08	$289 37	143
2	72	2 56	2 02½	2,595	23,301 21	6,529 15	16,772 06	485 44	136 03	349 41	5,544 39	1,846 80	291 81	230 85	114
3	72	2 56	2 02½	1,506½	9,763 14	3,572 10	6,991 04	390 53	142 88	247 85	1,443 84	1,142 10	240 64	190 35	94
4	72	2 56	2 02½	769½	12,300 06	5,245 90	10,054 16	256 25	46 79	209 46	1,833 60	1,296 00	152 80	144 00	64
5	72	2 65	2 25	1,351½	22,960 17	3,022 55	19,937 92	214 58	28 21	196 37	3,789 50	1,462 50	172 25	146 25	65
6	72	2 65	2 20	523	4,840 68	1,324 20	3,516 48	102 99	28 17	74 82	3,031 60	1,736 00	233 20	173 60	88
7	72	2 25	2 50	5,749	62,082 53	15,061 04	47,021 49	633 50	153 79	479 71	7,917 75	6,727 50	465 75	513 50	207
8	72	2 25	2 50	107	2,173 78	338 00	1,835 78	72 45	11 27	61 18	594 00	720 00	54 00	60 00	24
9	72	2 25	2 50	6,265	62,261 41	16,108 24	46,153 17	604 48	156 39	448 09	12,210 75	7,035 00	425 25	502 50	201
10	72	2 25	2 50	9,877	99,110 79	25,450 02	73,660 77	639 43	164 20	475 23	11,232 00	8,840 00	468 00	520 00	208
11	72	2 25	2 50	5,063	55,433 09	13,301 00	42,131 28	615 92	147 80	468 12	6,716 25	6,467 50	447 75	497 50	199
12	72	2 25	2 50	3,739	42,567 90	9,924 43	32,643 47	500 80	115 82	384 96	4,826 25	5,362 50	331 25	412 50	165
14	72	2 56	2 02½	1,700	20,512 73	4,378 95	15,933 78	625 35	127 19	498 16	4,300 80	3,827 25	537 60	425 25	210
15	72	2 56	2 02½	7,500	81,722 24	19,697 10	62,025 44	486 44	117 25	369 19	8,243 20	5,589 00	588 80	465 75	230
16	72	2 56	2 02½	3,515	55,979 28	10,247 20	45,732 08	682 67	124 97	557 70	5,401 60	2,990 89	540 16	427 27	211
17	72	2 56	2 02½	2,288	50,505 80	7,478 63	43,437 17	711 35	105 33	606 02	3,450 80	2,587 92	545 28	431 32	213
18	72	2 56	2 02½	289	5,666 31	903 65	4,762 66	472 19	75 30	396 89	925 56	710 96	308 52	236 92	117
19	72	2 56	2 02½	8,331½	82,929 50	21,480 78	61,448 72	584 01	151 36	432 65	9,400 00	3,936 60	552 96	437 40	216
20	72	2 56	2 02½	1,771	22,319 19	4,829 31	17,489 99	544 32	117 79	326 33	2,885 12	1,630 10	412 16	326 02	161
21	72	2 56	2 02½	6,391	61,358 49	16,308 35	45,050 14	697 24	185 32	511 92	13,824 00	5,454 06	576 00	454 00	225
22	72	2 60	2 50	312											63
24	72	2 56	2 02½	2,139	26,745 64	5,815 40	20,930 44	534 91	116 30	418 61	3,386 88	2,679 03	376 32	297 67	147
27	72	2 56	2 02½	2,012	19,174 78	5,223 70	13,951 08	563 93	153 60	410 33	4,211 20	2,855 25	601 68	475 88	235
28	72	2 56	2 02½	3,826	30,300 36	9,393 40	21,006 96	496 72	152 35	544 37	4,561 92	2,806 65	506 88	400 95	198
29	72	2 56	2 02½	997	9,888 42	2,562 30	7,326 12	375 54	102 07	273 47	2,897 28	1,863 00	471 04	372 60	184
30	72	2 56	2 02½	3,491	38,156 46	9,174 90	28,981 56	578 12	139 01	439 11	6,755 84	5,343 91	519 68	411 07	203
31	72	2 56	2 02½	893	10,102 44	2,376 60	7,725 84	240 86	56 58	184 28	768 00	607 50	128 00	101 25	50
32	72	2 56	2 02½	428	9,519 54	1,403 10	8,116 44	297 42	42 84	256 36	832 00	789 18	166 40	131 53	65
33	72	2 56	2 02½	444	5,225 22	1,188 30	4,036 92	108 85	24 75	64 10	860 16	510 30	107 52	85 05	42
34	72	2 56	2 02½	1,036	130,281 06	29,559 42	100,721 42	824 56	187 08	637 48	8,744 96	3,458 70	694 54	494 10	244
35	72	2 70	2 30	9,475	111,544 17	23,360 58	86,183 59	626 25	142 48	483 17	20,790 00	6,578 00	594 00	506 00	220
36	72	2 70	2 30	5,478	40,153 11	13,263 00	26,890 16	597 81	187 95	399 86	6,382 80	3,624 80	531 90	453 10	197
37	72	2 56	2 02½	9,075	85,472 28	18,150 00	67,322 28	534 20	113 44	420 76	12,902 44	4,374 00	614 40	486 00	240
38	72	2 56	2 02½	2,200	24,490 00	5,750 00	18,740 00	627 97	147 33	480 64		1,458 00	614 40	486 00	240
39	72	2 56	2 02½	260	2,051 80	637 00	1,414 80	341 96	106 16	235 80	578 56	457 55	578 56	457 65	226
40	72	2 56	2 02½	586	8,807 28	1,678 20	7,129 68	375 21	52 44	222 77	2,995 20	1,974 35	499 20	394 87	195

41	72	2 56	2 02½	775	16,387 22	4,490 33	11,870 92	634 45	179 61	454 84	2,329 60	1,474 20	465 92	368 55	148
42	72	2 56	2 02½	5,120	48,858 33	13,047 95	35,810 38	514 80	153 50	361 30	4,531 20	3,225 78	453 12	358 42	177
43	72	2 56	2 02½	204	1,023 99	466 85	557 14	255 99	116 71	139 28	358 40	4,915 20	358 40		140
44	72	2 56	2 02½	2,119	17,961 15	5,270 25	12,790 90	581 64	170 00	414 64	3,566 08	2,014 85	509 44	402 97	199
45	72	2 81	2 56	670	7,830 00	1,800 00	6,030 00	391 50	90 00	301 50	1,865 55	1,608 93	373 11	268 16	133
46	72	2 56	2 02½	660	8,700 00	1,820 00	6,880 00	435 00	91 00	344 00	2,048 00	405 00	512 00	405 00	200
47	72	2 56	2 02½	400	3,440 00	1,000 00	2,440 00	573 33	166 66	406 67	358 40		358 40		140
48	72	2 56	2 02½	2,827	44,345 90	8,202 61	36,143 29	368 53	105 16	463 37	6,256 64	3,384 00	481 28	423 00	188
49	72	2 56	2 02½	366	4,959 00	1,017 00	3,942 00	177 10	36 32	140 78	1,459 20	1,346 59	243 20	192 37	95
50	72	2 56	2 02½	200	2,610 00	550 00	2,060 00	522 00	110 00	412 00	2,008 00	810 00	512 00	405 00	200
51	72	2 81	2 02½	25	435 00	75 00	360 00	141 00	25 00	116 00	281 00	101 25	140 50	101 25	50
52															
53															
54															
55															
				128,415	$1,574,936 23	$347,343 57	$1,227,592 66	$584 23	$117 82	$416 41	$219,916 54	$132,072 78			161

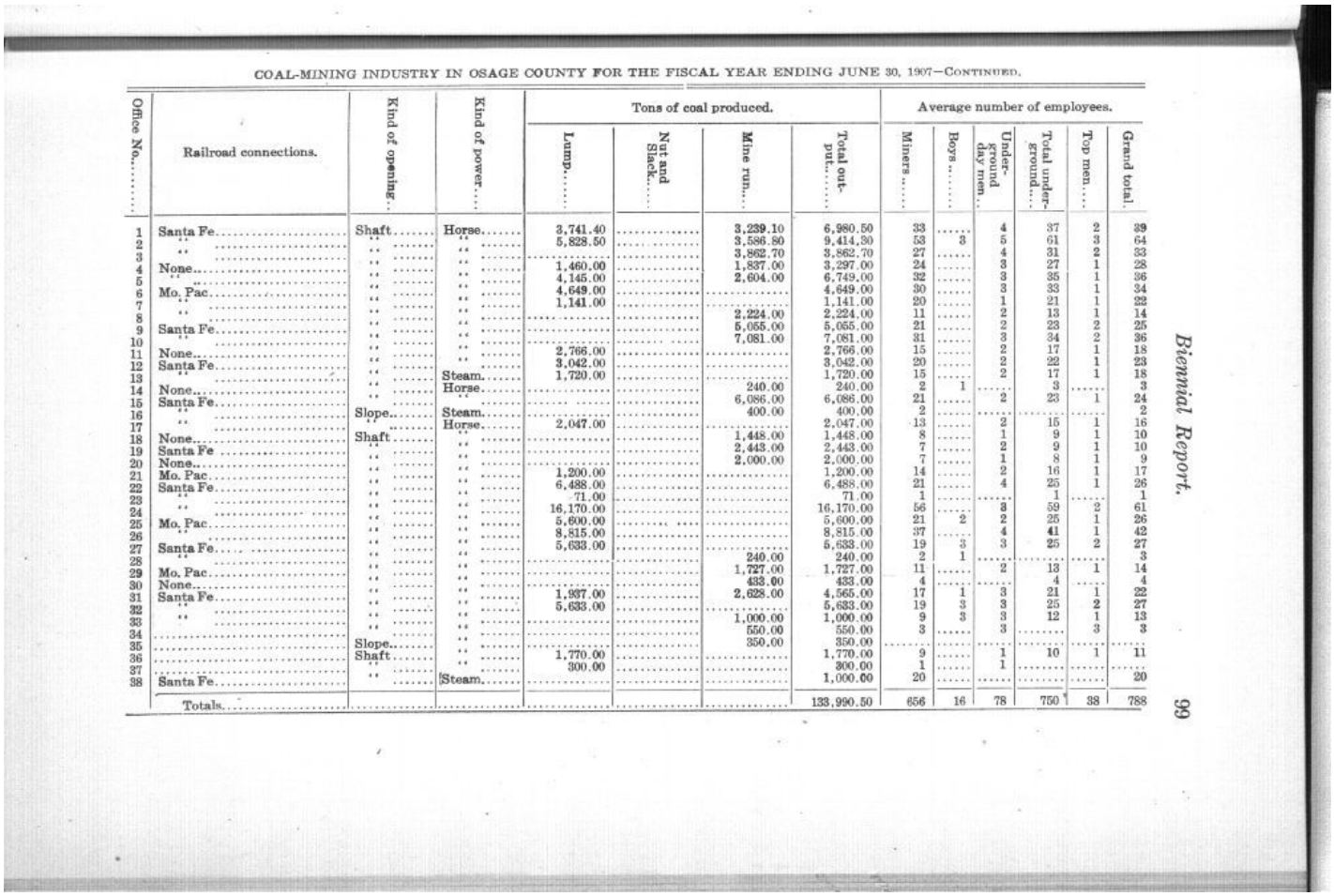
State inspector of coal mines reports

COAL-MINING INDUSTRY IN OSAGE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1907.

Office No.	Name of Operator.	Post-office address.	Number or name of mine.	Mine boss.	Location of mine.
1	Jackson-Walker Coal Co.①	Wichita	14	A. Andreen	1½ miles southwest of Scranton.
2	" " " ①	"	28	J. O. Melia	2 miles northeast of Osage City.
3	" " " ①	"	29	A. Falletti	2½ miles northeast of Osage City.
4	Labor Exchange, Branch 223	Osage City	1	A. Johnson	¾ mile northwest of Osage City.
5	" " " ②	"	3	Eric Fellman	½ mile north of Osage City.
6	Western Fuel Co	"	4	T. C. Davis	2 miles east of Osage City.
7	" "	"	5	Frank Ward	1 mile west of Osage City.
8	Superior Coal Co	"	1	Chas. Swenson	1 mile east of Osage City.
9	Chappell Coal Co	Scranton	3	G. W. Chappell	2 miles east of Burlingame.
10	" "	"	6	Jas. Bailie, jr	2 miles east of Burlingame.
11	John A. Johnson Coal Co	Osage City	2	Antone Sacco	1 mile north of Osage City.
12	Robt. Elliott Coal Co.①	Burlingame	2	Jas. Elliott	3 miles northeast of Burlingame.
13	" "	"	3	Geo. Elliott	2½ miles northeast of Burlingame.
14	Gus. Erickson	Scranton	1	E. Erickson	2 miles southwest of Scranton.
15	Bell Coal Co	Burlingame	Bell	Jno. Bell	2½ miles east of Burlingame.
16	Henry Isaacs	Scranton	Isaacville	H. Isaac	2 miles southwest of Scranton.
17	James Rennie	Carbondale	1	D. Purvis	1 mile southeast of Carbondale.
18	Sunflower Coal Co	Osage City	Sunflower	J. E. Siman	1¼ miles east of Osage City.
19	Strunk Coal Co	Burlingame	2	Wm. Strunk	¼ mile south of Burlingame.
20	McFarlane Coal Co	"	1	A. M. Farlane	¼ mile east of Burlingame.
21	Kansas Coal Co., of Kansas	Lawrence	1	— Garden	1 mile west of Osage City.
22	Jack Coal and Mining Co	Burlingame	1	J. D. Jack	½ mile south of Burlingame.
23	Hugh Davis Coal Co	Osage City			3 miles southeast of Barclay.
24	Standard Coal Co	Scranton	1	E. Griffith	2½ miles southeast of Scranton.
25	A. W. Granstrom	Osage City	5	Pete Friss	1 mile from Osage City.
26	Carlson Coal Co	Scranton	5	E. Anderman	Osage City.
27	Central Coal and Mining Co	Burlingame	1	N. Hotchkiss	¼ mile east of Burlingame.
28	Hotchkiss Bros	"	6	P. McFarlane	2 miles southwest of Burlingame.
29	Black Diamond Co	Osage City	1	Oscar Bolen	1 mile west of Osage City.
30	Alex. McIntosh	Scranton			2½ miles south of Scranton.
31	Caughlin Coal Co	Osage City	3	J. F. Graham	1 mile northeast of Peterton.
32	Cooperative Coal Co	Burlingame	1	R. Simpson	1 mile south of Burlingame.
33	Maggison Coal Co	"		Ed. Maggison	2½ miles northeast of Burlingame.
34	L. J. Boruff Coal Co	Osage City		L. J. Boruff	
35	Barry Coal Co	"			
36	Romine-Blankenship	"	Big 4	Ed. Cliff	2 miles southeast of Osage City.
37	McFail Coal Co	Scranton	1	H. M. Phail	1½ miles northeast of Scranton.
38	Dickinson Coal Co	Burlingame	1	Wm. Maggison	¾ mile southwest of Burlingame.

①Three quarters. ②Abandoned July 1, 1907.

State inspector of coal mines reports



COAL-MINING INDUSTRY IN OSAGE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1907—CONTINUED.

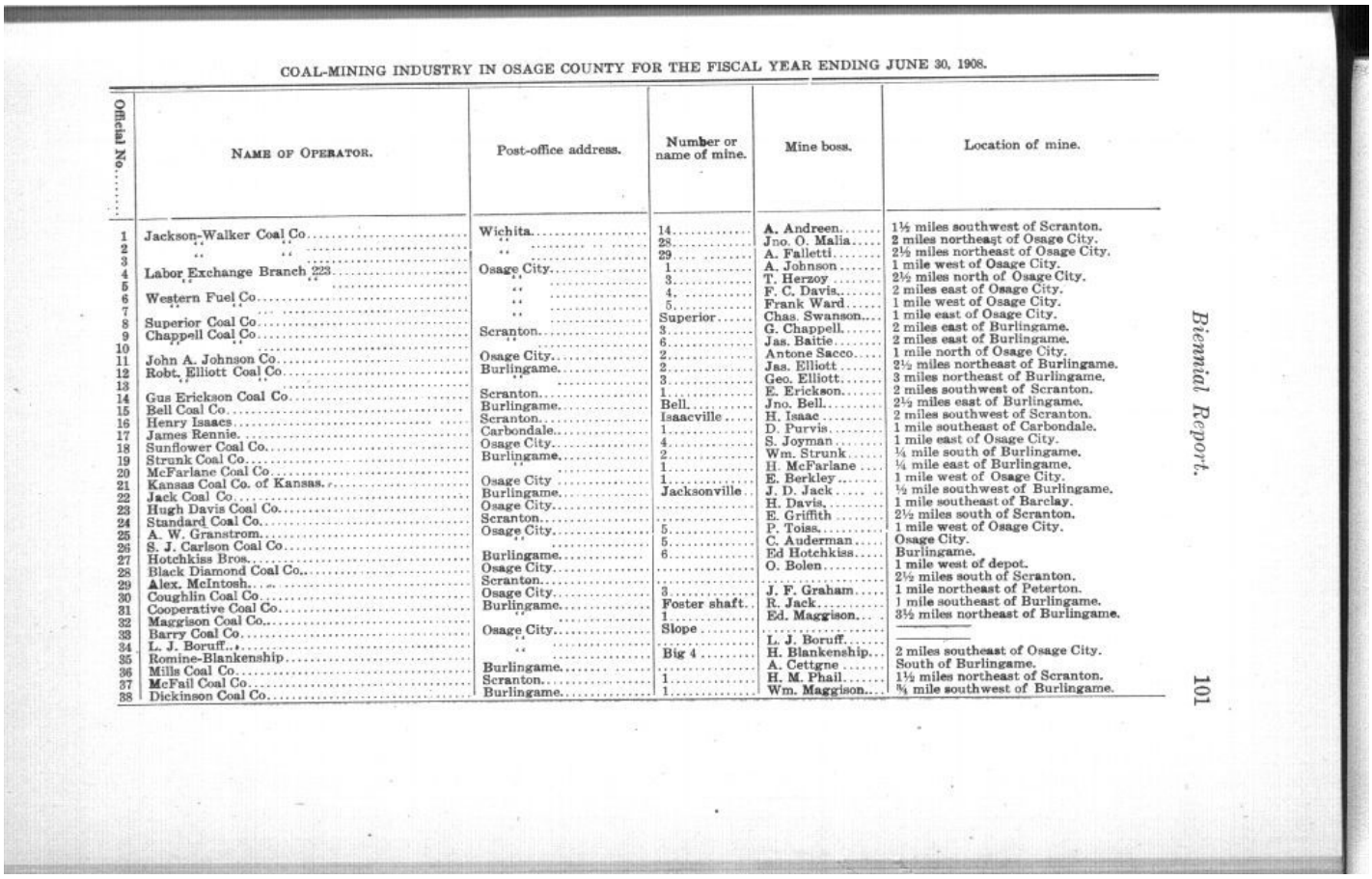
Office No.	Railroad connections.	Kind of opening.	Kind of power.	Tons of coal produced.				Average number of employees.					
				Lump.	Nut and Slack.	Mine run.	Total output.	Miners.	Boys.	Underground day men.	Total underground.	Top men.	Grand total.
1	Santa Fe	Shaft	Horse	3,741.40		3,239.10	6,980.50	33		4	37	2	39
2	"	"	"	5,828.50		3,586.80	9,414.30	53	3	5	61	3	64
3	"	"	"			3,862.70	3,862.70	27		4	31	2	33
4	None	"	"	1,460.00		1,837.00	3,297.00	24		3	27	1	28
5	"	"	"	4,145.00		2,604.00	6,749.00	32		3	35	1	36
6	Mo. Pac	"	"	4,649.00			4,649.00	30		3	33	1	34
7	"	"	"	1,141.00			1,141.00	20		1	21	1	22
8	"	"	"			2,224.00	2,224.00	11		2	13	1	14
9	Santa Fe	"	"			5,055.00	5,055.00	21		2	23	2	25
10	"	"	"			7,081.00	7,081.00	31		3	34	2	36
11	None	"	"	2,766.00			2,766.00	15		2	17	1	18
12	Santa Fe	"	"	3,042.00			3,042.00	20		2	22	1	23
13	"	"	Steam	1,720.00			1,720.00	15		2	17	1	18
14	None	"	Horse			240.00	240.00	2	1		3		3
15	Santa Fe	"	"			6,086.00	6,086.00	21		2	23	1	24
16	"	Slope	Steam			400.00	400.00	2					2
17	"	"	Horse	2,047.00			2,047.00	13		2	15	1	16
18	None	Shaft	"			1,448.00	1,448.00	8		1	9	1	10
19	Santa Fe	"	"			2,443.00	2,443.00	7		2	9	1	10
20	None	"	"			2,000.00	2,000.00	7		1	8	1	9
21	Mo. Pac	"	"	1,200.00			1,200.00	14		2	16	1	17
22	Santa Fe	"	"	6,488.00			6,488.00	21		4	25	1	26
23	"	"	"	71.00			71.00	1			1		1
24	"	"	"	16,170.00			16,170.00	56		3	59	2	61
25	Mo. Pac	"	"	5,600.00			5,600.00	21	2	2	25	1	26
26	"	"	"	8,815.00			8,815.00	37		4	41	1	42
27	Santa Fe	"	"	5,633.00			5,633.00	19	3	3	25	2	27
28	"	"	"			240.00	240.00	2	1				3
29	Mo. Pac	"	"			1,727.00	1,727.00	11		2	13	1	14
30	None	"	"			433.00	433.00	4			4		4
31	Santa Fe	"	"	1,937.00		2,628.00	4,565.00	17	1	3	21	1	22
32	"	"	"	5,633.00			5,633.00	19	3	3	25	2	27
33	"	"	"			1,000.00	1,000.00	9	3	3	12	1	13
34		"	"			550.00	550.00	3		3		3	3
35		Slope	"			350.00	350.00						
36		Shaft	"	1,770.00			1,770.00	9		1	10	1	11
37		"	"	300.00			300.00	1		1			
38	Santa Fe	"	Steam				1,000.00	20					20
	Totals						133,990.50	656	16	78	750	38	788

State inspector of coal mines reports

COAL-MINING INDUSTRY IN OSAGE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1907—CONCLUDED.

Office No.	Wages paid. Mining price	Wages paid. Underground day wage	Wages paid. Top day wage	Number of kegs of powder used	Gross earnings of miners	Gross expense of miners	Net earnings of miners	Earnings per miner per year	Expense per miner per year	Net earnings per miner per year	Earnings of day men underground	Earnings of day men aboveground	Net earnings per day man underground	Net earnings per day man aboveground	Number of days worked
1	$1 60	$2 56	$2 25	154	$11,866 85	$349 02	$11,517 83	$359 30	$19 91	$339 39	$962 56	$423 00	$240 64	$211 50	94
2	1 60	2 56	2 25	700	15,804 31	455 71	15,448 60	259 10	35 29	223 81	1,408 00	742 50	281 60	247 50	110
3	1 60	2 56	2 25	460	6,576 85	193 13	6,383 92	243 21	41 22	201 99	849 92	336 15	212 48	168 08	83
4	1 60	2 56	2 25	.....	5,604 90	164 85	5,440 05	233 54	6 87	226 67	1,080 48	396 00	364 16	306 00	136
5	1 60	2 56	2 25	.....	11,473 30	337 45	10,135 85	327 29	10 55	316 74	1,543 68	452 25	514 56	452 25	201
6	1 60	2 56	2 25	.....	7,902 40	232 45	7,669 95	263 41	7 78	255 65	1,105 92	224 00	368 54	224 00	144
7	1 60	2 56	2 25	.....	2,449 70	72 00	2,377 70	122 48	3 60	118 88	471 04	354 00	471 04	354 00	184
8	1 60	2 56	2 25	126	3,780 80	111 20	3,669 60	342 71	11 98	331 73	824 32	362 25	412 16	362 25	161
9	1 55	2 56	2 25	.....	8,340 75	252 75	8,088 00	397 17	12 03	384 14	865 28	760 50	432 64	380 25	169
10	1 55	2 56	2 25	.....	11,683 65	354 05	11,329 60	376 89	11 42	365 47	1,175 28	747 00	391 76	373 50	166
11	1 60	2 56	2 25	.....	4,702 20	138 30	4,543 90	813 48	9 22	304 26	732 16	221 75	366 08	221 75	143
12	1 60	2 56	2 25	.....	5,171 40	152 10	5,019 30	258 52	7 61	250 91	573 44	252 00	286 72	252 00	112
13	1 60	2 56	2 25	.....	2,924 00	86 00	2,838 00	114 93	5 73	189 20	460 80	202 50	230 40	202 50	90
14	1 60	.....	.....	.....	408 00	12 00	396 00	204 00	6 00	189 00	.....	.....	.....	.....	100
15	1 60	2 56	2 25	.....	10,346 20	304 30	10,041 90	492 68	14 49	478 19	880 64	387 00	440 32	387 00	172
16	1 55	.....	.....	.....	660 00	20 00	640 00	330 00	10 00	320 00	.....	.....	.....	.....	150
17	1 55	2 50	1 50	.....	3,377 55	102 35	1,275 20	259 81	7 87	251 94	655 00	196 50	327 50	196 50	131
18	1 60	2 56	2 25	.....	2,461 60	72 40	2,389 20	307 70	9 05	298 65	458 24	372 75	458 24	372 75	179
19	1 60	2 56	2 25	.....	4,153 10	122 15	4,030 95	593 30	17 40	575 75	1,105 92	486 00	552 96	486 00	216
20	1 55	2 56	2 25	.....	3,300 00	100 00	3,200 00	471 42	14 30	457 12	512 00	457 00	512 00	450 00	200
21	1 60	2 56	2 25	.....	2,040 00	60 00	1,980 00	145 71	4 21	141 50	455 68	200 25	227 84	200 25	89
22	1 55	2 56	2 00	.....	10,705 20	324 40	10,380 80	509 77	15 47	525 24	2,228 08	434 00	555 52	434 00	245
23	1 60	2 56	2 25	.....	120 70	3 55	117 15	120 70	3 55	117 15	.....	.....	.....	.....	171
24	1 55	2 56	2 25	.....	26,680 50	808 50	25,872 00	476 43	14 25	462 18	1,474 56	864 00	491 52	432 00	192
25	1 60	2 56	2 25	.....	9,520 00	280 00	9,240 00	453 00	13 33	440 00	819 20	360 00	409 60	360 00	160
26	1 60	2 75	2 25	.....	14,985 50	440 75	14,544 75	405 01	11 91	393 10	2,387 00	488 25	596 75	488 25	217
27	1 55	2 81	2 25	205	8,035 50	243 50	7,792 00	669 62	20 29	649 33	2,200 23	587 25	733 41	587 25	261
28	1 60	.....	.....	.....	408 00	12 00	396 00	204 00	6 00	198 00	.....	.....	.....	.....	106
29	1 60	2 56	2 25	.....	2,935 90	86 35	2,849 55	266 90	7 85	259 05	573 44	252 00	286 72	252 00	112
30	1 60	2 56	2 25	.....	4,153 10	122 15	4,030 95	593 30	17 40	575 75	1,105 92	486 00	552 96	486 08	216
31	1 60	2 56	2 25	.....	7,760 50	228 25	7,532 25	456 50	13 42	443 08	1,205 76	353 25	401 92	353 25	157
32	1 55	2 56	2 02½	.....	9,294 45	281 65	9,012 80	442 59	13 41	456 00	1,589 46	838 14	529 82	419 07	207
33	1 55	2 56	2 25	.....	1,650 00	50 00	1,550 00	177 77	5 55	172 22	576 00	169 75	192 00	169 75	75
34	1 60	2 56	2 25	.....	1,430 00	27 50	1,402 50	476 66	9 16	467 50	.....	.....	.....	.....	198
35	1 60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	1 60	2 56	2 25	.....	3,009 00	88 50	2,920 50	234 33	9 33	224 50	578 56	508 50	578 56	508 50	226
37	1 55	2 25	2 02½	.....	495 00	15 00	480 00	495 00	15 00	480 00	.....	.....	.....	.....	.....
38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	$211,704 99	$10,069 96	$201,635 04	$339 48	$15 14	$324 34	$30,358 57	$12,844 54	.....	.....	159

State inspector of coal mines reports



COAL-MINING INDUSTRY IN OSAGE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1908.

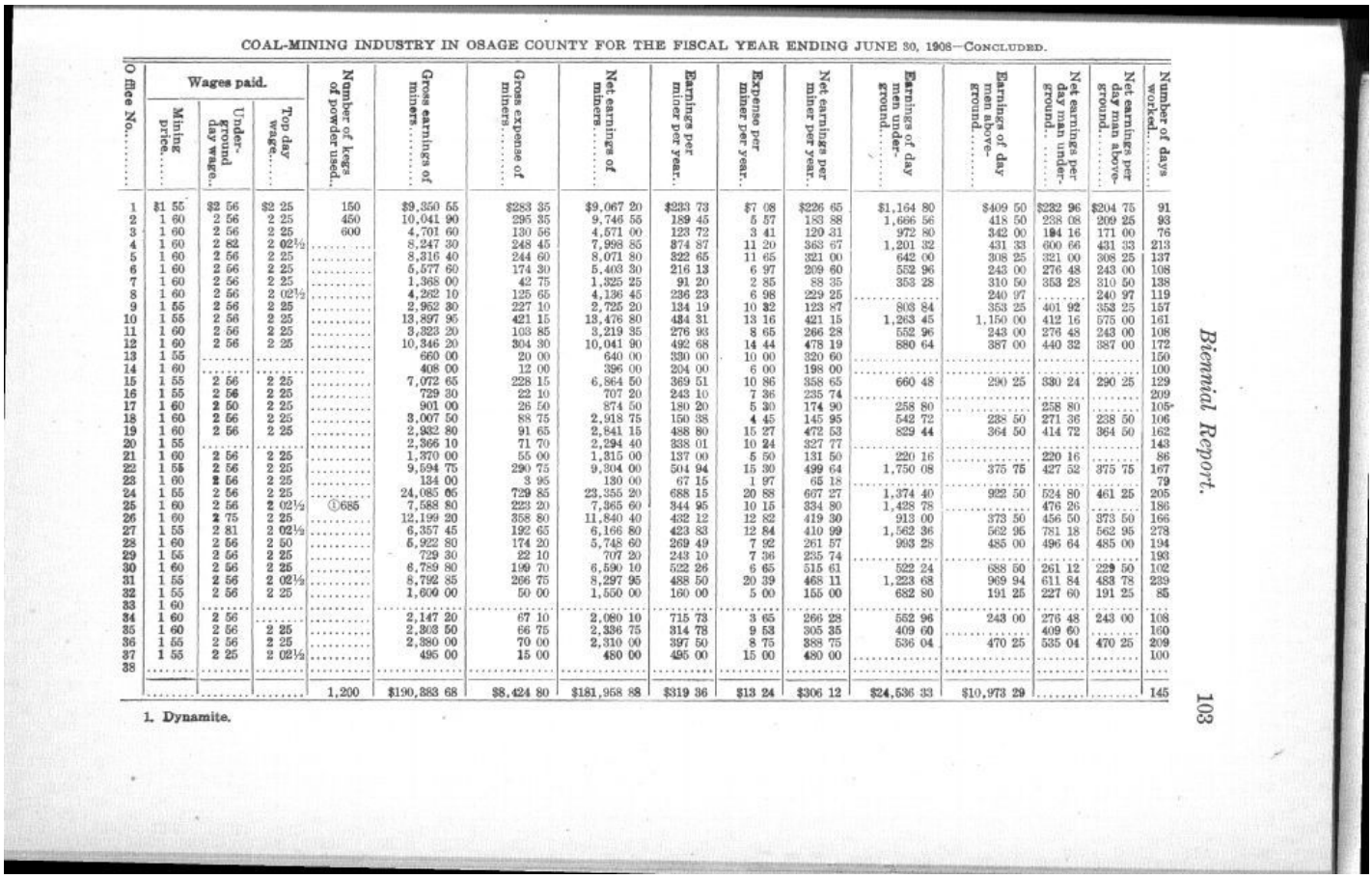
Official No.	Name of Operator.	Post-office address.	Number or name of mine.	Mine boss.	Location of mine.
1	Jackson-Walker Coal Co	Wichita	14	A. Andreen	1½ miles southwest of Scranton.
2	" "	"	28	Jno. O. Malia	2 miles northeast of Osage City.
3	" "	"	29	A. Falletti	2½ miles northeast of Osage City.
4	Labor Exchange Branch 223	Osage City	1	A. Johnson	1 mile west of Osage City.
5	" "	"	3	T. Herzoy	2½ miles north of Osage City.
6	Western Fuel Co	"	4	F. C. Davis	2 miles east of Osage City.
7	" "	"	5	Frank Ward	1 mile west of Osage City.
8	Superior Coal Co	"	Superior	Chas. Swanson	1 mile east of Osage City.
9	Chappell Coal Co	Scranton	3	G. Chappell	2 miles east of Burlingame.
10	" "	"	6	Jas. Baitie	2 miles east of Burlingame.
11	John A. Johnson Co	Osage City	2	Antone Sacco	1 mile north of Osage City.
12	Robt. Elliott Coal Co	Burlingame	2	Jas. Elliott	2½ miles northeast of Burlingame.
13	" "	"	3	Geo. Elliott	3 miles northeast of Burlingame.
14	Gus Erickson Coal Co	Scranton	1	E. Erickson	2 miles southwest of Scranton.
15	Bell Coal Co	Burlingame	Bell	Jno. Bell	2½ miles east of Burlingame.
16	Henry Isaacs	Scranton	Isaacville	H. Isaac	2 miles southwest of Scranton.
17	James Rennie	Carbondale	1	D. Purvis	1 mile southeast of Carbondale.
18	Sunflower Coal Co	Osage City	4	S. Joyman	1 mile east of Osage City.
19	Strunk Coal Co	Burlingame	2	Wm. Strunk	¼ mile south of Burlingame.
20	McFarlane Coal Co	"	1	H. McFarlane	¼ mile east of Burlingame.
21	Kansas Coal Co. of Kansas	Osage City	1	E. Berkley	1 mile west of Osage City.
22	Jack Coal Co	Burlingame	Jacksonville	J. D. Jack	½ mile southwest of Burlingame.
23	Hugh Davis Coal Co	Osage City		H. Davis	1 mile southeast of Barclay.
24	Standard Coal Co	Scranton		E. Griffith	2½ miles south of Scranton.
25	A. W. Granstrom	Osage City	5	P. Toias	1 mile west of Osage City.
26	S. J. Carlson Coal Co	"	5	C. Auderman	Osage City.
27	Hotchkiss Bros	Burlingame	6	Ed Hotchkiss	Burlingame.
28	Black Diamond Coal Co	Osage City		O. Bolen	1 mile west of depot.
29	Alex. McIntosh	Scranton			2½ miles south of Scranton.
30	Coughlin Coal Co	Osage City	3	J. F. Graham	1 mile northeast of Peterton.
31	Cooperative Coal Co	Burlingame	Foster shaft	R. Jack	1 mile southeast of Burlingame.
32	Maggison Coal Co	"	1	Ed. Maggison	3½ miles northeast of Burlingame.
33	Barry Coal Co	Osage City	Slope		
34	L. J. Boruff	"		L. J. Boruff	
35	Romine-Blankenship	"	Big 4	H. Blankenship	2 miles southeast of Osage City.
36	Mills Coal Co	Burlingame		A. Cettgne	South of Burlingame.
37	McFail Coal Co	Scranton	1	H. M. Phail	1½ miles northeast of Scranton.
38	Dickinson Coal Co	Burlingame	1	Wm. Maggison	¾ mile southwest of Burlingame.

State inspector of coal mines reports

COAL-MINING INDUSTRY IN OSAGE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1908—CONTINUED.

Office No.	Railroad connections.	Kind of opening.	Kind of power.	Tons of coal produced.				Average number of employees.					
				Lump.	Nut and slack.	Mine run.	Total output.	Miners.	Boys.	Underground day men.	Total underground.	Top men.	Grand total.
1	Santa Fe	Shaft	Horse				5,667	40	1	5	46	2	48
2	"	"	"				5,907	53	.....	7	60	2	62
3	"	"	"				2,612	38	.....	5	43	2	45
4	"	"	"				4,969	22	.....	2	24	1	25
5	"	"	"				4,892	25	.....	2	27	1	28
6	Mo. Pac.	"	"				3,486	25	.....	2	27	1	28
7	"	"	"				855	15	.....	1	16	1	17
8	Santa Fe	"	"				2,503	18	.....	.....	18	1	19
9	"	"	"				4,542	22	.....	2	24	1	25
10	"	"	Steam				8,423	32	.....	2	35	2	37
11	None	"	Horse				2,077	12	.....	2	14	1	15
12	Santa Fe	"	"				6,086	21	.....	2	23	.....	24
13	"	Slope	"				400	2	.....	.....	.....	.....	2
14	None	Shaft	"				240	2	1	.....	3	.....	3
15	Santa Fe	"	"				4,563	15	.....	2	17	1	18
16	"	"	"				442	3	.....	.....	3	.....	3
17	"	Slope	"				530	5	.....	1	6	.....	6
18	Mo. Pac.	Shaft	"				1,775	20	.....	2	22	1	23
19	Santa Fe	"	"				1,883	6	.....	2	8	1	9
20	"	"	"				1,434	7	.....	3	10	.....	10
21	Mo. Pac.	"	"				1,100	10	.....	3	13	1	14
22	Santa Fe	"	"				5,815	19	.....	4	23	1	24
23	"	"	"				79	2	.....	.....	2	.....	2
24	"	"	"				14,597	35	.....	3	38	2	40
25	Mo. Pac.	"	"				4,464	22	.....	3	25	.....	25
26	"	"	"				7,176	28	.....	3	31	1	32
27	Santa Fe	"	"				3,853	15	1	2	18	1	19
28	Mo. Pac.	"	"				3,484	22	.....	2	24	1	25
29	.....	"	"				442	3	.....	.....	3	.....	3
30	Santa Fe	"	"				3,994	13	1	2	16	1	17
31	"	"	Gas-engine				5,329	18	2	2	22	2	24
32	"	"	Horse				1,000	20	.....	3	23	1	24
33	.....	Slope	"				400	2	.....	.....	.....	.....	.....
34	.....	Shaft	"				1,342	3	.....	.....	.....	.....	.....
35	Mo. Pac.	"	"				1,355	7	.....	1	8	.....	8
36	Santa Fe	"	"				1,400	8	1	1	10	1	11
37	.....	"	"				300	1	.....	.....	.....	.....	1
38	Santa Fe	"	Steam				1,000	20	.....	.....	.....	.....	20
	Totals			60,048		60,200	120,496	637	7	71	715	30	745

State inspector of coal mines reports

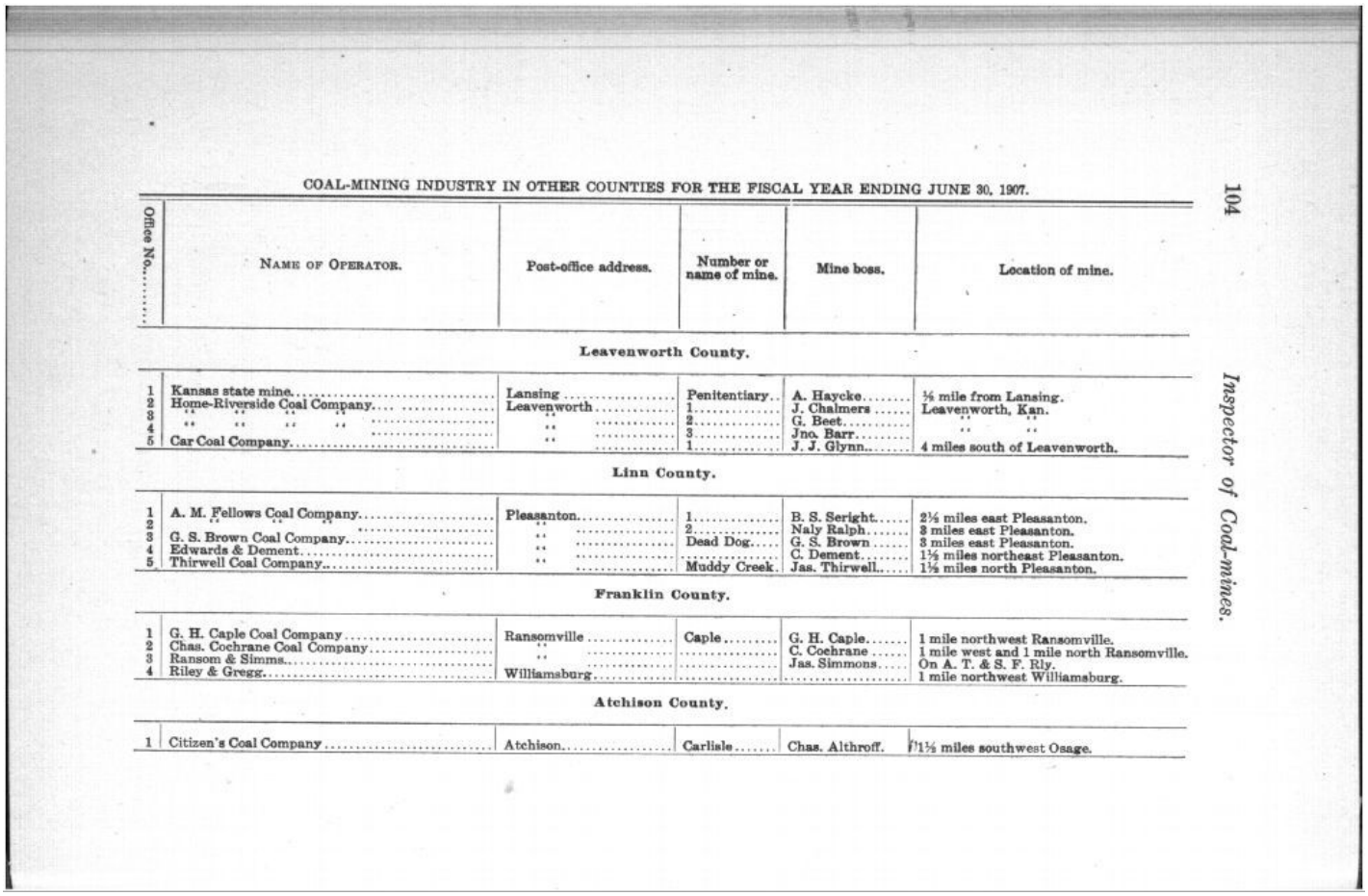


COAL-MINING INDUSTRY IN OSAGE COUNTY FOR THE FISCAL YEAR ENDING JUNE 30, 1908—CONCLUDED.

Office No.	Wages paid. Mining price.	Wages paid. Underground day wage.	Wages paid. Top day wage.	Number of kegs of powder used.	Gross earnings of miners.	Gross expense of miners.	Net earnings of miners.	Earnings per miner per year.	Expense per miner per year.	Net earnings per miner per year.	Earnings of day men underground.	Earnings of day men above-ground.	Net earnings per day man underground.	Net earnings per day man above-ground.	Number of days worked.
1	$1 55	$2 56	$2 25	150	$9,350 55	$283 35	$9,067 20	$233 73	$7 08	$226 65	$1,164 80	$409 50	$232 96	$204 75	91
2	1 60	2 56	2 25	450	10,041 90	295 35	9,746 55	189 45	5 57	183 88	1,666 56	418 50	238 08	209 25	93
3	1 60	2 56	2 25	600	4,701 60	130 56	4,571 00	123 72	3 41	120 31	972 80	342 00	194 16	171 00	76
4	1 60	2 82	2 02½	.....	8,247 30	248 45	7,998 85	374 87	11 20	363 67	1,201 32	431 33	600 66	431 33	213
5	1 60	2 56	2 25	.....	8,316 40	244 60	8,071 80	322 65	11 65	321 00	642 00	308 25	321 00	308 25	137
6	1 60	2 56	2 25	.....	5,577 60	174 30	5,403 30	216 13	6 97	209 60	552 96	243 00	276 48	243 00	108
7	1 60	2 56	2 25	.....	1,368 00	42 75	1,325 25	91 20	2 85	88 35	353 28	310 50	353 28	310 50	138
8	1 60	2 56	2 02½	.....	4,262 10	125 65	4,136 45	236 23	6 98	229 25	.....	240 97	.....	240 97	119
9	1 55	2 56	2 25	.....	2,952 30	227 10	2,725 20	134 19	10 32	123 87	803 84	353 25	401 92	353 25	157
10	1 55	2 56	2 25	.....	13,897 95	421 15	13,476 80	434 31	13 16	421 15	1,263 45	1,150 00	412 16	575 00	161
11	1 60	2 56	2 25	.....	3,323 20	103 85	3,219 35	276 93	8 65	266 28	552 96	243 00	276 48	243 00	108
12	1 60	2 56	2 25	.....	10,346 20	304 30	10,041 90	492 68	14 44	478 19	880 64	387 00	440 32	387 00	172
13	1 55	.....	.....	.....	660 00	20 00	640 00	330 00	10 00	320 60	.....	.....	.....	.....	150
14	1 60	.....	.....	.....	408 00	12 00	396 00	204 00	6 00	198 00	.....	.....	.....	.....	100
15	1 55	2 56	2 25	.....	7,072 65	228 15	6,864 50	369 51	10 86	358 65	660 48	290 25	330 24	290 25	129
16	1 55	2 56	2 25	.....	729 30	22 10	707 20	243 10	7 36	235 74	.....	.....	.....	.....	209
17	1 60	2 50	2 25	.....	901 00	26 50	874 50	180 20	5 30	174 90	258 80	.....	258 80	.....	105
18	1 60	2 56	2 25	.....	3,007 50	88 75	2,918 75	150 38	4 45	145 95	542 72	238 50	271 36	238 50	106
19	1 60	2 56	2 25	.....	2,932 80	91 65	2,841 15	488 80	15 27	472 53	829 44	364 50	414 72	364 50	162
20	1 55	.....	.....	.....	2,366 10	71 70	2,294 40	338 01	10 24	327 77	.....	.....	.....	.....	143
21	1 60	2 56	2 25	.....	1,370 00	55 00	1,315 00	137 00	5 50	131 50	220 16	.....	220 16	.....	86
22	1 55	2 56	2 25	.....	9,594 75	290 75	9,304 00	504 94	15 30	499 64	1,750 08	375 75	427 52	375 75	167
23	1 60	2 56	2 25	.....	134 00	3 95	130 00	67 15	1 97	65 18	.....	.....	.....	.....	79
24	1 55	2 56	2 25	.....	24,085 05	729 85	23,355 20	688 15	20 88	667 27	1,374 40	922 50	524 80	461 25	205
25	1 60	2 56	2 02½	(1)685	7,588 80	223 20	7,365 60	344 95	10 15	334 80	1,428 78	.....	476 26	.....	186
26	1 60	2 75	2 25	.....	12,199 20	358 80	11,840 40	432 12	12 82	419 30	913 00	373 50	456 50	373 50	166
27	1 55	2 81	2 02½	.....	6,357 45	192 65	6,166 80	423 83	12 84	410 99	1,562 36	562 95	781 18	562 95	278
28	1 60	2 56	2 50	.....	5,922 80	174 20	5,748 60	269 49	7 92	261 57	993 28	485 00	496 64	485 00	194
29	1 55	2 56	2 25	.....	729 30	22 10	707 20	243 10	7 36	235 74	.....	.....	.....	.....	193
30	1 60	2 56	2 25	.....	6,789 80	199 70	6,590 10	522 26	6 65	515 61	522 24	988 50	261 12	229 50	162
31	1 55	2 56	2 02½	.....	8,792 35	266 75	8,297 95	488 50	20 39	468 11	1,223 68	969 94	611 84	483 78	239
32	1 55	2 56	2 25	.....	1,600 00	50 00	1,550 00	160 00	5 00	155 00	682 80	191 25	227 60	191 25	85
33	1 60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	1 60	2 56	.....	.....	2,147 20	67 10	2,080 10	715 73	3 65	266 28	552 96	243 00	276 48	243 00	108
35	1 60	2 56	2 25	.....	2,303 50	66 75	2,336 75	314 78	9 53	305 35	409 60	.....	409 60	.....	160
36	1 55	2 56	2 25	.....	2,380 00	70 00	2,310 00	397 50	8 75	388 75	536 04	470 25	535 04	470 25	209
37	1 55	2 25	2 02½	.....	495 00	15 00	480 00	495 00	15 00	480 00	.....	.....	.....	.....	100
38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	1,200	$190,383 68	$8,424 80	$181,958 88	$319 36	$13 24	$306 12	$24,536 33	$10,973 29	.....	.....	145

1. Dynamite.

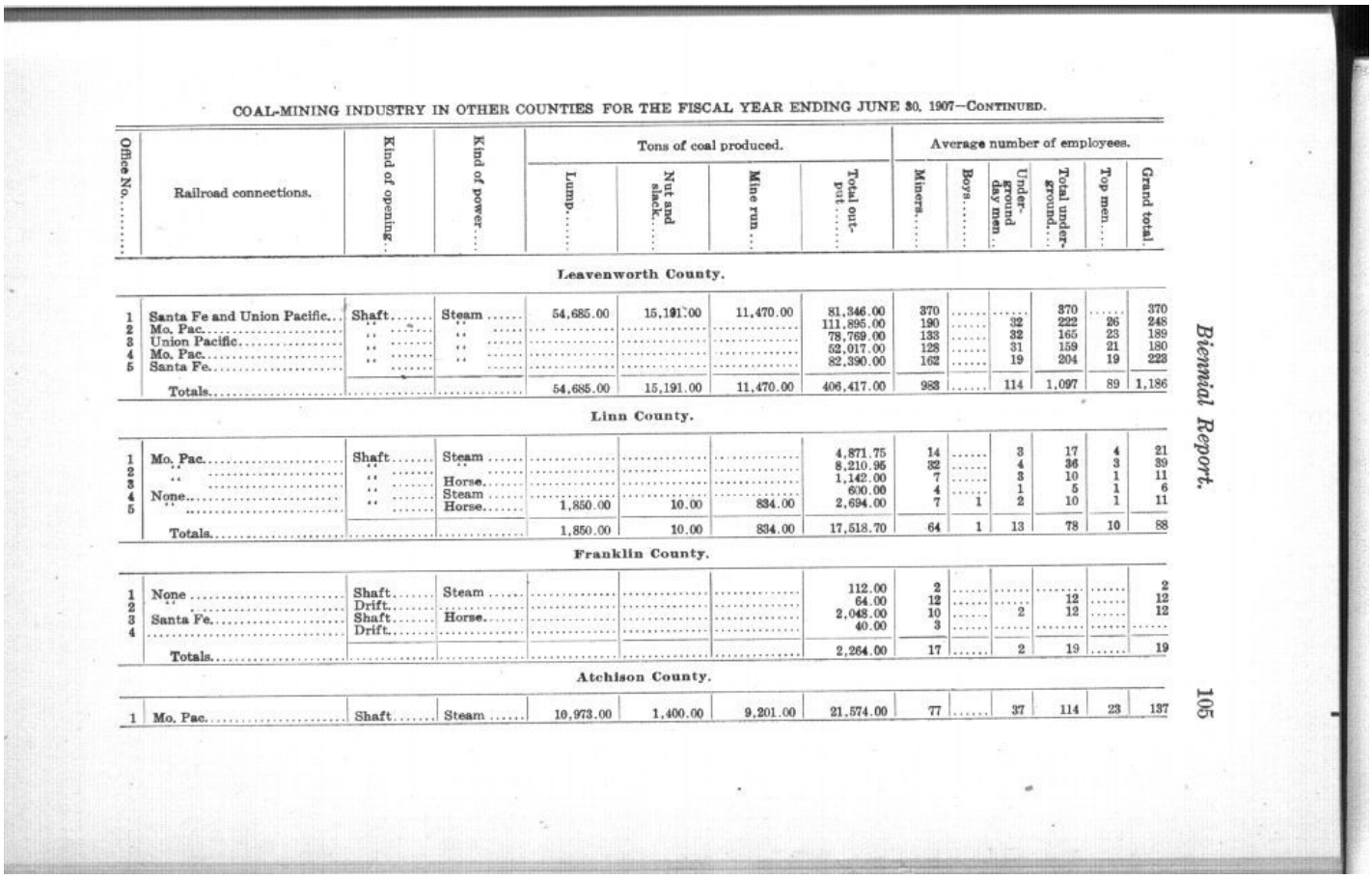
State inspector of coal mines reports



COAL-MINING INDUSTRY IN OTHER COUNTIES FOR THE FISCAL YEAR ENDING JUNE 30, 1907.

Office No.	Name of Operator.	Post-office address.	Number or name of mine.	Mine boss.	Location of mine.
	Leavenworth County.				
1	Kansas state mine	Lansing	Penitentiary	A. Haycke	½ mile from Lansing.
2	Home-Riverside Coal Company	Leavenworth	1	J. Chalmers	Leavenworth, Kan.
3	" " " "	"	2	G. Beet	" "
4	" " " "	"	3	Jno. Barr	" "
5	Car Coal Company	"	1	J. J. Glynn	4 miles south of Leavenworth.
	Linn County.				
1	A. M. Fellows Coal Company	Pleasanton	1	B. S. Seright	2½ miles east Pleasanton.
2	" " " "	"	2	Naly Ralph	3 miles east Pleasanton.
3	G. S. Brown Coal Company	"	Dead Dog	G. S. Brown	3 miles east Pleasanton.
4	Edwards & Dement	"		C. Dement	1½ miles northeast Pleasanton.
5	Thirwell Coal Company	"	Muddy Creek	Jas. Thirwell	1½ miles north Pleasanton.
	Franklin County.				
1	G. H. Caple Coal Company	Ransomville	Caple	G. H. Caple	1 mile northwest Ransomville.
2	Chas. Cochrane Coal Company	"		C. Cochrane	1 mile west and 1 mile north Ransomville.
3	Ransom & Simms	"		Jas. Simmons	On A. T. & S. F. Rly.
4	Riley & Gregg	Williamsburg			1 mile northwest Williamsburg.
	Atchison County.				
1	Citizen's Coal Company	Atchison	Carlisle	Chas. Althroff.	1½ miles southwest Osage.

State inspector of coal mines reports



COAL-MINING INDUSTRY IN OTHER COUNTIES FOR THE FISCAL YEAR ENDING JUNE 30, 1907—CONTINUED.

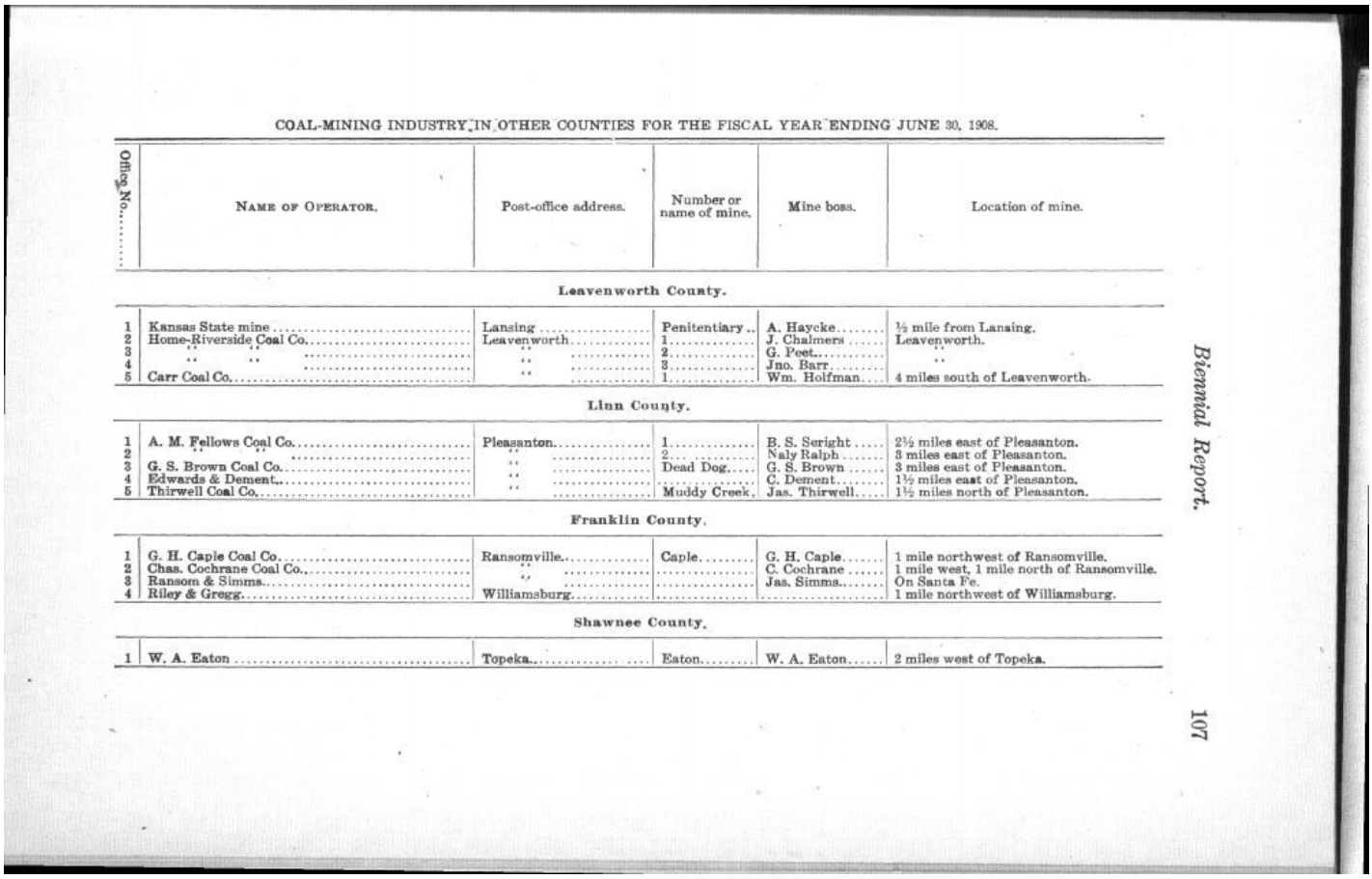
Office No.	Railroad connections.	Kind of opening.	Kind of power.	Tons of coal produced. Lump.	Nut and slack.	Mine run.	Total output.	Average number of employees. Miners.	Boys.	Underground day men.	Total underground.	Top men.	Grand total.
Leavenworth County.													
1	Santa Fe and Union Pacific	Shaft	Steam	54,685.00	15,191.00	11,470.00	81,346.00	370	.....	.....	370	.....	370
2	Mo. Pac.	"	"	.....	.....	.....	111,895.00	190	.....	32	222	26	248
3	Union Pacific	"	"	.....	.....	.....	78,769.00	133	.....	32	165	23	189
4	Mo. Pac.	"	"	.....	.....	.....	52,017.00	128	.....	31	159	21	180
5	Santa Fe	"	"	.....	.....	.....	82,390.00	162	.....	19	204	19	223
	Totals			54,685.00	15,191.00	11,470.00	406,417.00	983	.....	114	1,097	89	1,186
Linn County.													
1	Mo. Pac.	Shaft	Steam	.....	.....	.....	4,871.75	14	.....	3	17	4	21
2	"	"	"	.....	.....	.....	8,210.95	32	.....	4	36	3	39
3	"	"	Horse	.....	.....	.....	1,142.00	7	.....	3	10	1	11
4	None	"	Steam	.....	.....	.....	600.00	4	.....	1	5	1	6
5	"	"	Horse	1,850.00	10.00	834.00	2,694.00	7	1	2	10	1	11
	Totals			1,850.00	10.00	834.00	17,518.70	64	1	13	78	10	88
Franklin County.													
1	None	Shaft	Steam	.....	.....	.....	112.00	2	.....	.....	.....	.....	2
2	"	Drift	.....	.....	.....	.....	64.00	12	.....	.....	12	.....	12
3	Santa Fe	Shaft	Horse	.....	.....	.....	2,048.00	10	.....	2	12	.....	12
4	.....	Drift	.....	.....	.....	.....	40.00	3	.....	.....	.....	.....	.....
	Totals			.....	.....	.....	2,264.00	17	.....	2	19	.....	19
Atchison County.													
1	Mo. Pac.	Shaft	Steam	10,973.00	1,400.00	9,201.00	21,574.00	77	.....	37	114	23	137

State inspector of coal mines reports

COAL-MINING INDUSTRY IN OTHER COUNTIES FOR THE FISCAL YEAR ENDING JUNE 30, 1907—CONCLUDED.

Office No.	Wages paid. Mining price.	Wages paid. Underground day wage.	Wages paid. Top day wage.	Number of kegs of powder used.	Gross earnings of miners.	Gross expense of miners.	Net earnings of miners.	Earnings per miner per year.	Expense per miner per year.	Net earnings per miner per year.	Earnings of day men underground.	Earnings of day men aboveground.	Net earnings per day man underground.	Net earnings per day man aboveground.	Number of days worked.
Leavenworth County.															
1				1,955											230
2	$0 95	$2 56	$2 02½	.....	$117,489 75	$5,594 75	$111,895 00	$618 31	$29 45	$588 86	$19,906 56	$12,793 95	$622 08	$492 06	243
3	95	2 56	2 02½	.....	82,707 85	3,938 45	78,769 00	621 11	29 61	591 50	18,577 76	10,619 10	583 68	461 70	223
4	95	2 56	2 02½	.....	54,617 85	2,600 85	52,017 00	426 70	20 33	406 37	13,253 12	7,101 67	427 52	338 17	167
5	95	2 56	2 02½	.....	86,509 50	4,119 50	82,390 00	533 33	25 49	507 84	12,792 32	10,118 92	673 28	532 97	263
	.....	.....	.....	1,955	$341,324 55	$16,255 55	$325,071 00	$556 81	$26 51	$530 30	$64,629 76	$40,633 64	.....	.....	226
Linn County.															
1	$1 00	$2 81	$2 47	.....	$5,358 93	$243 59	$5,115 34	$382 78	$17 33	$365 45	$1,087 47	$1,274 52	$362 49	$318 63	129
2	1 00	2 70	2 26	.....	9,032 05	410 54	8,621 50	282 25	12 83	269 42	1,393 20	874 62	348 30	291 54	129
3	1 00	2 56	2 02½	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	60
4	1 00	2 56	2 02½	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...
5	1 00	2 28	2 10	38	$3,232 80	210 70	3,022 10	461 83	30 10	431 73	802 56	264 00	401 28	264 00	176
	.....	.....	.....	98	$18,623 78	$864 83	.....	.....	.....	.....	.....	.....	.....	.....	123
Franklin County.															
1	$2 00	.....	.....	.....	$235 20	$5 50	$229 70	$117 60	$2 75	$114 85	.....	.....	.....	.....	60
2	2 00	.....	.....	.....	134 40	3 20	131 20	67 20	1 60	65 50	.....	.....	.....	.....	30
3	1 60	$2 25	$2 02½	.....	3,481 60	107 40	3,379 20	348 16	10 24	337 92	$292 50	.....	$292 50	.....	130
4	2 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...
	.....	.....	.....	.....	$3,851 20	$116 10	$3,735 10	.....	.....	.....	.....	.....	.....	.....	73
Atchison County.															
1	$0 95	$2 56	$2 25	.....	$22,652 70	$1,078 70	$21,574 00	$294 19	$14 01	$280 18	$13,829 12	$6,799 95	$373 76	$295 65	146

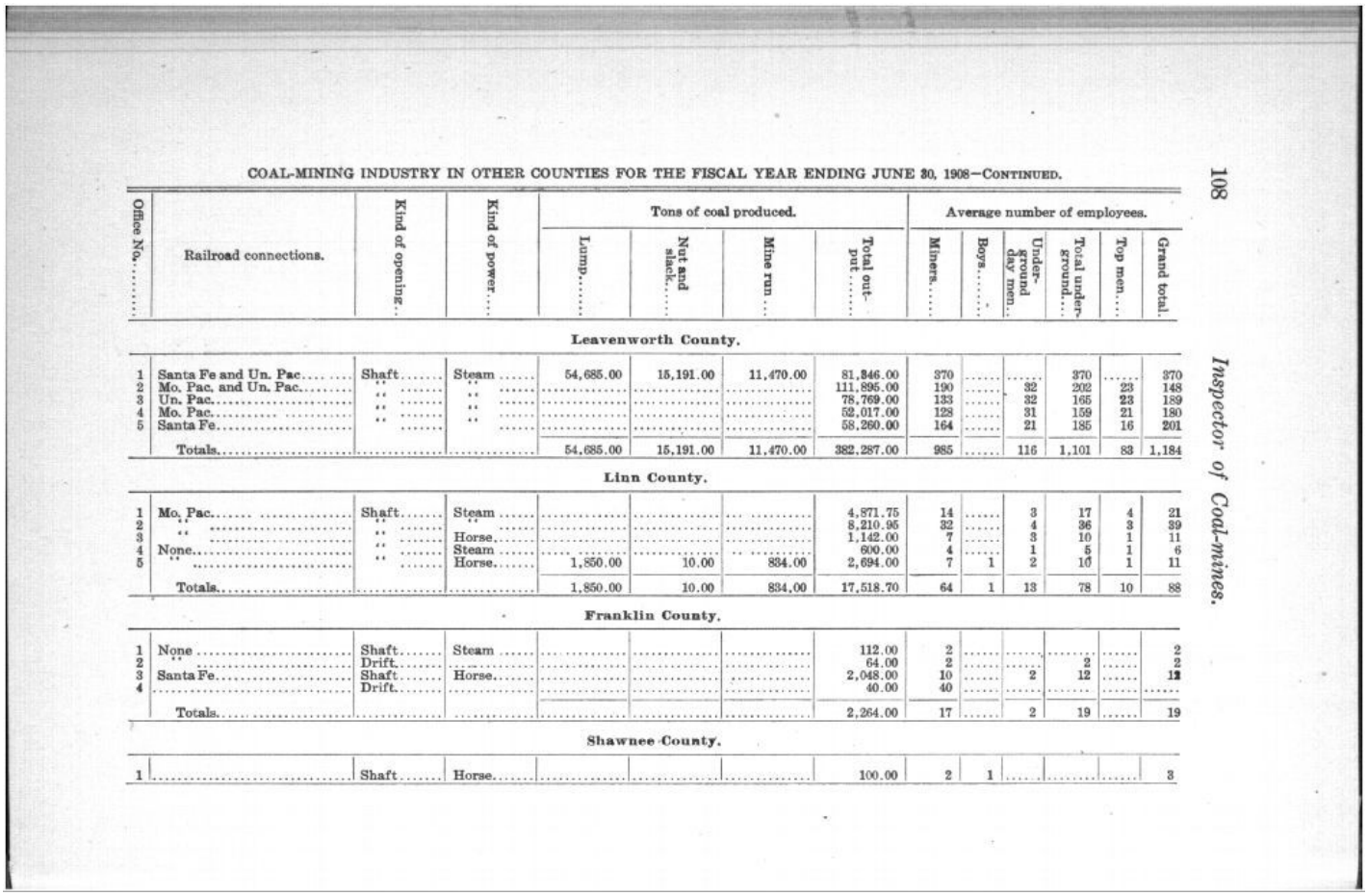
State inspector of coal mines reports



COAL-MINING INDUSTRY IN OTHER COUNTIES FOR THE FISCAL YEAR ENDING JUNE 30, 1908.

Office No.	Name of Operator.	Post-office address.	Number or name of mine.	Mine boss.	Location of mine.
	Leavenworth County.				
1	Kansas State mine	Lansing	Penitentiary	A. Haycke	½ mile from Lansing.
2	Home-Riverside Coal Co.	Leavenworth	1	J. Chalmers	Leavenworth.
3	" "	"	2	G. Peet	"
4	" "	"	3	Jno. Barr	"
5	Carr Coal Co.	"	1	Wm. Holfman	4 miles south of Leavenworth.
	Linn County.				
1	A. M. Fellows Coal Co.	Pleasanton	1	B. S. Seright	2½ miles east of Pleasanton.
2	" " "	"	2	Naly Ralph	3 miles east of Pleasanton.
3	G. S. Brown Coal Co.	"	Dead Dog	G. S. Brown	3 miles east of Pleasanton.
4	Edwards & Dement	"		C. Dement	1½ miles east of Pleasanton.
5	Thirwell Coal Co.	"	Muddy Creek	Jas. Thirwell	1½ miles north of Pleasanton.
	Franklin County.				
1	G. H. Caple Coal Co.	Ransomville	Caple	G. H. Caple	1 mile northwest of Ransomville.
2	Chas. Cochrane Coal Co.	"		C. Cochrane	1 mile west, 1 mile north of Ransomville.
3	Ransom & Simms			Jas. Simms	On Santa Fe.
4	Riley & Gregg	Williamsburg			1 mile northwest of Williamsburg.
	Shawnee County.				
1	W. A. Eaton	Topeka	Eaton	W. A. Eaton	2 miles west of Topeka.

State inspector of coal mines reports



COAL-MINING INDUSTRY IN OTHER COUNTIES FOR THE FISCAL YEAR ENDING JUNE 30, 1908—CONTINUED.

Office No.	Railroad connections.	Kind of opening.	Kind of power.	Tons of coal produced.				Average number of employees.					
				Lump.	Nut and slack.	Mine run.	Total output.	Miners.	Boys.	Underground day men.	Total underground.	Top men.	Grand total.
Leavenworth County.													
1	Santa Fe and Un. Pac.	Shaft	Steam	54,685.00	15,191.00	11,470.00	81,346.00	370			370		370
2	Mo. Pac. and Un. Pac.	"	"				111,895.00	190		32	202	23	148
3	Un. Pac.	"	"				78,769.00	133		32	165	23	189
4	Mo. Pac.	"	"				52,017.00	128		31	159	21	180
5	Santa Fe.	"	"				58,260.00	164		21	185	16	201
	Totals.			54,685.00	15,191.00	11,470.00	382,287.00	985		116	1,101	83	1,184
Linn County.													
1	Mo. Pac.	Shaft	Steam				4,871.75	14		3	17	4	21
2	"	"	"				8,210.95	32		4	36	3	39
3	"	"	Horse				1,142.00	7		3	10	1	11
4	None.	"	Steam				600.00	4		1	5	1	6
5	"	"	Horse.	1,850.00	10.00	834.00	2,694.00	7	1	2	10	1	11
	Totals.			1,850.00	10.00	834.00	17,518.70	64	1	13	78	10	88
Franklin County.													
1	None	Shaft	Steam				112.00	2					2
2	"	Drift.					64.00	2			2		2
3	Santa Fe.	Shaft	Horse.				2,048.00	10		2	12		12
4		Drift.					40.00	40					
	Totals.						2,264.00	17		2	19		19
Shawnee County.													
1		Shaft	Horse.				100.00	2	1				3

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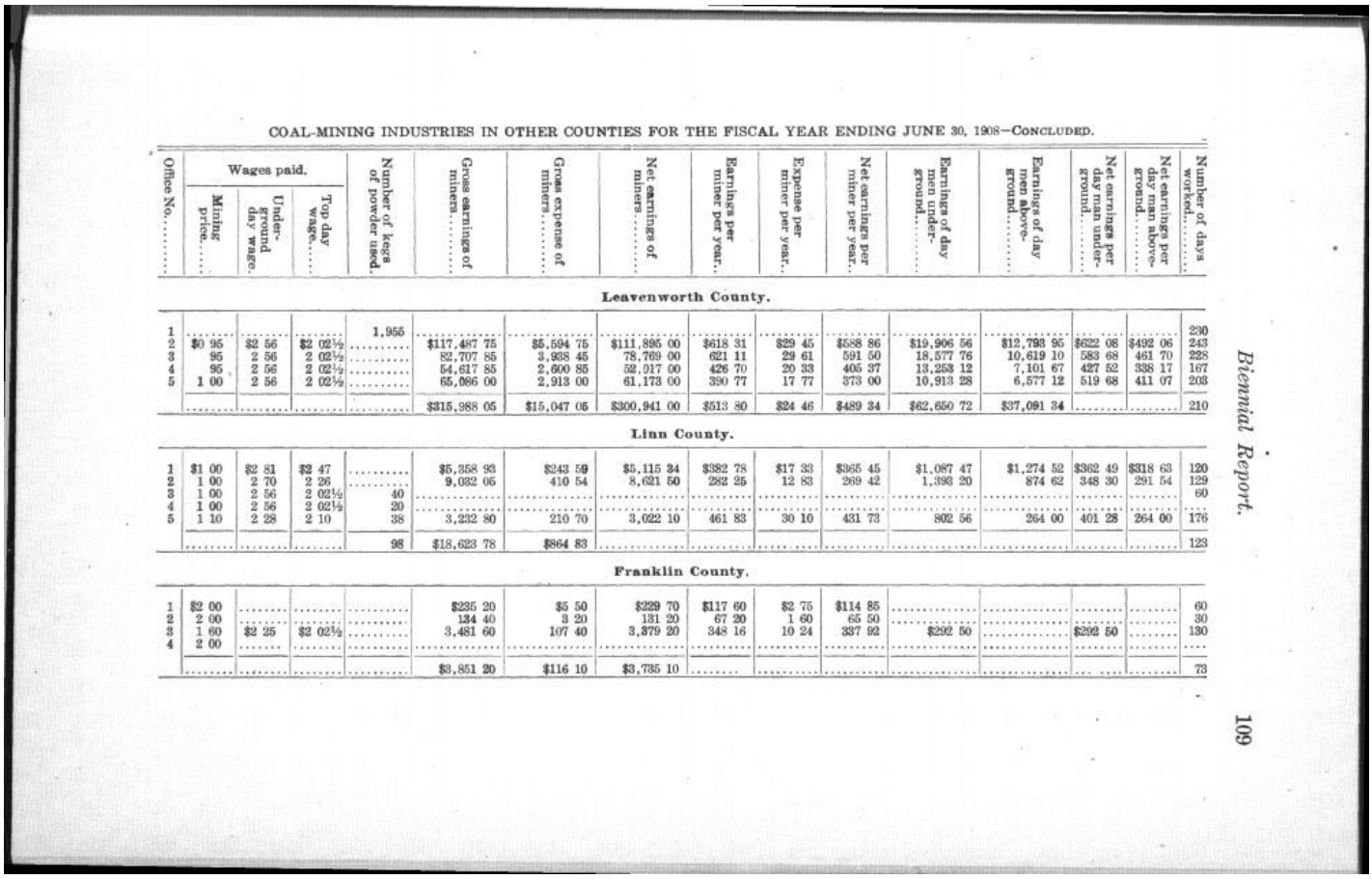

COAL-MINING INDUSTRIES IN OTHER COUNTIES FOR THE FISCAL YEAR ENDING JUNE 30, 1908—CONCLUDED.

Office No.	Wages paid. Mining price.	Wages paid. Underground day wage.	Wages paid. Top day wage.	Number of kegs of powder used.	Gross earnings of miners.	Gross expense of miners.	Net earnings of miners.	Earnings per miner per year.	Expense per miner per year.	Net earnings per miner per year.	Earnings of day men underground.	Earnings of day men aboveground.	Net earnings per day man underground.	Net earnings per day man aboveground.	Number of days worked.
Leavenworth County.															
1				1,955											230
2	$0 95	$2 56	$2 02½		$117,487 75	$5,594 75	$111,895 00	$618 31	$29 45	$588 86	$19,906 56	$12,793 95	$622 08	$492 06	243
3	95	2 56	2 02½		82,707 85	3,938 45	78,769 00	621 11	29 61	591 50	18,577 76	10,619 10	583 68	461 70	228
4	95	2 56	2 02½		54,617 85	2,600 85	52,017 00	426 70	20 33	405 37	13,253 12	7,101 67	427 52	338 17	167
5	1 00	2 56	2 02½		65,086 00	2,913 00	61,173 00	390 77	17 77	373 00	10,913 28	6,577 12	519 68	411 07	203
					$315,988 05	$15,047 05	$300,941 00	$513 80	$24 46	$489 34	$62,650 72	$37,091 34			210
Linn County.															
1	$1 00	$2 31	$2 47		$5,358 93	$243 59	$5,115 34	$382 78	$17 33	$365 45	$1,087 47	$1,274 52	$362 49	$318 63	120
2	1 00	2 70	2 26		9,032 06	410 54	8,621 50	282 25	12 83	269 42	1,393 20	874 62	348 30	291 54	129
3	1 00	2 56	2 02½	40											60
4	1 00	2 56	2 02½	20											
5	1 10	2 28	2 10	38	3,232 80	210 70	3,022 10	461 83	30 10	431 73	802 56	264 00	401 28	264 00	176
				98	$18,623 78	$864 83									123
Franklin County.															
1	$2 00				$235 20	$5 50	$229 70	$117 60	$2 75	$114 85					60
2	2 00				134 40	3 20	131 20	67 20	1 60	65 50					30
3	1 60	$2 25	$2 02½		3,481 60	107 40	3,379 20	348 16	10 24	337 92	$292 50		$292 50		130
4	2 00														
					$3,851 20	$116 10	$3,735 10								73

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ACCIDENTS.

During the year ending June 30, 1907, there were more fatal accidents in the coal-mines of Kansas than ever before. There were eight shot-firers killed, which is a very large percentage of the number of shot-firers employed. Investigation of the causes of deaths indicates that they were due to the large amount of powder which is being used in the coal-mines of Kansas.

The method of mining coal has been greatly changed in the last ten or twelve years, and shots then considered large are now considered very small. Prior to that time the miner would prepare his shot by mining and cutting, and no man was considered a miner unless he could use a pick. And in going back a little farther, before the shot-firing law came into effect it was seldom an explosion occurred, owing to the preparations just mentioned.

The coal that was mined in those days was nearer to the crop, softer, and easier shot down than the coal they are mining now. From a wage-earners' view-point it is necessary for them to use more powder than in the vein which is closer to the crop, as the coal is deeper, some of the mines being 240 feet deep. The coal vein is thinner and harder, requiring more powder, and the miner feels that at seventy-two cents per ton he cannot make wages unless he can shoot it off of the solid, especially since a great number of miners who are now employed know no other method of mining. This forces the old practical miner to mine his coal in the same manner as do those who have never used a pick—simply blow it out. Some of them mix their shots with dynamite and black powder, and drill in such a manner that the powder can do nothing but come out of the hole it had been put in, probably cracking the coal a little as it comes out.

It has been a common practice for this class of miners to drill a hole from six to eight feet deep, directly in on the solid, and put in from nine to sixteen sticks of dynamite, simply causing a crack in the coal. In some places the shot-firer refuses to fire such a shot. Being a member of the local union, the union has taken it up and fined him for not lighting that kind of shots. However, when it has been brought to my attention I have informed them that they had no authority for requiring a shot-firer to fire these unlawful shots, and in those cases where my attention had been drawn to it by the shot-firer the fine was remitted.

Every coal-miner or operator in Kansas knows that the great amount of powder that is being used, being placed in the shot that has been prepared only by drilling into the solid to make a crack so as to give a chance for another shot, is the

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initial cause of all the explosions that take place in Kansas; and I feel that it is a very hard task for me to change this method, since the miner will insist that he cannot make wages if he is not allowed to shoot the coal on the solid, and the operator will insist that he will be compelled to pay more per ton to have the coal mined if he refuses to allow the miners the privilege of shooting on the solid and forces them to mine the shots and prepare them. In this connection I find the state law requires that the miner shall mine or cut his shot on the clear, and that if he drills a hole on the solid, or if he drills what is known as a gripping shot, he will have committed a misdemeanor, but there is no fine for committing this misdemeanor. The attorney-general has given it as his opinion on this law that the miner who prepares the unlawful shot is not subject to a fine but that the shot-firer who fires it can be fined; therefore, it is impossible for this department to enforce that law, especially since the operators seem to hold to it so they can produce this coal cheaply enough to compete with other states, and as a large percentage of the miners know no other method of mining coal.

W. H. Barrett, one of the oldest and best posted mining operators of this field, while developing a new mine at Stone City, gave orders that all shots should be cut in the clear before being fired. The shot-firer, after lighting one side of the mine, would run to the bottom and would be hoisted before the shots would go off. After working with this method for quite a while the superintendent who had charge of the mine complained to Mr. Barrett that they were not producing enough coal per miner, and asked that they be allowed to prepare their shots as they were doing in other parts of this district—that is, drilling them on the solid past the cutting, and making a crack in the coal, giving a chance for another shot. Mr. Barrett, who had worked on this other system to protect his property, finally consented, and allowed the miners to prepare their shots the way they had been accustomed to. The first shots fired after drilling on the solid caused an explosion. Nobody was hurt, as there was no one in the mine at the time, but the property was damaged considerable, the force of the explosion blowing a flame right out of the mine, thus proving what we all know, that it is drilling on the solid, thereby requiring more powder, that is the initial cause of all the explosions in Kansas.

This has been demonstrated in several other new mines, where they had been preparing their shots in this manner. While it is a misdemeanor, there is no fine attached, making it impossible for this department to change this method. We then do the next best thing to reduce the probability of explosions by ordering them to slow down the fan when firing shots, to have the roads sprinkled, to order the shot-firers to fire slowly, to fire no shot which might throw fire, and to make

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safety-holes in each section of the mine for them to go into; but all these precautions appear like trying to catch a man after he has been thrown from a precipice.

Sometimes, when all of these precautions are taken, we get along for a while without an explosion, as they do reduce the liability of them some; but when shots are drilled directly into the coal face and have no chance of throwing any coal, but the force of the powder when ignited must come back through the hole which the miner had drilled, the effect in the entry would be the same as if a large cannon was placed at the head of the entry and filled with 700 or 800 times as much powder an an ordinary rifle, and then shot down the entry. Several of these shots going off at about the same time in the various entries, probably just after 100 or 150 kegs of powder have been exploded in the mine in the various working-places, will give some idea of how hard it is to stop explosions in the coal-mines of Kansas while the present method of mining is employed, for does any one think, if a cannon were placed at the head of the entries and filled with as much powder as is usually put in one of those tight shots, and exploded when the mine had just been filled with hot, seething smoke, it would be possible by sprinkling the roads and slowing down the fan to make that mine absolutely exempt from danger of an explosion?

The lives lost and injuries received in these explosions are not the only ones that can be traced directly to this method of mining coal, forty per cent. of the miners' lives lost being caused by falling roof while at work in their places. A very large percentage of these deaths can be traced to this method of mining, as it is a common occurrence for the miner to blow every prop out of his room by the shots which are ignited by the shot-firer after he has completed his day's work and gone home. The next morning he sets them up again and proceeds to blow them out the following evening. This is continued day after day. Of course, all of the miners do not blow out all of their props, but it is no uncommon thing to go into a place and find the props that had been holding up the roof all blown out and a great many of them covered with coal from the shots. The miner, on entering his room in the morning, finding his props all blown out and his track covered with coal, unless he is a very careful one, usually begins close to his switch, shoveling the coal into his car as he proceeds in cleaning his road. He generally loads one or probably more cars before he starts setting the props that had been blown out. Of course this is not true of all the miners, for a careful miner would begin propping at once. The careful miner, although compelled to fire more large or more tight shots than he feels he should, in endeavoring to produce as much as the miner who blows his coal clear out and across his place every night, does not shoot his props out so frequently. This continual shooting out of the props makes the miner used to it and hardens him to the

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presence of so many death-dealing forces that he really becomes unconscious of the danger. It is obvious that if the miner did not blow out his props constantly, but kept his place well timbered close up to his working-face, he would realize the danger on going into a place where all the props had been blown out, and would hesitate about staying in there very long, for it is the unaccustomed danger that he will observe very quickly.

Another danger which the miner seems unconscious of is the handling of powder. He will proceed to make up his cartridge and fill it with powder, with his lamp swinging back and forth with every movement of his head, and sometimes smoking. If his lamp becomes dry the wick will become charred and sparks will fall close to or around the powder; and if he is in a hurry and notices a spark fall he will simply move his head a little to the side and continue to fill his cartridge. But often, as in the case of a fall of rock where the miner intended to prop his place just after he had loaded his car but never finished loading his car because the rock fell first, so also the spark from his lamp or pipe either ends his life or maims him very badly.

These are some of the dangers which are constantly before the miner. There are certain risks which the miner is compelled to take which would be horrifying to one not accustomed to them, but there are other risks to which he has become accustomed that I believe could be avoided, and I believe in making agreements between the miners and the operators that this high death-rate should be a large factor in determining the method by which the coal should be mined.

The following report was given out by three foreign experts, and if their recommendations were followed no doubt the death-rate would be much less in this field. One of the first recommendations is that shooting in or off the solid should not be practiced. Here is their report in full:

To the Honorable The Secretary of the Interior:

SIR—In response to your request that we coöperate with the United States Geological Survey in the inauguration of its investigations looking to the prevention of mine explosions, and that we submit for the consideration of those connected with the coal-mining industry in the United States such recommendations as experience in our own countries and observation among American coal-mines indicates may be useful in providing for greater safety, we beg to submit the recommendations given below.

Since coming to the United States, we have given careful attention to and approve the investigations in relation to this subject begun by the Geological Survey. We have visited typical mines in the more important coal-fields of the United States, and have discussed the mining problems with many coal operators, miners and state inspectors.

To be effective, investigations for the benefit of mining must be continuous. The opening up of new mines, the deepening of old mines, the meeting with new conditions, the changing of explosives, and the inauguration of new processes and methods will call for continuous investigations, to be followed by continuous educational work.

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Our investigations and recommendations relate primarily to questions of safety in mining; but in this connection we have been greatly impressed with another closely associated phase of the industry, viz., the large and permanent loss of coal in mining operations in many portions of the United States. This is a serious, permanent and national loss. It seems to be a natural outcome of the ease with which coal has been mined in the United States and the enormously rapid growth of the industry.

The active competition among the operators and the constant resulting effort to produce cheaper coal has often naturally led to the mining of only that part of the coal which could be brought to the surface most easily and cheaply, leaving underground, in such condition as to be permanently lost, a considerable percentage of the total possible product. Certainly much of this loss can be prevented through the introduction of more efficient mining methods, such as the long-wall system, more or less modified, and the flushing method. (See *h*, 7.)

In the preparation of these recommendations we have recognized fully the great differences between the mining conditions in Europe and those in America, where the industry has developed so rapidly that thorough organization has not yet been possible; where a large percentage of the men entering the mine are unfamiliar either with mining methods or the English language; and where the price of coal at the mine is less than half that in Europe. Nevertheless, we believe that these recommendations will be found useful in the further development of the American coal-mining industry for safety and efficiency. The cordial reception everywhere accorded us leads us to believe that these recommendations will be received by the operators and miners in the same spirit of good will as that in which they have been prepared. But the success of this movement for greater safety and efficiency will depend upon the hearty and patient coöperation of the operators and the miners, working together for the accomplishment of this purpose.

RECOMMENDATIONS.

(*a*) *Selecting the explosives to be used.*

1. We recommend that the government of the United States examine the explosives now and hereafter used in mining, with a view to eliminating the more dangerous explosives and to improving and standardizing such explosives as may be considered most suitable for such use, these to be designated by the government "permissible explosives."

The term "permissible explosives" is suggested for the reason that no explosives are entirely safe, and all of them develop flame when ignited; and we advise therefore against the use in the United States of the terms "safety explosives" or "flameless explosives," as these terms may be misunderstood and this misunderstanding may endanger life.

2. We recommend that the operators and miners of coal use only such explosives as are included in a list of "permissible explosives," when the same has been published by the government, in all mines where there is risk of igniting either dust or gas, selecting that one which their own experience indicates can be used to the best advantage under local conditions.

3. We also recommend that investigations be conducted to determine the amount of charge of such "permissible explosives" which may be used to the best advantage under different conditions with a view to reducing danger to the minimum.

(*b*) *Carrying the explosives into the mines.*

1. All explosives should be made into cartridges and placed in closed receptacles before being carried into the mine, and the quantity carried into the mine during one day by any miner should be limited as nearly as practicable to the quantity needed by him for use during that day. Han-

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dling loose explosives and making them into cartridges by an open light in the mine should be prevented.

2. Detonators or caps should be handled with great care, and should be carried only by a limited number of responsible persons.

(*c*) *Use of explosives in the mine.*

1. Shooting in or off the solid should not be practiced.

2. The depth of the shot hole should be less by at least six inches than the depth of the cutting or mining. The use of very deep shot holes should be avoided as unnecessarily dangerous.

3. The overcharging of shots (the use of a larger charge than is required to do the work satisfactorily) should also be avoided as unnecessary and dangerous. The proper standardization of explosives used in coal-mining will greatly facilitate the carrying out of this recommendation. (See, also, *a*, 1.)

4. Shots should never be tamped with fine coal or material containing coal. Clay or other suitable material should be supplied and used for this purpose.

5. The firing of two or more shots in one working-place, except simultaneously by electricity, should not be allowed until a sufficient interval has elapsed between the firings to permit an examination of the working-place in order to see whether any cause of danger has arisen.

6. Before a shot is fired the fine coal should be removed from the working-place, as far as practicable, and the coal-dust on the floor, side and roof, for a distance of at least twenty yards from the place where the shot is to be fired, should be thoroughly wet, unless it has been demonstrated that the dust in the mine is not inflammable. (See, also, *e*, 1.)

7. If gas is known to occur in the mine, no shot should be fired until, in addition to the watering, an examination made immediately preceding the time for firing, by a competent person, using a lamp which will easily detect two per cent. of gas, has shown the absence of that amount of gas from all spaces within twenty yards of the point where the shot is to be fired.

8. Believing that such will be one of the greatest advances which can be made in safe-guarding the lives of the miners, we recommend the adoption of a system of electric shot-firing, in all mines where practicable, by which all shots in the mine, or in each ventilation district of the mine, may be fired simultaneously, at a time when all miners and other employees are out of the mine.

(*d*) *Keeping the mine roadways clean.*

1. The roadways of the mines should be kept as free as possible from loose coal which may be ground into dust and of rubbish in which such dust may accumulate, in order to facilitate the removal and wetting of the dust.

(*e*) *Wetting the coal-dust.*

1. In all coal-mines where explosives are used it is desirable, and in all mines containing gas it is highly important, that the dust on the walls, timbers and floors of the working-places and roadways should be kept continually wet prior to and during the work in the mine. If, however, conditions of roof or lack of water render this general watering impracticable, at least the dust within twenty yards of each shot should be wet before each firing, and other precautions against explosions should be practiced with unusual care.

It is our opinion that a system of watering which occasionally sprinkles the floor only and leaves dry the dust on the walls and timbers of the roadways is useless, and is also dangerous in that it may generate an unwarranted feeling of security against an explosion.

(f) Special precautions for mines containing gas.

1. In any mine where as much as two per cent. of gas can be detected by suitable method only locked safety-lamps of an approved type should be used so long as such condition exists or is likely to recur.

All safety-lamps should be maintained in good condition, cleaned, filled, kept in a special room at the surface, and carefully examined both when delivered to the miner and when returned by him at the close of each day's work. A defective safety-lamp is especially dangerous because of the false feeling of security it engenders.

In the filling of lamps with benzine or other low-flash oils, which should always be done at the surface, special precautions against fire or explosions should be taken.

(g) Use of Electricity.

1. Electricity in mining operations offers so many advantages, and has been so generally adopted, that no reasonable objection can be made to its use under proper restrictions. The electrical equipment, however, should be installed, maintained and operated with great care, and so safeguarded as to minimize danger from fire or shock. The fact that the effectiveness of some insulating materials is soon destroyed in most mines should not be lost sight of.

We recommend the following precautions: For distribution underground the voltage should not exceed 650 direct current or 500 alternating current, these voltages being intended for transmission to machinery operating at 500 volts direct current and 440 volts alternating current, respectively. Even lower voltages are preferable. The trolley wires should be installed in such manner as to render shocks least likely; that is, placed either high enough to be beyond easy reach or to one side of the track and properly protected.

Where current at a potential of more than 650 volts is employed for transmission underground, it should be transmitted by means of a completely insulated cable; and where a lead or armored covering is used, such covering should be grounded.

In all mines having electric installation special precautions should be taken against the setting on fire of coal or timber. Inclosed fuses or cut-outs are recommended, and each branch heading should be so arranged that the current may be cut off when necessary.

No live electric wire should be permitted in that part of any mine in which gas is found to the amount of two per cent.

In all mines producing gas in dangerous quantities, as indicated by a safety-lamp which will detect two per cent. of gas, the working-places should be examined for gas by a qualified man, using such a lamp, immediately before any electric machine is taken or operated there.

(h) Precautions against miscellaneous accidents.

1. In all new construction, shaft lining and superstructures about the entrance of the shaft (or slopes or drifts) should be built as far as practicable of non-combustible materials.

About the entrances to mines, every possible precaution should be taken to prevent fires or the injury of the equipment for ventilation and haulage. Ventilating fans should be placed to one side of the mine opening, and hinged doors or light timbering should render easy the escape of the explosive force in direct line of the shaft or slope.

Proper precautions should be taken for immediately preventing the entrance into the mine of heat and gases and for facilitating the escape of the men in case of surface or shaft fires.

2. The surface equipment for handling the coal should be so arranged as to prevent coal-dust entering into the mine shaft.

3. In all new mines, and in all old mines as far as practicable, suitable man roads should be provided for the men separate from the main haulage roads.

4. In connection with the system of ventilation it is recommended that

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in the more frequented roads connecting the intake with the return aircourses, two doors be provided, these doors to be placed at such a distance apart that while one is open the other is closed.

5. In view of the large number of accidents from falls of coal or roof, under the existing practice with single props, more attention should be given to the introduction in mines where the roof is bad of better systems of timbering, such as have been long in use with economy and safety in many well-managed mines.

6. In undercutting coal by hand, the premature fall of the coal should be prevented by sprags or other suitable supports.

7. We believe that the difficulties and dangers encountered in the working of coal seams which are thick and steeply pitching, or of which the coal is highly inflammable in character or subject to firing from spontaneous combustion, and in mines where the subsidence of the surface must be avoided, may be successfully and economically overcome in many cases through the adoption of the flushing system of mining—that is, the filling with sand or other similar materials of the space from which the coal is removed. This system originated in the United States and is now successfully practiced in portions of Germany, Austria, Belgium, and France.

(*i*) *Mine supervision and inspection.*

1. We cannot too strongly emphasize the fact that thorough discipline about the mine is absolutely essential to safety, and that thorough discipline can be brought about only through the hearty coöperation of the operators, the miners, and the state.

2. We are of the opinion that the responsibility for safety in the mine should primarily rest with some person, such as the manager or superintendent, clothed with full authority; and that such person can greatly facilitate the attainment of safety through the employment of a sufficient number of foremen, and also of one or more inspectors whose special duty it shall be to see that the regulations are strictly enforced.

3. The state cannot exercise too much care concerning the experience, technical training and selection of its inspectors. Their positions should be made independent of all considerations other than that of efficiency; and their continuance in the service should be coexistent with good behavior and proper discharge of official duty.

(*j*) *Training for mine foremen, inspectors, etc.*

We are of the opinion that the cause of both safety and efficiency in coal-mining in the United States would be greatly aided through the establishment and maintenance in the different coal regions of special schools for the training of fire bosses, mine foremen, superintendents, and inspectors. The instruction in such schools should be practical rather than theoretical.

The work of these schools would supplement most effectively that of the colleges already established in many parts of the country for the more thorough training of mining engineers.

Respectfully submitted.

VICTOR WATTEYNE.
CARL MEISSNER.
ARTHUR DESBOROUGH.

LIST OF PERMISSIBLE EXPLOSIVES.

As a part of the investigation of mine explosions authorized by Congress in May, 1908, it was decided by the Secretary of the Interior that a careful examination should be made of the various explosives used in mining operations, with a view to determining the extent to which the use of such explosives might be responsible for the occurrence of these disasters.

The preliminary investigation showed the necessity of subjecting to rigid tests all explosives intended for use in mines where either gas or dry

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inflammable dust is present in quantity or under conditions which are indicative of danger.

With this in view, a letter was sent by the director of the United States Geological Survey on January 9, 1909, to the manufacturers of explosives in the United States, setting forth the conditions under which these explosives would be examined and the nature of the tests to which they would be subjected.

Inasmuch as the conditions and tests described in this letter were subsequently followed in testing the explosives given in the list below, they are here reproduced, as follows:

"1. The manufacturer is to furnish 100 pounds of each explosive which he desires to have tested; he is to be responsible for the care, handling and delivery of this material at the testing station on the United States arsenal grounds, Fortieth and Butler streets, Pittsburg, Pa., at the time the explosive is to be tested; and he is to have a representative present during the tests, who will be responsible for the handling of the packages containing the explosives until they are opened for testing.

"2. No one is to be present at or to participate in these tests except the necessary government officers at the testing station, their assistants, and the representative of the manufacturer of the explosives to be tested.

"3. The tests will be made in the order of the receipt of the applications for them, provided the necessary quantity of the explosive is delivered at the plant by the time assigned, of which due notice will be given by the Geological Survey.

"4. Preference will be given to the testing of explosives that are now being manufactured and that are in that sense already on the market. No test will be made of any new explosive which is not now being manufactured and marketed, until all explosives now on the market that may be offered for testing have been tested.

"5. A list of the explosives which pass certain requirements satisfactorily will be furnished to the state mine inspectors, and will be made public in such further manner as may be considered desirable.

"Test requirements for explosives.

"The tests will be made by the engineers of the United States Explosives Testing Station at Pittsburg, Pa., in gas and dust gallery No. 1. The charge of explosive to be fired in tests 1, 2 and 3 shall be equal in disruptive power to one-half pound (227 grams) of forty-per-cent. nitroglycerin dynamite in its original wrapper, of the following formula:

Nitroglycerin	40
Nitrate of sodium	44
Wood pulp	15
Calcium carbonate	1
	100

"Each charge shall be fired with an electric fuse of sufficient power to completely detonate or explode the charge, as recommended by the manufacturer. The explosive must be in such condition that the chemical and physical tests do not show any unfavorable results. The explosives in which the charge used is less than 100 grams (0.22 pound) will be weighed in tinfoil without the original wrapper.

"The dust used in tests 2, 3 and 4 will be of the same degree of fineness and taken from one mine. [With a view to obtaining a dust of uniform purity and inflammability.]

"*Test 1.*—Ten shots with the charge as described above, in its original wrapper, shall be fired, each with one pound of clay tamping, at a gallery temperature of 77 degrees F., into a mixture of gas and air containing eight per cent. of methane and ethane. An explosive will pass this test if all ten shots fail to ignite the mixture.

"*Test 2.*—Ten shots with charge as previously noted, in its original wrapper, shall be fired, each with one pound of clay tamping at a gallery

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temperature of 77 degrees F., into a mixture of gas and air containing four per cent of methane and ethane and twenty pounds of bituminous coal-dust, eighteen pounds of which it to be placed on shelves laterally arranged along the first twenty feet of the gallery, and two pounds to be placed near the inlet of the mixing system in such a manner that all or part of it will be suspended in the first division of the gallery. An explosives will pass this test if all ten shots fail to ignite the mixture.

"*Test 3.*—Ten shots with charge as previously noted, in its original wrapper, shall be fired, each with one pound of clay tamping at a gallery temperature of 77 degrees F., into forty pounds of bituminous coal-dust, twenty pounds of which is to be distributed uniformly on a horse placed in front of the cannon and twenty pounds placed on side shelves in sections 4, 5 and 6. An explosive will pass this test if all ten shots fail to ignite the mixture.

"*Test 4.*—A limit charge will be determined within twenty-five grams by firing charges in their original wrappers, untamped, at a gallery temperature of 77 degrees F., into a mixture of gas and air containing four per cent. of methane and ethane and twenty pounds of bituminous coal-dust, to be arranged in the same manner as in test 2. The limit charge is to be repeated five times under the same conditions before being established.

"*Note.*—At least two pounds of clay tamping will be used with slow-burning explosives.

"WASHINGTON, D. C., January 9, 1909."

In response to the above communication applications were received from twelve manufacturers for the testing of twenty-nine explosives. Of these explosives, the seventeen given in the following list have passed all the test requirements set forth, and will be termed permissible explosives.

Subject to the conditions named below, a permissible explosive is defined as an explosive which has passed gas- and dust-gallery tests Nos. 1, 2 and 3 as described above, and of which in test No. 4 one and one-half pounds (680 grams) of the explosive has been fired into the mixture there described without causing an ignition.

Permissible explosives tested prior to May 15, 1909.

Ætna coal powder A, Ætna Powder Co., Chicago, Ill.
Ætna coal powder B, Ætna Powder Co., Chicago, Ill.
Carbonite No. 1, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 2, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 3, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 1 L. F., E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 2 L. F., E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Coal special No. 1, Keystone Powder Co., Emporium, Pa.
Coal special No. 2, Keystone Powder Co., Emporium, Pa.
Coalite No. 1, Potts Powder Co., New York city.
Coalite No. 2 D., Potts Powder Co., New York city.
Collier dynamite No. 2, Sinnamahoning Powder Co., Emporium, Pa.
Collier dynamite No. 4, Sinnamahoning Powder Co., Emporium, Pa.
Collier dynamite No. 5, Sinnamahoning Powder Co., Emporium, Pa.
Masurite M. L. F., Masurite Explosives Co., Sharon, Pa.
Meteor dynamite, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Monobel, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.

Provided:

1. That the explosive is in all respects similar to the sample submitted by the manufacturer for test.

2. That double-strength detonators are used of not less strength than one gram charge consisting by weight of ninety parts of mercury fulminate and ten parts of potassium chlorate (or its equivalent), except for the explosive "Masurite M. L. F.," for which the detonator shall be of not less strength than one and one-half grams charge.

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3. That the explosive, if in a frozen condition, shall be thoroughly thawed in a safe and suitable manner before use.

4. That the amount used in practice does not exceed one and one-half pounds (680 grams) properly tamped.

The above partial list includes the permissible explosives that have passed these tests prior to May 15, 1909. The announcement of the passing of like tests by other explosives will be made public immediately after the completion of the tests for such explosives.

A description of the method followed in making these and the many additional tests to which each explosive is subjected, together with the full data obtained in each case, will be published by the Survey at an early date.

Notes and suggestions.

It may be wise to point out in this connection certain differences between the permissible explosives as a class and the black powders now so generally used in coal-mining, as follows:

(*a*) With equal quantities of each, the flame of the black powder is more than three times as long and has a duration 3000 to more than 4000 times that of one of the permissible explosives, also the rate of explosion is slower.

(*b*) The permissible explosives are one and one-fourth to one and three-fourths times as strong and are said, if properly used, to do twice the work of black powder in bringing down coal; hence only half the quantity need be used.

(*c*) With one pound of a permissible explosive or two pounds of black powder, the quantity of noxious gases given off from a shot averages approximately the same, the quantity from the black powder being less than from some of the permissible explosives and slightly greater than from others. The time elapsing after firing before the miner returns to the working-face or fires another shot should not be less for permissible explosives than for black powder.

The use of permissible explosives should be considered as supplemental to and not as a substitute for other safety precautions in mines where gas or inflammable coal-dust is present under conditions indicative of danger. As stated above, they should be used with strong detonators; and the charge used in practice should not exceed one and one-half pounds, and in many cases need not exceed one pound.

Inasmuch as no explosive manufactured for use in mining is flameless, and as no such explosive is entirely safe under all the variable mining conditions, the use of the terms "flameless" and "safety" as applied to explosives is likely to be misunderstood, may endanger human life, and should be discouraged.

JOSEPH A. HOLMES,
Expert in Charge Technologic Branch.

Approved, May 18, 1909.
GEO. OTIS SMITH, *Director.*

FATAL ACCIDENTS, 1907.

There were fifty-two fatal and ninety-seven non-fatal accidents occurring in and around the coal-mines of the state during the year beginning July 1, 1906, and ending June 30, 1907. Two serious explosions, one killing seven and the other killing three, increased the number of fatal accidents. As the explosion which killed those seven men occurred before they had begun work it could hardly be accredited to the mining of coal.

The large number of non-fatal accidents occurring this year were not of a serious nature, but I have endeavored to record

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each accident that occurred, even though the man was only laid off for a few days.

Fatal accidents occurred in the following counties:

Crawford county	29
Cherokee county	21
Osage county	1
Lynn county	1
Total	52

The causes were as follows:

Fall of roof and coal	22
Heart failure	2
A sinker, by a stone falling down the shaft	1
By a trip of cars	1
Falling down shaft	2
Explosion of powder	10
Shot-firers, smothered	5
Shot-firer, by a shot	1
Shot-firers, by explosion	3
Miners, premature shot	2
Coming up on cage	1
Top man, fell off tipple	1
Top man, run over by railway cars	1
Total	52

During the year beginning July 1, 1907, and ending June 30, 1908, there were thirty-one fatal and seventy-two non-fatal accidents.

Fatal accidents occurred in the following counties:

Crawford county	18
Cherokee county	10
Leavenworth county	2
Osage county	1
Total	31

The causes were as follows:

Fall of roof and coal	16
Heart failure	2
Shot-firers, by explosion	5
Shot-firer, smothered	1
Shot-firers, hit by shot	2
Coming up on cage	1
Cager, caught by cage	1
Caught in pump-wheel on top	1
Top man, fell off dirt dump	1
Fell down shaft	1
Total	31

JULY 1, 1906, TO JUNE 30, 1907.

1. Fatal accident to Louis Sacco, July 20, 1906, at mine No. 16 of the Cockerill Coal Company. He was fifty years of age, and was killed by fall of rock.

2. Fatal accident to Joe Rushin, on July 23, 1906, at C. C. C. C. mine No. 31. Died from heart failure. He was loading

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a car, when he became sick. He came out of his room and sat down on the entry to rest, when he fell over dead.

3. Fatal accident to James Grizzel, August 27, 1906, at the Columbus Coal Company, in a new mine close to Mulberry. He was employed in the sinking of this mine, and was instantly killed by a piece of slate which struck him on the head as it fell from the bucket which was being hoisted.

Geo. McVeigh states: "I did not work at this tub particularly and therefore did not notice any loose rock on it. Mr. Grizzel was very careful while at his work, and had been a sinker nearly all his life."

S. M. McDoniel, a man employed in sinking this mine, states: "I believe the place where the bucket comes through at the top is three feet square. I did not see any stone hanging over the edge of the tub. I stand with my hand on the rope at all times to start the tub out and have told the boys several times to be careful."

From the evidence given, I could not determine the cause of the rock falling out of the bucket.

4. Fatal accident to Hugh McNelia, August 15, 1906, at mine No. 14 of the Western Coal and Mining Company. They were sinking this shaft and using but one car for hoisting. Mr. McNelia had gone to put an empty car on the cage and evidently did not see that the cage was on the bottom. He pushed the car into the shaft and fell in after it. He was killed instantly.

5. Fatal accident to Stephen Seeley, August 1, 1906, at abandoned mine No. 37 of the C. C. & C. He was a little boy and was playing around the old shaft, when he crawled through the fence and fell to the bottom.

6. Fatal accident to Frank Riley, August 24, 1906, at mine No. 6 of the Cherokee-Pittsburg Coal and Mining Company. He was employed as a driver and was caught under a fall of timber and rock, dying a short time after being taken out.

Statement of Mr. Fernotti: "I was within fifteen feet of this accident. I had ridden out with the driver. He made us get out of the car and started his mule to pull the car down, when the mule turned out of the track and pulled around a timber, knocking it out. This caused the rock to fall. I was too much frightened to be of any assistance in getting him from under the rock. Wm. Hay is also a driver here; he was right behind Frank Riley when the accident happened."

Wm. Hay states: "Riley told the men who were in the car to get out. He then said 'gee' to his mule. The mule turned into the track, went a short distance and turned out again and pulled around a timber, knocking it out and causing the timber and rock to fall on Riley. The cross-bar fell, hitting him on the back of the head. The rock was on his back. I called Frank and he did not answer, so I called out 'Help,' and when the men came we took him from under the rock. I believe his

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death was caused by the mule turning and knocking the timber down."

Statement of Chas. Fisher: "I heard Mr. Hay call and I ran to him. When I got there I did not see the man under the rock at first. More men came and I told them to stand back, as small pieces were still falling. After the small pieces quit falling we lifted the rock off him."

That the drivers in this mine make a practice of bringing cars to the bottom is confirmed by Jos. Baird and Fred Mayers.

John Thompson testified that he believed Frank Riley's death was caused by the mule pulling the car off the track and knocking down the timber, thus causing the rock to fall.

Thomas Ellwood also swore to this statement.

After being notified, I went to the mine, but the rock and timber had all been cleaned up, so my investigation consisted of taking the above statements from the men who were there when the accident occurred. Frank Riley was the only support of his widowed mother, and a depressed feeling had settled down on all the employees in and around this mine on account of this sad accident.

7. Fatal accident to Antone Kaucic, August 24, 1906, at the M. K. & T. No. 6. A rock 12 x 21 fell on him while he was at work in his room, killing him instantly.

8. Fatal accident to Bartholame Mizzia, September 1, 1906, at the Devlin & Miller mine, by a fall of rock. He was about fifty years of age and leaves a family of five children. While working in his room, apparently mining off a shot, a rock nine by six feet, weighing about five tons, fell on him, killing him instantly. He was found under the edge of the rock nearest the coal face. There had been about seventeen inches of rock falling all across his place within about six feet of the face. There were a few props under it but it appeared to me to be a dangerous rock and should have been timbered well. His son, who was working with him, ran out on the entry crying, and Thomas Mallans, who worked close by, heard the boy crying and ran into the room, where there were some other men trying to get him out. They sent out to the bottom for the jack to raise the rock, then got him out, but life was extinct.

9. Fatal accident to O. A. Reese, September 5, 1906, at the Cherokee Coal and Mining Company, near Cherokee. He was foreman at this mine, and the accident happened while he was examining a loose rock contemplating the advisability of having it timbered or taken down, as a miner had refused to push his car under it. While he was examining it the rock fell, killing him instantly. He was fifty years of age and leaves a family of nine children.

10. Fatal accident to Frank Kimovec, Frank Yaksi and Chas. Kokle, October 19, 1906, at the M. K. & T. No. 11. Report is under head of "Explosions."

11. Fatal accident to Burdine Lampton, October 11, 1906,

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at mine No. 12 of the J. R. Crowe Coal Company. He was employed as a top man and was injured by letting a car of slack stop on the switch and then letting a car of lump run down. He was caught between the two cars, and received internal injuries from which he died about four hours after the accident occurred.

12. Fatal accident to Andrew Hartman, October 6, 1906, at Dickey-Mulholland mine. He was forty-two years of age, a practical miner, and was killed by a fall of rock which measured nine by four feet and four inches thick. This accident occurred in a place about six feet wide.

Thomas Whitcomb, along with three others, lifted the rock off him and got him out. Whitcomb stated: "I worked about thirty feet from Andrew Hartman; heard him holler and heard rock fall, and ran to his aid; tried to lift the rock but could not, then called for help. When the three other men came we raised the rock and blocked it up, then we pulled him out. He died shortly after we got him out from under the rock. In my opinion it was an accident and nobody to blame."

This statement was verified by the three men who helped to get him out.

When I got to the mine and examined this place I found the rock which killed Mr. Hartman had broken off at the rib and tapered out close to a horseback. It was one of those accidents which occurs in unlooked for places, as the place was about six feet wide. From the condition it would look as though the unfortunate man was shoveling back coal when the rock fell on him.

13. Fatal accident to George Brazil, November 30, 1906, at J. H. Bennett's mine. He was a colored man about forty years of age, single, and was employed as shot-firer. Seemed he had lost bearings and got turned around, and was overcome by the smoke, for when he was found there were no marks on him, which would indicate that he had smothered to death. There was no explosion or windy shot.

14. Fatal accident to Ed Johnson, November 3, 1906, at Clemens mine No. 3. He was employed as a miner and was killed by a shot going off.

James Kerr, who worked near Johnson, heard the shot and went to see about it. He says that when he got there the smoke was so thick he could not go into the place. He sent word to the bottom for the mine foreman, and after he came they went into the room and began groping around in the smoke. They found the unfortunate man lying twenty-nine feet from the face, where the shot had blown him. He was dead when found.

15. Fatal accident to Tony Ceglar, December 7, 1906, at the M. K. & T. mine No. 7. While he was at work in his place a rock nine by four feet and four inches thick fell on him, bruising him up very badly. He was taken home, where he died six

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days later. He was fifty-five years of age and leaves a wife and eight children.

16. Fatal accident to Ben Fedell, December 12, 1906, at mine No. 8 of the Cherokee-Pittsburg Coal and Mining Company. He was employed as a shot-firer.

Jno. Beerbar, one of the men who got him out of the mine, states: "The shot-firer came to me and told me that his butty was killed, and asked me if I would go with him. We started in, I following him to the place. We pushed an empty car in with us. He then went up into the place and found him. He was torn in bad shape. We gathered him up the best we could, placed him in the car and pushed him to the bottom."

Joe Adell, the other shot-firer who fired with Fedell, states: "I had finished firing the other entry and came to the place where Ben was killed. I went into the place adjoining him to fire the shots, and we signaled to each other, as we had done every night before; he rubbed on the coal and then gave three raps. I had told him that I would rap twice and then rub on the coal. Ben then hollered and I answered him. I had one shot to tamp in the place after we had signaled to each other. I lit my two shots and went and fired two more rooms, then I came back to where I always met Ben and hollered. I went in to see if I could find him, as he did not answer me. When I went into the room the smoke was so thick I could not see very good. I crawled around in the room and found his body. I then came out to the bottom and went on top and phoned to the company's store. The blacksmith and myself went down and got an empty car and pushed it into the place, put the body into the car and pushed it back to the bottom. We had rapped to each other this night the same as we had done three nights previous, as we were expecting a shot to blow through, as the miners were making a cross-cut in this place."

This is an unexplainable accident, as there is no doubt that Fedell knew that his butty had lit the shots in the adjoining room; and he must have stayed in there quite a while after they had rapped to each other, since his butty states he had tamped one shot after the signaling was done.

17. Fatal accident to Simion Leneive, December 12, 1906, at mine No. 1 of the Fidelity Coal Company. He was at work in his place and a rock ten by eight feet and twenty inches thick fell on him, killing him instantly. He was thirty-five years of age, married, and leaves two children.

18. Fatal accident to Patrick Fleming, December 26, 1906, Midway Coal Company. Mr. Fleming had just gone in and started to work, when suddenly he fell over and died. Heart failure was the cause of death. He was one of the very old miners of this district. The air in his room was first-class, therefore this can hardly be considered a mine accident. He had complained of a pain below his heart that morning and his fellow workmen advised him to go home, but he kept on work-

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ing and was just getting ready to drill a hole when he dropped over dead.

19. Fatal accident to Beceila Amiala, December 24, 1906, at mine No. 10 of the Western Coal Mining Company. He was employed as a shot-firer and had been smothered to death. Upon being notified, and after examining the mine carefully, I could only conclude that in his anxiety to fire the shot which had missed he had gone back into the hot smoke and death overtook him. Having been smothered, I questioned the fireman very closely after examining the mine and finding a good current of air traveling.

Jess Lambe, fireman, stated, under oath: "I was at the top of the mine attending to the fan on the night of December 24, 1906, when the fan was going at the usual rate—that is, thirty-five or forty revolutions per minute. There was nothing on top to indicate an explosion. The first I knew was the other shot-firer came to the bottom and hollered up and asked if his butty had come out yet. I did n't think there was anything wrong. Then later he came to the bottom and said he could not find him. I then went down the mine. We found him in the first south off the first east on the south side. He was dead. He was not burned or bruised in any way that I could see. He was overcome with smoke. He was found on the main entry. It was clear when we got there, and there was a good current of air traveling when we got to where he was laying, but I had started the fan up probably eight or ten revolutions per minute faster than it had been going."

Dave Fulton, mine foreman, made the following statement under oath: "I was standing at the top of the shaft when a shot-firer crossing the bottom from the north side hollered up and asked if his butty was out. I answered 'No.' He said he would go in and look for him. I did not think there was anything wrong, as it was not late—about seven o'clock. In about fifteen minutes he came back and hollered that all the entries were fired but could not see his butty, but if we would speed up the fan he would go back and look for him again. I told the fireman to speed up the fan, which he did. I then went down manway and started in the first east entry; there we found a prop with his coat lying over it in the mouth of entry, showing he was in there, as this was the mark the shot-firer use to indicate the entry he was in. The shot-firer with me called my attention to the large nails in his butty's shoes and said we could track him by them, which we did. We followed these tracks in and out of several entries until we found him in the first south off of the first southeast. He was lying against the gob wall, his cap by his side, as though it had fell off his head. He was about thirty feet from the face of entry and right in front of a cross-cut which had a shot in it which had been fired. He was lying on the top of the coal from this shot in the cross-cut and his second lamp was lying on top of the coal thrown