State inspector of coal mines reports

Section 13, Pages 361 - 390

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.

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a local and shipping business. Has to haul coal when shipping one-half mile. Is ventilated by furnace, and has two openings. The mine is in good condition. John Gray, superintendent; Charles Mangerson, pit boss.

Mine No. 4.—Is located in the vicinity of Osage City, and has no railroad connections. Does a local and shipping business. Has to haul one-half mile when shipping coal. It has two openings, and is ventilated by furnace. Ventilation and roads in fair condition. John Gray, superintendent; S. Jones, pit boss.

DENNIS RYAN.—This slope mine is located one mile southeast of Osage City, and has no railroad connection. It does a local and shipping business. Has two openings, and is ventilated by furnace. Ventilation and roads not in very good condition. When I visited this slope, the proprietor was opening out old workings that had been standing during the summer months; hence the reason of bad ventilation. Dennis Ryan, superintendent.

SAMUEL HATFIELD.—This drift is located about four miles southeast of Scranton. Does entirely a local trade. The men push out all coal. Is only worked a few months in winter by farmers' sons and laborers.

Another drift is located about four miles southeast of Scranton, and is operated and worked on the same principle as Mr. Hatfield's.

HANSON & GRANSTROM.—This shaft mine is located in Osage City, and was formerly operated by W. T. Williams. It has no railroad connections. Does a local and shipping trade. When shipping coal, has to haul one-half mile to cars on Atchison, Topeka & Santa Fé Railroad. Has two openings, and is ventilated by furnace. Ventilation good, and roads in fair order. A. W. Granstrom, superintendent.

WESTERN COAL COMPANY.—*Shaft No. 1.*—This mine is located in Osage City, on east side of Atchison, Topeka & Santa Fé Railroad, and has a switch from same. It has two openings, and is ventilated by furnace. Ventilation very inferior. Roads in fair order. Does a local and shipping trade. Gust. Johnson, superintendent. Turner Grovenor, pit boss.

WILLIAM MCCRAE.—*Shaft No. 2.*—Is located one mile northeast of Osage City, and has railroad connections by switch with the Lyndon branch of the Atchison, Topeka & Santa Fé Railroad. It does a shipping business. Has two openings, and is ventilated by furnace, and has two currents of air. Ventilation good, but roads wet and muddy. William McCrae, superintendent; James Sharron, pit boss.

WESTERN FUEL COMPANY.—The Western Coal Company, with two mines, and the Excelsior Coal Company, with two mines, consolidated, hence the name—The Western Fuel Company. William Simms, superintendent.

Mines Nos. 1 and 2.—These shafts are located one and one-half miles east of Osage City. No. 1 is located on the Missouri Pacific Railway, and has railroad connection with same. No. 2 shaft is situated on the north side of the Lyndon branch of the Atchison, Topeka & Santa Fé Railroad, and has a switch therefrom. The two mines are not worked as one mine. The coal

is all hoisted out of No. 2 shaft. Each shaft has two openings, and is ventilated by furnace. Ventilation and roads are in good condition. Frank Lofty, pit boss.

Mine No. 4.—Located one mile east of Osage City, on the Missouri Pacific Railway, and does a shipping trade. It has two openings, and is ventilated by furnace. Ventilation and roads are in good condition. E. Batcholer, pit boss.

Mine No. 5.—This mine is also located about one mile east of Osage City. Has switch from the Lyndon branch of the Atchison, Topeka & Santa Fé Railroad. It does a shipping trade. Has two openings, and is ventilated by furnace. This mine is in fair condition. A. Batly, pit boss.

JOHN HERSHEY.—This shaft is located about one and a half miles east of Osage City, on the Missouri Pacific Railway, and has switch from same. Does a shipping trade. Has two openings, and is ventilated by furnace. This mine is in good condition. John Hershey, superintendent; George Aitken, pit boss.

WILLIAM T. SCOTT.—This shaft is located on the land of W. T. Scott, three miles east of Barclay, and has no railroad connection. Does a local and shipping trade. It is operated and leased now by Edward Tyson. When shipping coal it has to be hauled about one mile to cars on the Atchison, Topeka & Santa Fé Railroad. It has two openings, and is ventilated by furnace. Ventilation and roads in fair order. Edward Tyson, superintendent.

REES LEWIS.—This drift is located on Coal creek, about three miles southwest of Arvonia. Does a local business, and only works during the winter months. Rees Lewis, superintendent.

W. H. THOMAS.—This drift mine is located on Coal creek, about three and one-half miles southwest of Arvonia. Does a local business during the winter months, and is principally worked by farmers. Condition of mine good. W. H. Thomas, superintendent.

CHARLES MITCHELL.—This drift mine is located two miles northwest of Arvonia. Does a local business during the winter months. It has two openings, and is ventilated by furnace. Condition of mine, fair. Charles Mitchell, superintendent.

W. M. WALTERS.—This drift mine is located three and one-half miles southeast of Quenemo, and has no railroad connections. It does a local and shipping trade. It is ventilated by furnace. Ventilation, fair; but roads in bad order. W. M. Walters, superintendent.

MINOR DRIFT OPERATORS.

The names and addresses of the other operators of drifts in this county are as follows:

John Rabbie, Rosemont; James Mitchell, Edward Scott, F. M. Thornburgh, William Westwood, C. B. Smith, John Rice, John Boyle, Amos Her-

rington, A. S. Mason, James Claypole, William C. Barrett, William Whicher, and Isaac Jones, Quenemo. These drifts are all located in a radius of one and one-half miles, and about three to four miles from Quenemo. They are worked in the face of hills around little spurs of creeks and ravines that run into the Marais des Cygnes river. They all have a local trade and are only worked in the winter months. They have only the drift opening, and scarcely any of them are ever driven more than one hundred to one hundred and fifty feet. They are generally worked as far as they can get air and then left, or if one happens to cave in, they open out another. They are all one-horse affairs. There are also a considerable number of strippings around Arvonia, the names of the operators of which, and the output, will be found on another page. These strippings are all worked by farmers in the winter months. The depth of the vein of coal is from eight to twelve feet from surface, and in several places there is no bed-rock — nothing but the surface and soapstone.

REPUBLIC COUNTY COAL MINING.

Name of operator, S. F. Curtis; postoffice address, Minersville; number days worked, 200; output for 1889, 24,650 bushels; estimated value of output, $2,218; number miners employed, 10; boys employed, 1; others, 2—total, 13; price paid for mining, 7 cents.

ANALYSIS.—Number shaft mines, 1; average thickness of vein, 20 inches; kind of coal, lignite; average depth of coal from surface, 80 feet; average number days mine worked, 200, or 64 per cent. of all working-days; total output for year, 24,650 bushels, or .04 per cent. of total output of State; estimated value of output, $2,218; total number employés, 13.

RECORD OF INSPECTION.

I. F. CURTIS.—This shaft is located in Minersville, and has no railroad connection. It does a local business. Has two openings, and is ventilated by furnace. The west side of this mine is worked out, and they are opening out the east side. They are doing good work, and putting in heavy, solid timbers. This mine is equipped with a good, substantial hoisting-plant. I. F. Curtis, superintendent.

L. ERICSON.—This shaft is located at Scandia, and is a new mine. When sinking, they went through a gravel bed. No effort was made to cement, or stop the water by any other means as it came in, and they now have it to pump from the bottom of the shaft. L. Ericson, superintendent.

RUSSELL COUNTY COAL MINES.

ANALYSIS.—Total number of shaft, slope, and drift mines, 7; kind of coal, lignite; thickness of vein, 14 to 20 inches; average number of days mines

worked, 174, or 56 per cent. of all working-days; total output for year, 150,135 bushels, or .28 per cent. of total output of the State; estimated value of output, $13,508; number employés, 62.

COAL MINES, RUSSELL COUNTY.

Office No.	Names of operators.	Post-office address.	No. days mine worked.	No. bushels mined in 1889.	Estimated value of output for 1889.	Av. No. bushels mined per day worked.
1	W. S. Carhan	Bunker Hill	157	18,285	$1,645	116
2	James Merzies	Bunker Hill	174	20,075	1,806	115
3	N. E. Warner	Bunker Hill	170	15,975	1,437	93
4	Thos. Cooper	Dorrance	190	23,175	2,085	122
5	F. H. Heard	Dorrance	120	12,000	1,080	100
6	Gust. Neff's	Dorrance	210	28,550	2,569	136
7	L. D. Smith & Son	Russell	200	32,075	2,886	160
	Totals and average		174	150,135	$13,508	

COAL MINES, RUSSELL COUNTY—CONCLUDED.

Office number.	Average number daily employés.				Av. No. bushels mined per employé daily.	Av. price paid per bu.		Number kegs powder used.	Accidents.		Mine opening.		
	Miners.	Boys.	Others.	Total.		Winter.	Summer.		Fatal.	Non-fatal.	Shaft.	Drift.	Slope.
No. 1	6		2	8	14	7	7						1
No. 2	6	1	2	9	12	7	7						1
No. 3	4		2	6	15	7	7						1
No. 4	7		2	9	13	7	7					1	
No. 5	4		2	6	16	7	7					1	
No. 6	8	1	2	11	12	7	7					1	
No. 7	10	1	2	13	12	7	7				1		
Totals	45	3	14	62							1	3	3

RECORD OF INSPECTION.

The coal in this county is of lignite quality. It is found at different depths, and principally cropping out into the several creeks and rivers. It is from 14 to 20 inches in thickness. None of the mines have any railroad connection, and all do a local business.

GUST. NEFF.—This drift is located ten miles north of Dorrance, on the Saline river. It has no railroad connection. Does a local business. Has two openings, and ventilated by furnace. Mine in fair order. Gust. Neff, superintendent.

THOMAS COOPER.—This drift is located about seven miles northwest of Dorrance, near the Saline river. It has no railroad connection, and does a local trade. This mine was not in operation when I was there, and I did not go in to examine it.

THOMAS H. HEARD.—This drift is located about nine miles southeast of Dorrance, on the south side of the Smoky Hill river. It does a local trade. It has two openings, and is ventilated by furnace. Ventilation fair, but roads are in bad order. Thomas H. Heard, superintendent.

E. WARNER.—This drift mine is located three miles north of Bunker Hill,

on the south side of the Saline river. It does a local business. It was not in operation when I visited it, and I did not examine it. E. Warner, superintendent.

JOSEPH MENZIE.—This slope mine is located four miles southwest of Bunker Hill, on the north side of the Smoky Hill river. It does a local business. It is a new slope, and has not done much as yet. Joseph Menzie, superintendent.

W. S. CUSHLAN.—This slope mine is located four miles northeast of Bunker Hill, on the south side of the Saline river. It does a local business. Is ventilated by furnace. Condition of mine, fair. W. S. Cushlan, superintendent.

L. D. SMITH & SON.—This shaft is located ten miles from Russell, and north of the Smoky Hill river. It has no railroad connection, and does a local business. It has two openings, and is ventilated by furnace. The part of this mine that was cleaned up and working, was in good condition. L. D. Smith, superintendent.

SHAWNEE COUNTY COAL MINING.

ANALYSIS.—Total number shaft and slope mines, 5; number strip banks, 2; kind of coal, bituminous; average thickness of vein, 14 inches; average depth of coal from surface, 40 feet; average number days mines worked, 206, or 67 per cent. of all working-days; average number days banks worked, 170, or 55 per cent. of all working-days; total output for year, 203,811 bushels, or .38 per cent. total output of State; estimated value of output, $24,394.

COAL MINES, SHAWNEE COUNTY.

Office No.	Names of operators.	Post-office address.	No. days mine worked.	No. bushels mined in 1889.	Estimated value of output for 1889.	Av. No. bushels mined per day worked.
1	William Forbes	Silver Lake	200	38,466	$4,615	192
2	E. Maple	Silver Lake	180	16,344	1,961	91
3	Allan Coble	Topeka	250	31,438	3,772	125
4	Daniel L. Heaton	Topeka	250	48,864	5,803	195
5	S. T. Sprague	Topeka	150	24,580	2,949	164
	Totals and average		206	159,692	$19,100	

COAL MINES, SHAWNEE COUNTY—CONCLUDED.

Officer number.	Average number daily employés.				Av. No. bushels mined per employé daily	Av. price paid per bu.		Number kegs powder used.	Accidents.		Mine opening.		
	Miners.	Boys.	Others.	Total.		Winter.	Summer.		Fatal.	Non-fatal.	Shaft.	Drift.	Slope.
No. 1	8	2	2	12	16	9	9	6	.....	.....	1	.....	.....
No. 2	5	1	2	8	14	9	9	2	.....	.....	.....	.....	1
No. 3	6	1	2	9	14	8½	8½	2	.....	.....	1	.....	.....
No. 4	12	1	2	15	13	9	9	4	.....	.....	1	.....	.....
No. 5	4	.....	2	6	27	9	9	.....	.....	.....	1	.....	.....
Totals	35	5	10	50	.....	.....	.....	14	.....	.....	4	.....	1

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STRIP BANKS, SHAWNEE COUNTY.

Names of operators.	Post-office address.	No. days worked.	Output for 1889. (Bush'ls.)	Estimated value of output.	No. employés.
William Demas	Topeka	120	6,735	$808	2
Hulber & Ebly	Topeka	220	37,384	4,486	8
Totals and average		170	44,119	$5,294	10

RECORD OF INSPECTION.

S. F. SPRAGUE.—This mine is located at Quinton Heights, Topeka. It has no railroad connections, and does only a local business. It has two openings. The shaft has not been working all summer, and was full of water when I visited it.

M. V. CARPENTER.—This shaft is located three miles west of Topeka. It has no railroad connections, and does a local business. It has two openings, and is ventilated by furnace. Ventilation and roads in fair order. This mine has a good, substantial and strong frame, and guide. Altogether the plant has the latest improvements. M. V. Carpenter, superintendent.

D. L. HEATON.—This shaft is located about three miles west of Topeka. It has no railroad connections, and does a local business. It has two openings, and is ventilated by furnace. This mine was not in operation when I visited it, and I could not get down to inspect it on account of water in the bottom of the shaft. D. L. Heaton, superintendent.

ALLAN CABLE.—This shaft is located two and one-half miles west of Topeka, and has no railroad connections. It supplies Mr. Cable's brick works with coal. It has two openings, and is ventilated by furnace. Condition of mine fair. Allan Cable, superintendent.

WILLIAM EDY.—This drift is located five mile northwest of Topeka, near the Chicago, Rock Island & Pacific Railroad. This is a new drift in the bluff of a hill, and has no railroad connection. The drift has only been opened two months, and was not in order for inspection. William Edy, superintendent.

WILLIAM FORBES.—This shaft is located at Silver Lake, and has no railroad connection, and does a local business. It has two openings, and is ventilated by furnace. The shaft was shut down when I visited it. William Forbes, superintendent.

E. MARPLE.—This slope is located in the vicinity of Silver Lake, without any railroad connections, and does a local business. It has two openings. This mine was shut down when I visited it—for want of men, I am told. E. Marple, superintendent.

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SUMMARY.

In order that a complete review of the coal industry of the State may be had, I have summarized the foregoing detailed county tabulations in three tables. The first of these tables is here given:

TABLE NO. 1.—Showing number of employés, by counties.

COUNTIES.	EMPLOYÉS.				
	In mines.			*In strip banks.*	*Totals.*
	Miners.	Boys.	Others.		
Bourbon	15	.....	1	158	174
Chautauqua	5	.....	1	.....	6
Cherokee	946	46	324	61	1,377
Cloud	53	4	20	.....	77
Coffey	.....	.....	.....	107	107
Crawford	1,162	19	260	227	1,668
Ellsworth	45	6	12	.....	63
Franklin	120	6	31	72	229
Jewell	10	1	3	.....	14
Labette	.....	.....	.....	25	25
Leavenworth	778	41	94	.....	913
Lincoln	47	4	16	.....	67
Linn	63	6	19	47	135
Lyon	29	.....	7	.....	36
Mitchell	9	1	4	.....	14
Nemaha	15	4	5	.....	24
Osage	2,001	125	229	220	2,575
Republic	10	1	2	.....	13
Russell	45	3	14	.....	62
Shawnee	35	5	10	10	60
Totals	5,388	272	1,052	927	7,639

The 972 men employed in the strip banks mean also 972 two-horse teams, for each man works in this manner in a strip bank. The number of boys—272—will not exceed the number employed, and it is doubtful if it is a large enough number to represent all those who work in and about the mines, but it is all that was returned to me. Pit-bosses, topmen, weighmen, check-weighmen, prop-men, track-men, engineers and laborers of all kinds employed around the top of the mines are included in the 1,052 given under the head of "others" in the table.

TABLE NO. 2.—Showing number of mines and strip banks, and working-time in averages and percentages, by counties.

COUNTIES.	*Number of mines.*	*Number of strip banks.*	DAYS WORKED.			
			Mines.		*Strip banks.*	
			Average number days.	Per cent. of all working days.	Average number days.	Per cent. of all working days.
Bourbon	2	67	190	61	42	12
Chautauqua	1	.....	200	64	.....	.....
Cherokee	18	14	154	50	75	24
Cloud	10	1	146	47	120	38
Coffey	.....	29	.....	.....	71	23
Crawford	13	40	183	59	59	19
Ellsworth	7	.....	170	55	.....	.....
Franklin	24	20	144	46	77	25

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TABLE NO. 2—CONCLUDED.

COUNTIES.	Number of mines.	Number of strip banks.	DAYS WORKED. Mines. Average number days.	Mines. Per cent. of all working days.	Strip banks. Average number days.	Strip banks. Per cent. of all working days.
Jewell	1	.....	80	25	.....	.....
Labette	.....	6	.....	.....	75	24
Leavenworth	4	.....	215	69	.....	.....
Lincoln	8	.....	155	49	.....	.....
Linn	9	14	112	36	81	26
Lyon	5	.....	131	42	.....	.....
Mitchell	2	.....	125	40	.....	.....
Nemaha	2	.....	180	58	.....	.....
Osage	81	54	178	57	83	27
Republic	1	.....	200	64	.....	.....
Russell	7	.....	174	56	.....	.....
Shawnee	5	2	206	67	170	55
Totals and averages	200	247	.....	52	.....	27

Table 2 shows that we we have two hundred shaft, slope and drift mines, and that these mines only worked 52 per cent. of the working-days (308) of the year 1889. The working-time of the 247 strip banks was less than that of the mines—being but 27 per cent. of all working-days. Generally speaking, however, the time of working strip banks is only in the winter months. Of the coal-producing counties, Leavenworth shows the steadiest work. The fact that the mines of a county do not show full time cannot always be taken as a sure indication that the employés of the mines are not at work mining, as in several instances, one mine in close proximity to another is closed down for repairs, and the miners are put to work in another place. I do not say that such is the rule, but it often occurs in the large coal-producing counties. A large number of mines does not insure a large output. Leavenworth county has but four mines, yet it produces nearly 19 per cent. of all the coal produced in Kansas. Osage county with eighty-one mines, does not produce as much coal per year as does Cherokee with only eighteen shafts, although the former works 7 per cent. more days than the latter.

The next table completes the summarization of the counties, and is here given:

TABLE NO. 3.—Showing output for 1889, per cent. of county output of total, and estimated value.

Counties.	Output for 1889. Mines.	Strip banks.	Total.	Per cent. of total output of State.	Estimated value of output. Mines.	Strip banks.	Total.
Bourbon	105,086	362,350	467,436	00.85	$7,356	$24,233	$31,589
Chautauqua	36,600	.....	36,600	00.06	3,294	.....	3,294
Cherokee	12,714,372	469,812	13,184,184	24.50	636,172	23,691	659,863
Cloud	152,050	10,775	162,825	00.32	13,681	969	14,650
Coffey	.....	427,114	427,114	00.79	.....	38,435	38,435
Crawford	19,943,388	1,202,104	21,145,492	39.30	997,451	60,091	1,057,542
Ellsworth	125,970	.....	125,970	00.23	10,077	.....	10,077
Franklin	551,605	267,630	819,235	01.52	44,122	18,725	62,847
Jewell	20,000	.....	20,000	00.03	1,800	.....	1,800
Labette	.....	61,000	61,000	00.11	.....	5,490	5,490
Leavenworth	6,161,721	.....	6,161,721	11.45	431,318	.....	431,318

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TABLE NO. 3—CONCLUDED.

Counties.	Output for 1889.			Per cent. of total output of State.	Estimated value of output.		
	Mines.	Strip banks.	Total.		Mines.	Strip banks.	Total.
Lincoln	162,470	.....	162,470	00.32	$16,247	.....	$16,247
Linn	252,295	331,100	583,395	01.08	17,971	$17,223	35,194
Lyon	85,202	.....	85,202	00.16	8,520	.....	8,520
Mitchell	24,000	.....	24,000	00.04	2,639	.....	2,639
Nemaha	54,296	.....	54,296	00.10	5,971	.....	5,971
Osage	8,761,462	1,158,151	9,919,613	18.44	715,071	92,731	807,802
Republic	24,650	.....	24,650	00.04	2,218	.....	2,218
Russell	150,135	.....	150,135	00.28	13,508	.....	13,508
Shawnee	159,692	44,119	203,811	00.38	19,100	5,294	24,394
Totals	49,484,994	4,334,155	53,819,149	100.00	$2,946,516	$286,882	$3,233,398

The grand total of 53,819,149 bushels as the output of the State is the largest ever reported. Of this amount 4,334,155 bushels, or 8 per cent., is strip coal. It will thus be seen that the 247 strip banks—the number shown in Table 2—are of small importance when compared with the 200 shaft, slope and drift mines; yet these strip banks bring comfort and warmth to many of our citizens, and give employment to 927 men and teams at a time when work is scarce.

From the column of percentages in Table 3, it will be seen that, practically, four counties produce the Kansas coal; they are: Crawford, Cherokee, Osage, and Leavenworth, in the order named. These four counties put out in the year 1889 93.69 per cent. of all the coal mined in Kansas, leaving 6.31 per cent. of the output to be divided between the other seventeen counties which have reported to me. Compared with the output of competing points, Kansas does not make a detrimental showing. On the east we have Missouri, producing, in 1889, 55,586,925 bushels as against 53,819,149 bushels produced in Kansas; on the north, Iowa had an output of 98,661,725 bushels; and on the west, Colorado, with 59,346,875 bushels.

As compared with other years, the output for 1889 shows a steady increase. The product for the five years from 1885 to 1889, inclusive, is as follows:

Years.	Bushels.
1885	36,001,427
1886	34,750,000
1887	39,251,985
1888	42,500,000
1889	53,819,149

The increase in the output for 1889 over 1885 is 17,807,722 bushels, or a trifle over 49 per cent. The estimated value of this output is $3,233,398. For a State that is classed as "agricultural" this industry, giving employment to 7,639 men, 927 teams, and having a product valued at three and a quarter million dollars, is very creditable.

ACCIDENTS.

NON-FATAL ACCIDENTS.

The number of non-fatal accidents for 1889 can only be reported by me for the last five months of the year, and are four in number. The non-fatal accidents for 1890 number twenty. Following is a summary from July 2, 1889, to January 1, 1891:

Where accident occurred.	*Date of accident.*	*Name of injured.*	*Character of injury.*	*Cause.*
Kansas and Texas Coal Co.:	1889.			
Mine No. 11, Litchfield	July 2	Henry Keilhorn	Burn	Powder explosion.
Carbon Coal Co.:				
Mine No. 15, Osage City	Oct. 22	Peter Alice	Slight bruise	Fall of roof.
Scandinavian Coal and Mining Co.:				
Peterton	Nov. 26	Carson Buck	Collar bone broken	Fall of roof.
Kesler's Mine:				
Orchard	Dec. 1.	Harry C. Anderson.	Broken leg and bones of foot.	Fall of coal.
Western Coal and Mining Co.:	1890.			
Mine No. 4, Crawford county.	Jan. 9	Daniel Jordan	Bruise	Fall of roof slate.
Home Mine:				
Leavenworth	Feb. 2	George Jacobs	Burn	Explosion of gas.
Cherokee and Pittsburg Coal and Mining Co.:				
Mine No. 4, Chicopee	Mar. 3	Charles Morey	Leg broken in two places	Collision.
Keith & Perry Coal Co.:				
Mine No. 2, Scammon	Mar. 8	Leslie Emmons	Bruise	Fall of roof.
Cherokee and Pittsburg Coal and Mining Co.:				
Mine No. 1, Frontenac	Mar. 19	Peter Johnson	Three toes mashed.	Fall of roof slate.
Mine No. 1, Frontenac	April 5	Casper Schaferhoff	Bad bruise	Fall of roof slate.
Carbon Coal Co.:				
Mine No. 9, Peterton	April 19	John Jenkins	Breast bone broken	Fall of roof.
Keith & Perry Coal Co.:				
Mine No. 4, Scammon	May 27	Eug'ne Perquignot	Hands and face burned	Powder explosion.
Cherokee and Pittsburg Coal and Mining Co.:				
Mine No. 1, Frontenac	June 27	John Vhles	Bruise	Falling off car.
Cherokee and Pittsburg Coal and Mining Co.:				
Mine No. 1, Frontenac	July 17	Henry Pettirs	Leg broken	Run over by car.
Leavenworth Coal Co.:				
Leavenworth	Oct. 17	John Gannon	Leg broken	Caught between cars.
Parsons Coal Co.:				
Daisy shaft, Weir City	Oct. 24	Henry Guy	Crushed	Fall of roof.
Pittsburg and Midway Coal Co.:				
Mine No. 1, Midway	Oct. 27	John Loth	Crushed	Fall of roof.
Kansas and Texas Coal Co.:				
Mine No. 34, Leavenworth	Nov. 4	Jno. Derashjimska.	Burn	Gas explosion.
J. H. Durkee Coal Co.:				
Mine No. 1, Weir City	Nov. 14	Richard Entwistle.	Crushed	Fall of coal.
James Yuccia & Co.:				
Burlingame	Dec. 11	Abe Temple	Bruised	Fall of roof.
Western Fuel Co.:				
Mine No. 1, Osage City	Dec. —	Nick Hussey	Collar bone broken	Fall of roof.

From the foregoing table, under the head of "Cause," it will be seen that nearly fifty per cent. of the accidents are directly attributable to "fall of roof." As I have said before, the mine roofs in Kansas are of good character, with few exceptions. This large percentage of accidents from this cause, I have every reason to believe, could be decreased by one-half were proper care and attention given to the propping of the roof. On the following pages is a detailed account of the accidents shown in the table.

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July 2, 1889, Henry Keilhorn was severely burned at the powder house of mine No. 11, Kansas and Texas Coal Company, Litchfield, Crawford county, by an explosion of powder, caused by Albert Shirkle striking a keg of powder with an iron hook to make the hole in the keg larger in order that the powder would run out quicker. The iron, when struck against the powder-kegs—also made of sheet-iron—caused sparks of fire which exploded the powder.

On the 22d of October, 1889, as Peter Alice was at work in his room in Mine No. 15, Carbon Coal Company, he was caught by a fall of soapstone. The stone was about 2½ feet square, and 6 inches thick on one side, tapering to a thin edge on the other. It held him for several hours, as there was no one near to render assistance. He finally worked himself loose, and was able to move around the next day, no bones being broken, and very little time lost. He had been very negligent in putting props to his roof.

On November 26, 1889, Carson Buck had his collar bone broken, and was otherwise bruised by a fall of soapstone in the new shaft of the Scandinavian Coal and Mining Company, at Peterton, Osage county. The fall occurred in his own room, where a piece of stone came down suddenly, catching and injuring him as above. It weighed about 300 pounds. He lost about five weeks time from the effects of the accident.

On December 1, 1889, as Harry C. Anderson was mining off a shot of coal in his room, at Kesler's mine, Orchard, Linn county, the coal fell on him before he could get from under it. There was about three tons of coal in the fall. It broke his leg and the bones of his foot, so that he will never be able to use them. He will always be lame from the effects of the injury. It also hurt his back a good deal.

On January 9, 1890, Daniel Jordan, a miner, was injured at the face of his room in Mine No. 4, of the Western Coal and Mining Company, in Crawford county, near Minden, Mo., by a piece of roof-slate, weighing about 250 pounds falling on him. He was mining off a standing shot of coal. The loose slate was supported by the coal he was mining, and when it fell the slate came also, without his knowing it to be loose, and caught him on the back. The physician who attended him, said he was not seriously injured, and would be able to go to work again in a few weeks.

On February 2, 1890, George Jacobs was burned on the face and hands by an explosion of gas in the Home mine, Leavenworth. When the fire boss examined the mine in the morning, he found a small quantity of gas at the face of the room, in the roadway. He gave Jacobs a safety-lamp, telling him the gas was there and to brush it out, and examine it with the safety-lamp before entering with a naked light. Jacobs and his partner proceeded to work, and when they went under a curtain on the roadway, about 150 feet from the face—Jacobs having the safety-lamp in one hand and his dinner pail in the other, with his naked lamp on his head—on raising up inside, a small quantity of gas exploded, with the above result.

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Charles Morey, a driver, was seriously injured at Mine No. 4, Cherokee and Pittsburg Coal Company, at Chicopee, Crawford county, March 3, 1890. Morey was coming out to the bottom of the shaft with his loaded trip of mine cars, when he saw another driver coming in another direction. Seeing that a collision was inevitable, he jumped from his car, where he was riding, and was caught between the cars and the gob-wall of the roadway, getting his leg broken in two places, and otherwise injuring him. He was a long time unable to do any kind of work. The last time I visited the mine he was weighing out the powder to the miners, and doing other light work.

On Saturday afternoon, March 8, 1890, Leslie Emmons was hurt at Mine No. 2, Keith & Perry Coal Company, at Scammon, Kansas, by a stone falling on his back while helping his partner load a car, in his partner's room. The stone had been close to a slip in the roof, which was not seen by them, and they did not know there was any danger. He was unable to work for a few days only.

On March 19, 1890, Peter Johnson, a miner, was hurt in his room at Mine No. 1, Cherokee and Pittsburg Coal and Mining Company, Frontenac, Crawford county, by a piece of slate falling on his foot, injuring three of his toes so severely that they had to be amputated. He was not injured in any other way, and was able to go to work when his foot got well.

At Mine No. 1, Cherokee and Pittsburg Coal and Mining Company, Frontenac, on April 5, 1890, Caspar Schaferhoff, a miner, was injured, by being badly bruised on the back by a fall of slate, while at work in his room. The slate, which caused the injury, fell out between two slips in the roof, which he had not propped sufficiently to protect him from the danger.

An accident occurred April 19, 1890, at Mine No. 9, Carbon Coal Company, at Peterton, Osage county, Kansas, where John Jenkins, a miner, aged 70 years, was seriously injured. He was mining on the right-hand side of his room, when a piece of soapstone, weighing about 700 pounds fell, breaking his breast bone, and squeezing him severely. This accident would have happened with any one, as it was one of those slips which often occur in the soapstone roof of this county, and is very hard to observe or guard against. On examination his place was found to be well propped, the roof looked good, and nothing of the danger could be seen. He recovered from the injury sooner than was expected, for a man as advanced in years as he was.

On May 27, 1890, Eugene Perquignot was burned slightly at the face of his room in Mine No. 4, Keith & Perry Coal Company, Scammon, Kansas. He had left two shots tamped and ready to fire in the coal on the day previous, to be fired by the "shot-firers" as usual. When he went to work on the morning of the above date only one of his shots had been fired. He started at once to drill out the tamping from the unfired shot, and had got it nearly all out. He was carefully turning the drill in the hole with one hand, when the powder exploded, flashing out and burning his face and hands considerably. It was a mere chance he did not lose his life, having

about three and one-half pounds of powder in the shot. Had it got directly at him, it would have most assuredly killed or maimed him for life. Too much care cannot be used in drilling out missed shots; in fact, some States and many foreign countries make it a criminal offense to do so.

On June 27, 1890, John Vhles was injured in Mine No. 1, Cherokee and Pittsburg Coal and Mining Company. He was employed as a mule-driver, and was injured by falling off the loaded mine cars. The evidence goes to show that the accident was caused by his own negligence or carelessness.

An accident occured in Mine No. 1 of the Cherokee and Pittsburg Coal and Mining Company, on the 17th day of July, 1890. Henry Pettirs, engaged as a mule-driver at above mine, when coming out of the main west entry with his loaded trip of mine cars, fell off by some means, and the cars ran over his leg, breaking it.

On October 17, 1890, John Gannon, employed at the Leavenworth Coal Company's shaft, Leavenworth county, as a mule-driver, was injured by the mule turning suddenly out of the track, at cross-entry, throwing the mine cars off. Gannon was riding between the cars, and when they were thrown from the track, they came together suddenly, catching his left leg and breaking it.

On October 24, 1890, in the Daisy shaft of the Parsons Coal Company, a miner named Henry Guy was seriously injured while working in his room, by a piece of slate from the roof falling on him. He had struck a slip in his room, and while working off a piece of coal from the slip, the roof gave way with the above result. There was no one to blame, as it was purely accidental.

On October 27, 1890, at Mine No. 1, Pittsburg and Midway Coal Company, Midway, Crawford county, in the back entry of the third north, on the east side of the shaft, John Loth and Adolph Gomra were working together. At the time Loth was hurt, the two were engaged tamping a shot on the front of the face next to the roadway, about five feet under the brushing. There was some loose rash (or draw-slate as it is generally termed among miners) hanging over them, which they had tried to pull down, but failed to do so. In their hurry to finish the tamping of their shots, preparatory to leaving the shaft, they had neglected to prop up the "rash," and had about done tamping when the "rash" or slate fell on Loth, the piece striking him being about three feet wide, and four feet long, and five inches thick. It was very heavy on account of sulphur balls being mixed in it. It seems they were very careless about the "rash," as it had been hanging there for two or three days to their knowledge, and they did not pull it down nor prop it up.

On November 4, 1890, John Derashjimska, was slightly burned in Mine No. 34, Kansas and Texas Coal Company, Leavenworth, by an explosion of gas on the road-head of his working-place, by using a naked light contrary to instructions. There has been no detailed report of this accident.

November 14, 1890, a boy named Richard Entwistle was injured in J. H. Durkee Coal Company's Mine No. 1, at Weir City, Cherokee county. He

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was working in a room in above shaft, with his father, and was mining off a piece of a standing shot when it fell on him, slightly injuring him. It seems his father and brother had cautioned him not to mine under the coal, but he did not heed them at that time, and as a consequence was injured as reported above.

December 11, 1890, an accident accurred in the mines of James Yuccia & Co., Burlingame, Osage county, whereby Abe Temple, a colored man aged 22 years, was slightly bruised by a piece of soapstone falling on him. The stone weighed about 300 pounds. He was not dangerously hurt, and was able to be at his work in a few days.

An accident occurred in Mine No. 1, Western Fuel Company, Osage City, whereby a young man aged 19 years, named Nick Hussey, had his collar bone broken. He was in the act of setting a prop, when the stone broke over it, falling on him. It was thought that the injury was occasioned by his wrenching himself from under the stone. The piece which caught him would weigh about 150 pounds.

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FATAL ACCIDENTS.

In the year 1889 there were reported to the Mine Inspector twelve fatal accidents. The year 1890 has but eight fatal accidents to record. Tabulated, the returns for the two years are as follows:

Where accident occurred.	*Date of accident.*	*Date of death.*	*Name of deceased.*	*Cause.*
Western Coal Company:				
Mine No. 5, Osage City	January 28, 1889	January 28, 1889	A. J. Anderson	Fall of roof.
Keith & Perry Coal Company:				
Shaft No. 3, Scammon	March 15, 1889	March 17, 1889	Jean Bassart	Fall of coal.
Shaft No. 2, Scammon	May 28, 1889	May 28, 1889	John Thomas	Fall of coal.
Kansas and Texas Coal Company:				
Shaft No. 11, Litchfield	July 2, 1889	July 2, 1889	Albert Shirkle	Explosion of powder.
Shaft No. 11, Litchfield	July 2, 1889	July 3, 1889	Peter Sarrien	Explosion of powder.
Shaft No. 11, Litchfield	July 2, 1889	July 3, 1889	James Clancy	Explosion of powder.
Cherokee and Pittsburg Coal Company:				
Shaft No. 1, Frontenac	July 19, 1889	July 19, 1889	William James	Fall of roof.
Wood & North Coal Company:				
Mine No. 2, Cherokee	July 19, 1889	July 19, 1889	Dennis McLaughlin	Fall of roof.
Pleasanton Coal Company:				
Pleasanton	September 17, 1889	September 17, 1889	N. P. Cullough	Crushed by cage.
Drift, Fort Scott	September 29, 1889	September 29, 1889	G. W. Gay	Fall of roof.
Cherokee and Pittsburg Coal Company:				
Shaft No. 1, Frontenac	October 7, 1889	October 7, 1889	Frank McDaniels	Fall of roof.
Western Fuel and Coal Company:				
Shaft No. 4, Osage City	October 24, 1889	October 24, 1889	Delos Sypes	Fall of coal and roof.
Alma Coal and Mining Company:				
Alma	March 10, 1890	March 10, 1890	William Holvey	Breaking of scaffold.
Alma	March 14, 1890	March 14, 1890	William Crockett	Fall of cage.
Alma	March 14, 1890	March 14, 1890	Frank Leggett	Fall of cage.
Keith & Perry Coal Company:				
Shaft No. 4, Scammon	May —, 1890	May —, 1890	Cuthbert Hall	Powder explosion.
Cherokee and Pittsburg Coal Company:				
Shaft No. 4, Chicopee	September 18, 1890	September 18, 1890	John McGinnis	Fall of roof.
Keith & Perry Coal Company:				
Shaft No. 2, Scammon	September 22, 1890	September 22, 1890	Chester Macarri	Fall of roof.
Western Coal and Mining Company:				
Mine No. 4, Crawford county	November 18, 1890	November 18, 1890	Samuel Wright	Fall of roof.
Mine No. 2, Fleming	December 6, 1890	December 6, 1890	Louis Didier	Fall of roof.

I cannot forbear to again call attention to the number of—not accidents this time—but deaths, caused by "Falling of roof," and coal. I herewith present an account of fatal accidents:

The following accident occurring at Mine No. 5, Western Coal Company, Osage City, January 28, 1889, I found among the records of my office. Not being able to procure the details, I herewith append the verdict of the coroner's jury:

OSAGE CITY, SUPERIOR TOWNSHIP, OSAGE COUNTY, KANSAS.—On the body of A. J. Anderson, a person here lying dead, by the jurors whose names are herewith subscribed: The said jurors upon their oaths, do say that said A. J. Anderson was killed in the Western Coal Company's No. 5 shaft. The said A. J. Anderson came to his death by the falling of a rock accidentally, and we think the company should be exonerated from all blame.

JOHN WALKINS,
ALEXANDER BURGESS,
E. J. MORGAN,
W. A. HACKETT,
I. G. BULLOCK,
J. S. BROWN,
Jurors.

J. D. PEAK, *Coroner.*

On Friday, March 15, 1889, at Mine No. 3, Keith & Perry Coal Company, Scammon, Cherokee county, Jean Bassart, a Frenchman, was hurt by a fall of coal while mining off a standing-shot. At first, it was thought he was not badly injured; but he kept getting worse all the time, and died on March 17, two days after the accident. He was a married man, and left a wife and family. Had been only a short time in this country, and could not speak English.

May 28, 1889, John Thomas, aged 35 years, at Mine No. 2, Keith & Perry Coal Company, was killed by a fall of coal, which caught his head in a break-through, while he was mining off a shot of coal. There was a horse-back where he was mining, and the coal fell off suddenly, and caught him as above. The following is the verdict of the coroner's jury:

STATE OF KANSAS, CHEROKEE COUNTY, ss.—An inquisition was holden at No. 2 shaft, situated three miles west of Weir City, Cherokee county, on the 29th day of May, 1889, before me, Dennis W. King, coroner of said county, on the body of John Thomas, a person there lying dead, by the jurors whose names are hereto subscribed. The said jurors, upon their oaths, do say, that deceased came to his death by an accidental falling of coal, due solely and entirely to his own dereliction in not taking proper precaution in mining close to the dreaded horse-back. In testimony whereof, said jurors have hereunto set their hands, this 29th day of May, 1889.

JAMES C. GRAHAM.
PHILIP PHILLIPS.
JOHN JENKINS.
J. J. WOOTEN.
J. J. PULLEN.
HENRY JENKINS.

Attest: DENNIS W. KING, *Coroner Cherokee County.*

July 2, 1889, Albert Shirkle, Henry Keilhorn, Peter Sarrlen and James Clancy, four miners employed at Shaft No. 11, Kansas and Texas Coal Company, Litchfield, Crawford county, went to the powder-house, situated about

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130 yards from the shaft, and proceeded to fill their five-pound cans with powder, preparatory to going into the mine to their work. Albert Shirkle struck his keg of powder with a piece of iron, to make a hole for the powder to run out of into the small can, when there was a flash, and all the open cans in the house exploded, filling the house and all around it with flames, burning all of the four men seriously, and causing the death of three of them. Peter Sarrlen died on the day of the accident, and James Clancy and Albert Shirkle on the following day. Henry Keilhorn was just outside of the powder-house when the explosion occurred, and did not inhale any of the flame, and recovered from his injuries. Albert Shirkle, after the explosion, walked to the engine-house, and in reply to the pit boss, who asked him how it occurred, said: "I knocked a hole in the keg with a hook, and then all was fire."

July 19, 1889, William James, a mule-driver, was killed in Shaft No. 1, Cherokee and Pittsburg Coal Company, Frontenac, Crawford county, by a fall of roof-slate, when coming out of the second south entry on west side of shaft. His trip was at the switch coming onto the main entry, when the loaded cars went off the track, and knocked out some timbers, letting the roof fall on him, causing his death.

Dennis McLaughlin was killed, July 19, 1889, at Mine No. 2, Woods & North Coal Company, located in Cherokee county, one-half mile south of the city of Cherokee, by a stone falling from the roof in his room, when he was at work lifting some bottom to change the direction of his roadway. His room was well timbered, but he had to take some of them out to get his road where he wished to put it. He either knocked some props out from under the stone, without putting more up to make it safe, or had taken the bottom up too close to the old props so that they slid out from under the stone, and let it down on him. He had the reputation of being a very careful miner. The coroner was sent for, but did not think it necessary to hold an inquest.

September 17, 1889, as N. P. McCullough, superintendent of the Pleasanton Coal Company's mine, Pleasanton, Linn county, was standing at the lower landing on top of above shaft, giving some instructions to the man employed at the bottom concerning some dirt which he was putting on the cage to be hoisted up; he was killed by the cage striking him. The signals to the engineer for the hoisting and lowering of the cages, are given at the top landing, above where the superintendent was standing. His position could not be seen by the man on top who gave the signal, nor by the engineer who raised and lowered the cages. When the signal was given to lower the cage, in its descent it caught the deceased on the head, crushing his skull almost to a jelly, and stopping the cage. The engineer, thinking the stoppage was caused by a piece of slate or coal falling from the cage or car, reversed his engine, and raised the cage again, when the body was released and fell to the bottom of the shaft, a distance of eighty-five feet. The man at the bottom, to whom he had been talking but a few moments before, saw him fall, and immediately went to his assistance, only to find him dead. A coroner's jury, composed of

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C. S. Atkins, acting coroner, and J. H. Martin, W. S. Everett, E. E. Ellis, J. F. Cady, Louis Elfert, and F. Newell, viewed the remains, and after hearing the evidence brought in the following verdict: "We, the jury, find that N. P. McCullough came to his death by an accident, by being caught or struck by a descending cage at the Pleasanton coal shaft, in Linn county, Kansas, on the 17th day of September, 1889, while in the line of his duty as superintendent of said coal shaft."

September 29, 1889, G. W. Gay, a carpenter by trade, had made an exchange for some property near Lath Branch school house, about 2½ miles south of the city of Fort Scott, Bourbon county. On the above property was located a small coal drift, and deceased with his son proceeded to examine the coal. Entering the drift they began digging. The son warned his father not to dig there, but it was no use; he went on digging until the pick struck a large stone above them, and loosened it. The son fled as quickly as he could, and escaped with a slight bruise on the head. The father attempted to flee from the spot, but was caught by a stone weighing about three tons, killing him instantly. As soon as the neighbors could be notified they assembled, and breaking the stone took out the body. Dr. H. D. Barker, coroner, was notified, but from the evidence of all who were present he declined to hold an inquest.

October 7, 1889, at about 5:15 P. M., Frank McDaniels, aged 25 years, was killed by a fall of slate from the roof, while at work at the face of his room in the first north entry on the west side of Shaft No. 1, Cherokee and Pittsburg Coal Company, Frontenac, Crawford county. He was found by the shot-firers when going to commence their work at 6:30 P. M., same day. It seems from the position in which deceased was found that he had some warning, as he had turned around from the face where he was tamping a hole. The stone had caught him from the shoulders nearly to his feet, which were clear. His head was not touched, his cap was on, and the mining-lamp burning when found. The stone which fell on him was about fifteen hundred pounds in weight. It was fourteen inches thick on one side, and about two inches on the other, and four feet square. Deceased was unmarried, and had not been long in the above company's employ.

October 24, 1889, an accident occurred in Shaft No. 4, of the Western Fuel and Coal Company, Osage City, Osage county, about 9 A. M., whereby a miner named Delos Sypes, a German, lost his life. The accident took place in his own room. Charles Whittaker and he were working in the first north entry in east side of shaft. Sypes was mining and finishing a fall of coal; Whittaker had put a wedge in the fall, and told him to come out of where he was, as the top was bad, and get it propped up, when all of a sudden coal and top came down, burying Sypes completely, and catching Whittaker by the shoulders. Whittaker worked himself out, and was only bruised a little. Sypes was dead before he could be got out, being caught across the lungs and smothered. There were plenty of props close to them, which should have

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been put up to the roof when they knew it to be in a dangerous condition. When the place was examined, there were no props within four feet of the face. The stone which fell on deceased was eighteen inches at the thickest, and about fifteen feet long, tapering to about three inches next the gob side. Coroner J. D. Peak held an inquest on the dead body of Delos Sypes. Charles Whittaker, Emil Balloca, Frank Rosseta and Thomas McMillan were examined as witnesses, and after hearing all the evidence, the jury returned the following verdict:

STATE OF KANSAS, OSAGE COUNTY, *ss.*—An inquisition held at the office of the *Kansas People*, in Osage City, Osage county, Kansas, on the body of Delos Sypes, a person known there lying dead, by the jurors whose names are hereunto subscribed. The said jurors upon their oaths do say that said Delos Sypes came to his death in Shaft No. 4 of Western Coal Company, near Osage City, by a fall of soapstone; that he had been warned of his danger, and that the accident was through his own carelessness, or neglect to place a sufficient number of props; and that the jury further find that there was an abundance of props of different lengths furnished by the company, and that they fully exonerate the said company from all blame. In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

E. MILLS,
ISAIAH JONES,
DAVID JONES,
T. B. EDWARDS,
JAMES A. DRAKE,
BEN. HEILBRUN,
Jurors.

Attest: J. D. PEAK, *Coroner.*

About 8:30, on the morning of March 10, 1890, William Holvey, Elijah Kermen, and others, were at work removing ice from the ice-breaker in the sinking-shaft of the Alma Coal and Mining Company, Alma, Wabaunsee county, about 450 feet from the top of shaft, and about 80 feet from bottom of same. Holvey and Kermen were standing on the scaffold in the hoisting division, helping the others to load the ice, and send it to the top in the iron bucket used for hoisting all material out of said shaft. The bucket was being lowered into the shaft at above time, when by some means it went past the place it ought to have stopped, striking the scaffold on which Holvey and Kermen were, knocking two of the planks on which the former was standing, from under him, letting him fall to the bottom, a distance of nearly 80 feet, where he struck with his side on an empty bucket standing on the bottom, dangerously injuring him, from the effects of which he died on the morning of March 15, 1890. After a complete investigation, and the examination of a large number of witnesses, the coroner's jury returned the following verdict:

ALMA, KANSAS, March 15, 1890.

STATE OF KANSAS, WABAUNSEE COUNTY, *ss.*—An inquisition holden at Alma, Wabaunsee county, on the 15th day of March, A. D. 1890, before me, T. H. Hall, coroner of said county, on the body of William Holvey there lying dead, by the jurors whose names are hereto subscribed. The said jurors upon their oaths do say, that William Holvey came to his death in the Alma coal shaft through lowering the bucket too swiftly, striking the temporary scaffold built for the purpose of clearing the shaft of ice; and we, the jury, upon our oaths do further find, that said William Holvey came

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to his death on March 15, 1890, by injuries received on the 10th day of March, A. D. 1890, as above stated, by and through the neglect of the engineer in operating the machinery used in the coal shaft of the Alma Coal and Mining Company, but without criminal intent upon the part of said engineer. In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

H. G. LIGHT, *Foreman.*
H. WEYGAND.
AUG. UTERMAN.
W. T. MAHAN.
FRED. LUTZ.
GEORGE M. KEENE.

Attest: T. H. HALL, *Coroner.*

On March 14th, 1890, as the night shift was being hoisted to the top, at the sinking-shaft of the Alma Coal and Mining Company, at 7 A.M., the iron cage, weighing about 300 pounds, used to steady the bucket for a distance of 165 feet from the top of the shaft, got caught by some means, which no person seems able to account for, and was raised some distance up the shaft before the bucket containing the five men had reached it. After going up some distance the cage became detached from whatever was holding it, and gaining momentum as it descended, broke away the blocks which usually held it at its destination in the shaft, and came crashing down on the helpless men in the bucket, knocking William Crockett, who was standing on the edge, to the bottom of the shaft, a distance of 300 feet, killing him instantly. F. M. Smith, who was standing on the opposite side of the bucket, with one hand on the rope and the other hand on the buntins, as he passed them was struck on the hand holding the rope by the cage in its descent. It cut his finger and thumb, but he clung to the buntins with his other hand, and thus saved himself from falling. The iron cage struck Frank Leggett, who was in the bucket, on the head, splitting his skull, and in his case, death must have been instantaneous. William Dooley, and A. Ure, were also injured, but not seriously. Crockett intended that to be his last shift, as he was going home to Hamilton, Mo., where his mother resides. Frank Leggett was an estimable young man, 26 years old, and had been married on the Thanksgiving day previous.

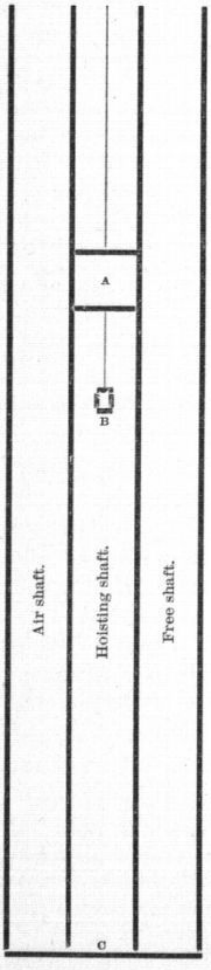

DIAGRAM OF SHAFT, ON A SCALE OF 100 FEET TO THE INCH IN DEPTH.
"A," cage at bottom of guides. "B," bucket at point of accident, containing the five men being hoisted to the surface.
"C," Crockett's body.

A sketch of the shaft as it was arranged for work is here given, so that the details of the accident may be more easily understood.

The depth of the shaft is about 550 feet. It is divided into three compart-

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ments as shown in the diagram. The men were being hoisted in the bucket, and had reached the point "B" when the accident occurred. Guide timbers extend down about 165 feet in the hoisting-shaft of the cage, where it rested on blocks. These blocks were fastened to buntins with lag-screws and heavy spikes. The iron cable attached to the bucket passed through the cage. Going down, the cage follows the bucket until point "A" is reached; here it rests until the bucket returns.

The verdict of the coroner's jury is as follows:

STATE OF KANSAS, WABAUNSEE COUNTY.—An inquest holden at Alma, in Wabaunsee county, Kansas, on the 13th day of March, A. D., 1890, before me, T. H. Hall, coroner of said county, on the bodies of Frank M. Leggett and William Crockett, there lying dead, by the jurors whose names are hereunto subscribed. The said jurors upon their oaths do say that the deceased, Frank M. Leggett and William Crockett, came to their deaths by an unavoidable accident in the coal shaft of the Alma Coal and Mining Company on this, the 13th day of March, A. D., 1890, at about 7:05 A. M. In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

C. O. KINNE, *Foreman.*
J. W. BIVINS.
JAMES CARROLL.
J. C. MCELVANE.
V. C. WELCH.
D. H. CHENOWETH.

Attest: T. H. HALL, *Coroner.*

May —, 1890, at about 7:30 P. M., Cuthbert Hall and his partner, William Halliday, were firing shots in Mine No. 4, Keith & Perry Coal Company, located at Scammon, Cherokee county. They had proceeded with their work all right until they reached the fourth room on back entry of the second west entry on the south side of the shaft, where they lighted two shots, one of which exploded as they expected; and, as stated by Halliday, they heard the squib burn in the second hole, but the shot did not go off. After waiting for the space of ten minutes before going back to relight the second shot, they went into the room. Hall was first on the right side of the entrance, and had proceeded to the corner of the room-pillar, when the shot exploded, throwing coal against him, striking him on the head, making a large indentation in his skull, and giving a severe shock to his nervous system, from which he never rallied. He received good medical and surgical aid immediately on being taken out of the shaft, but died on the second day after the accident. Halliday was close to him when the fatal shot went off, but being on the other side of the entrance of the room was out of line of the force of the coal thrown by the shot, and escaped without injury. The coroner was one of the attending physicians, and said it was not necessary to hold an inquest.

September 18, 1890, John McGinnis was accidentally killed in Mine No. 4, Cherokee & Pittsburg Coal Company, located at Chicopee, Crawford county, by a fall of what is termed "draw slate." On examining the place, I found that deceased had been trying to take down the stone which afterwards fell and killed him, as the marks of his pick were to be seen where he

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had been working at it. Unfortunately it would not come down at that time. Believing it would be safe, he sat down under it to mine off a shot of coal which was standing, but had got very little mining done when it fell on him. He was found some time after by James Carlin, whose drill he had borrowed some time before, and as Carlin was going to use it, he went after it, and found deceased as described above. James Cusick and William J. Davis corroborated the statement of James Carlin. Deceased was about 30 years old, was married, and had a wife and one child.

September 22, 1890, at Mine No. 2, Keith & Perry Coal Company, Scammon, Kansas, Chester Macarri was killed by a fall of slate in his room in third east entry, on south side of shaft. Deceased was in the act of wedging down a piece of coal, and when the coal came down, a piece of slate about three inches thick came along with the coal, knocking deceased down, and killing him. John McNally, who was the first to find deceased, stated that about forty-five minutes before going to the room of deceased, he heard a noise like falling roof, but as such things often occur, he paid no attention to it. A friend of Macarri called to McNally to come for some shot-paper. McNally went up the room, calling to deceased, but got no answer. Seeing his clothes and dinner-pail, he went right up to the face of the room, and found him lying under the slate, as above stated. This statement was corroborated by Pat. Griffin, roadman, and Thomas Barret, miner, who took deceased from under the slate. Macarri was twenty years of age, and the only support of his aged father and mother.

About 5 P.M., November 18, 1890, Samuel Wright, aged 45 years, was killed by a fall of roof-slate, on his roadway, in room 12, second west entry, on north side of Mine No. 4, Western Coal and Mining Company, Crawford county, near Minden, Mo. A short time before the accident, deceased went to help the driver out to his own switch on the entry with a loaded mine car, and when there told him that he would have no more coal that day. He then returned to where his powder was, made up the cartridges to place in the holes he had drilled, to take down coal for the next day's work. When going to the face of his room, with the loaded cartridges in his hand, he was caught by a large mass of slate, 27 feet from the face of room. The stone which fell on him was fourteen feet long, about eight inches thick on one side and one inch thick on the other side, and nearly the width of the roadway. There were some differences of opinion, among the parties present, as to whether any props were under the stone to support it before it fell. Deceased was married and had a family—two of his sons being young men.

At 10:30 A.M., December 6, 1890, Louis Didier, a Frenchman, was killed by a fall of roof at the face of the fifth south entry, on the east side of Mine No. 2, Western Coal and Mining Company, at Fleming, Crawford county. Deceased was in the act of loading a car of coal which he had just wedged down a few minutes previous, when without any warning a large mass of rock fell on him, killing him instantly. I examined the place the same day, and

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measured the rock. It was eight feet six inches long, six feet six inches wide, and two feet three inches thick. His brother, Peter Didier, who worked near him, said he had two props set under the stone, but it was dangerous, and would not be detected by the most experienced miner, as the roof was all good everywhere around it. Every one who knew deceased said he was a very careful and intelligent workman. He was a married man, and left a wife and three children. The following is the verdict of the coroner's jury:

At an inquest holden at Fleming, Crawford county, on the 6th day of December, 1890, before me, C. A. Fisher, coroner of said county, on the body of Louis Didier, then lying dead, by the jurors whose names are hereunto subscribed. The said jurors, upon their oaths, do say: From the evidence brought before us, that Louis Didier came to his death while following his vocation as coal miner by a fall of rock; that the same was accidental, and could not be foreseen or avoided. In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

THOMAS FLYNN,
JAMES FENN,
HUGH HONIGAN,
MIKE BRENNAM,
JOHN FITZGIBBON,
F. SAMUELSON,
Jurors.

Attest: C. A. FISHER, *Coroner.*

GASES MET WITH IN COAL MINES.

CARBONIC ACID GAS.

This gas, commonly known as black-damp, is found in greater or less quantities in all mines, whether coal or any other mineral. Its specific gravity is 1.524, or a little over one and one-half times as heavy as air. It is composed of two atoms of oxygen to one atom of carbon. This gas is always produced when substances containing carbon are burnt in air or oxygen. Lights burn badly in air containing five per cent. of this gas, and it is very unsafe for a person to remain any length of time in an atmosphere containing eight per cent. It will not support combustion, and a small percentage of it in the air, will extinguish the flame of a candle or lamp. The breathing of this gas produces numbness, followed by dull pains in the joints of the legs and arms, with other sensations according to the constitution of the person inhaling it, until it produces in a short time paralysis, and finally death. When its presence is detected, the workmen should retreat at once, until the gas is dislodged, and the place thoroughly cleared of its presence. As it is heavier than any of the other gases found in mines, it lodges nearer the floor of the mine, and requires a larger amount of fresh air to dilute and carry it off. The confined gases in all coal contain this gas. It is also produced in mines by the breathing of men and animals and the burning of lights or lamps of any kind, and by the action of the air on gobs and timbers in the mines. The explosion of gas or powder in blasting also produce it. Gob-fires produce this gas abundantly; but these are of rare occurrence in this State, only two such having occurred to my knowledge; one was extinguished immediately, and the mine where the other was has been abandoned.

WHITE-DAMP.

Carbonic oxide is the most dangerous of all the gases, as it is exceedingly poisonous, acting almost instantly on the system. It is composed of one atom of carbon and one atom of oxygen, and is a trifle lighter than air. It has neither color, taste, nor smell, but is exceedingly poisonous, one-half of one per cent. in the air, if long breathed, producing fatal results. It does not support combustion, but burns with a blue flame. Such a proportion of this gas can be mixed with air as to form a mixture in which lamps will burn, and at the same time its effect on persons breathing it will be speedy death. Ignorance on this point has resulted in many deaths in mines. Its poison acts on the blood and nervous system, causing, when breathed in small quantities, a most unpleasant feeling, accompanied by headache and lassitude, prostration and inactivity, followed quickly by death. It is produced by im-

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perfect combustion, and is generally found in mines where there has been a fire of some kind. It is also produced in mines where powder is used for blasting, and is often found in after-damp. Men have often been killed by supposed after-damp, while their lamps, when found, were burned dry. It can only be detected by its effect on the miner, and this is apt to be fatal. On the first symptom of its presence, the miner should retreat to fresh air as soon as possible, as a few seconds wasted may mean death.

CARBURETTED HYDROGEN.

This is the fire-damp of coal mines. When pure, or nearly so, it is not explosive; but as it mixes with the air of the mine it renders the whole atmosphere dangerous, and when it comes in contact with a light an explosion is the result. Being only about half the weight of common air, it fills the upper portions of a mine, and gradually diffuses if left undisturbed, so that it is always found in the highest excavations. The principal object in modern mine ventilation is to remove it by currents of air, or to so dilute it as to render it non-explosive. About thirty volumes of air and one of gas, up to fifteen of air and one of gas, will not explode, but can be faintly seen on the flame of a lamp. Nine or ten volumes of air and one of gas are probably the most explosive mixture. As we add more gas the mixture becomes less explosive, until there are only five volumes of air to one of gas, when it will not explode, but will extinguish light, and would extinguish life. When we encounter explosive gases in the mines, we must judge by the action of the flame on the safety lamp. The Darry lamp is always considered a good lamp for indicating the presence of this gas, but is condemned as not being safe in strong currents of air, the flame readily passing through the gauze.

SULPHURETTED HYDROGEN.

This gas is not often met with in coal mines. It is produced when sulphur pyrites are decomposing in unventilated portions of a mine containing stagnant water. When mixed with air it burns with a blue flame. This gas can be so mixed with air that lights will burn while life will become extinct; it can only be detected by its smell, resembling rotten eggs. Its effects are sickness, giddiness, weakness, and loss of sensation.

There are quite frequently cases occurring in mines where the men employed therein are prostrated by one or more of the gases common to such places. It is not always possible to obtain the aid of a physician. Instead of crowding around the disabled miner in sympathetic idleness, those who form the onlookers should be able to at once address themselves to the best and quickest way of restoring the patient. The following directions, taken from the "Colliery Engineer Pocket-book," are submitted with the hope that they may prove useful in case of accidents:

TREATMENT OF PERSONS OVERCOME BY GAS.

Miners are exposed to asphyxia when the circulation of the air is not sufficiently active, when the mine exhales a quantity of deleterious gas, when they impru-

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dently penetrate into old or abandoned workings, and when there is an explosion. The symptoms of asphyxia are sudden cessation of breathing, of the pulsations of the heart, and of the action of the senses; the countenance is swollen, and marked with reddish spots; the eyes are protruded, the features are disturbed, and the face is often livid. Such are the most common symptoms noticeable in persons who are overcome by poisonous gases.

The first and best remedy to employ, and in which the greatest confidence ought to be placed, is the renewal of the air necessary for respiration. In succession—

1. Promptly withdraw the person affected from the deleterious place, and expose him to pure air.

2. Loosen the clothes round the neck and chest, and dash cold water on the face and chest.

3. Attempts should be made to irritate the nose on the inside with the feathered end of a quill, which should be gently moved in the nostrils of the insensible person, or to stimulate it with a bottle of volatile alkali under the nose.

4. Keep up the warmth of the body, and apply mustard plasters over the head and around the ankles.

5. If these means fail to produce respiration, Dr. Sylvester's method of producing artificial respiration should be tried, as follows: Place the patient on the back, on a flat surface inclined a little upwards from the feet; raise and support the head and shoulders on a small, firm cushion, or folded article of dress placed under the shoulder-blades; draw forward the patient's tongue and keep it projecting beyond the lips; an elastic band over the tongue and under the chin will answer this purpose, as it will retain the tongue in that position; remove all tight clothing from about the neck and chest, especially suspenders, should the patient wear them; then, standing at the patient's head, grasp the arms just above the elbows, and draw the arms gently and steadily upwards above the head, and keep them stretched upwards for two seconds; (by this means air is drawn into the lungs); then turn down the patient's arms and press them gently and firmly for two seconds against the sides of the chest; (by this means the air is pressed out of the lungs).

Repeat these measures alternately, deliberately, and perseveringly about fifteen times in a minute, until a spontaneous effort to respire is perceived; immediately upon which cease to imitate the movements of breathing, and proceed to induce circulation and warmth.

6. To promote warmth and circulation, rub the limbs upward with firm, grasping pressure and energy, using handkerchiefs, flannels, or other substitutes which may be at hand. Apply hot flannels, bottles of hot water, heated bricks, etc., to the pit of the stomach, the armpits, between the thighs, and to the soles of the feet.

7. On the restoration of life, a teaspoonful of warm water should be given; and then, if the power of swallowing has returned, small quantities of wine, warm brandy and water, or coffee should be administered.

8. These remedies should be promptly applied, and as death does not certainly appear for a long time, they ought only to be discontinued when it is clearly confirmed. Absence of the pulsations of the heart is not a sure sign of death, neither is the want of breathing.

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EXPLOSIVES.

In the Cherokee-Crawford coal field the handling and use of explosives has given the thinking portion of our operators and miners some cause for investigation concerning the subject.

The explosions in the mines of this field during the years 1887 and 1888 seem to have been largely due to the unrestricted use of powder, and keeping large quantities of it carelessly in the mine. No concerted effort has yet been made in this State to find an explosive which would be safer to handle than common blasting-powder, and at the same time produce as good results.

Several efforts in the direction of discovering a safer explosive than common blasting-powder were made by the Cherokee and Pittsburg Coal and Mining Company at their mines at Frontenac, Crawford county, under the supervision of Robert Craig, Esq., superintendent, and other officers of this company. Being absent from this part of the State at the time the experiments were made, Mr. Craig kindly furnished me with the results, which are as follows:

John T. Stewart, Esq., State Inspector of Coal Mines, Scammonville, Kansas—DEAR SIR: In answer to yours of the 12th inst., with reference to some experiments I made with dynamite and lithrotite in blasting coal in the mines at Frontenac, the following are the results:

First—A test of six days, with 10 per cent. dynamite, produced: lump, $47\frac{5}{10}$ per cent.; nut, $17\frac{6}{10}$ per cent.; slack, $34\frac{9}{10}$ per cent.

Second—With 15 per cent. dynamite for three days: lump, $44\frac{3}{10}$ per cent.; nut, $17\frac{9}{10}$ per cent.; slack, $37\frac{8}{10}$ per cent.

Third—With the lithrotite for 1 day: lump, $63\frac{2}{10}$ per cent.; nut, $14\frac{5}{10}$ per cent.; slack, $22\frac{3}{10}$ per cent.

The lithrotite produces as much lump coal as the blasting-powder in general use in the Cherokee field, with about the same bulk in the hole. We fired some of the holes with fuse and some with the squib. You will notice the per cent. of lump coal produced with the dynamite is low. The kind generally used in rock is the 40 per cent. nitro-glycerine; but we got some made with 10 per cent. and some with 15 per cent., thinking it would not produce so much nut and slack, but still it made too much. The object we had in view was to get a powder that would have no flame when exploded. This was claimed for the lithrotite; but, as I saw flame the first day, we gave it up. All the time we tried the dynamite there was no flame when exploded, so far as we could observe, and I believe there was none.

Yours truly, ROBERT CRAIG.

It will be seen by the above that neither of the three explosives tested was any improvement on the present method. While the dynamite gave off no flame, it broke up the coal too much, and this destroyed its value. The lithrotite did good work as to the quality of coal, yet when it gave off flame it was no safer than the present powder, with higher cost for its use.

The question of producing an explosive which could be used in fiery mines, has long tested the skill of the chemists, and the knowledge of mining experts in England, and on the continent of Europe. Nearly all the explosives hitherto tried are composed of dangerous substances, requiring very careful handling, are liable to explode at a low temperature, and by concussion. Two of these new explosives Mr. W. Bootle, colliery manager, Lancashire, England, in his essay on explosive compounds, says:

"There are two that I wish to say a few words in favor of, and these are gelatine dynamite and rolemite. Gelatine dynamite in conjunction with the water cartridge, an appliance invented by Mr. Miles Settle, has been a great stride in the direction of safety, especially when placed in a *careful man's hands*. We have fired over 1,200 shots with it, and never saw any indication of either spark or flame. But it has two drawbacks—it was rather destructive in its action, and required a large bore-hole. I will now bring my remarks to a close by saying a few words on rolemite. We have fired over 10,000 shots with it, and find it almost as cheap as gunpowder, and more efficient. It only requires an ordinary bore-hole, and occupies the space of bobbin powder. It gives off very little smoke or smell, which would be more injurious than the smoke of gunpowder in an ordinary-ventilated mine. We have carefully watched for both flame and sparks, but have, up to the present time, never seen the least. I believe it to be the simplest to use, most efficient and safe in its action, and has proved to be the best explosive ever yet discovered for the safety of our mines, ourselves, and our miners."

From the above it can be seen at a glance that the first of these would not do in our mines, as it is too destructive in its results, and requires a careful man to handle it. The latter seems to give off more deleterious gases than common gunpowder. And another fact: of all the charges used in their tests of rolemite, six ounces seemed to be the maximum, while in this coal field the average charge of powder is three and one-half pounds to a shot. I am much afraid that the safe explosive, with the average result of effective work, for use in mines has not been discovered, so far.

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THE COAL DEPOSITS OF KANSAS.

CHEROKEE AND CRAWFORD COUNTIES' COAL FIELD.

The vein of coal most extensively mined in these two counties, is generally known to the coal trade as the Cherokee vein. While it is the thichest, averaging 44 inches over the whole field, it is also the largest in extent; being over 30 miles in length. From Arcadia and Mulberry, in Crawford county, near the Missouri line, it runs in a southwesterly direction to near Columbus, the county seat of Cherokee county. It ranges from 3 to 8 miles in width. In depth from surface it varies from a few feet of stripping to 140 feet at the Woods & North Coal Company's shaft, on the north line of Cherokee county, three-fourths of a mile south of the city of Cherokee. The Cherokee top vein has been worked to a limited extent at a depth of 47 feet at the last-mentioned shaft, but was abandoned when the lower vein was reached. This vein has also been worked out. Baird & Sons' shaft, within the city limits of Cherokee, in Crawford county, owing to the large quantity of water in the shaft, and poor facilities for pumping, has been almost abandoned for the present. This vein at above place, is about two feet thick, and if properly managed would make good long-wall working. This top vein is not troubled with "horse-backs" or clay. There are several veins of coal mined and sold to the local trade west of Cherry creek, in Cherokee county. There is a good quality of smithing coal mined or stripped on a small branch of Cherry creek, about five miles west of Scammon. Also, many other places north and west of Cherry creek, until we reach one mile east of Lightning creek, where a shaft is down 90 feet, to a two-foot vein of coal, which cannot be profitably mined, as the bottom slate is very hard, causing the undercutting to be done in the coal, losing a good part of it in slack. The owner of the shaft claims to have a three-foot vein, which he intends to sink for at an early date. In the vicinity of Hallowell, a good deal of coal is stripped for local trade. The vein averages about 24 inches. Near Hallowell, there have been two shafts sunk to a depth of 90 feet; both have been abandoned for the present. Over half the coal product in the State has been mined and shipped from this field during the last two years. There are some small veins shipped in the vicinity of Oswego, Labette county, along the creeks, and ravines running into the Neosho river.

The next vein of coal to claim attention is what is generally known as the Fort Scott, "red coal." It occurs near the surface, all the way from Garland, in the southeast of Bourbon county, to Devon, six miles north of Fort Scott, on the Kansas, Nebraska & Dakota Railroad. It is generally mined by stripping, in the winter season, by the farmers, who haul it to Fort

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Scott, where it is sold. Over one-half million bushels have been mined and sold in this county during the last year. The vein averages about twenty inches in thickness, and is found in grading streets and lots in Fort Scott, the coal often paying for the work done. The city is underlaid with coal, building-stone, and hydraulic cement rock. A cut made in the north part of the city, in grading for the Fort Scott Belt Line of Railway, shows six feet of good building-stone, four feet of hydraulic cement rock, eighteen inches of coal, and about ten feet of good fire-clay. Cement works are located within the city limits on the east, and about two miles north of the city, both on the main line of the Fort Scott & Memphis Railroad.

Linn county coal is thought by many to be a continuation of the Fort Scott vein; but the quality and thickness of the two veins do not correspond very closely. In ravines bordering on West Labadie creek, coal is found in strippings at from a few feet to ten feet below the surface, the vein being about twenty-eight inches thick. One and one-half mile east of these strippings, a shaft fifty feet deep was sunk and the same vein reached. This shaft has recently been abandoned on account of bad management. On East Labadie creek and vicinity a good deal of strip coal is mined. A shaft at Pleasanton, ninety feet deep, is working a vein about twenty-two inches thick, on the east side of the shaft, with a soapstone roof. Further east, two miles, the coal is eighty-three feet deep, with hard slate roof, and thirty inches of coal. Four miles east of Pleasanton, coal is mined in a shaft sixty feet deep, with hard slate top and thirty-six inches of coal. Six miles east of Pleasanton, a good deal of stripping is going on, nearly all of which is shipped at Groom's switch, on the St. Louis and Emporia division of the Missouri Pacific Railroad.

At Boicourt, six miles north of Pleasanton, the coal is 93 feet deep, 34 inches thick, with 36 inches of soapstone roof, above which there is 17 feet of a very hard conglomerate rock. Below the coal is 4½ feet of a good quality of fire clay.

Coal is mined at LaCygne at 110 feet deep, about 30 inches in thickness, and at Orchard Mines, seven miles east of above city, there are three shafts 60 feet deep, the vein averaging 36 inches in thickness, with a good, hard slate roof. This vein resembles the coal mined at Rich Hill, Mo., and vicinity. The stratum seems to be wavy in this county, but there is every evidence to show large bodies of good, workable coal, accessible to railroad facilities.

In Neosho county, the coal vein is mined by small drifts, in the vicinity of Thayer, and has not been much developed except for local use. It averages about 14 inches in thickness. It has not been traced to any great extent west or north. Owing to being so thin, it does not seem to have attracted the same attention as other veins in the State.

Franklin county vein averages 17 inches thick. It has a hard roof, with clay mining in the bottom in some localities, and in others the bottom is generally hard, making the mining comparatively unprofitable. Long-wall is the prevailing system adopted for mining all the thin veins of this county.