State inspector of coal mines reports

Section 8, Pages 211 - 240

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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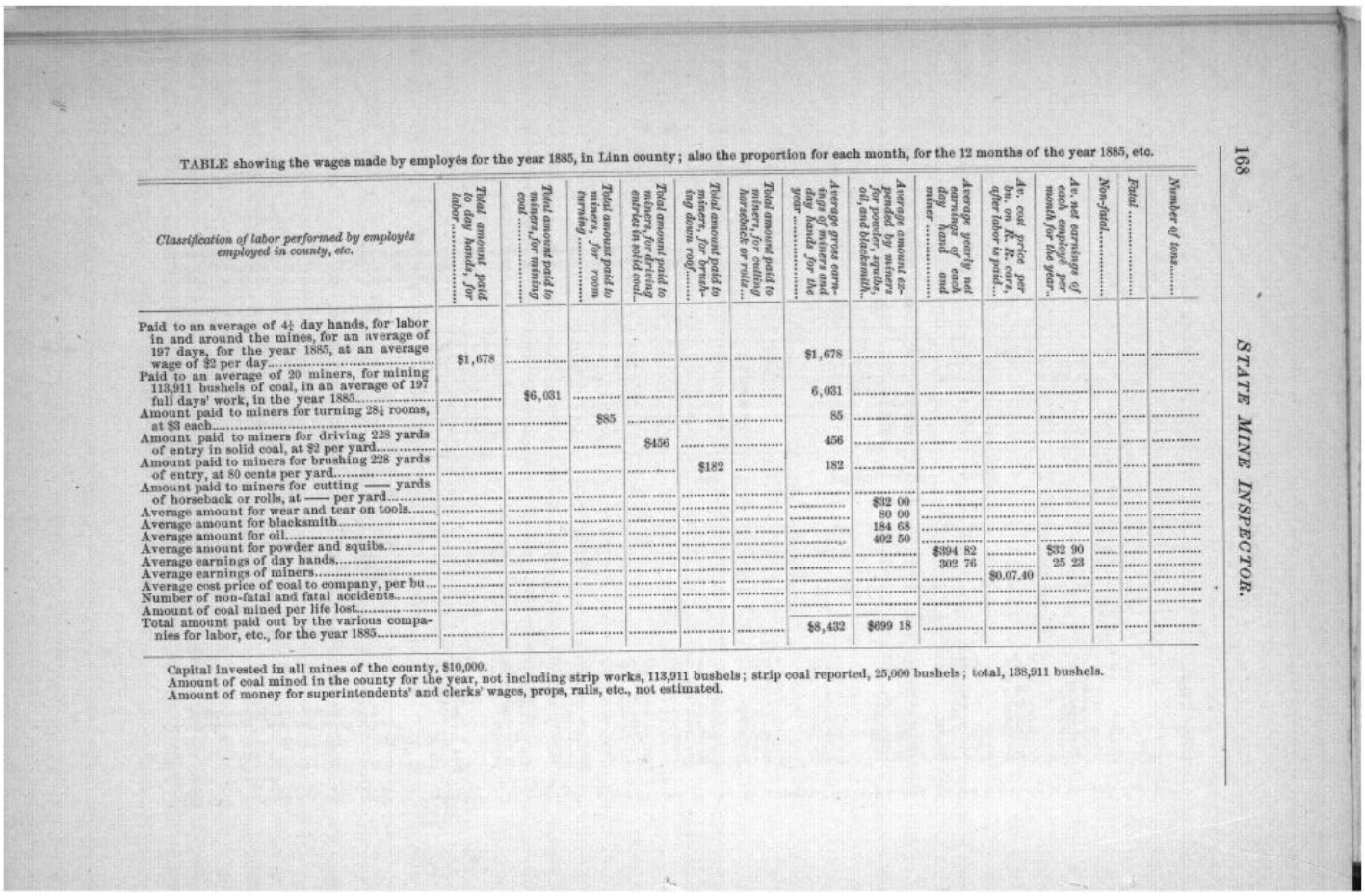

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TABLE showing the wages made by employés for the year 1885, in Linn county; also the proportion for each month, for the 12 months of the year 1885, etc.

Classification of labor performed by employés employed in county, etc.	Total amount paid to day hands, for labor	Total amount paid to miners, for mining coal	Total amount paid to miners, for room turning	Total amount paid to miners, for driving entries in solid coal	Total amount paid to miners, for brushing down roof	Total amount paid to miners, for cutting horseback or rolls	Average gross earnings of miners and day hands for the year	Average amount expended by miners for powder, squibs, oil, and blacksmith	Average yearly net earnings of each day hand and miner	Av. cost price per bu. on R. R. cars, after labor is paid	Av. net earnings of each employé per month, for the year	Non-fatal	Fatal	Number of tons
Paid to an average of 4½ day hands, for labor in and around the mines, for an average of 197 days, for the year 1885, at an average wage of $2 per day	$1,678						$1,678							
Paid to an average of 20 miners, for mining 113,911 bushels of coal, in an average of 197 full days' work, in the year 1885		$6,031					6,031							
Amount paid to miners for turning 28¼ rooms, at $3 each			$85				85							
Amount paid to miners for driving 228 yards of entry in solid coal, at $2 per yard				$456			456							
Amount paid to miners for brushing 228 yards of entry, at 80 cents per yard					$182		182							
Amount paid to miners for cutting —— yards of horseback or rolls, at —— per yard								$32 00						
Average amount for wear and tear on tools								80 00						
Average amount for blacksmith								184 68						
Average amount for oil								402 50						
Average amount for powder and squibs									$394 82		$32 90			
Average earnings of day hands									302 76		25 23			
Average earnings of miners										$0.07.40				
Average cost price of coal to company, per bu														
Number of non-fatal and fatal accidents														
Amount of coal mined per life lost														
Total amount paid out by the various companies for labor, etc., for the year 1885							$8,432	$699 18						

Capital invested in all mines of the county, $10,000.
Amount of coal mined in the county for the year, not including strip works, 113,911 bushels; strip coal reported, 25,000 bushels; total, 138,911 bushels.
Amount of money for superintendents' and clerks' wages, props, rails, etc., not estimated.

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LOCATION AND CONDITION OF MINES IN LEAVENWORTH CO.

LEAVENWORTH COAL COMPANY'S SHAFT.

This mine is located on the Government reservation, adjacent to the city of Leavenworth, and near the Missouri river. The mine and plant is the most elaborate and extensive of any in the State. It has been in operation about fifteen years, and has excavated about one and a half miles square of coal, twenty-two inches thick. The greatest portion of the mining operations, now going on, are to the east and north, under the Missouri river. Some work is being done on the west, but not so much as east and north.

The ventilation is fairly good in the largest portion of this mine. At some points it is weak, but this is being remedied as quickly as possible. The hauling-roads of this mine are in first-class condition for getting out coal, and everything seems to move along like clock-work. The air-current is split in four separate divisions. A separate current ventilates each of the four quarters of the mine, and all come together in two currents to the up-cast, or furnace-shaft, which is divided into three compartments, one for air and two for cages to raise or lower men, should any break-down occur with the main winding-machinery.

Had the management not had their attention called for the last twelve months to other large and important improvements, which are now completed, the air-current would have been at present separated into ten different currents, each ventilating a division separately, without being mingled together until they had all passed the workmen. The high and constant temperature at the face of the workings of this mine, over that on the surface, at most all times of the year, must be overcome to make the workings more cool and comfortable; and the only way to overcome it is to separate the air into more currents, so that a larger volume of cool air will sweep throughout all the ramifications of the mine and lower the temperature of the gob-wastes and accompanying strata. As the mine is extended, the gob-waste is extended. This gob-waste is all the time under a slow combustion, and although the temperature of it has never at any time yet reached the point of ignition, still it is continually giving off heat, and, as above stated, as the mine is extended the gob-waste is extended, so that a larger volume of heat is raised, and consequently a larger volume of cool air is required to keep the temperature at a comfortable degree for men to work in.

The management of this company have long since seen the need of a large surplus volume of air in this mine, and have been working their mine on a plan to bring about that result in the near future. Mr. J. E. Carr, the superintendent and partner of this mine, said that all his attention for some

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time previous to my visit had been devoted to other improvements, but as they were now completed, he expected to devote part of the year 1886 to that problem. He stated that he intended to construct a 25-foot ventilating fan, and he thought he might have it in operation before I made another visit.

The high temperature of this mine is the only objectionable feature I see about it. Without saying that it is injurious or not injurious to the men, it must keep them from performing a certain amount of labor which they could do in a cooler atmosphere. Whatever loss arises from this cause must either come out of the company's pocket or the men's wages. The Pit Boss of this mine is John Healer; W. J. E. Carr, Assistant Superintendent; J. E. Carr, General Superintendent.

PENITENTIARY COAL MINE.

This mine's shaft is located inside of the walls of the State Penitentiary, and is second in capacity to the Leavenworth Coal Mine. But it is young, and has years to grow. It is well managed and is in first-class shape in every respect. It has large spacious airways in the mine, and an abundance of air, separated into four currents, which is carried in and around the working-faces to every one's satisfaction. The hauling-roads are kept high and free of any overhanging loose material, and kept level, tidy, and clean, and in every respect in first-class condition for getting out coal. Every precaution is used from the top of the shaft to the coal-face to guard against accidents.

There has recently been erected on the air-shaft a pair of 80-horse-power winding-engines, for raising or lowering men or material should any breakdown occur with the main winding machinery. All the machinery is good of its class I would prefer the Leavenworth winding-engine to these, for a hoist of this depth, but I presume there is a vast difference in the cost.

I have to thank the superintendent of this mine for the kind courtesy shown me during my visit there. I took a great interest in examining and reviewing the work that he has so well built from the bottom to the top, and can assure him that it will never be a discredit to him. Oscar F. Lamm, Superintendent.

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LOCATION AND CONDITION OF MINES IN BOURBON COUNTY.

MISCELLANEOUS OPERATORS.

James Bell's slope is a small mine, near Fort Scott, working but one man in winter. Trade, local.

John Sever's slope is also a small mine near Fort Scott, working two men a part of the winter. Trade, local. It is not now in operation.

Hugh Clifford's slope is a small mine working three men for two months in the winter. It has not operated any in 1886.

John Moffat's mine is the same as Clifford's.

I. & L. Ogden's slope is located near Fort Scott, and operates all the year round. The miners went out on a strike for a higher price, in December, 1885. I do not know whether they have commenced work again, or not.

Henry Cozad's slope is now abandoned. It has not done anything since the month of August, 1885.

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LEAVENWORTH COUNTY COAL MINES.

NAME OF OPERATOR.	Name or No. of mine	P. O. address	Thickness of vein. Feet	Thickness of vein. Inches	Depth of shaft from surface, in feet	What kind of opening	By what power operated	By what power ventilated	What kind of coal	Is coal wedging or blasting coal	Shipping or local trade, or both
Leavenworth Coal Co.	1	Leavenworth	1	10	720	Shaft	Steam	Furnace	Bituminous	Wedging	Both.
Penitentiary Coal Shaft	1	Lansing	1	10	720	"	"	"	"	"	"

LEAVENWORTH COUNTY COAL MINES—CONTINUED.

NAME OF OPERATOR.	Number of kegs of powder used during the year 1886.	Average number day hands employed during year	Average number of full days worked at each mine during year	Average rate per day paid to day hands during year	Total amount money earned by day hands for total number of days during year	Average number of miners employed at each mine during the year	Total number of bushels of coal mined at each mine, during the year 1886	Price paid per bushel for mining. Summer price	Price paid per bushel for mining. Winter price	Average price paid per bushel for year	Total value of product to miners	Average number of bushels of coal making a fair day's work at different mines	Capital invested by the companies
Leavenworth Coal Co		62	157½	$2 00	$19,530 00	240	1,891,605	Cts. 4	Cts. 4	Cts. 4	$75,664 20	50	$300,000
Penitentiary Coal Shaft		48	208	1 00	9,984 00	200	1,122,419	4	4	4	44,896 76	27	75,000
Total					$25,142 00		3,014,024				$120,560 96		$375,000

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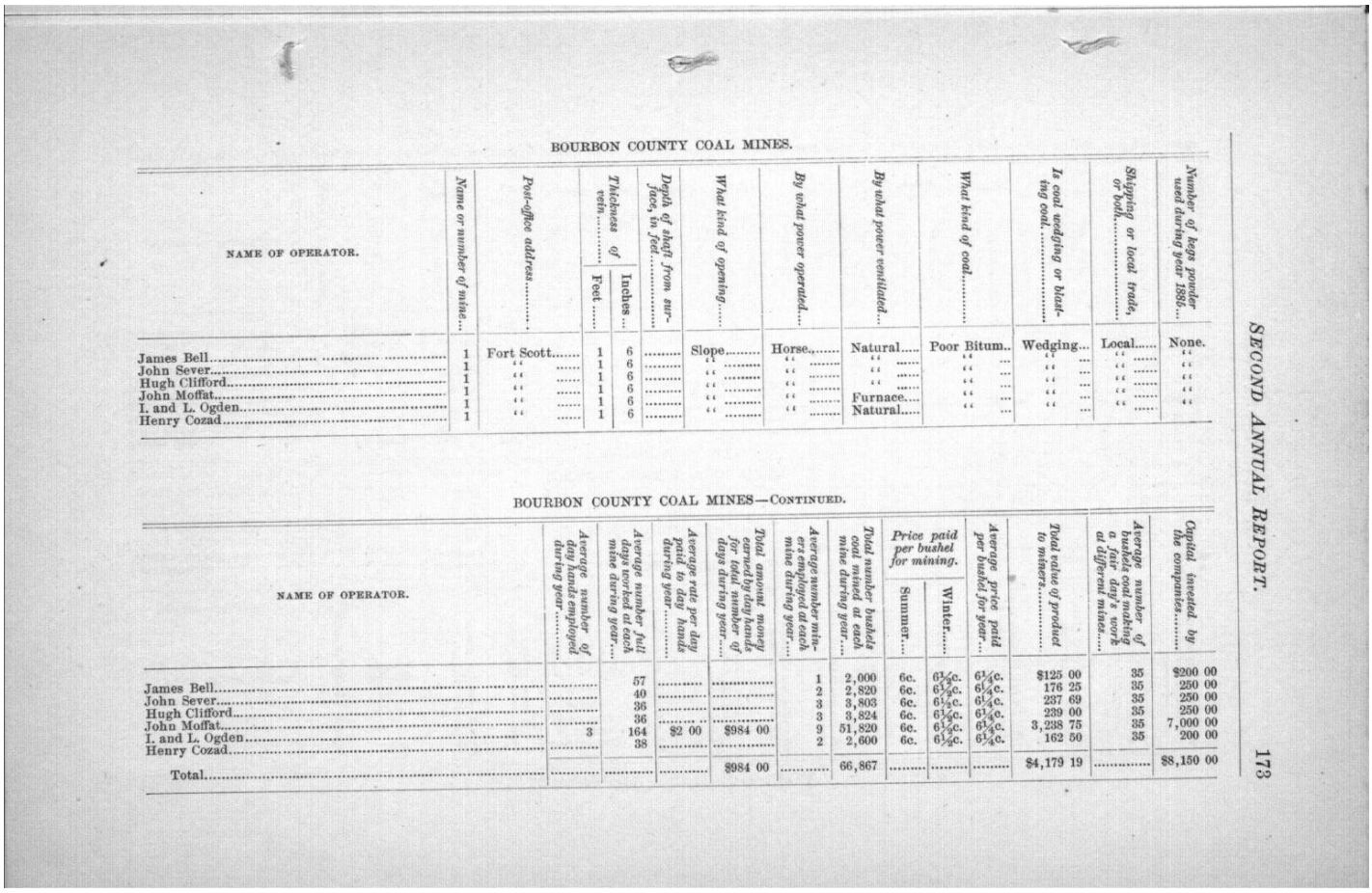

BOURBON COUNTY COAL MINES.

NAME OF OPERATOR.	Name or number of mine	Post-office address	Thickness of vein: Feet	Thickness of vein: Inches	Depth of shaft from surface, in feet	What kind of opening	By what power operated	By what power ventilated	What kind of coal	Is coal wedging or blasting coal	Shipping or local trade, or both	Number of kegs powder used during year 1895
James Bell	1	Fort Scott	1	6		Slope	Horse	Natural	Poor Bitum.	Wedging	Local	None.
John Sever	1	"	1	6		"	"	"	"	"	"	"
Hugh Clifford	1	"	1	6		"	"	"	"	"	"	"
John Moffat	1	"	1	6		"	"	Furnace	"	"	"	"
I. and L. Ogden	1	"	1	6		"	"	Natural	"	"	"	"
Henry Cozad	1	"										

BOURBON COUNTY COAL MINES—CONTINUED.

NAME OF OPERATOR.	Average number of day hands employed during year	Average number full days worked at each mine during year	Average rate per day paid to day hands during year	Total amount money earned by day hands for total number of days during year	Average number miners employed at each mine during year	Total number bushels coal mined at each mine during year	Price paid per bushel for mining: Summer	Price paid per bushel for mining: Winter	Average price paid per bushel for year	Total value of product to miners	Average number of bushels coal making a fair day's work at different mines	Capital invested by the companies
James Bell		57			1	2,000	6c.	6½c.	6¼c.	$125 00	35	$200 00
John Sever		40			2	2,820	6c.	6½c.	6¼c.	176 25	35	250 00
Hugh Clifford		36			2	3,803	6c.	6½c.	6¼c.	237 69	35	250 00
John Moffat		36			2	3,824	6c.	6½c.	6¼c.	239 00	35	250 00
I. and L. Ogden	3	164	$2 00	$984 00	2	51,820	6c.	6½c.	6¼c.	3,238 75	35	7,000 00
Henry Cozad		38			2	2,600	6c.	6½c.	6¼c.	162 50	35	200 00
Total				$984 00		66,867				$4,179 19		$8,150 00

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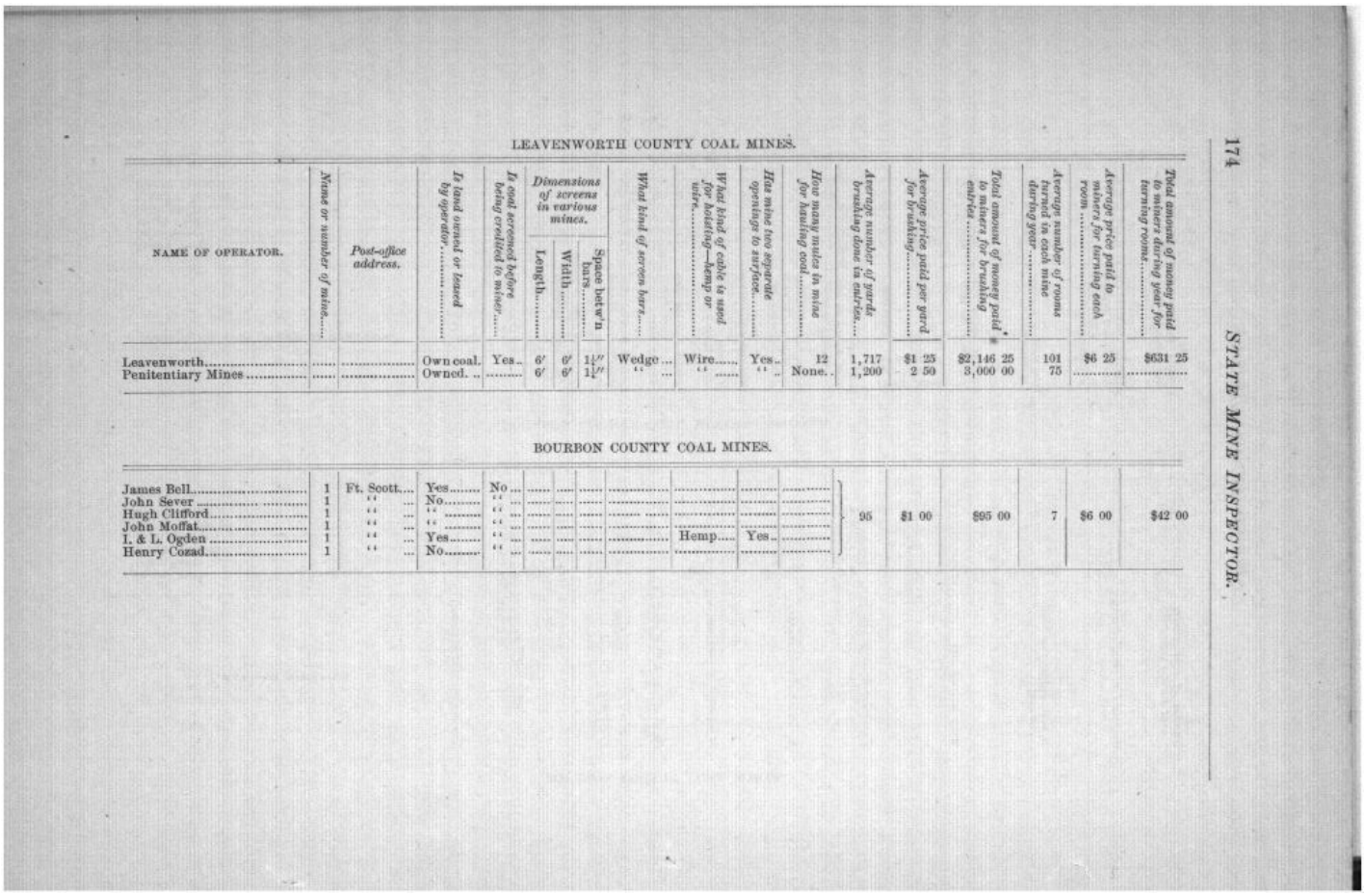

LEAVENWORTH COUNTY COAL MINES.

NAME OF OPERATOR.	Name or number of mine.	Post-office address.	Is land owned or leased by operator	Is coal screened before being credited to miner	Dimensions of screens in various mines. Length	Width	Space between bars	What kind of screen bars	What kind of cable is used for hoisting—hemp or wire	Has mine two separate openings to surface	How many mules in mine for hauling coal	Average number of yards brushing done in entries	Average price paid per yard for brushing	Total amount of money paid to miners for brushing entries	Average number of rooms turned in each mine during year	Average price paid to miners for turning each room	Total amount of money paid to miners during year for turning rooms
Leavenworth	.....	.....	Own coal.	Yes	6′	6′	1 7/8″	Wedge	Wire	Yes	12	1,717	$1 25	$2,146 25	101	$6 25	$631 25
Penitentiary Mines	.....	.....	Owned.	.....	6′	6′	1 7/8″	‘‘	‘‘	‘‘	None.	1,200	2 50	3,000 00	75	.....	.....

BOURBON COUNTY COAL MINES.

James Bell	1	Ft. Scott	Yes	No	.....	.....	.....	.....	.....	.....	.....	95	$1 00	$95 00	7	$6 00	$42 00
John Sever	1	‘‘	No	‘‘	.....	.....	.....	.....	.....	.....	.....						
Hugh Clifford	1	‘‘	‘‘	‘‘	.....	.....	.....	.....	.....	.....	.....						
John Moffat	1	‘‘	‘‘	‘‘	.....	.....	.....	.....	.....	.....	.....						
I. & L. Ogden	1	‘‘	Yes	‘‘	.....	.....	.....	.....	Hemp	Yes	.....						
Henry Corad	1	‘‘	No	‘‘	.....	.....	.....	.....	.....	.....	.....						

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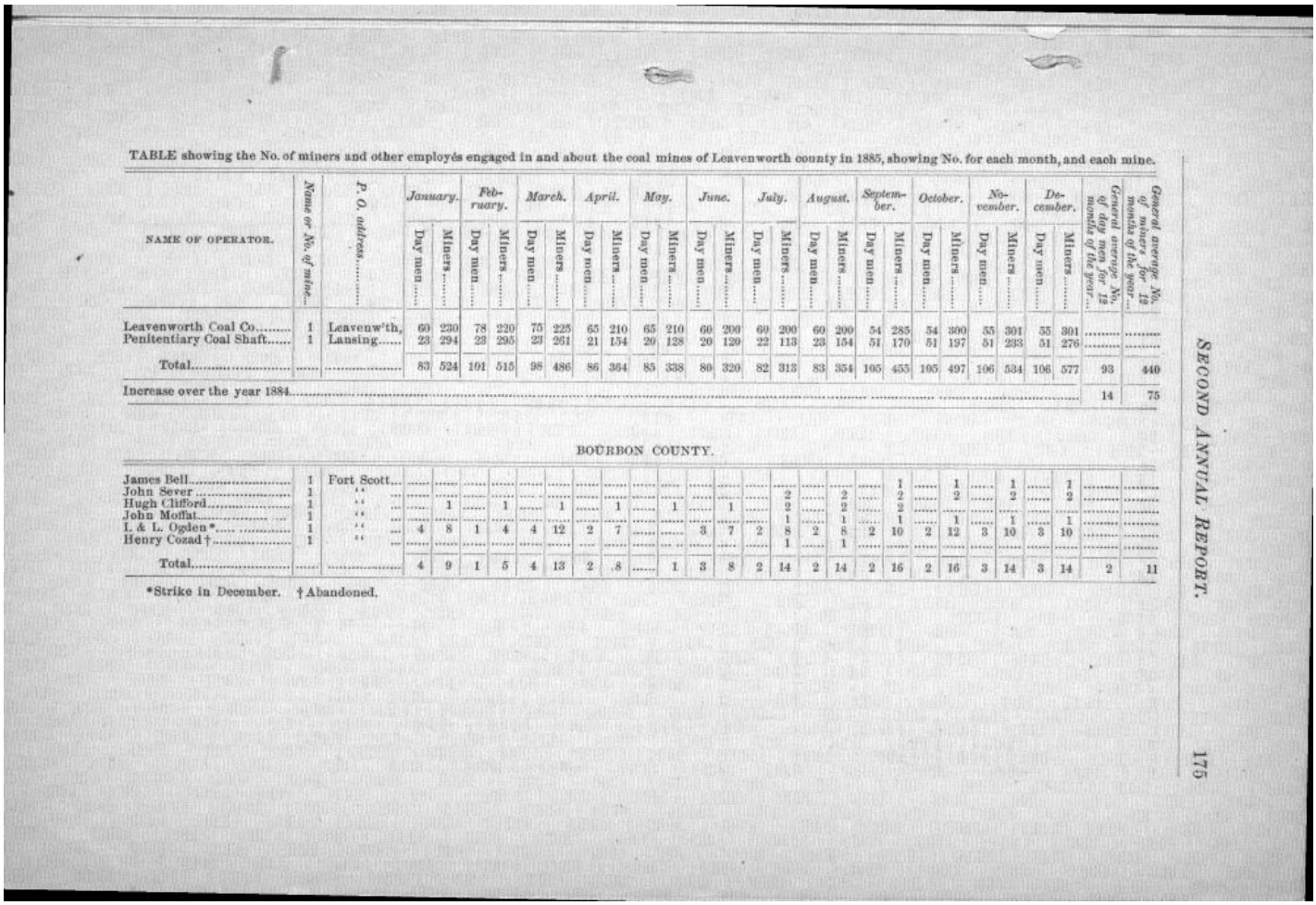

TABLE showing the No. of miners and other employés engaged in and about the coal mines of Leavenworth county in 1885, showing No. for each month, and each mine.

NAME OF OPERATOR.	Name or No. of mine.	P. O. address.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		General average No. of miners for 12 months of the year.	General average No. of day men for 12 months of the year.
			Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.	Day men.	Miners.		
Leavenworth Coal Co	1	Leavenw'th,	60	230	78	220	75	225	65	210	65	210	60	200	60	200	60	200	54	285	54	300	55	301	55	301	.....	.....
Penitentiary Coal Shaft	1	Lansing	23	294	23	295	23	261	21	154	20	128	20	120	22	113	23	154	51	170	51	197	51	233	51	276	.....	.....
Total	.....	.....	83	524	101	515	98	486	86	364	85	338	80	320	82	313	83	354	105	455	105	497	106	534	106	577	93	440
Increase over the year 1884																											14	75
BOURBON COUNTY.																												
James Bell	1	Fort Scott	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	1	.....	1	.....	.....
John Sever	1	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2	.....	2	.....	2	.....	2	.....	2	.....	.....
Hugh Clifford	1	"	.....	1	.....	1	.....	1	.....	1	.....	1	.....	1	.....	2	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
John Moffat	1	"	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	1	.....	1	.....	1	.....	1	.....	1	.....	.....
L. & L. Ogden*	1	"	4	8	1	4	4	12	2	7	.....	.....	3	7	2	8	2	8	2	10	2	12	3	10	3	10	.....	.....
Henry Cozad†	1	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	.....	.....	4	9	1	5	4	13	2	8	.....	1	3	8	2	14	2	14	2	16	2	16	3	14	3	14	2	11

*Strike in December. †Abandoned.

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RECAPITULATION of the following counties, as a comparison with the same counties for the year 1884, showing the increase in day hands and miners for the year 1885.

COUNTIES.	Day hands...	Miners...
Bourbon	2	11
Franklin	8	55
Douglas	1	5
Neosho	2	40
Linn	5	20
Ellsworth	4	26
Lincoln	6	25
Cloud	4	18
Republic	3	13
Russell	.....	1
Jewell	2	5
Shawnee	7	24
Coffey	1	8
Total for above-named counties for 1885	45	251
Total for above-named counties for 1884	18	137
Increase in above-named counties for 1885	27	114
Total increase in employés for the whole State	290	951

STRIP COAL MINED IN BOURBON COUNTY, AND VALUE OF SAME WHEN READY FOR MARKET.

NAME OF OPERATOR.	P. O. address.	Total number of bushels of coal mined by each operator.	Cost price for putting coal on board of cars, or for hauling and unloading it at distance of one mile.	Total value of the product at the cost price, ready for shipment.
A. J. Clark	Fort Scott	7,000	Average 7 cents.	.....
C. T. Clark	" "	4,000	"	.....
Mr. Kennison	" "	7,000	"	.....
John Wick	" "	7,000	"	.....
Mr. Clyburn	" "	6,000	"	.....
Dr. Couch	" "	15,000	"	.....
Geo. Dunn	" "	10,000	"	.....
John Drum	" "	10,000	"	.....
Mr. Maberry	" "	50,000	"	.....
Mr. McAffee	" "	15,000	"	.....
John Ferris	" "	80,000	"	.....
Herman Katz	" "	15,000	"	.....
Geo. Pellett	Godfrey	15,000	"	.....
John Bishop	Clarksburg	25,000	"	.....
John Kopkins	"	10,000	"	.....
M. M. Dobbins	"	15,000	"	.....
Isaac Runyon	"	20,000	"	.....
		311,000	Average 7 cents.	$21,770 00

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TABLE showing the wages made by employés for the year 1885, in Leavenworth county; also the proportion for each month, for the 12 months of the year 1885, etc.

Classification of labor performed by employés employed in county, etc.	*Total amount paid to day hands, for labor*	*Total amount paid to miners, for mining coal*	*Total amount paid to miners, for turning*	*Total amount paid to miners, for driving entries in solid coal*	*Total amount paid to miners, for brushing down roof in entries*	*Total amount paid to miners, for cutting horseback in rooms and entries*	*Average gross earnings of miners and day hands for year*	*Average amount expended for powder, squibs, oil, and blacksmith*	*Average net earnings of each day hand and miner for year*	*Av. cost price of coal p'r bu. in R. R cars, after labor is paid*	*Av. net earnings of each employé per month for the year*	*Non-fatal*	*Fatal*	*Number of tons*
Paid to an average of 62 day hands, for labor in and around the mines, for an average of 157½ days, for the year 1885, at an average wage of $2 per day	$19,530						$19,530							
Paid to an average of 240 miners, for mining 1,891,605 bushels of coal, in an average of 157½ full days' work		$75,664					75,664							
Amount paid to miners for turning 101 rooms, at $6.25 each			$631				631							
Amount paid to miners for driving —— yds. of entry in solid coal, at —— per yd														
Amount paid to miners for brushing 1,717 yards of entry, at $1.25 per yard					$2,146		2,146							
Amount paid to miners for cutting —— yards of horseback, at $—— per yard														
Average amount spent by miners for wear and tear on tools								$168						
Average amount spent for blacksmith								1,680						
Average amount spent for oil								1,772						
Average amount for powder and squibs									$315 00		$26 25			
Average earnings of day hands									311 75		25 98			
Average earnings of miners										$0.05.17				
Average cost price of coal, per bushel														
Number of non-fatal and fatal accidents														
Amount of coal mined per life lost														
Total amount paid out by the various companies for labor for the year 1885							$97,971	$3,620						

Capital invested in all mines of the county, $300,000. Capital invested in Penitentiary shaft, $75,000.
Total amount of coal mined in the county for the year, not including strip works, 1,891,605 bushels.
Amount of money for superintendents' and clerks' wages, props, rails, etc., not estimated.

NOTE.—The wear and tear of tools of each mine is estimated at 10 cents per month per man; have worked a short 7 months.—The use of oil is calculated at ¼ pint per day per man, at 75 cents per gallon; have worked 157½ days in year.—Blacksmithing is paid for at the rate of $1 per month from each man, for 7 short months.

Had there been steady work the year round in this county, day hands would have made $50 per month, and miners, on an average (poor and good classed together), would have made about $50 per month, after paying all expenses.

I have made no estimate of the Penitentiary coal shaft on this table; see other tables preceding this in this report for that mine.

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TABLE showing the wages made by employés for the year 1885, in Bourbon county; also the proportion for each month, for the 12 months of the year 1885, etc.

Classification of labor performed by employés employed in county, etc.	*Total amount paid to day hands, for labor*	*Total amount paid to miners, for mining coal*	*Total amount paid to miners, for room turning*	*Total amount paid to miners, for driving entries in solid coal*	*Total amount paid to miners, for brushing down roof*	*Total amount paid to miners, for cutting horseback or rolls*	*Average gross earnings of miners and day hands for the year*	*Average amount expended by miners for powder, squibs, oil, and blacksmith*	*Average yearly net earnings of each day hand and miner*	*Av. coal price per bu. on R. R. cars, after labor is paid*	*Av. net earnings of each employé per month for the year*	*Non-fatal*	*Fatal*	*Number of tons*
Paid to an average of 2 day hands, for labor in and around the mines, for an average of 246 days, for the year 1885, at an average wage of $2 per day	$984						$984							
Paid to an average of 11 miners, for mining 66,867 bushels of coal, in an average of 246 full days' work, in the year 1885		$4,179					4,179							
Amount paid to miners for turning 7 rooms, at $6 each			$42				42							
Amount paid to miners for driving —— yards of entry in solid coal, at —— per yard														
Amount paid to miners for brushing 95 yards of entry, at $1 per yard					$95		95							
Amount paid to miners for cutting —— yards of horseback or rolls, at —— per yard														
Average amount for wear and tear on tools								$9 90						
Average amount for blacksmith								99 00						
Average amount for oil								126 75						
Average amount for powder and squibs														
Average earnings of day hands									$492 00		$41 00			
Average earnings of miners									370 95		30 91			
Average cost price of coal to company, per bu										$0.07.92				
Number of non-fatal and fatal accidents														
Amount of coal mined per life lost														
Total amount paid out by the various companies for labor, etc., for the year 1885							$5,300	$235 65						

Capital invested in all mines of the county, $8,150.
Amount of coal mined in the county for the year, not including strip works, 66,867 bushels; strip coal reported, 311,000 bushels; total, 377,867 bushels.
Amount of money for superintendents' and clerks' wages, props, rails, etc., not estimated.

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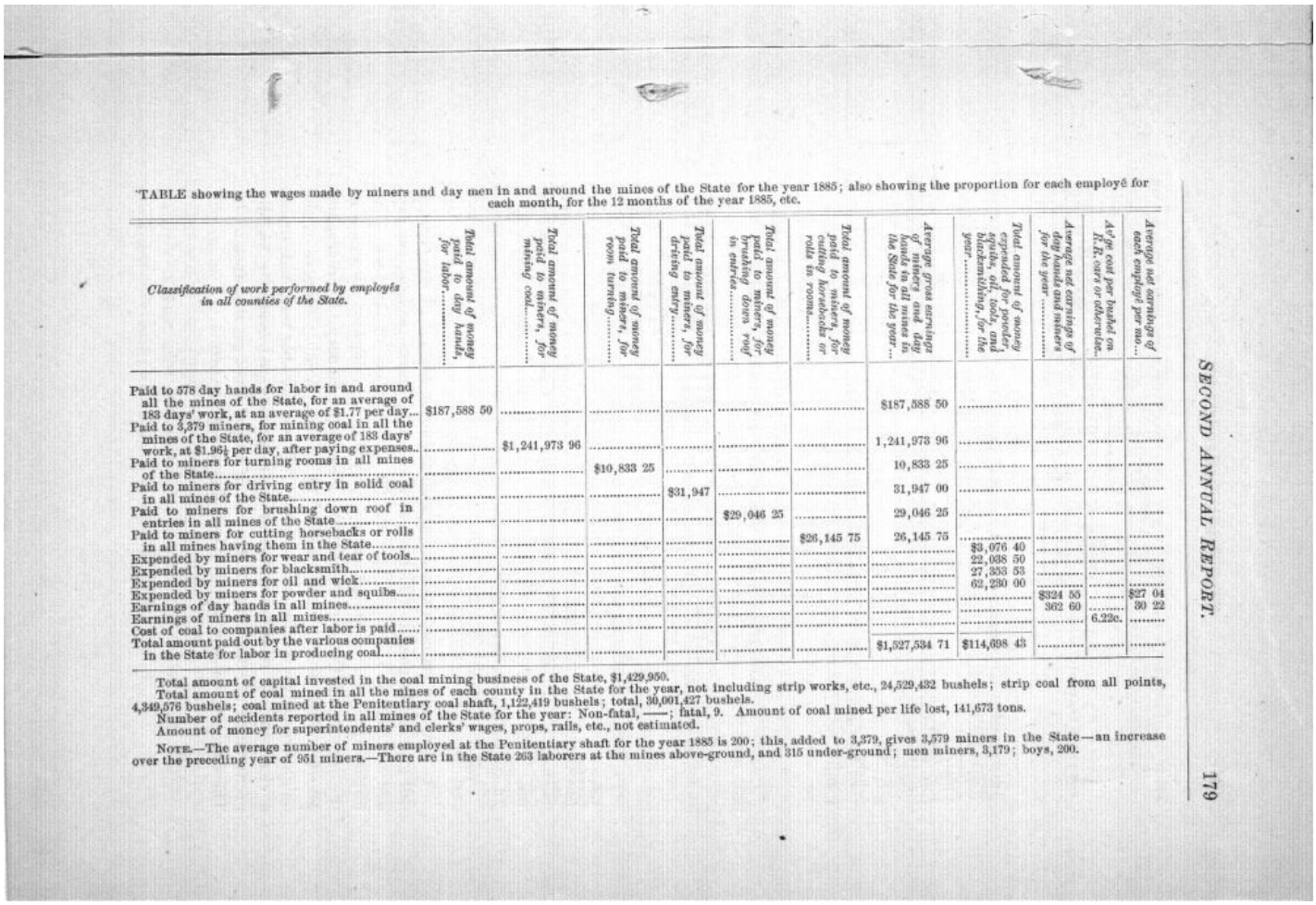

TABLE showing the wages made by miners and day men in and around the mines of the State for the year 1885; also showing the proportion for each employé for each month, for the 12 months of the year 1885, etc.

Classification of work performed by employés in all counties of the State.	Total amount of money paid to day hands, for labor	Total amount of money paid to miners, for mining coal	Total amount of money paid to miners, for room turning	Total amount of money paid to miners, for driving entry	Total amount of money paid to miners, for brushing down roof in entries	Total amount of money paid to miners, for cutting horsebacks or rolls in rooms	Average gross earnings of miners and day hands in all the mines in the State for the year	Total amount of money expended for powder, squibs, oil, tools, and blacksmithing, for the year	Average net earnings of day hands and miners for the year	Av'ge cost per bushel on R.R. cars or otherwise.	Average net earnings of each employé per mo.
Paid to 578 day hands for labor in and around all the mines of the State, for an average of 183 days' work, at an average of $1.77 per day	$187,588 50						$187,588 50				
Paid to 3,379 miners, for mining coal in all the mines of the State, for an average of 183 days' work, at $1.96½ per day, after paying expenses		$1,241,973 96					1,241,973 96				
Paid to miners for turning rooms in all mines of the State			$10,833 25				10,833 25				
Paid to miners for driving entry in solid coal in all mines of the State				$31,947			31,947 00				
Paid to miners for brushing down roof in entries in all mines of the State					$29,046 25		29,046 25				
Paid to miners for cutting horsebacks or rolls in all mines having them in the State						$26,145 75	26,145 75				
Expended by miners for wear and tear of tools								$3,076 40			
Expended by miners for blacksmith								22,038 50			
Expended by miners for oil and wick								27,353 53			
Expended by miners for powder and squibs								62,230 00			
Earnings of day hands in all mines									$324 55		$27 04
Earnings of miners in all mines									362 60		30 22
Cost of coal to companies after labor is paid										6.22c.	
Total amount paid out by the various companies in the State for labor in producing coal							$1,527,534 71	$114,698 43			

Total amount of capital invested in the coal mining business of the State, $1,429,950.

Total amount of coal mined in all the mines of each county in the State for the year, not including strip works, etc., 24,529,432 bushels; strip coal from all points, 4,349,576 bushels; coal mined at the Penitentiary coal shaft, 1,122,419 bushels; total, 30,001,427 bushels.

Number of accidents reported in all mines of the State for the year: Non-fatal, ——; fatal, 9. Amount of coal mined per life lost, 141,673 tons.

Amount of money for superintendents' and clerks' wages, props, rails, etc., not estimated.

NOTE.—The average number of miners employed at the Penitentiary shaft for the year 1885 is 200; this, added to 3,379, gives 3,579 miners in the State—an increase over the preceding year of 951 miners.—There are in the State 263 laborers at the mines above-ground, and 315 under-ground; men miners, 3,179; boys, 200.

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STRIP COAL MINED IN LABETTE COUNTY, AND VALUE OF SAME WHEN READY FOR MARKET.

NAME OF OPERATOR.	P. O. address.	Average thickness of earth removed to get out coal for the market.	Thickness of vein after stripped. Feet.....	Thickness of vein after stripped. Inches...	Total No. of bushels of coal mined by each operator.	Cost price for putting coal on board of cars, or for hauling and unloading it at distance of one mile.	Total value of the product at the cost price, ready for shipment.
D. C. Shepherd	Oswego	10 feet	Av. 1	Av. 6	200,000	Av. 7 cents.	$14,000
James Stice	"	10 "	" 1	" 6		"	
T. F. Stice	"	10 "	" 1	" 6		"	
A. Olmstead	"	10 "	" 1	" 6		"	
L. Baker	"	10 "	" 1	" 6		"	
L. W. Leake	"	10 "	" 1	" 6		"	
C. M. Page	"	10 "	" 1	" 6		"	
Harvi Foust	"	10 "	" 1	" 6		"	
A. Ball	"	10 "	" 1	" 6		"	
Z. Richel	"	10 "	" 1	" 6		"	
N. Taylor	"	10 "	" 1	" 6		"	
A. Kaho	"	10 "	" 1	" 6		"	
L. H. Simmers	"	10 "	" 1	" 6		"	
J. A. Kirby	"	10 "	" 1	" 6		"	
J. Silvers	"	10 "	" 1	" 6		"	

RECAPITULATION OF THE STRIP COAL MINED IN KANSAS.

COUNTIES.	Total number of bushels of coal mined in each county.....	Cost price for putting coal on board of cars, or for hauling and unloading it at distance of one mile..	Total value of the product at the cost price, ready for shipment.....
Labette	200,000	7 cents.....	$14,000 00
Crawford	1,760,816	5½ "	96,844 88
Cherokee	37,574	6 "	2,254 44
Linn	25,000	6½ "	1,625 00
Bourbon	311,000	7 "	21,770 00
Coffey	215,100	8½ "	18,283 00
Osage	803,086	7¼ "	58,223 73
Franklin	18,000	7½ "	1,350 00
All other coal mined in the State in 1885, estimated	1,000,000	7 "	70,000 00
Total	4,370,576	.....	$284,351 05

To strip and get out ready for market the above amount of strip coal, it will give employment to 856 head of horses, at 50 cents per head per day, and 856 men, at $1.50 per day each, for 166 days out of the year. The largest amount of strip coal mined in any year is in the winter season — in the months of October, November, December, January, February, and March. This work is done largely by the surrounding farmers of the neighborhood where the coal is mined. It is a valuable help, and almost a clear gain to them, as they and their horses would evidently be idle pretty much all this time of the year if they did not get this work to do. There are some men who follow stripping as a profession.

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IMPORTANT IMPROVEMENTS AT THE LEAVENWORTH COAL COMPANY'S SHAFT.

In the latter part of 1885, this company constructed an underground cable line, and a short time previous to my visit they had started it to haul the coal to the shaft-bottom. It is now in successful operation, with most gratifying results. I think a description of it will not be out of place.

The motive power of this cable line is derived from a pair of 10″x20″ cylinder engines, located in an engine room on the surface, provided with three triple-grooved sheave wheels and a steel-wire cable, manufactured especially for the purpose, for the transmission of the power. One of the sheaves is keyed to the engine-shaft, another to an auxiliary shaft of the engine, while the third is mounted in a movable frame, and serves as a tightener to take up the slack of the rope. To this latter, or tightener, are attached weighted trucks, which move on an inclined plane, and keep the wire rope at a uniform tension. The cable transmitting the power is seven-eighths of an inch in diameter. The machine for distributing the power is located down in the mine, 720 feet below the surface, and 100 feet away from the bottom of the shaft. This distributor consists of a heavy frame built of 12″x12″ timbers, well bolted together. It supports the heavy line, the counter and upright shafting, the sheaves, gearing, tighteners, and a large compression steel clutch which is used for the transmission and regulation of the power that moves the trains of pit-cars in the mine.

The engines, which are under the control of the governor, being started in the morning, run continuously during the day, requiring but little attention, and deliver their power to the distributor at the bottom of the shaft. Here it is under perfect control, and the cable lines are started and stopped at will, without regard to the engines, by means of the powerful steel compression clutch-coupling, above alluded to. The precision, safety and power with which this clutch works are wonderful. It has a capacity for almost an unlimited number of mine-cars, and the load can be increased or decreased without any appreciable effect upon it. Should a mine-car break down or run off the track, the clutch device stops automatically. In this respect, it is eminently a safety apparatus for both men and trains.

The line traversed by the cables is provided with double tracks of T-iron rails, one for the incoming loaded cars, the others for the outgoing empties. The cables are located between the tracks, and are supported by guide-rollers and sheaves constructed especially to suit the curvature of the line, which is in some places very sharp. The peculiar construction of these guiding-sheaves and rollers, and the cable gripping-irons, is such that the

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cables are never displaced, even under the most severe labor at the points of greatest curvature. The cables travel about 300 feet per minute, and of course the trains attain that speed also. The methods employed to tighten these cables is nearly the same as that mentioned above for tightening the transmission-ropes, and a load of from 75 to 100 tons can be pulled with ease and security.

The entry through which the roadway runs is about ten feet by eight to ten feet high, and is well ventilated. Two double-track switches are located at cross-entries on the main line, one right hand and the other left; they are laid on 12-inch wrought-iron channel girders, and are provided with latches and track-gates for the passage of the grips and cables on the main line. Under those switches, in a pit, are built strong timber frames, for the purpose of putting in sheaves and friction-rolls, to operate a cable in each of those cross-entries. The power to operate the cables is to be transmitted to the wheels by the cable on the main line. This main line, at present, is 3,000 feet long, and it has made this — the largest part of the mine — comparatively a new mine, fully developed. All that is necessary now to continue this line double the distance, when required, is simply that much more rope, as the machinery has sufficient power for a much greater distance. Everything about this line seems to work like clock-work, and I feel justified in saying that if it has its equal in the United States, there is none that work better. Mr. J. E. Carr may well be proud of his cable line. To his skill and unceasing industry is due the wonderful perfection of the company's system, which enables it to deliver to its patrons the black diamonds.

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LEAD AND ZINC MINING IN KANSAS.

This important and growing industry is carried on entirely in Cherokee county. The largest zinc smelting furnaces, however, are in Crawford county, near and within easy reach of the coal mines. Not having had time, so far, to make the lead and zinc mines a personal visit and get out this report in anything like the proper time required by law, I have had to depend upon information from other parties interested and well acquainted with this industry, to whom I am very much indebted for the following information:

Lead and zinc mines are worked on an entirely different plan from coal mines. The land-owner lays his land out in lots, usually containing about one acre, and gives the miner a contract to mine it, paying him on what is called a $25 basis. That is, when lead is quoted at 7c. in St. Louis, Mo., the miner receives $25 per one thousand pounds for mining and cleaning the lead ore. At the present price of lead, February 1st, 1886, they receive $15.30 per 1,000 lbs., this being the average price paid for mining and cleaning lead ore. The miner in most cases sells the zinc ore, paying to the land-owner from 15 to 20 per cent. The average price of zinc ore is about $18 per ton.

Cost of mining both lead and zinc varies according to the size of the deposit and the kind of ground in which it is found. In case it is found in soft or open ground, where but little blasting is required, the cost is very small. On the other hand, where the ore and accompanying strata have to be blasted, the cost is greatly increased. The ores are found in both kinds of ground, and it would be impossible to give the exact cost of producing the ores under such diverse circumstances.

About two hundred shafts are being operated, each under separate management, and employing, as near as can be estimated, an average of eight men, although some employ twenty or more and others only two or three. This depends on the richness of the mine, and the energy or enterprise of the parties in charge. The wages paid laborers is from $1.50 to $2 per day, they being paid every Saturday.

The mines are not worked on a system, and it would be very impracticable to do so. They follow the runs of ore. The ores are found at different depths, some as shallow as 20 feet, and from that down as far as they have sunk, which is 135 feet. In cases where ventilation is needed, an air-shaft is sunk or a drift is cut so as to open into another, and good ventilation is thereby obtained. Nine hours constitute a day's work in the mines.

In the first part of 1885, on account of the low price of lead, very little

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of the ore was mined, but since July, at which time lead took a rise, lead and zinc ore mining has given steady employment to the miners. There is very little difference in the amount of ore produced in the different seasons of the year, it being governed by the weather and price.

The following is a list of the names of the companies whose lands are producing the most of the ores from this place: Southside Mining & Mfg. Co., Galena Lead & Zinc Co., Cornwall Co., James Murphy, S. L. Cheney, Conner & Brewster.

In addition to the list of companies given, there are many cases where parties owning town lots have found lead and zinc ore on them, and are at present producing ore.

There is another very important thing in zinc-ore cleaning; that is, the crushers or separating works. When the zinc ore is mined, the most of it is mixed with rock and lead ore. It is taken to the separating works, and is first crushed by passing through a pair of breakers; then passes through a pair of rollers; then, by an elevator, it is carried into what is called jig tanks, where, with the aid of water, the ore is separated. The greater specific gravity of the lead ore carries it to the bottom of the jig tank. In the same manner is the zinc ore separated from the rock, each finding its own place in accordance with its lesser or greater weight after being jigged.

The following are the names and addresses of the proprietors of the different separating works:

Galena Zinc Company, Murphy & Rice, Fuller & Aldrich, S. L. Cheney, Boice & Son, James Murphy, Cody & Co., Emmons & Boice, A. Cohen—all of Galena, Kansas; and Conner & Brewster, of Joplin, Mo.

As it takes from two to three tons of coal to smelt or reduce one ton of zinc ore, it is more economical to locate the zinc smelters at or near the coal mines; therefore, the zinc is shipped mostly to Pittsburg, Kansas, where there are four large smelting works, to Weir City, Kansas, Rich Hill, Mo., and Lasalle and Peru, Ills. There is one lead furnace in Galena which smelts most of the lead ore produced in the district. It is operated by the South Side Mining & Manufacturing Co., and W. B. Stone.

Companies or individuals will lease forty or more acres of land, subdividing it into mining lots 200 feet square, and enter into a mining contract with miners to mine the same. The miners generally furnish all tools and labor to develop the land, and in consideration therefor, have the lead ore on a $25 basis; that is, when lead is worth seven cents per pound in St. Louis they receive $25 per 1,000 pounds of ore, and a greater or less amount as lead advances or decreases from seven cents in St. Louis. The companies buy the lead from the miners, and make their profits in the difference between what is paid the miner, on a $25 basis, and the real value of the ore in market, which difference is about $8 per 1,000 pounds.

So, you see, but little capital is needed to operate our mines, outside of purchasing lead from the miners. Office superintendents, and other little

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expenses, are all we have. Our mines are comparatively in their infancy, with the finest ore fields in the world on account of the quick results gained from our work. We have sufficient capital in way of companies and deposits. A large number of miners work the fields here, with new fields continually being developed.

The zinc ores are excavated with the lead ores. The price of zinc, when cleaned and ready for market, ranges from $12 to $20 per ton, and the miners pay from 10 to 20 per cent. on the dollar to the companies.

The best seasons for mining are the summer, fall and winter. Men can work nearly all days in the year, and industrious, temperate men, do well. The amount of money invested in stock companies, as near as I can get them, is $400,000, and *in private companies about the same.*

It would seem from the above that a lead miner's success in life depends more on his good luck in striking good-paying veins of ore in his prospects, than his ability and skill to perform the labor in mining it. A good, energetic man might take a claim with considerable money on hand to pay out for his prospect, and lose it all in a very short time. Another man, with inferior ability and not so much cash, might be the most successful of the two at the end of the year. I am informed that there are instances where men have got rich in a very short time, and that there are others who have been mining all their lives, working for wages, until they would get a little ahead, then they would put it into a prospect and lose it in most every instance, but still keep working away with the hope that they would make a good find some day.

I have not been able to get the amount of ore mined or money earned, nor perhaps as much information otherwise, as I could have got had I had more time before the law required me to make this report. But I trust that sufficient information can be gleaned from the above to show the magnitude of this important industry, and the prospects of its future development.

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BOILER INSPECTION.

BOILER EXPLOSIONS IN ENGLAND AND AMERICA.

[From the Mining Herald.]

From careful statistics, which have just come to hand, of boiler explosions in the United Kingdom of Great Britain and Ireland during the year 1884, it appears that the total number of such explosions was 36, by which 24 persons were killed and 49 others severely injured.

Turning now to a record of boiler explosions in the United States during the same period, it appears that the number reported was 152, by which 254 persons were killed outright and 261 others injured, many of them fatally. Frightfully large as this record is, it yet falls slightly below that of the preceding year; and the important question arises, therefore, why the number of boiler explosions in the United States should be four times as great as in the United Kingdom, and the record of persons killed outright should be more than ten times as large in the former country as in the latter?

The total population in the United Kingdom by the last census was 35,262,762; that of the United States was 50,155,783. Hence, with only about 43 per cent. more inhabitants in our country, we have an excess of more than 100 per cent. of fatalities from boiler explosions.

Looking back over the terrible record of accidents of this description, it appears that of the 152 which were reported in the United States in 1884, only one occurred in a textile manufactory, and, as our cotton and woolen and silk mills are among the largest users of steam, the conclusion is obvious that the lack of disasters therein was due to the precautionary measures of the boiler owners and their employés. Boiler explosions occur in miscellaneous industries in the cities and towns of the United States, as well as in England; but the more frequent disasters, which give this country its predominance over Great Britain in this particular, occur in saw-mills, locomotives and steamboats, and portable and agricultural engines. Some of the best saw-mills now have their boilers inspected and insured, and operated as carefully as the steam plant of a cotton mill; but the proverbial country-saw-mill boiler is run at a high pressure, which could only exist in a plethora of cheap fuel, and with a disregard of life engendered by ignorance of the power of imprisoned steam.

I am glad to know that none of the figures above quoted are from the coal mines of Kansas using steam.

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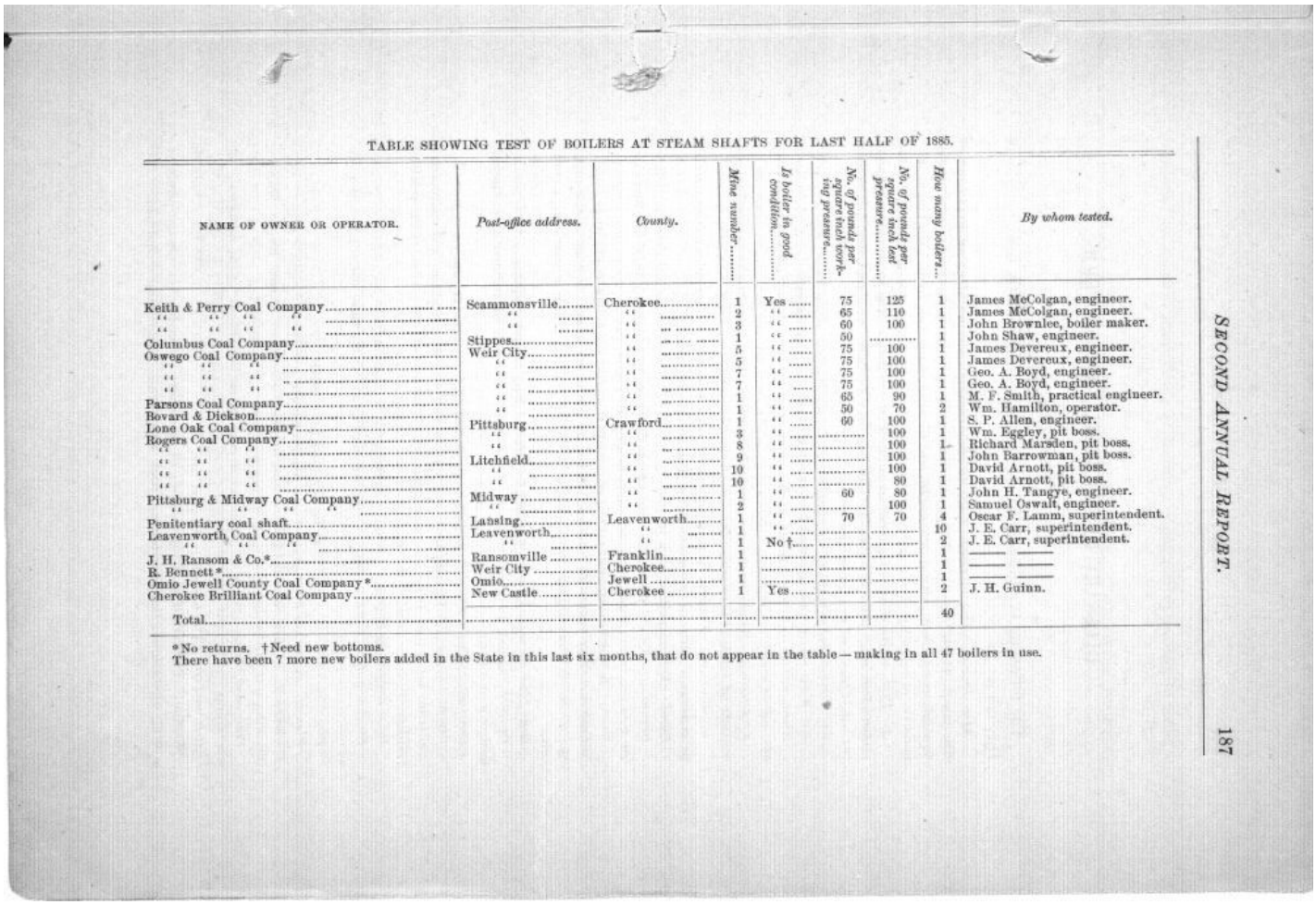

TABLE SHOWING TEST OF BOILERS AT STEAM SHAFTS FOR LAST HALF OF 1885.

NAME OF OWNER OR OPERATOR.	Post-office address.	County.	Mine number.	Is boiler in good condition.	No. of pounds per square inch working pressure.	No. of pounds per square inch test pressure.	How many boilers.	By whom tested.
Keith & Perry Coal Company	Scammonsville	Cherokee	1	Yes	75	125	1	James McColgan, engineer.
" " " "	"	"	2	"	65	110	1	James McColgan, engineer.
" " " "	"	"	3	"	60	100	1	John Brownlee, boiler maker.
Columbus Coal Company	Stippes	"	1	"	50	.....	1	John Shaw, engineer.
Oswego Coal Company	Weir City	"	5	"	75	100	1	James Devereux, engineer.
" " "	"	"	5	"	75	100	1	James Devereux, engineer.
" " "	"	"	7	"	75	100	1	Geo. A. Boyd, engineer.
" " "	"	"	7	"	75	100	1	Geo. A. Boyd, engineer.
Parsons Coal Company	"	"	1	"	65	90	1	M. F. Smith, practical engineer.
Bovard & Dickson	"	"	1	"	50	70	2	Wm. Hamilton, operator.
Lone Oak Coal Company	Pittsburg	Crawford	1	"	60	100	1	S. P. Allen, engineer.
Rogers Coal Company	"	"	3	"	.....	100	1	Wm. Eggley, pit boss.
" " "	"	"	8	"	.....	100	1	Richard Marsden, pit boss.
" " "	Litchfield	"	9	"	.....	100	1	John Barrowman, pit boss.
" " "	"	"	10	"	.....	100	1	David Arnott, pit boss.
" " "	"	"	10	"	.....	80	1	David Arnott, pit boss.
Pittsburg & Midway Coal Company	Midway	"	1	"	60	80	1	John H. Tangye, engineer.
" " " "	"	"	2	"	.....	100	1	Samuel Oswalt, engineer.
Penitentiary coal shaft	Lansing	Leavenworth	1	"	70	70	4	Oscar F. Lamm, superintendent.
Leavenworth Coal Company	Leavenworth	"	1	"	.....	.....	10	J. E. Carr, superintendent.
" " "	"	"	1	No †	.....	.....	2	J. E. Carr, superintendent.
J. H. Ransom & Co.*	Ransomville	Franklin	1	.....	.....	.....	1	——— ———
R. Bennett *	Weir City	Cherokee	1	.....	.....	.....	1	——— ———
Omio Jewell County Coal Company *	Omio	Jewell	1	.....	.....	.....	1	——— ———
Cherokee Brilliant Coal Company	New Castle	Cherokee	1	Yes	.....	.....	2	J. H. Guinn.
Total	.....	.....	.....	.....	.....	.....	40	

*No returns. †Need new bottoms.
There have been 7 more new boilers added in the State in this last six months, that do not appear in the table — making in all 47 boilers in use.

GLOSSARY OF TECHNICAL MINING TERMS.

The following is a glossary of the terms most frequently used by miners throughout the States:

After-Damp.—The mixture of gases remaining in a mine after an explosion of fire-damp, which may consist of carbonic-acid gas, carbonic-oxide, water-vapor (quickly condensed), nitrogen, oxygen, and in some cases, free hydrogen, but usually consists principally of carbonic-acid gas and nitrogen, and is therefore irrespirable.

Air-Pipe, or Air-Box.—Square boxes made of wooden boards in sections, eight to sixteen feet long, for the conveyance of air into tunnels, etc.; also, iron pipes used for conveyance of compressed air.

Air-Stack.—A ventilating chimney.

Air-Way.—Any passage used for passage of air for ventilation.

Anemometer.—An instrument used for measuring the velocity of the ventilating current of air.

Arenaceous.—Sandy rocks are arenaceous when they contain a considerable percentage of sand.

Argillaceous.—Clayey. An argillaceous rock is one that contains a considerable percentage of clay, or has some of the characteristics of clay.

Band.—Interstratified rock in coal.

Brushing.—To cut down the roof of an entry, or passageway in the mine, after the coal has been mined away, to make height for mules, etc.

Bank.—A word often used amongst miners in referring to the coal mine.

Battery.—Any structure built of timber or plank to keep the coal in the room, or prevent it from sliding down a chute when not wanted. This is used on pitching veins.

Bear; to bear in.—Usually applied to underholing or undermining.

Bed.—A regular member of a stratified series deposited or formed after the underlying and before the overlying rock.

Bed-rock.—The solid rock underlying the soil drift or alluvial deposit.

Bench.—A natural terrace marking the out-crop of any stratum; a division of a coal-seam separated from the remainder by a parting of slate, shale, iron pyrites, sulphur, or other foreign matter.

Bit.—A drilling-chisel.

Black-Damp, Choke-Damp.—Carbonic acid gas = CO^2; thus distinguished from white-damp or carbonic oxide = CO.

Blossom.—Out-crop of a coal bed or mineral deposit.

Blower.—A strong discharge of gas from a fissure.

Blow-out; to blow out.—A blast is said to blow out when it acts like a cannon, throwing out the tamping without bringing down the rock or coal.

Bone coal; bone.—Slaty or argillaceous coal, or carbonaceous shale, occurring in coal seams.

Bottom-Lift.—The lowest or deepest lift.

Bottom.—The landing at the bottom of the shaft or slope; the lowest point of mining operations; the floor-bottom rock, or stratum, underlying a coal-bed.

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Brattice.—A board or plank lining or partition, in any mining passage, to confine air and force it into the working-places. Its object is to keep the intake air from finding its way by a short route into the return air-way.

Brattice Cloth.—A heavy cloth or canvas, often covered with some water-proof material, for temporarily forcing air into the face of the room or entry; also used in place of doors at the entrances of rooms. They are then frequently called "sheets." Such brattice cloth should be uninflammable in gaseous mines; this is not so, however, in many instances.

Bridle Chains.—Safety chains to support the cage if the middle link should break, when two chains are used in a slope, (instead of attaching the rope by a single chain to the draw-bar of a car); they are also called bridle chains.

Bucket.—The piston of a lifting pump; or a bucket used in sinking shafts.

Buntuns.—Timbers placed horizontally across a shaft to carry the cage guides and column pipes, also to strengthen the shaft-timbering.

Butty.—A partner or comrade working with another in the coal mine.

Cage.—A platform on which men and cars are raised to the surface from the mine.

Cap, Cap-piece.—A piece of plank put on the top of a prop next the roof.

Cap.—The pale bluish elongation of the flame of a safety-lamp, caused by the presence of gas; fire-damp.

Carbonaceous.—Coaly; containing carbon of coal.

Carboniferous.—Containing, or carrying coal; thus: carboniferous rocks, the carboniferous formation.

Cave, to cave in.—Falls from the roof, or sides of the entries, or rooms of a mine.

CH^4.—The chemical notation for carburetted hydrogen or fire-damp.

Chain Pillar.—A pillar left to protect the top of entry and air-way, and running parallel between these passages.

Charge.—The amount of powder used in one blast or shot.

Chocks.—Shanties; a building built with logs or props crossing one another to support the roof in a place where an extra creep of the stratum takes place.

Clanny Lamp.—Safety lamp invented by Dr. Clanny. This lamp differs from the Davy in having the lower portion of the covering made of glass, instead of being wholly gauze.

Clinometer.—A small pocket instrument, provided with a spirit-level and graduated arc, for measuring the angle of a dip.

Coal Measures.—The carboniferous formations.

Cleavage.—The property of splitting more readily in some directions than others.

Collar.—The horizontal timber resting upon two upright or inclined legs or props for the support of the roof in an entry or air-way.

Colliery.—This term is used to denote not only the mine, but includes also all the structures that make up the plant of the surface: the mine and all its adjuncts.

Column Pipe.—Cast-iron or wrought-iron pipes through which the water is conveyed from the mine pumps to the surface.

Conglomerate.—The rock formation, consisting of pebbles and fragments of various rocks cemented together.

Creep.—A squeeze or crush, forcing the pillars down into the floor or up into the roof, which often gives the miner the impression that the floor is rising.

Crevice.—A fissure in rock or coal.

Crib-Work.—A structure composed of horizontal frames of timber laid one upon another, built like a log-cabin.

Cribbing.—Timbering a shaft with crib-work; it commonly extends from the surface down to bed-rock.

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Crop.—To come to the surface and crop out.

Cross-Cut or Cross-Heading.—A passage driven for ventilation through the pillar between entry and air-way.

Davy Lamp.—A safety-lamp, invented by Sir Humphrey Davy, with a fine wire gauze inclosing the flame; 784 apertures to the square inch; frame-work brass.

Dead-Air.—The air of a mine is said to be dead or heavy when it contains carbonic gas (black-damp), or when the ventilation is sluggish.

Dead-Work.—Work not in itself productive of enough coal to pay the cost of driving, or producing nothing at all.

Derrick.—The structure erected for drilling or hoisting process.

Dip.—The angle of inclination of the coal seams or mineral bed or vein, measured from a horizontal line.

Door.—Doors are placed in the passages of mines to prevent the ventilating current from taking a short cut to the up-cast shift.

Door Trapper.—A boy whose duty it is to open and close a mine door, before and after the passage of a mine car.

Down-Cast.—The passage or air-way through which the ventilating current passes into a mine.

Draw.—To draw the pillars; robbing out the pillars after the room is exhausted.

Drift.—A level tunnel driven in on the bed from the surface.

Driving.—Excavating horizontal passages.

Dump.—The tipple by which the cars are dumped on the slate or slack-dump.

Entry.—A level used for a haulage-road, from which rooms are turned.

Face, or Working-Face.—The place at which work is being done in a room-entry or air-way.

Fault.—The place where the stratum is broken by some upheaval, and disappears from the continuous line.

Feeder.—A spring of water encountered in mining operations, or a small blower of gas.

Fire Board.—A board on which the fire boss indicates by chalk-marks where gas is found in different parts of the mine.

Fire Boss.—A man whose duty it is to examine the workings of the mine for accumulations of explosive gas.

Fire-damp.—CH^4, light carburetted hydrogen, an inflammable gas, explosive when mixed with air in certain proportions.

Floor.—The rock underlying the coal-seam.

Free Coal.—Coal is said to be free when it is loose and easily mined.

Gang.—A set of miners — a shift.

Gas.—Fire-damp.

Gob.—A space from which the coal has been mined, and refuse or waste left therein.

Gob-Fire.—Fire originating spontaneously from the heat of decomposed gob.

Guide.—Vertical timbers fastened to the buntuns to steady and guide the cage in a hoisting shaft.

Head-Frame.—A structure erected over a shaft to carry the sheaves and steady the cage.

Head-Gear.—That portion of the winding-machinery attached to the head-frame.

Heading.—A term usually given to an entry going to the rise of the vein or cross-heading.

Hog-Back.—A short anticlinical axis of limited extent.

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Holing Through.—Driving a passage through to make connections with another part of the working, or with those of an adjacent mine.

Incline.—A slope; any inclined plane, whether above or beneath the surface.

Indicator.—An instrument or device for indicating the position of the cage in the shaft.

Intake.—A passage by which air enters the mine or down-cast.

Keeps, or Keps.—Catches or rests to hold the cage when it is brought to rest at the top, or any intermediate landing, (commonly called shuts or fans.)

Lagging.—Small round timbers, slabs or planks driven in behind the legs and over the collars, to prevent pieces of roof from falling through.

Landing.—Any place whers cars are taken off or put on a cage or slope.

Latches.—Synonym for switch, applied to split rails or hinge switches.

Leg.—Props on which the collar rests in entry or other timbering.

Level.—A horizontal passage in a mine.

Lift.—The number of entries from which coal is raised in a colliery. This term refers to the number of pump-lifts also.

Long-Wall.—A method of working coal where no pillars are left, and the roof is supported by pack-walls, gob, etc. This method is often adopted where the coal-vein does not exceed four feet.

Loose-End.—A place mining along side of a place previously worked out.

Man-Hole.—A small place cut back into the side of self-acting planes, slopes, or entries, for the safety of the miners during the passage of the mining-cars.

Man-Way.—A small passage-way used as a traveling-way for the miner; also used as an air-way for rooms on a pitching vein.

Measures.—Rocks, or a series of rocks having some attribute in common; thus, coal measures, containing coal, etc.

Narrow Work.—Entries and air-ways, cross-cuts and cross-headings.

Needle.—An instrument or tool placed in a drill-hole during the tamping of a charge, to leave on its withdrawal an opening through which the charge can be fired by a squib.

Outcrop.—That portion of a vein-bed, or any stratum, appearing at the surface or occurring immediately beneath the soil or alluvial debris.

Outlet.—A passage furnishing an outlet for air (up-cast, out-take) for miners, for water, etc.

Output.—The product of a mine sent to market.

Overcast.—A passage through which the ventilating-current is conveyed over an entry or air-way.

Pack Wall.—A wall or pillar built of gob to support the roof.

Parting.—A layer of slate or other matter dividing two benches of a coal seam.

Pillar and Room.—Pillar and stall, stoop and room, etc., a method of mining or working out coal.

Pillars.—A mass of coal left to support the roof.

Plane.—Usually applied to self-acting inclines, but any slope or incline on which coal is raised or lowered may be called a plane.

Plat or Plot.—A map of the surface and workings underground, or of either.

Post.—Any upright timber applied to timbers used for propping.

Prop.—A timber set upright, or at right angles to the dip, to support the roof-rock.

Regulator.—A frame with a sliding door to regulate the air passing into any part of the workings.

Rend-rock.—A variety of dynamite.

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Rib.—To take out the pillars, or to reduce by skipping the side of the pillars left to support the roof.

Safety Cage.—A cage provided with an automatic safety catch.

Safety Lamp.—A lamp surrounded by a wire gauze, to prevent the direct contact of the flame with explosive gases.

Sand Pump.—A sludger; a cylinder provided with a stem (or other) valves lowered into a drill-hole to remove the pulverized rock.

Scraper.—A tool used for cleaning out drill-holes.

Sheave.—A wheel with a grooved circumference, over which a rope is turned, either for the transmission of power or for winding or hauling.

Sheets.—See brattice cloth.

Siliceous.—Containing or having the characteristics of quartz.

Slack.—Small coal or dust from coal.

Slides.—See Guides.

Slope.—An inclined passage driven in the bed or vein opening up the surface.

Soapstone.—A term incorrectly applied to an unctuous rock.

Split.—Any division or branch of the ventilating current.

Sprag.—A short billet of wood or iron used to block the wheels of a mine-car in place of a brake.

Spring Latch.—A spring or automatic switch.

Slopping.—A brattice, or more commonly, a masonry or brick wall built in a cross-cut, to confine the air or direct it to face of workings.

Stratum.—Any bed or layer; plural, strata.

Stump.—A small pillar of coal left between the entry and the rooms to protect these passages.

Sump.—An excavation in the coal or rock made below the level of the entry or shaft-bottom to collect the mine water; the ditches or drains empty into it, and the pump draws it from thence.

Swamp.—A local depression in the coal bed in which the water collects.

Trapper.—A door-tender in the mine, almost always a boy.

Trouble.—A dislocation or fault; any irregularity in a coal-seam.

Upcast.—The opening or passage through which the air goes out of the mine.

Vein.—This term is often applied to stratified beds, but its use should be restricted to mineral deposits.

Water-Gauge.—An instrument for measuring the ventilating pressure; the term is also used to denote the ventilating pressure in inches.

Whim.—A horse gin used for hoisting.

White-Damp.—CO (carbonic oxide), a gas that may be present in the after-damp of a fire-damp explosion, or in the gases given off by a mine fire; rarely met with in mines under other circumstances.

Winding.—Hoisting coal, etc.

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THIRD ANNUAL REPORT

OF THE

STATE INSPECTOR OF COAL MINES,

TO THE

GOVERNOR OF THE STATE OF KANSAS.

FOR THE YEAR ENDING DECEMBER 31, 1887.

TOPEKA.
KANSAS PUBLISHING HOUSE: CLIFFORD C. BAKER, STATE PRINTER.
1888.

REPORT.

To His Excellency JOHN A. MARTIN, *Governor:*

SIR—I have the honor to submit to you the third report of this Department.

The coal trade during the past year has been more constant and regular than usual. The settling-up of the central and western portions of our State has been the cause of the increased demand upon our coal fields. The phenomenal railroad construction in the State has also greatly helped to increase the demand. During the busy season the problem of handling the immense coal shipments was a difficult one for the railroads to solve, for while, in anticipation of an increased business over that of previous years, they had made large additions to their rolling stock, yet when brought face to face with the great demand they found their preparations very inadequate.

The coal product of Kansas in 1885 was 30,001,427 bushels, of 1886 it was 34,750,000 bushels, and in 1887 it was 39,251,985 bushels. It gave employment during the year to 4,728 miners and 870 day laborers. The number of miners employed in 1885 was 3,597; day laborers, 578. It will be seen that the increase in miners is 1,131, and in day laborers 192. The increase in the coal product was 9,250,558 bushels. The rapid growth of the industry has been most satisfactory.

A number of small mines were abandoned in 1887, and a few of the larger ones worked out, yet there were so many new mines opened that the number in operation at the close of 1887 was about the same as at the beginning of the year.

The general condition of the mines last year was much better than it had been previously. This was largely due to the increased demands on the mines for coal, most of the mines being in operation practically during the entire year.

The almost total absence of strikes during the past year was very gratifying to the operators and miners alike. There were only two or three worth

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mentioning, among them being those at Leavenworth and Weir City, spoken of in the body of the report.

The accident list, while larger than it is likely to be hereafter, has not increased in proportion to the increase in the number of miners. No deaths occurred by reason of poisonous gases, those accidents resulting fatally having been caused by explosions, the falling of rock or slate from defective roofs, and falling down shafts.

There were but few complaints received from the miners during the year, and such grievances as were complained of were in most cases immediately remedied by the operators, the majority of them evincing an earnest desire to take every precaution necessary for the health and safety of the miners, and to comply to the limit of their power with suggestions tending to that end.

While there are many topics connected with mining that demand legislation, I shall only allude to a few of them now, as there will be another report issued while the Legislature is in session. A law should be enacted requiring miners to use copper tamping-bars and needles, instead of those composed of iron; also a law regulating the distance that rooms can be driven in advance of the last break-through before another one is made; also a law fixing the size of openings in screen bars. The law of 1885, limiting the amount of powder to be taken into the mine by the miners, should be amended, as it works an injustice to them in its present state.

I am, Sir, yours, very respectfully,

G. W. FINDLAY,
Inspector of Mines.

THE COAL DEPOSITS OF KANSAS.

In his report for 1885, Mr. Jno. R. Braidwood, at that time Inspector, gave so full and complete a description of the coal fields of Kansas, that I have taken the liberty to incorporate it in this report. There has been a great deal of prospecting, however, in the past year, in different localities from those mentioned by Mr. Braidwood, with results not as yet fully determined and satisfactory.

CHEROKEE AND CRAWFORD COUNTY'S COAL FIELDS.

The coal vein most extensively mined now in these two counties is that deposit known by coal men as the Cherokee vein. It is the thickest and most valuable deposit of any coal yet discovered in the State. It ranges in thickness from three feet two inches to three feet nine inches, attaining its greatest thickness in the vicinity of Weir City and Scammonville, Cherokee county. In a few localities in this vicinity it has attained a uniform thickness of four feet, and in a few exceptional places it has been found to measure five feet. This latter deposit is mostly found alongside of horse-backs or clay-seams, which are very numerous in this vein. They will be found running throughout the vein in every conceivable direction, resembling an unevenly-spaced net-work, cutting the coal out completely in every instance, from the top to the bottom. In most places they are composed of pure fire-clay; in others, a mixture of fire-clay and hard boulders.

This coal seems to possess superior quality over most other bituminous coals coming into the same market, and is sold at a higher price. This is evidence of its superior quality. It is a coal of a very highly coking nature, makes a fair quality of coke, and is a good gas coal. As evidence of this fact, it is being used very generally by the gas companies of this State.

The cropping out of the eastern edge of this valuable deposit of coal can be seen along a line in a southwestern direction from Mulberry, Kansas, and Morerod, Missouri, passing through Litchfield, Pittsburg, and Weir City, to Columbus, a distance of 30 miles, varying to the east and west in conformity to the undulations of the surface. It is being mined by shaft, slope, drift, and strip-bank openings, at intervals at and between these points.

This vein is probably the same deposit that is found at Walnut, Bates county, Missouri, but the most valuable part of it, so far discovered, seems to be in Kansas. Beyond the vicinity of Columbus, to the southwest into the Neosho river basin, this vein has been lost sight of. It has probably been cut out by the low lands of the river, and will come to view again southwest from Columbus, in the Indian Territory.

The general dip or declivity of this deposit is found bearing to the north and westward. As evidence of this fact, so far as this coal has been developed, it is found deeper and deeper the further we get in that direction, so that the extent of the deposit is much greater than was surmised a few years ago. It seems to dip towards the interior of the State, varying with the undulations of the surface, at the rate of fifteen to thirty feet to the mile; whether it keeps this inclination or not, is not known. Of course it will be observed that the general surface of the State rises to the north and west, but local developments have proven that the measures also dip.

In the vicinity of Pittsburg there is a shaft located about three-fourths of a mile west from the crop line, that is thirty feet in depth. Three miles due northwest of this shaft, at a place called Lone Oak, in ground having comparatively the same elevation, will be found a shaft working the same vein 116 feet from the surface. At Weir City, Cherokee county, there are shafts also within a mile and a half from the crop, that are forty-five feet deep. Four miles north and west of these shafts, near the city of Cherokee, will be found a shaft working the same vein 140 feet in depth, and on ground having comparatively the same surface elevation. This proves beyond a doubt that the strata decline in that direction. There are also other small veins of coal which have taken on successively between the crop of this larger vein and where it is now being mined in these deep openings. One of these has attained the thickness of twenty-six inches. This vein can be found cropping out between the deep shaft at Cherokee, and the other, not so deep, at Weir City, and between the deep shaft at Lone Oak, and the one, not so deep, at Pittsburg. It is being stripped at Coalvale, northwest of Mulberry, and is being mined at a shaft opening at Arcadia. It is also being mined at J. M. Baird's shaft, at Cherokee City, in Crawford county; is being stripped and drifted on Cherry creek, northwest of Columbus, and is being mined from two shaft openings near Hallowell, due west of Columbus. This vein no doubt will make a valuable seam for long-wall work in the near future. In the hands of a good company, having managers who understand this system of work, this vein could be mined with profit, and compete in the market with other coals, as there seem to be no troubles or faults in it.

Other smaller veins, evidently above this deposit, are being mined near Oswego, in Labette county. There is no scarcity of coal in this part of the country. The deposits are in a manner inexhaustible. It is only a question of sinking the shafts a few feet deeper, when the shallower parts are worked out.

OSAGE, SHAWNEE AND COFFEY COUNTY COAL FIELDS.

The outcropping of this coal can be seen in a similar manner to that found in Cherokee and Crawford counties, the eastern edge of the deposit varying to the east and west, owing to the undulations of the surface. It comes to view at intervals on the surface, on a line in a southwestern direction from a point three miles west of Topeka, passing through Carbondale and east of Scranton, Burlingame, Dragoon, Peterton, Osage City, Barclay, and Arvonia, through Lebo, in Coffey county, and to a point near Neosho Rapids, in Lyon county, showing an extent of country sixty-five miles long, between the Kansas and Neosho rivers, where coal is being mined at intervals. The breadth of this deposit is not known. The inclination of the including strata and the deposits to the north and west carries the vein gradually deeper and deeper in that direction.

This coal ranges in thickness from 12 to 20 inches, having attained its greatest thickness at Scranton, and from here gradually thinning down to the northeast as it approaches the Kansas river, and to the southwest as it approaches the Neosho river. Beginning in Shawnee county, west of Topeka, we find it 12 inches; at Carbondale, 17 to 18 inches; at Scranton, 20 inches; at Burlingame, 18 inches; at Dragoon, in narrow troughs, but only local, 3 feet; at Peterton and Osage City, 14 to 15 inches; at Barclay, 13 to 14 inches; at Arvonia, 13 inches; at Lebo, 12 inches; near Neosho Rapids, in Lyon county, 10 to 11 inches. Four miles west of North Topeka, I am informed, a drill-hole was put down forty feet, passing through an 18-inch vein of coal. This is probably the same vein as above, but it is a little thicker than would be expected in that locality. Being only a few miles north, across the Kansas river, from where it is found only twelve inches thick, it shows an exaggeration, but it may be nevertheless true. Some few years ago coal was being mined in Shawnee