State inspector of coal mines reports

Section 59, Pages 1741 - 1770

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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LETTER OF TRANSMITTAL.

Hon. E. W. Hoch, Governor:

SIR—In compliance with the law relative to mines and mining, I herewith submit to you the biennial report of the state mine inspector, beginning July 1, 1904, and ending June 30, 1906.

Respectfully yours,

FRANK GILDAY, *Inspector.*

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ACKNOWLEDGMENTS.

I desire to express my sincere appreciation of the many courtesies extended me in the preparation of this report by those who not only have furnished statements of their products and other data called for in the schedules, but who have also cheerfully replied to special inquiries incident thereto.

Acknowledgments are also due to Joseph Ryan, deputy in Cherokee county; Thomas Morrissey, in Leavenworth and Atchison counties, and John Gilday, in Crawford county, for the able and efficient manner in which they have discharged the difficult and complicated duties devolving upon them.

Acknowledgments are again due the secretaries and members of the United Mine Workers of America for the kindly manner in which they have aided us in the discharge of our duties.

INTRODUCTION.

In entering upon the duties of this office, I did so fully realizing the honor conferred upon me by the State Society of Miners, and also realizing the necessity of conscientious and faithful performance of my duties, so as to cast no discredit upon the miners for the confidence which they have shown in electing me to this position.

The law requires the report to cover a period of two years, ending June 30, 1906, and, although I have only been in office for four months, I have had to compile the data and make the report for the full time, and, on account of the companies being so slow in complying with my request for back data, the report has necessarily been delayed. As I had no records of inspections in Crawford and Cherokee counties previous to March 1, 1906, and as it was an impossibility for us to inspect all the mines in these two counties in such a short period of time, the mine inspections are somewhat incomplete.

The double-entry law passed by the last legislature is an improvement over the old system of single entry, but in some instances, although complying with the law, where the back entry is not brushed and switches are laid in the break-throughs, leaving several break-throughs open or partly so, with only curtains hung to close them, the air-current is not as good as it would be were so many break-throughs not open. Several of the large coal companies were working on the single-entry system, and I notified them that the double-entry law had to be complied with or action would be brought, and they immediately began to drive double entries.

The following letter, written by Wm. Monay, superintendent of the Western Coal and Mining Company, is a fair example of instructions sent out by other companies, after I had requested that double entries be driven:

PITTSBURG, KAN., June 30, 1906.

To All Mine Foremen: Pursuant to instructions, you will hereon and after this date drive an entry parallel to our brushed entry, in order to comply with the recent double-entry law, passed by the last legislature.

Yours truly, WM. MONAY, Superintendent.

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WORLD'S PRODUCTION OF COAL.

The following table, taken from the United States Geological Survey, by Edward W. Parker, gives the coal production of the principal countries for the years nearest the one under review for which figures could be obtained. For the sake of convenience, the quantities are expressed in the unit of measurement adopted in each country and reduced for comparison to short tons of 2000 pounds. In each case the year is named for which the production is given:

Country.	Usual unit in producing country.	Equivalent in short tons.
United States (1905) ..... long tons	350,820,840	392,919,341
Great Britain (1905) ..... "	326,128,936	264,464,408
Germany (1905) ..... metric tons	173,796,674	191,576,074
Austria-Hungary (1904) ..... "	41,014,182	45,209,933
France (1904) ..... "	34,167,966	37,663,349
Belgium (1905) ..... "	21,844,200	24,078,362
Russia and Finland (1904) ..... "	19,318,370	21,294,639
Japan (1903) ..... "	10,088,845	11,120,934
Canada (1905) ..... short tons	8,775,933	8,775,933
India (1904) ..... long tons	8,216,706	9,202,711
New South Wales (1904) ..... "	6,019,809	6,742,186
Spain (1905) ..... metric tons	3,202,911	3,530,569
South African Republic (1904) ..... long tons	2,409,033	2,698,117
New Zealand (1904) ..... "	1,537,838	1,722,379
Mexico (1904) ..... metric tons	700,000	771,610
Sweden (1904) ..... "	320,984	353,821
Italy (1904) ..... "	362,151	399,199
Holland (1904) ..... "	466,997	514,771
Queensland (1904) ..... long tons	512,015	573,457
Victoria (1904) ..... "	121,741	136,350
Natal (1904) ..... "	858,298	961,294
Cape Colony (1904) ..... "	154,272	172,775
Tasmania (1904) ..... "	61,109	68,442
Other countries* ..... "	7,298,935	8,174,807
Total	.....	1,033,125,971
Percentage of the United States	.....	38

* Includes China, Turkey, Servia, Portugal, United States of Colombia, Borneo and Labuan, Peru, Greece, etc.

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COAL PRODUCTION.

During the fiscal year ending June 30, 1905, there were employed in and around the coal-mines of Kansas 11,853 men and 256 boys, who produced 6,347,671 short tons of coal. They worked an average of 183 days. This shows an increase of 807,014 tons of coal and 2137 employees over the preceding year. More coal was produced this year than ever before in the history of Kansas.

For the year ending June 30, 1906, 5,754,616 tons of coal were produced by 10,035 men and 140 boys, in an average of 166 days. This is a decrease of 592,955 tons and 1818 men from the previous year. This decrease is due to the fact of there having been a suspension in all the coal-mines of Kansas from April 1 to June 16, 1906.

During the year ending June 30, 1905, there were thirty-six fatal and sixty-eight non-fatal accidents in and around the mines; that is, one fatal accident for every 176,322 tons of coal produced and for every 336 employees. For every 93,332 tons of coal and every 178 employees there was one non-fatal accident.

For the year ending June 30, 1906, there were thirty fatal and fifty-four non-fatal accidents in and around the mines. This makes one fatal accident for every 191,820 tons of coal produced and every 339 employees, or one non-fatal accident for every 106,566 tons of coal and every 188 employees.

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SUMMARY OF STATISTICAL TABLES.

The statistical tables for year ending June 30, 1905, will show, together with a great many other things, that, in the four largest producing counties of the state, namely, Crawford, Cherokee, Leavenworth, and Osage, $5,239,691.77 was earned by the miners and $1,153,453.80 was expended by them, leaving a net earning of $4,086,237.97; that the underground day men earned $817,158.69 and the top men $383,421.06, making a total of $6,440,271.52 earned by all the employees in the mines. Taking the amount earned by all the miners and the number of miners, we find that they average $509.21, and an expense of $81.51 for the year; we also find an average of $2.32 for the days worked and $1.37 for the 310 working days of the year. In Crawford and Cherokee counties, 427,087½ kegs of powder were used, or one keg for every 14.05 tons of coal produced.

For the year ending June 30, 1906, the miners earned $4,491,-856.81, and the expenses were, $971,148.60, leaving the net earnings $3,520,708.21; $644,249.74 were earned by the underground day men, and $299,831.10 by the top men; making a total of $5,435,-937.65 for all employees. The miners made a yearly average earning of $475.65, and an average expense of $75.15. They averaged $2.37 per day for days worked, and $1.29 per day for the 310 working days of the year. There were 358,017 kegs of powder used in Crawford and Cherokee counties.

The miners in Crawford county earned an average of $2.53 for the number of days worked, and $1.60 per day for the 310 working days of the year; Cherokee county, $2.46 and $1.46 per day; Leavenworth county, $2.23 and $1.52; and Osage county, $2.08 and $0.91. This shows that the Crawford county miners had the highest average and Osage the lowest.

When computing the miners' earnings for Crawford and Cherokee counties, I added ten cents per ton to the mining price to pay for yardage, cutting faults, etc., and five cents per ton to the powder for other expenses; and added eight cents per ton to the mining price and three cents per ton to the powder in Leavenworth and Osage counties. I believe this to be a fair approximate, although some of my predecessors have added as much as fourteen cents per ton, and others as low as eight cents per ton.

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A FEW REMARKS ON VENTILATION.

Ventilation is the replacing of the foul air contained in an enclosed space with fresh air from the atmosphere, and the mine inspector finds the keeping of good air in circulation in the mines one of the most important features of his duties, as the health of those working underground depends on the air they breathe. To a person accustomed to working out of doors the necessity of ventilation is not apparent, but to those working underground, where, if artificial means are not used, the air will move slowly or not at all, the case is very different, and a mine foreman cannot expose his incompetency in any better way than to have a poorly ventilated mine; for, regardless of what conditions may exist, a practical and competent foreman will figure ahead to meet all emergencies, and, as the conditions governing the ventilation of the mine are changing daily, it will require his constant and careful attention to keep the mine in a good condition, so that it will be healthful for the miners as well as economical to the operators.

Good ventilation is of great interest to all miners, as they work the most of their time at the face; yet they very often either turn and drive a room from 75 to 100 feet without a break-through, and then expect good air, or after a break-through has been cut it is sometimes partly filled with tool-boxes, props, or some kind of refuse, thereby reducing the quantity of air; but more often the operators, in their attempt to keep down expenses, will not have sufficient air-courses driven, or have the ones already driven properly cared for. In some instances, after the mine inspector orders air-courses cleaned, the companies will do so, and then, instead of maintaining them, will neglect them until complaint of bad air is again sent the inspector.

The air will naturally take the easiest course to the upcast shaft, whether it be the shortest way or the largest sectional area, and often when the air-courses nearest the face are partly choked up or when no air-course has been cut close to the face, the air is naturally very weak at the face, and the careless foreman is at a loss to know why he hasn't a greater current of air in this part of the mine, seemingly expecting the air to travel where there is no air-course through which it can go.

In this state, the required amount of air to keep a mine in a

healthful condition varies considerably, as in the long-wall work nearly all the air circulates at the face and very little powder is used; but in the southeastern coal-fields, where more than a hundred kegs of powder are exploded in one mine in a night, thereby generating large quantities of carbonic-oxid gas (white damp), and carbonic-acid gas (black damp), the air does not sweep the face, and a larger quantity of air is needed in this section of the country to clear the mine of these and other gases formed by the explosion of so much powder. This shows that what would be sufficient air in one mine would be inadequate in another, proving that the best law to govern the amount of air required is to have enough to keep the mine in a healthy condition.

Sometimes, on entering our mines, I find the ventilating current is poor, but before going far the current is increased, either by quickening the revolutions of the fan or by firing up the furnace, proving that the ventilating appliances are adequate to furnish the required quantity of air if properly attended. Often the miners will say that the operator must have known the inspector was coming, as they generally have good air when he is in the mine, and they really believe this until assured that the current of air was increased after his arrival. A mine, to be properly ventilated, should have the air carried to the face when the men work, and a mine boss who has the appliances at hand to do so, and then neglects it, causing the men to breathe impure air, is nothing less than a criminal.

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A WORD ON EXPLOSIONS.

By the term "explosion," I mean a wild hurricane of fire, dust, and debris, propelled at an inconceivable speed by the expansive energies caused by the ignition of gases in the mine. So much has been written by scientific men, since the early history of mining, and so little accomplished in regard to eliminating explosions from mines—for they still occur—that any suggestion of mine would only be that a commission of scientific men and some practical miners be appointed to study deeply the causes, with the intention of finding some remedy for explosions in the coal-mines of Kansas; for it appears that mines in different sections explode from different causes. The theory is that all powder or explosives, when ignited, are transformed from solids into gaseous products by chemical action assisted by heat and pressure.

On account of the great importance of explosives used in mining, and their being the direct cause of a great many mine accidents, a careful study of their nature and use is needful. Understanding that a test was being made at the University of Kansas, I wrote to that place and asked if a test had been made to determine the relative amount of gases generated by different powders, when exploded, but they had not at that time taken up this phase of the subject. I believe that if a thorough study relating to the amount of dangerous gases generated from the combustion of the different grades of powder were made along scientific lines, it would aid materially in reducing the number of explosions in mines. Many attempts have been made to alter the composition of explosives so that inflammable gasses would not be produced, but the result has only been realized in part—that is, by the production of detonating explosives.

Since my term began there have been no explosions; but a great many new mines are being developed, and past experience has proven that the most explosions occur either in new mines of limited extent or in old mines, in the new or more congested workings. However, if the shots are fired slowly, so that the heated gases can expand and be carried away before another shot is fired; if no shot is fired that appears in the shot-firers' judgment to be improperly prepared and dangerous; if steam-pipes are put in to moisten the air and heat the new mines in the winter; if the mine

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is well ventilated, so as to allow no large quantity of "white damp" to accumulate (as this gas, besides being very poisonous to the system, has the widest explosive range of any gas except hydrogen, and there is no doubt but that it adds force to the initial explosion), and if the roads in dry mines were sprinkled, then the danger of an explosion would be greatly lessened.

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RECOMMENDATIONS.

In regard to the state mining laws, I would recommend: (1) That a law be enacted whereby the mine inspector, after making a thorough inspection of a mine and finding it unhealthy or unsafe for the men to work in, be given the power to close down such mine or portion thereof until same be made safe and healthful; (2) that a law be enacted compelling companies to have all the shots in the mine fired from the top by electricity or by some other equally safe method; (3) that a law be enacted compelling all persons desiring employment in the mines to give positive proof of their ability and experience before they are given a place to work alone; (4) that a law be enacted giving the mine inspector more assistance to perform his work of inspecting the mines and other duties of his office.

The foregoing recommendations are made with the thought in mind that, if enacted, these laws would much improve the condition of the mines. If the inspector had the power to close down any mine run contrary to the mining laws without waiting for an injunction, it would have a tendency to keep the mines in a better condition, as the companies would then either drive air-courses through from one pair of entries to another, about every 1000 feet, thereby shortening the distance the air must travel, or else increase the ventilating pressure as the mine is driven in. It can be readily seen that if such air-courses were driven and maintained it would be an improvement over the present system of depending on old, partly caved-in rooms for air-courses. The companies would also keep stagnant water off the roads. Under the present law the miners working in the mine must swear that it is in a bad condition before an injunction will be granted, and this they very seldom care to do.

As to the shot-firing recommendation, it would seem that no person would oppose the plan of having all shots fired from the top, when it can be clearly seen from the past observations the number of lives lost by the terrible explosions caused by the firing of shots. There are now patented devices in which shots are fired by a chemical preparation and by electricity. The shots are fired by the first method by placing the preparation within the powder which will be exploded by the chemical after a certain length of time. By

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attaching the electric wires to a cap inserted in the powder, the shots can be fired by electricity from above. If this law were enacted it would not devolve upon the mine inspector to hurry to the scenes of a terrible accident and find the charred remains of some poor shot-firer killed in the discharge of his duties. In many instances not only the shot-firers perish, but also the heroic rescuers, in their attempt to find the shot-firer, whom they hope is still alive, are overcome by the foul gases which accumulate from the explosion, and they, too, give up their lives because there is no law to compel the companies to have the shots fired from above.

Again, if the law pertaining to the employment of experienced men were enacted, the death-rate would be materially reduced, as so often, when the mine inspector is called to investigate an accident, he finds that the miner was killed while at work in his room, by coal or rock falling upon him, and after examining the condition of the room the thought so often suggests itself: Was he a practical miner, fully realizing the dangers that surround him, but for the time omitted that eternal vigilance so necessary even to the most experienced miners, or was he some poor, inexperienced fellow who gave up his life in trying to learn, without the aid of an experienced miner, one of the most, if not the most, dangerous of all occupations? By referring to the statistics of the death-rate of employees in coal-mines it is very evident that no inexperienced person should be allowed to work alone mining coal.

The coal-mining industry in the state has increased to such an extent that more assistance is required to properly inspect the mines, and provision should also be made for a clerk in the office, to gather statistics and perform all other office duties, thereby allowing the mine inspector more time to work in the field inspecting mines instead of being a statistical clerk.

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MINE INSPECTIONS.

OSAGE COUNTY.

The mines of Osage county are worked on the long-wall system, and are ventilated by furnaces. The coal lies at a depth of from 25 to 125 feet, and the average thickness of the seam in and around Osage City is thirteen inches, and at Burlingame and Scranton it is seventeen inches. In practically all of the mines the air in circulation must pass the loose or open end to go from one entry to another, and on account of the great amount of weight that is always on the loose end, it is a very common occurrence for it to cave in, or partly cave in, or have to be built close, thereby blocking the air for a few days to several weeks, and causing the men on that current to suffer from want of air until the loose end is opened again. Under the present law, the mine inspector, when he finds a mine in such condition, must wait until an injunction is brought before he can compel the operator to improve this portion of the mine, and, were he allowed to close down any portion of a mine which is unhealthy or unsafe for the miners to work in without waiting for an injunction, all the mines in this county would have air-courses cut through from one entry to another, and maintained for use in case of a cave-in at the working-face. Some of the mines have such air-courses cut through back of the working-face, and they are a great improvement to these mines, especially where the roof is soft.

I have tested all the scales in this county and, with a very few exceptions, found they were correct. Those which were incorrect were quickly adjusted. Platform scales are used, and I weighed all the empty boxes and balanced the scales at the average weight of these boxes.

The Standard Coal Company's mine is located two and one-half miles southwest of Scranton. It has been improved by sinking an escapement shaft, rebuilding the top, enlarging the bottom and putting in a switch off the Santa Fe. They employ thirty miners and six day men, and with the improvements made in the last year the mine is now equipped to employ a great many more men. Evan Griffith, mine manager.

Bunten's mine is located one mile west of Scranton, on a switch

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off the Santa Fe. It is a slope from which the coal is hoisted by means of a steam-engine. They have had some trouble with black damp coming from the old works. Twenty miners and three day men are employed. Robt. Bunten, manager.

Isaacs' slope is located two and one-half miles west of Scranton; has a steam hoist and has a switch off the Santh Fe. Fifty miners and six day men are given employment. Three doors have been put up in this mine, which has greatly improved the air. Although this is an old mine it has always been kept in a good shape, though accumulating a great amount of water. A new mine is being sunk by this company, and the old one will be abandoned. Harry Isaacs, manager.

Mount Carmel mine No. 14 is located two miles southwest of Scranton, and has a switch off the Santa Fe. An escapement shaft has been completed, and the mine is in fair shape. The scales did not break well; so I ordered new ones put in, which was done immediately. This mine works only during the winter months and is closed down the remainder of the year. Andreen Andreen, mine manager.

Gus Erickson's mine is located two miles south of Scranton. It is a small mine, selling to local trade.

McIntosh mine is located two miles south of Scranton. It is a small mine, employing but a few men.

Thos. Noble mine is located two miles southeast of Scranton; employs but a few men. This mine is now operated by Robt. Harrison, who has sunk an air-shaft which has greatly improved the condition of the mine.

James Rennie mine is located one mile south of Carbondale. It is a slope employing about twenty miners. They work only during the winter months. At one time there were a great many mines in this vicinity but they have all been abandoned with the exception of the Rennie mine. John Downs, mine manager.

Roger McPhail has sunk a mine one and one-half miles northeast of Scranton. Not much developed as yet.

Chappell's mine No. 6 is located at Fosterville, and has a switch off the Santa Fe. A large part of the coal to be worked by this mine lies north of the railroad-track, and in order to develop this part a narrow entry was driven from the south side. Development was begun with practically no return air-course, and I ordered this part of the mine to be closed until another tight entry was driven for a return air-course. This was done, greatly improving that sec-

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tion of the mine. The escapement shaft has been completed by putting in stairs, and a furnace of brick has been built. Some new doors have been put up and the runs are now in good conditition. James Bailie, mine manager.

Chappell's mine No. 3 is also located at Fosterville, and has a switch off the Santa Fe. A tight entry has been driven several hundred feet through to No. 5, for escapement purposes. The mine has a good furnace, thereby making a good ventilating pressure. Geo. Chappell, mine manager.

Elliott's mine No. 2 is located on the same switch as Chappell's No. 3. Elliott's mine No. 1, which is not working at the present time, is used for an escapement-shaft, and is the downcast. A road has been cut from No. 1 to third north entry in No. 2, which is used for main air-course. The air-course leading to the furnace was very small and had water standing in it. I ordered this cleaned up and enlarged, and this work has been done. I found the main return air-course, leading from the fourth south to the third south, blocked by dirt being gobbed in it, and the men suffering for want of air. I ordered this air-course cleaned out and the mine to remain idle until sufficient air was put in circulation. A force of men was put to work at once cleaning up air-courses, and when the mine resumed work conditions were somewhat better. Geo. Elliott, mine manager.

Elliott's mine No. 3 is located at Fosterville. This is a new mine that has been closed down and they are just now preparing to reopen it, and they are installing a gasoline-engine with which to hoist the coal.

John Bell's mine is located at Fosterville and has a switch off the Santa Fe. It is connected with the Sommers mine for an escapement. This mine has good roads and good trap-doors. The air has been greatly improved by the cutting of air-courses through from the main entry to the first north and through to the second north. The only complaint that is made of the air in this mine is when the furnace is neglected. John Bell, manager.

Sommers mine, commonly known as the old Foster mine, is located on the same switch and is connected with the Bell mine as a means of escapement. Some doors were hung in this mine which improved the air. The mine has changed hands and is now operated by E. Meggison.

Hugh McFarlin's mine is located a little east of the Burlingame depot, and has escapement through to the Central mine. Although

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this is one of the oldest mines in the county, yet the roads are good and the mine is kept in good condition.

The Central mine is located about one-half mile east of Burlingame. This mine had been closed down for almost a year, but has been reopened and a new part of the mine has been developed which gives promise of being good work. Neil Hotchkiss, manager.

John D. Jack's mine is located in the south part of Burlingame, and has a switch off the Santa Fe. An escapement and air-shaft has been sunk, which has greatly improved the mine. The mine was leased for a short time by the Hotchkiss brothers, but is now back in the hands of John D. Jack.

Strunk Coal Company's mine is located one mile south of the Burlingame depot, and has a switch off the Santa Fe. New head frames have been put up, the shaft has been retimbered, and the return air-course has been enlarged. Wm. Strunk, mine manager.

Simpson Coal Company's mine No. 2 is known as the Italy mine, and is located two miles south of Burlingame on a switch off the Santa Fe, and is connected with No. 1 for air and escapement purposes. The east entry has been driven through to an old road for a return air-course. This mine has been closed down for some time and is being reopened by John A. Johnson.

Knight & Weston coal-mine is located one mile southwest of Burlingame and has switch off Santa Fe. An escapement shaft has been sunk and stairs have been put in, which improves the condition of this mine. There is a good current of air. This mine is now under the management of the Hotchkiss brothers.

James Washington's mine is located about three-fourths of a mile southwest of Burlingame, and has a switch off Santa Fe. This mine is now operated by a company of miners who work the mine themselves. Robert Simpson, manager.

Black Diamond Coal Company's mine is located one-half mile southwest of Burlingame, and has a switch off Santa Fe. The coal is hoisted by a steam-engine. An escapement and air-shaft has been sunk and a furnace put in. Doors have also been hung. This mine was well equipped to handle a large output, but, owing to the coal being hard to mine when they first began the development, the requisite number of miners could not be obtained. However, now as the work is advancing it is becoming better. Wm. Meggison, mine manager.

Coughlin Coal Company's mine is located one mile north of Peterton, and has been abandoned because of so much water. A

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new mine has been sunk by them one-half mile farther north, which has railroad connections with the Santa Fe, and there is every indication that it will be a good mine.

Mount Carmel mine No. 28, located one mile northeast of Osage City, has railroad connections with the Santa Fe. This is one of the largest coal-producing mines in the county. The air is split in four currents and undercast is used for return air-course. Four new doors have been put up and air-courses have been cut through in several places, from one entry to another, to be used in case of a cave-in at face. This has greatly improved the mine. Alex Omallra, mine manager.

Mine No. 29 of the same company is located one-half mile north of No. 28, and is also connected with the Santa Fe. It, too, is one of the largest coal-producing mines in the county. The air is split in four currents, and air-courses have been cut in several places from one entry to another, to use in case of cave-in at face. A regulator is used in the short air-course near the furnace to equalize the currents. John O'Malia, mine manager.

K. K. K. K. mine, located one and one-half miles west of Osage City, is connected with the Missouri Pacific railroad. This mine has been closed down for some time but is now reopened. Four currents of air were formerly used, but as only one side of the mine is now being worked the four currents are not used. Archie Gardner, mine manager.

Maney Nettleblade mine is located one mile west of Osage City and has switch off Missouri Pacific. This mine has changed hands several times and is now being managed by a company of miners, who improved the mine by cleaning air-courses, putting up doors and curtains, and taking down loose rocks on entry. Oscar Bolen, mine manager.

A. W. Granstrom's mine, located one mile west of Osage City, is connected with the Missouri Pacific railroad. A door and some curtains have been put up in this mine. The return air-course, which was very small, has been enlarged. Pete Forss, mine manager.

Mine No. 5 of the Western Coal and Fuel Company, located one-half mile west of Osage City, and connected with the Missouri Pacific railway, is worked by a company of miners, and they have improved the mine considerably by working some rooms that were behind. After these rooms are worked up, the coal will break better all over the mine.

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Sam Carlston's mine, located close to the Missouri Pacific depot, is connected with the Missouri Pacific railway. The north side, which had not been worked for some time, has been started up, and curtains are used to force the air in to the working-face, and the air is not so good as it should be in this part of the mine. A new door has been put in the south entry which has improved the air there. John Carlston, mine manager.

Labor Exchange Coal Company has two mines, No. 1 and No. 2. The former is located one mile northwest of Osage City and the latter is one-half mile north of Osage City. The miners who work in these mines are members of the company, and the mines are in good condition. A report reached me that the shot-firing law was being violated in these mines, and I notified the manager of this report. Later, upon investigation, I found that the law was being complied with. Robert Cahill, manager.

John A. Johnson's mine No. 2, located a little north of the Missouri Pacific depot at Osage City, has a road through to No. 1 for escapement, and is in good condition. Mine No. 1 is worked by a company of miners.

Gust Johnson's mine No. 4, located one mile east of Osage City, has switch off Missouri Pacific. The inlet air-course had been cleaned out a little, and later, upon investigation, I found that it needed a more thorough cleaning. There are three openings in this mine, but the main hoisting-shaft had not been used to ventilate the mine, and as the air-course at the bottom of the inlet mine was too small to let sufficient air pass through, I advised that the main shaft be used as an inlet together with the other. This was done, and after leakages had been stopped the air-current was improved considerably. Tom Davis, mine manager.

Sunflower Coal Company is located a little south of No. 4, and gives employment to a very few men. John Seamen, manager.

Superior Coal Company's mine is located one-fourth of a mile south of the Sunflower mine. This is a new mine, employing only a few men as yet.

Isaiah Jones's mine No. 3 is located one mile southeast of Osage City. This mine depends on local trade, and works very little during the summer months.

I might add to the above inspections that when the mines resumed work after the suspension, which lasted from April 1 to June 16, 1906, the ventilation in almost all the mines was very poor, on account of so many places being caved in.

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LEAVENWORTH COUNTY.

Report of Leavenworth county, from March 1 to June 30, 1906, submitted by Thomas Morrissey, deputy.

Leavenworth county has in operation six mines, including a mine that is just being opened, and all are worked on the long-wall system. Considerable gas is generated in these mines, but precaution is used by the companies in employing fire bosses to examine the mines every morning and to report to the miners before they go to their rooms. The coal lies at a depth of about 740 feet, is twenty-two inches thick, with a fire-clay mining.

Home-Riverside Coal Company mine No. 1 is located in Leavenworth, and has connections with the Union Pacific and the Kansas City, Wyandotte & Northwestern railways. On my first visit to this mine I found that part of the air-course was in poor condition, and I called the attention of the mine boss to the fact. On returning later, I found that my request had been complied with and the air-course was in good shape. A road, five by six feet, has been cut through to mine No. 2 for escapement, and the tunnel which was formerly used for this purpose has been abandoned. The general condition of the mine is good. A fan is used to ventilate the mine, and they have their own shops and machinery to make all necessary repairs.

Home-Riverside Coal Company mine No. 2 is one mile southwest of mine No. 1, and has switch connections with the Union Pacific. It is connected with mine No. 1 for escapement. A fan is used for ventilating and the air is in fair condition. A pair of Litchfield engines, with a twelve-foot drum, are used by this mine. The hoisting-shaft has been greatly improved by new guides being put in, and the air-shaft also has been repaired. Ropes in fair condition.

Mine No. 3 of the same company, which has been running for thirty-five years, is located northeast of Leavenworth, close to the city limits, and has connections with the Missouri Pacific railway. The air is split in four currents. Although the mine is ventilated with a twenty-five-foot fan and six-foot blades, yet the air is rather warm for those getting the last of it, and conditions are not as good as they should be, on account of the long distance the air must travel and of the air-courses being in poor condition The mine boss promised to have things improved. There is an escapement shaft, also a blacksmith, carpenter and machine shop.

Carr Coal and Mining Company mine No. 1 is located at Rich-

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ardson, about three and one-half miles south of Leavenworth, and has connections with the Santa Fe and the Kansas City, Wyandotte & Northwestern railways. The shaft is 720 feet deep and has a 500-horse-power engine, three-flue boilers. It is ventilated with a twelve-foot fan, and the air is split into four different currents, giving each quarter-section of the mine a separate current. The escapement-shaft, which is 500 feet east of the hoisting-shaft, has been completed. The broken timbers on the main road have been taken out and replaced by new ones. The mine is now in good condition.

The Kansas state mine is located at Lansing, five miles south of Leavenworth. It has connections with the U. P., K. C. W. & N. W., A. T. & S. F. and the Kansas City & Leavenworth railways. The shaft is 715 feet deep, and has a 500-horse-power engine. Among the improvements made are the hoisting-engine, two new shive wheels, new rods and new bottoms for the hoisting- and the air-shaft cages, new ropes, and a new Fairbanks scale, at a cost of $1240. The bottom of the hoisting-shaft has been retimbered with 12x12 oak, and the air-courses have been cleaned out and timbers repaired. The main roads are going through a general repairing, which, when complete, will make a good haulage road. The north and the west side of the mine have been abandoned.

I have tested all the scales in this county.

ATCHISON COUNTY.

The Atchison Coal and Mining Company mine No. 1 is one and one-half miles south of Atchison, on the Missouri Pacific railway. This is the deepest mine in the state, the coal being found at a depth of 1172 feet. The coal is thirty-eight inches thick and there is a sand-rock top and bottom, and the mine is worked on the long-wall system.

The air-shaft is bratticed off of the main shaft and has an area of about eighteen square feet. An eight-foot Champion fan is used and it would produce a greater volume of air if the area of the air-shaft were larger, and if the leakages were stopped between the air- and the main-shaft. The air was very poor in this mine when I first visited it and the superintendent said he would have the ventilating pressure increased. Considerable gas is generated and a great amount of water accumulates in this mine. Tanks are attached to the bottom of the cages as an aid to the pumps in hoisting the water. A fire boss is employed to examine the mine

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and report the conditions to the miners before they go to their rooms. The coal is mined about one foot from the bottom on account of being softer there. It breaks very readily and the bottom coal is wedged up.

The law gives mines of this depth two years to sink an air- and escapement-shaft, and as yet this company has not begun to sink one, although the time limit will have expired in February, 1907, and it will now be impossible for them to sink and complete such shaft before that time. The state mine inspector notified this company that he understood the escapement shaft must be sunk within this time limit, on account of the great danger to the men working in the mine, but the attorney-general advised that nothing could be done until the two years were up. After this time has expired the law will then apply to this mine.

CHEROKEE COUNTY.

General report of the condition of the mines in Cherokee county from March 1 to June 30, 1906, submitted by Joseph Ryan, deputy.

Mine No. 6 of the Southwestern Development Company is located at Mineral, connected with the M. K. & T. railway. This mine has two openings, and has two currents of air, only one side of the mine being worked. This mine employs 130 men, and the ventilation is in fair condition. Wm. Jones, pit boss.

Mine No. 7 of the Southwestern Development Company, located one-half mile east of Mineral, and connected with the M. K. & T. railway; has three currents of air. This mine employs fifty men, and was a fair producer a few months previous to my visit, but owing to the vast amount of water accumulated around the working places it has become very difficult to produce coal. The water shut off all the workings in the fourth and fifth casts on the south. This is an old mine and the air is very poor in the fifth west, on the south side, and on the straight north, having so much water to pass through, and the air-course partly caved in. Francis Ryan, pit boss.

Mine No. 8 of the same company, located three-fourths of a mile south of West Mineral and connected with the M. K. & T. railway; has two openings and three separate currents of air. It is worked on the double-entry system and employs 150 men. The air in this mine, previous to my visit, has been in fair condition, but owing to the company changing foremen the air-courses have

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got in bad condition, and the air in the sixth east of the west was in poor condition; and in the first north, second north of the sixth east, air was very dull, and the roads in poor condition and need timbering. Jas. Roe, pit boss.

Mine No. 11 of the same company, located three-fourths of a mile north of West Mineral and connected with the M. K. & T. railway. This mine has two openings and four separate currents of air, is worked on double-entry system, and is a large producer. This mine employs 200 men and is in good condition all over, the mine being well ventilated and roads in fine shape, and all air-courses well timbered and kept in good condition. John Ryan, pit boss.

Mine No. 15 of the same company, located one-half mile east and one-half mile north of East Mineral, and connected with the M. K. & T. railway. This is a new mine, and during my visit they were working on the tipple. When in operation this mine will be one of the largest producers in Cherokee county. Jas. Price, pit boss.

Mine No. 1 of the Scammon Fuel Company, located one mile west and one mile north of West Mineral and connected with the M. K. & T. railway, is a new mine, sunk some time about the first of the year. It will have two openings and be ventilated by a fan, and will be worked on the double-entry system. The mine is in fair condition. R. A. Gilcrist, pit boss.

Mine No. 1 of the Fidelity Land and Improvement Company, located at Stone City, connected with M. K. & T. railway; has two openings and two separate currents of air; is worked by the double-entry system. In general, the air has been good, but the want of a few doors made the air very dull. The mine foreman informed me that he would start work on them as soon as possible and the ventilation will be in fair condition. John Dorman, pit boss.

Mine No. 2 of the same company, located at Stone City and connected with M. K. & T. railway, has been in faulty work, and has been shut down for almost a year, and the company does not know when work will be started again.

Mine No. 1 of the Cherokee Crescent Coal Company, located at West Mineral, is worked on the double-entry system, and has four separate currents of air, and connected with M. K. & T. railway. This mine is a large producer and employs 215 men. The mine is in fair condition, except the main entries, in which there was some

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very bad rock, and I instructed the foreman either to take it down or have it timbered, so it would be safer for the drivers, who have to haul coal under the rocks. This he agreed to do. Dan Ryan, pit boss.

Mine No. 1 of the Mayer Coal Company, located three-fourths of a mile south of Mineral, is connected with M. K. & T. railway; is worked on the double-entry system, and has five separate currents of air. The mine employs 187 men, and is in fair condition. They have just completed some connections to an air-course which gives the air shorter way to travel. John Humble, pit boss.

Spencer & Skidmore mine, located one and three-fourths miles south of Mineral, connected with M. K. & T. railway; has two openings and is worked on the double-entry system. This mine was in bad condition as they had no fan or furnace. I ordered a fan to be put in and they started work on it right away. Wm. Homer, pit boss.

C. A. Williams Coal Company, located one mile north of Scammon, is a slope and employs only four men, and is in good condition.

Luke Bros. Coal Company, located two miles northeast of Scammon, has no railroad connections; is worked on the single-entry system and employs from six to ten men. This mine is a gin and had no escapement; so I ordered the company to sink one, and they promised to start right away.

Sanders & Mammot Coal Company, located two miles northeast of Scammon. This is a slope and employs from four to eight men.

Pullen & Sons' mine is a gin, connected with the Frisco railway, located one mile northeast of Scammon; has two openings and is ventilated by a furnace. As there are only four men employed the air is sufficient.

A. L. Hayden Coal Company mine is located two and one-half miles southwest of Weir. This is a gin and has no railroad connection; has three openings and is ventilated by a furnace; worked on the double-entry system and employs thirty-five men. When I visited the mine the air was in very poor condition. P. Braidwood, pit boss.

Larson Bros.' mine, located two and one-half miles southwest of Weir, is a small gin mine, and has no railroad connections; employs twenty-eight men. This mine was almost abandoned, as all entries were stopped and started to pull through the pillars.

J. W. Robison Coal Company mine No. 1, located one mile south of Weir and connected with the Frisco railway; has two

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openings, with proper escapements, and two separate currents of air. The air was in fair condition for the number of men employed, but the roads were in a poor condition on account of water and mud. The mine employs twenty-five men. John Slaving, pit boss.

Tomson & Tomson Coal Company, located one and one-fourth miles south of Weir, has no railroad connections. This is a new mine, just sunk to the coal. Dan Tomson, pit boss.

Mine No. 1, Sherman Zinc and Oil, Coal and Gas Company. This mine was formerly called the Elk Horn Coal Company. Located at Roseland and connected with Missouri Pacific railway. Has two openings properly equipped. This is a very faulty mine, and is in very poor condition, owing to the lack of doors and curtains. The foreman agreed to put up doors and curtains immediately, and the ventilation will be in fair condition. J. P. Davison, pit boss.

Mine No. 1 of the Roseland Coal Company, located three-fourths of a mile northwest of Roseland, connected with the Missouri Pacific railway. The mine has two openings, worked on the double-entry system. Ventilation in some parts of the mine is very poor, owing to so much leakage in the stopings and the lack of doors, which I suggested would put the ventilation in a fair condition, to which the foreman agreed. M. L. Walters, pit boss.

Joe Humble Coal Company mine is located three miles west of Weir, and connected with Frisco railway. This mine has two openings, properly equipped and ventilated by a fan, just one side of the shaft being worked It employs about thirty men. Ventilation is in fair condition, for the number of men. Joe Humble, pit boss.

Mine No. 2, Schwab Coal Company, located three miles west of Weir, and connected with Frisco railway; has two openings, properly equipped, and ventilated with a fan. Just one side of the mine being worked. The mine is in very poor condition, owing to the lack of doors, and defective curtains. I instructed the superintendent about the necessary supplies to put the mine in a fair condition, and he agreed to start work at once. Jas. Cunningham, pit boss.

Mine No. 1, Cherokee Coal and Mining Company, located one-half mile south of Cherokee, and connected with the Frisco railway. This is a very faulty mine with very poor roof; worked by the double-entry system. At my visit to this mine I found it in a

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very poor condition, as the mine had been shut down for three months and the main air-courses caved in, and some of the entries very dangerous on account of so much loose rock. The mine foreman promised to put a force of men on and clean the air-courses, timber all the bad places in the entries, and put the mine in fair condition. O. A. Reese, pit boss.

Cherokee Coal and Mining Company, located one and one-half miles south of Cherokee, and connected with the Frisco railway, is a small mine, working upper vein, and is in fair condition. Charley Gerhard, pit boss.

Curtis Coal Company slope mine No. 1, located one and one-half miles south of Scammon, connected with the Frisco railway. At the time of my visit to this mine it was in fair condition.

Diamond Coal Company, located two miles south of Scammon and connected with Frisco railway. This mine is a gin and employs from four to eight men, and ventilation is sufficient for the number of men employed. M. C. Boltins, pit boss.

Bud Hisle Coal Company, located two and one-half miles south of Scammon, connected with Frisco railway; has two openings, properly equipped; is worked on the double-entry system, and ventilated by a furnace. The mine is in very poor condition, as the roof was very shallow, and the main air-course caved in. Some new air-courses have been started and when they are connected it will make the ventilation in a fair condition for the number of men employed. Dan Grant, pit boss.

Walker & Morgan Coal Company, located at Stippville; has no railroad connections; is a small gin shaft, employs from two to four men, and sells custom coal. W. Walker, pit boss.

Scott & Oliphant Coal Company, Turck; connected with Frisco railway, and has two openings. Worked on the single-entry system and was in a very poor condition, the mine being full of water; the stopings were in bad shape, and the air-courses caved in. Mr. Scott agreed to work five men to get it in proper shape, and start on the double-entry system and have it well ventilated.

Earl & McGregor Coal Company, one and one-half miles southwest of Stippville; has no railroad connection; has two openings; is worked on the single-entry system, and ventilated by a furnace. Few men are employed and the air is sufficient. McGregor, pit boss.

Mine No. 3, Norton Coal Company, three-fourths of a mile west of Scammon, connected with the Frisco railway; has two openings properly equipped; worked on the double-entry system. This

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mine employs 195 men. The ventilation is very poor. The air in the straight north, the seventh east of the straight north and sixth east of the straight north is in bad condition on account of the overcast on north side being too small for the full current to pass through. The air has such a long distance to travel, and there is leakage in the stopings on account of not keeping them air-tight. The south side of this mine is in a much better condition. The fourth and fifth east of the straight south were in poor condition on account of the main airway being partly filled with dirt and props. The mine foreman agreed to do all that is necessary to have the mine well ventilated. A. Braidwood, pit boss.

Mine No. 7, Norton Coal Company, four miles west of Weir, connected with Missouri Pacific railway; has two openings, properly equipped; is worked on the double-entry system. This is a new mine, in fair condition. Thos. Graham, pit boss.

Mine No. 5, Hamilton Coal and Mercantile Company, one and one-fourth miles south of East Mineral, is connected with M. K. & T. railway; has two openings properly equipped; worked on the double-entry system and is in fair condition. John McGill, pit boss.

Mine No. 4, Fleming Coal Company, one mile west of Stippville, connected with M. K. & T. railway; has two openings, properly equipped, and worked on the double-entry system. The ventilation in this mine is in good condition but the roads are wet and muddy. W. M. Williams, pit boss.

Mine No. 5, same company, one and one-half miles northwest of Stippville, connected with M. K. & T. railway; has two openings, properly equipped; well ventilated and roads in good condition. August Mason, pit boss.

Mine No. 6, Fleming Coal Company, one mile northwest of Turck, connected with Frisco railway. Worked on the double-entry system and has two openings, under the old law. Only a few men being employed at this mine, the ventilation is sufficient; roads and entries in good condition. Jas. Bullock, pit boss.

Eastern Coal and Coke Company, Cokedale, connected with Missouri Pacific railway. This mine has been shut down for eight months. The mine foreman expects to start work again in the near future. J. A. Spriggs, pit boss.

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CRAWFORD COUNTY.

General report of Crawford county from March 1 to June 30, 1906, submitted by John Gilday, deputy.

Crawford county has been the largest coal-producing county in the state for a number of years, and from present indications will remain so for some time. During the year ending June 30, 1906, 3,252,116 tons of coal were produced, which was 56½ per cent. of the entire output of the state, and 5306 men were given employment. In the northern part of this county a great many new mines are being developed. The coal lies at a depth of from 30 to 150 feet, and the thickness of the seam ranges from thirty-two to forty-four inches. The mines are worked on the room-and-pillar system, solid shooting.

Mount Carmel mine No. 6, located at Frontenac, is one of the large producing mines of the state, and coal is hauled to the bottom by two electric motors for a distance of almost a mile. An electric pump has been installed, which can be moved from one part of the mine to another. On account of the mine being in so far, it requires a great amount of care to keep the air-courses in good condition. The air was poor in the twenty-second east, but an air-course was being driven from the twentieth to this entry which would greatly improve it. Several other roads were being driven which, when connected, would shorten the air-course considerably. I told the boss that an air-hole should be sunk on the northeast section, and later it was started. It is only a question of time until a new shaft will have to be sunk in order to properly ventilate this mine. Phil. Jones, mine manager.

Mine No. 9 of the same company, located one mile northeast of Frontenac, had only two air currents, and the air was weak in part of the mine, caused by the lack of curtains. I told the boss that an overcast was needed, as two currents of air were not sufficient for a mine of that size. On my return visit the overcast had been put in, which was quite an improvement, as they now had four currents of air. John McGarvia, mine manager.

Mine No. 5 of the same company, located one and one-fourth miles northwest of Chicopee, is the second largest coal-producing mine in the state. This mine was sunk large enough to install four cages, and the tipple was erected so that coal could be dumped onto eight tracks, but on account of so much faulty coal when the mine was being developed the idea was abandoned and only two cages were installed. An electric motor hauls the coal from the partings to the bottom, a distance of about a mile, and there is

an electric pump which can be moved to any part of the mine. Several entries have been closed down on account of so much water, and holes are now being drilled to pump water out of and regain those entries. Part of this mine, which had been shut down because of faults, is now being worked, as they have driven through the fault and found good coal. An air-shaft, which has ventilated the northeast section, has been connected with the northwest section, greatly improving the air in this part of the mine. The air was very weak in the northeast diagonal, and at my suggestion there was a brattice and some curtains put in, which improved the air in this section. This mine is now in good condition. Wm. Hart, mine manager.

Mine No. 8 of the same company, located about one mile southwest of Chicopee, is the largest coal-producing mine in the state of Kansas. It has excellent roads, which is the main reason for the large production. There are three parallel entries on both sides of the mine and diagonal entries are driven off the main entries. There is only one parting in all this mine, and the drivers pull the coal from the face direct to the bottom, except in this one entry where there is a small parting. Under this diagonal system the mine was developed very quickly and the mine speaks well for this system of mining coal. There are four separate currents of air and the ventilation is good, but on account of the great number of men employed the last of the air is somewhat impure. Two mine managers are employed; on the west side, Peter McQuade, and on the east, Felix Murphy.

Clemens & Son mine No. 1 is located about one mile west of Pittsburg. They have a large amount of water, which causes a great deal of ditching and piping to be done, but by raising and corduroying the roads they have kept them in good condition. The air in this mine was in fair condition. Wm. Nesbitt, mine manager.

Clemens & Schlanger mine No. 1 is about one mile north of Pittsburg. I ordered leakage stopped and new curtains put up. S. Boone, mine manager.

Luffmann coal-mine, located in West Pittsburg, is a small gin shaft, employing but a few men. I ordered gates put on this mine, and found later that they had been put on.

Barrett Coal Company mine No. 6, located at Ashley, is a new mine. The general condition of this mine is good.

Pittsburg Coal and Coke Company mine is located one-half

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mile south of Cambria. At this mine I found the air was bad in the southwest section on account of leakages and the lack of stopings. I called the foreman's attention to this, and he had it remedied at once. As they had no escapement shaft, I notified them that one must be sunk, and it has been completed. Mr. Theobald, mine manager.

Ed. Merts mine, at Kirkwood, is a small gin shaft. I told the boss to fix up the air-shaft, which he did at once. Ed. Merts, mine manager.

Nevius Coal Company mine No. 4 is located one and one-half miles south of Chicopee. At my suggestion a door was put up in this mine, and leakages stopped, which made the air good. This is a very dry mine, and I told the boss to sprinkle the roads to keep the dust from accumulating. Jas. Turner, mine manager.

La Belle Coal Company mine, located two niles north of Pittsburg, had been drowned out by water coming in from surface through cave holes. They drained off their pond and pumped the water out of the mine, and, after filling up the cave holes, they resumed the work of drawing pillars, and unless they secure more coal land this mine will be worked out in a short time. H. Wilson, mine manager.

Central Coal and Coke Company mine No. 15 is located at Ashley. At my first visit to this mine they were driving single entries, and I ordered double entries driven, as the chief mine inspector had ordered me to notify all companies who were not complying with the double-entry law to do so at once or he would bring action against them. They then began working on the double-entry system. There was a great deal of water and mud on the roads and the ditches were blocked. I asked that the ditches be opened at once, and the mine foreman promised to have this done. I found some openings which needed filling, and the air was not good in some parts of the mine. Some work has been done to improve the general condition. Frank Thomas, mine manager.

Mine No. 17 of the same company is located two miles north of Frontenac. This mine also had begun work on the single-entry system, but upon notification changed to the double entry. The general conditions of the mine are good. Geo. Walker, mine manager.

Mine No. 27 of the same company is located at Cambria. After stopping their back entries for some time, they reopened them upon notification that they must comply with the double-entry