

State inspector of coal mines reports

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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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is a 500-horse-power engine at the main hoisting-shaft and a 250-horse-power engine at the escapement-shaft. The shaft is 715 feet deep, has good covers on the cages and safety-catches attached. These are good safety-catches, as the rope once broke and the catches caught and held the cage. They have improved this mine by putting in 2800 feet of new guides, relining and facing up the other four guides, making six guides in each cageway. The guides have all been treated to a coat of linseed-oil. Two new eight-foot sheave-wheels, with wrought-iron spokes, have been put in. The bottom has been graded for 100 feet back from the main shaft. A new cross-cut 400 feet has been driven through the old abandoned gob to shorten the haul and make a safer roadway, the old road having fallen up to a considerable and dangerous height, having double timbers in, one on top of the other, some of them broken. The new road is one of the finest roads in any mine in the state, it being eight feet high and ten feet wide, with an easy grade for the loads. There have been several hundred feet of cross-cuts driven in the several divisions, placing the roads in this mine in an excellent condition. In the air-shaft there is a shale mine. It is worked at a depth of 115 feet. The shale is twenty-five feet thick, of which eight feet nearest the bottom is of good quality. They began working this on the room-pillar plan, taking out the eight feet of good shale and timbering up the other fifteen feet. This shale was so soft that the props would not hold it and it caved in up to the rock, some of the pillars crumbling off on the side. There is a stratum of limestone ten feet thick overlying this shale, and this great weight rested entirely on these pillars of shale, which were not hard enough. As the place was twenty-three feet high, it would have been very hard to put timbers in there to add to the strength of these pillars so two brick piers were built. These were round, and built solid with brick and mortar, about ten feet in diameter. This places this shale-mine in a very safe condition. They have been working it for several years and have never had an accident in it. The coal-mine is ventilated by an eighteen-foot fan, which produces 40,000 cubic feet of air per minute. This mine is now in a first-class physical condition. They have installed a light plant, which is of great satisfaction, as in and around the bottom of the mine it is well lighted with electric lights. They have a telephone system running down and into the mine foreman's office, which is close to the bottom of the mine. In the year 1908 they produced 2,228,185 bushels of coal. Archie Fulton, mine superintendent.



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Mine No. 1 of the Home-Riverside Coal Company, located at Leavenworth, is connected with the Missouri Pacific and K. C. N. W. railways. First-class machinery is installed at this mine, with a 400-horse-power hoisting-engine, and 50-horse-power engine to run a 20-foot fan, which, when making sixty-five revolutions per minute, produces 19,000 cubic feet of air. There are four currents of air in this mine. There were several entries in the mine which needed repairing, to which I called the mine foreman's attention. It was then retimbered and the roads are now in good condition. The air is carried to and circulates well around the working-face, as the mine is worked on the long-wall system. Gas generates here, but not enough to make it dangerous, and it will only accumulate in pockets on the road, close to the brushing, usually. The mine is examined every morning by the fire-boss, who reports when he finds any quantity of gas in the miner's room. The cages have covers and safety-catches. The shaft is 10 x 14 feet and 712 feet deep. There are employed 32 underground day men, 26 top men and 190 miners, who worked 243 days and produced 111,895 tons of coal. Jas. Chalmers, mine foreman.

Mine No. 2, belonging to the same company, is located one mile south of mine No. 1, and connected with a switch to the Union Pacific railway. Good machinery is installed at this mine. There is a 20-horse-power engine which runs a 12-foot fan at eighty-seven revolutions per minute, producing 17,780 cubic feet of air. At the present time they have only three currents of air. The east side of the mine is fairly well ventilated, but the air is not so good on the west side as it should be. I requested the mine foreman to remedy this defect, and they have begun to make the desired improvements. When they have completed some new air-courses, splitting the air and giving the mine four currents, the condition will be much improved, and I am satisfied that no complaint will be heard on account of bad air. They have put on new ropes, which makes this mine safer for the men to be hoisted out. It is connected with No. 1 for escapement purposes. This shaft is about the same size and depth as No. 1. The mine gives employment to 23 top men, 32 underground day men and 133 miners, who produced 78,769 tons of coal in 228 days. G. Peet, mine foreman.

Mine No 3, of the Home-Riverside Coal Company, is located northeast of Leavenworth, close to the city limits, and connected with the Missouri Pacific railway. This mine is equipped with good machinery, having a first-class engine to hoist the coal,



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ventilated with a 25-foot fan and 150-horse-power engine to run it. This is the oldest mine in the state, and the circuit which the air travels a great distance around. In the past year one and one-half miles of air-courses have been cleaned out. The air is carried to the working-face and conducted around it in a very satisfactory manner. All of the main entries are kept well timbered and are brushed high and wide. The roads are kept clean and in a first-class condition. The main shaft and the air-shaft should be re-timbered—they have had two men working constantly in these shafts to keep them in fair condition. The main shaft is 11 x 12 feet and is 720 feet deep; the air-shaft is 8 x 10 feet and the same depth as the main shaft. As only one side of this mine is working they have only two currents of air, the two currents combined being 13,720 cubic feet per minute. There is a second motion engine installed at the air-shaft in case there should be an accident at the main shaft. There are employed at this mine 31 underground day men, 21 top men and 128 miners, who worked 167 days and produced 52,017 tons of coal. Jno. Barr, mine foreman.

Mine No. 1 of the Brighton Coal Company is located eight miles southwest of Leavenworth. This mine was sunk about sixteen years ago and was then abandoned, but on November 11, 1906, they began cleaning it out preparing to operate it. The mine was full of water up to the door-heads and the timbers were twisted two feet out of line. They began improving it by putting in twenty new sets of timbers. After pumping the water out and reaching the bottom, the old timbers, which were 12 x 12 inches, were found broken and decayed, and slate and rock had fallen to the height of twenty feet. The development work was carried on in a most careful manner. The bottom was retimbered and the east entry was cleaned up for a distance of 650 feet, where they reached the coal January 3, 1907. They continued to develop up to March 1, when a new company from Kansas City took hold of the property, and very little was done until July 1. The mine was then closed down until October, when one working shift was put on cleaning out the cross-entries, and about 2000 feet of coal-face was opened and air connections were made. The engine-room and boiler-house were burned down but have since been rebuilt as nearly fire-proof as possible. Four new boilers have been put in, new ropes and new cages have been installed, and two and one-half miles of railroad have been rebuilt, connecting with the Atchison, Topeka & Santa Fe railway, and they are still at work developing this mine. James Graham, mine foreman.



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Mine No. 1 of the Carr Coal Company is located four miles south of Leavenworth, connected with the A. T. & S. F. and K. C. N. W. railways. There is good machinery installed at this mine. It has a 500-horse-power engine, with a 12-horse-power engine to run the fan and a 60-horse-power engine at the air-shaft. It is ventilated with a 12-foot fan running eighty revolutions per minute and producing 15,250 cubic feet of air, which is split into four separate currents at the head of the main north entry and at the head of the main south entry, traveling around the face to the air-shaft. The ventilation in this mine is in fair condition, but some of the air-courses were partly filled up, to which I called the attention of the mine foreman and also the mine superintendent, who ordered them cleaned at once, and when this is done the ventilation will be in first-class condition. The north side of the mine has been well timbered, leaving the roads high and wide. The roads are dry and in a fair condition. The manway around the bottom has been made larger. I have inspected the ropes, cages and safety-catches and find them in a satisfactory condition. There are employed in this mine 19 underground day men, 19 top men, and 162 miners, who worked 263 days and produced 82,390 tons of coal. The shaft is 8x16 feet and 750 feet deep. J. J. Glynn, mine foreman.

Mine No. 1 of the Atchison Coal and Mining Company is located one and one-half miles south of Atchison, on the Missouri Pacific railway. They have a good tippie, good top-buildings, and a good hoisting-engine of 350 horse-power, and a ten-foot drum. Considerable water is running down this shaft. This water seems to eat the rope; at least they wear out very soon. The shaft is $7\frac{1}{3}$ x $15\frac{1}{3}$ feet, and 1,172 feet deep, being the deepest coal-mine in this part of the United States. The coal is thirty-six inches thick, of first-class quality, and is very easy to mine. It is worked on the long-wall system. The coal is mined within about one foot of the bottom, on account of its being softer there. When the face is kept even it is no trouble to mine the coal, as the weight keeps it cracking and coal breaking out while the miner is mining. After the coal is mined it breaks very readily and the bottom coal is wedged up. A large body of water was encountered at about 1,065 feet, which runs down the shaft continually and into a sump at the bottom, and the only means they have of hoisting this water out is in tanks attached to the bottom of the cages. The pillars which were left around the mine-bottom were too small, and were continually breaking. While this mine was being developed there



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were frequent changes of superintendents and mine foremen, and each superintendent made changes in the method of mining—that is, they would change the distance between the roads, some contending that by driving the roads close together the brushing from each roadway would come nearer filling up the gob entirely, allowing the roof to rest on it and keep it from caving in, while others contended that by having the room roadways farther apart and by filling the gob full for a distance of about eight or ten feet on each side of the road, leaving the remaining distance between the roads entirely open, would allow the roof to break in there and thus relieve the roadways of the weight. Later, the last superintendent who was there began by brushing one roadway by lifting the bottom instead of brushing the top, and had a faced track extending on each side of this roadway and small cars running along the face; the miner, after loading, would push them to this roadway where the bottom had been lifted and dump them into a larger car. Under this method there was no way of filling up the gob, as there was absolutely no dirt, there being a sandrock top and bottom. The air-shaft is bratticed off the main shaft and has an area of about eighteen square feet, and the air was very poor. The bottom was in a dangerous condition on account of the rotten and broken timbers and the water running over the roads, but this superintendent seemed to only have in mind how he could get out some cheap coal; in fact, that seemed to be what all these superintendents were trying to do. Instead of developing the mine and preparing for a large production in the future they apparently were trying to get out a large production before the mine was developed. The company had begun another shaft close by and sunk to a depth of eighty feet, when I notified them that they must improve the condition of this mine and make it safer and more healthful for the miners to work in. Rather than go to the expense of making these improvements they closed down the mine and it is now abandoned.

Frank Griffith Coal Company mine, located two and one-half miles south of Atchison, is a slope, and employs only a few miners, who sell their coal to the local market. It is a thin vein, about one foot thick.

CHEROKEE COUNTY.

The coal in this county is all mined on the room-and-pillar system, leaving a pillar of coal between each room. The coal ranges in height from three to four feet and is shot off the solid. The mines are all ventilated by a fan, and when the fan is not kept running gases which are injurious to the health of the miners ac-



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cumulate very quickly. After the shots have been fired, if the fan is not kept running or a door left open, the next morning when the miners go to work they find considerable carbonic oxidg as (CO), or white damp and carbonic acid gas (CO₂), commonly known as black damp. There is not much carbureted hydrogen (CH₄) generated in these mines, only when a place is driven through a horseback sometimes a strong feeder is found, and if the miner is not careful when he first goes through this horseback he is liable to get burned; and very often on going into those places without first brushing them out they do get burned. There were employed 3714 miners in and around the coal-mines in this county, and they produced 2,339,889.74 tons of coal for the year ending June 30, 1907. There were sixty-one shafts in operation in this county. All the scales at the coal-mines in this county have been tested, some of them several times, and where they were found to be inaccurate they were either adjusted or new scales put in.

RECORD OF INSPECTIONS.

Mine No. 6 of the M. K. & T. railway coal department is located three-fourths of a mile east of West Mineral. This is the oldest mine around Mineral and will be worked out in a few months. The machinery at this mine was all first-class when installed, and is still in good condition—a first-motion engine, shaker-screens and self-dumping cages with safety-catches attached. The shaft is well timbered. The roads in the mine are dry and in first-class shape, one mule being able to pull all of the coal from the parting to the bottom, pulling twenty cars at a trip, which demonstrates the benefits to be derived from keeping the roads in good condition. The miners are all employed on one side of this mine. There was only one current of air, and on the last it was impure, so I ordered the company to split the air in two currents, and in order to do this the mine was closed down for two weeks while they were at work making the change and preparing the return air-courses. Since this change was made the air has been first-class. The shaft is 7x12 feet and 126 feet deep, ventilated by a twelve-foot fan producing 28,630 cubic feet of air per minute. There were employed 15 day men below, 15 men on top and 98 miners, producing 71,340 tons of coal in 207 days. Edward Ryan, mine foreman.

Mine No. 7 of the M. K. & T. railway coal department is located one and one-half miles east of West Mineral. The shaft is 7x12 feet and 116 feet deep. There was considerable water in this mine. At this time they are employing only about thirty miners, and it will be abandoned in a short while. Francis Ryan, mine foreman.



Mine No. 8 of the M. K. & T. railway coal department is located one-half mile southeast of West Mineral. There are good top buildings and first-class machinery at this mine—second-motion engine, shaker-screens, self-dumping cages with covers and safety-catches attached. The shaft is well timbered. On the bottom the old timbers had become partly decayed and I requested that the bottom be retimbered, which has been done, and it is now in good condition. This mine has been opened up and worked on the double-entry system, brushing both entries. It is one of the oldest mines in Mineral. New air-courses have been driven close to the face where the miners are working. This has reduced the distance the air had to travel, and the ventilation in this mine is now first-class. The shaft is $7 \times 15\frac{1}{2}$ feet and 120 feet deep. There are employed 25 underground men, 13 top men, and 103 miners, who worked 201 days, producing 71,565 tons of coal. This mine is ventilated by a twelve-foot fan, producing 27,540 cubic feet of air per minute, with four separate currents of air. W. F. Maylen, mine foreman.

Mine No. 11 of the M. K. & T. railway coal department is located three-fourths of a mile north of West Mineral. There are good top buildings at this mine and first-class machinery—first-motion engine, shaker-screens and self-dumping cages with covers and safety-catches. The shaft, which is well timbered, is $7 \times 15\frac{1}{2}$ feet and 156 feet deep. Bottom and roadways are in first-class condition. There are four separate currents of air with well-brushed and well-kept air-courses. The air has been in good condition at all times. This is one of the best mines in this field and very little complaint has been received from the miners. The condition in which this mine has been kept has undoubtedly been the cause of the company being able to produce so much coal here and get it to the bottom very cheap. Ventilated by a 14-foot fan producing 44,870 cubic feet of air per minute. This is a dry mine, but the roads are kept well sprinkled and the fan is slowed down while the shots are being fired. There are employed 24 underground day men, 17 top men and 155 miners, who worked 208 days and produced 113,920.45 tons of coal. Dan Ryan, mine foreman.

Mine No. 15, M. K. & T. railway coal department, is located one and one-half miles north of East Mineral. There is a fine tippie and top building at this mine, first-class first-motion engine, shaker-screens, and self-dumping cages with covers and safety-catches. The shaft, which is well timbered, is $7\frac{1}{2} \times 15\frac{1}{2}$ feet and 138 feet deep. The east side of the mine has always been in fault, right from the

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bottom. They have been and still are prospecting, but have not found any better coal. The other side of the mine is good coal. They have completed putting in their overcast, preparing to put in four currents of air if they should find better coal on the east side. This mine has been opened upon the double-entry system and all entries brushed. The air is first-class. This is a very dry mine and needs to be sprinkled quite frequently. This is looked after very carefully, and the mine was opened up with no serious explosions occurring. The fan is stopped when the shots are being fired, and there is a safety-hole for the shot-firers to go into when they light the shots. Ventilated by a twelve-foot fan producing 39,790 cubic feet of air per minute. There are employed 15 underground day men, 15 top men and 90 miners, who worked 199 days, producing 63,716.20 tons. Mike Wagner, mine foreman.

Mine No. 16 of the M. K. & T. railway coal department is located one and one-half miles east of East Mineral. This is a new mine and is equipped to handle a large production of coal. They have a first-class tippie, top houses and machinery—first-motion engine, shaker-screens and self-dumping cages, with covers on the cages and safety-catches attached. The shaft, which is well timbered, is 12.4 x 7.6 feet and 97 feet deep. They have a fine large bottom, very well timbered, and have double roads into the fourth cross-entries. These roads are well timbered. Considerable water comes from the vein of coal above. They have sumps dug along the sides of the road, which keep the water well drained off; and they have good pumps with pipes leading into these sumps, pumping the water to the top. This mine is well developed on the double-entry system, with all entries brushed and all the air-courses brushed from the air-shaft right up to the face. It takes considerable work to keep the roads in good condition on account of the large amount of water, but the sumps which are dug along the roads, with the pipes leading from the pumps on top, have kept them in good condition. There are four currents of air in this mine and the air is always first-class. There were no explosions in this mine while it was being developed and it is now apparently past the danger-point of having an explosion. Ventilated by a twelve-foot fan producing 37,460 cubic feet of air per minute. The fan is stopped while the shot-firers are at work. Working 165 days, 13 underground day men, 14 top men and 85 miners produced 48,928.63 tons of coal. Francis Ryan, mine foreman.

Mine No. 1 of the Scammon Fuel Company, located one and one-half miles north-west of West Mineral, is connected with the



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M. K. & T. railway. This is a new mine and is well equipped on top with first-class machinery, good tipple, shaker-screens, self-dumping cages with covers on and safety-catches attached. The shaft is well timbered and is 8 x 16 feet and 154 feet deep. This mine was developed on the double-entry system, all entries brushed. In the north side there is considerable fault and in the east off the south the coal is very faulty, but in this section they have driven an entry through the fault and have found better coal. The air-courses are kept in a good condition. This is a very dry mine but they keep the roads well sprinkled. It is ventilated by a sixteen-foot fan producing 35,130 cubic feet of air per minute. There are employed 19 day men, top and bottom, and 85 miners; working 177 days they produced 56,159 tons of coal. Jno. Barr, mine foreman.

Mackie Fuel Company mine A is located one and three-fourths miles northwest of Scammon. This is a very old mine and is now abandoned. The shaft is 7 x 14 feet and 126 feet deep. It employed 48 miners, who produced 6006 tons of coal. Jno. Morton, mine foreman.

Mackie Fuel Company mine C, located one-half mile west and three-fourths of a mile south of Scammon, is connected with the Frisco railway. This mine is just being equipped at the present time. They have built a good tipple with shaker-screen, and have self-dumping cages with covers and safety-catches. The shaft, which is well timbered, is about forty-five feet deep. They have developed a first-class bottom and timbered it well. It is worked on the double-entry system, and all entries are brushed. They have finished the putting in of an overcast and have four currents of air. The mine is in good condition. Ventilated by a sixteen-foot fan producing 37,600 cubic feet of air per minute. There are employed a little more than 100 miners. There is good coal in this mine and it will be a large producer when fully developed. Jno. Morton, mine foreman.

Mine No. 1 of the Fidelity Land and Improvement Company, located at Stone City, is connected with the M. K. & T. railway. This mine has good machinery, shaker-screens and self-dumping cages. The shaft, which is well timbered, is 7 x 12 feet and 153 feet deep. They are working only on the east side of this mine, as on the west side the coal is very faulty. In caging the coal the empty cars are pushed off to the west side and they run around the bottom to the east side, there being a grade of about two per cent. for the empty cars to run to where the electric motor is



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coupled onto them just east of the bottom. This mine is developed on the double-entry system, and all the entries are brushed. There are two separate currents of air on the east side. The ventilation is good. The mine is very dry and dusty in parts, but the dust has been loaded out several times, upon request. The electric motor which hauls the coal to the bottom for a distance of about one mile has been installed only recently, and is quite an improvement, as now they can take away all the coal the miners can produce. They have electric lights in and around the bottom, and also inside, on the parting, where the motor hauls the coal. There was a terrible accident occurred at this mine, on the bottom, in the morning. While the men were sitting there the powder which they were carrying was ignited in some manner, several cans of it being exploded, killing seven and burning nine. This accident could not be credited to the condition of the mine, as there is no question but that it was caused by ignition of the powder which the men were taking in. The roads are in a fair condition. This mine will be abandoned unless they begin developing an adjoining field of coal on the north. There are employed 24 underground day men, 12 top men and 85 miners, who worked 157 days and produced 45,105 tons of coal. Mine is ventilated by a fourteen-foot fan producing 26,859 cubic feet of air per minute. John Dorman, mine foreman.

Mine No. 8 of the Fidelity Land and Improvement Company, located two miles north of Mineral, is connected with the M. K. & T. railway. This is a new mine just being developed. They have built a first-class tipple and top buildings and installed good machinery—second-motion engine, shaker-screens with self-dumping cages, which have covers and safety-catches attached. The shaft, which is well timbered, is 8 x 16 feet and 152 feet deep. They have a first-class bottom, well timbered. The mine is developed on the double-entry system, all entries being brushed. The work in this mine is very faulty. Electric mining machines have been installed to cut the fault and they are driving in very rapidly. They have about one-half mile to drive through this fault, when they expect to find better coal. There are only thirty-eight men employed mining, and there is an abundance of air produced by a fourteen-foot fan producing 27,523 cubic feet per minute. Earnest Brown, mine foreman.

Mine No. 1 of the Cherokee Crescent Coal Mining Company is located at West Mineral. They have good top buildings and very



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good machinery—first-class hoisting engine, shaker-screens and self-dumping cages with covers on the top and safety-catches attached. This mine is connected with the M. K. & T. railway. It is worked on the double-entry system, all entries being brushed. This mine is ventilated by a twelve-foot fan producing 36,670 cubic feet of air per minute, and it has four separate currents of air. They have a large bottom well timbered, and the roads are in good condition. The roof in this mine is very hard and cuts badly and unless it is watched carefully and timbered well it will cut and fall in a very narrow place. The roadways require a great deal of attention to keep them from cutting and caving in. On several different occasions I have requested them to timber the roadways in this mine, and they now have them in a fair condition. The shaft is $7\frac{1}{2}$ x 13 feet and 151 feet deep. The coal is hauled to the bottom by an electric motor. The bottom and the inside parting are lighted with electric lights. The fan is stopped entirely when the shots are being fired. They employ seventeen underground day men, nine day men on top, and 142 miners, producing 96,375.75 tons of coal in 216 days.

Mine No. 2 of the Cherokee Crescent Coal Mining Company, located one and one-fourth miles northeast of Corona, is connected with the Missouri Pacific railway. There is a good tippie, with shaker-screens and self-dumping cages with covers, but there were no safety-catches on them and I ordered them put on several times. About this time the company which now owns the property got possession of it. I then asked them to put safety-satches on at once, and they complied with this request. The fan at this time was a very poor one. I informed the company they would have to get a new fan, as the one they had would not produce sufficient air to supply the miners in that mine. At first the company claimed the fan would put in sufficient air to supply the small number of men they were then employing and they were expecting to sell the property and did not want to go to the expense of installing a new fan. I then insisted that if this mine was to continue to work a new fan would have to be put in. This has been done and the shaft is now ventilated by a twelve-foot fan producing 33,950 cubic feet of air per minute. On account of the many changes in the company and mine foremen at this mine the air-courses and stoppings were in a very bad condition and the air was not carried to the working-face. After being notified that this must be remedied they cleaned out the air-courses and stopped the leakages, and the air is now carried well to the working-face. They employed 12 day men, top

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and bottom, and 41 miners. Working 240 days they produced 25,746.20 tons of coal. Thos. Richardson, mine foreman.

Mine No. 1, Mayer Coal Company, located three-fourths of a mile southwest of Mineral on the M. K. & T. railway, has a good tippie and top buildings, first-class machinery—first-motion engine, shaker-screens, and self-dumping cages with covers and safety-catches. The shaft, which is well timbered, is $7\frac{1}{2} \times 16$ feet and 100 feet deep. The roads in this mine had some very dangerous rocks hanging over them, and the stoppings, which should have been filled up and made air-tight, were left standing open in several of the entries. The mine foreman would promise to remedy this when I would draw his attention to it, but on going back to the mine I would find it in the same condition. I then notified the company that unless these stoppings were filled up and these entries made safer for men to travel on that I would be compelled to bring action and close down the mine. The company then put on a new foreman, who began working extra shifts, and it took him about three months to catch up with the work and put the mine in a fair condition. This mine is worked on the double-entry system, with all the entries brushed, and is ventilated by a twelve-foot fan producing 32,239 cubic feet of air. This mine employs 32 day men, top and bottom, and 160 miners, who worked 240 days and produced 98,240 tons of coal. Jno. Maxwell, mine foreman.

Mine No. 8 of the Mayer Coal Company, located two miles south of Cherokee, is connected with the Frisco railway. This is an old mine and had been known as the Eureka Deep Vein Mine. The shaft was $8\frac{1}{2} \times 17$ feet, and 104 feet deep, giving employment to 39 miners. At the present time this mine is shut down, and as the company has sunk a new mine west of this one the probabilities are they will never open this mine again. Jno. Humble, mine foreman.

John Coal Company mine, located one and one-half miles south of East Mineral, on the M. K. & T. railway. This is a small mine, employing a few men, and the coal is very faulty. The shaft is 7×16 feet and 68 feet deep. It has never been developed to handle a large output of coal. It is ventilated by a small fan, and the air-courses are not kept in a good condition and the air not carried well to the working-face. They employed only about 16 men. David John, mine foreman.

C. L. Mammoth Coal Company, located close to Scammon, employs but four men. This is a slope and the coal is hoisted by a horse. They expect to abandon the slope in the near future.



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Pullen & Son Coal Company, located one-half mile north of Scammon and connected with the Frisco railway, is a small mine employing but six miners. The coal is hoisted with a horse. The mine was ventilated by a furnace but is now abandoned. Chas. Pullen, mine foreman.

A. L. Hayden Coal Company, located two and one-half miles southwest of Weir. This is a small mine, employing few miners, and has no railroad connection. The coal is hauled over a tramway a distance of about one-half mile to the railroad switch. The coal is hoisted out of the slope with a small steam-engine. They have installed electric mining-machines to mine the coal. This company has changed hands, and there are now only a few acres of coal to be worked out by this mine. Pete Braidwood, mine foreman.

Larson Bros. Coal Company mine is located two and one-half miles southwest of Weir. The coal is hauled on a tramway about one-half mile and dumped into the railroad car. This is a small shaft employing but a few men. The shaft is 6x12 feet and 42 feet deep. The coal is hoisted with a small steam-engine. The mine had sufficient air for the small number of men. A. Larson, mine foreman.

J. W. Robertson Coal Company mine, located one mile south of Weir, is connected with the Frisco railway. It has two openings, one of which is used for an escapement-shaft. It has two separate currents of air. There is considerable water in this mine and the roads are in very bad condition. There is not much coal to be worked out. This mine is surrounded by old mines, working out a small piece of coal that has been left in there. The roof is very soft and caves in, continually choking up the air-courses and making very poor air in the mine until they can clean the air-courses or drive others around the cave-in. They employ 32 miners and produced 18,200 tons of coal. Oscar Manley, mine foreman.

Thompson Coal Company mine is located one mile south of Weir. This is a small slope 6 x 10 feet and 24 feet deep to the coal. There are only three men employed in this mine and they produced 2000 tons of coal. D. L. Thompson, mine foreman.

Sherman Zinc, Oil, Coal and Gas Company, located at Carona, is connected with the Missouri Pacific railway. This was known as the Elkhorn mine. This mine is 7 x 14 feet and 104 feet deep. After drawing the company's attention to the law, which requires that they should have safety-catches on their cages, they put them

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on. The coal is hoisted with a steam-engine. Mine is ventilated with a fan, and there was sufficient air for the number of men working here. They employed 33 miners, producing 6408 tons of coal. Jno. Citran, mine foreman.

Joe Humble Coal Company mine No. 4, located two miles north of Scammon, is connected with the Frisco railway. The shaft is 6 x 12 feet and 106 feet deep. The coal is hoisted with a steam hoist. They have shaker-screens. The coal in this mine dipped very steep, making it all a mule could do to pull one car up the hill. The air was not carried well to the working-face on account of not having enough doors in the mine. Upon my request they hung two doors, which greatly improved the ventilation. They employed 12 men on top and bottom and 31 miners. Working 199 days, they produced 20,645 tons of coal. Joe Humble, jr., mine foreman.

Mine No. 2 of the Weir Junction Coal Company is located two miles south of Cherokee, on the Frisco railway. There is a steam hoist, shaker-screen and self-dumping cages with covers. The shaft is 6 x 12 feet and 104 feet deep. There are two openings, and ventilation is with a fan. There is but one side of the mine working. The coal is very faulty. The air-course in this mine was caved in and the stoppings were all leaking. They were driving to make connections around this caved-in air-course, but unless they pay more attention to the leakages it will be impossible for them to conduct the air well to the working-face. This mine gave employment to 13 day men, top and bottom, and 34 miners. Working 235 days they produced 23,994 tons of coal. Chas. Bamard, mine foreman.

Mine No. 3 of the Weir Junction Coal Company is located one mile southeast of Scammon, connected with the Frisco railway. This mine is not well equipped; apparently they do not intend to handle a very large production. Nearly all of the working places in this mine are wet, and the roads are in a very bad condition. Ventilation is by a fan, which produces sufficient air for the number of men employed. On several occasions I have drawn attention to the water which was on the traveling way to the escapement-shaft, and also that they had no stairs for the men to get out of the escapement-shaft. They continued to promise to put in these stairs and to clear the road of water, but on my return there several times I found the conditions the same. Finally I gave them orders to comply at once, and they then complied. Jas. Cunningham, mine foreman.



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Mine No. 1 of the Cherokee Coal Mining Company is located one-half mile south of Cherokee, connected with the Frisco railway. This property has gone into the hands of receivers who have improved the top equipment by putting in a new boiler, a new shaker-screen and new cages. The shaft is 8 x 15 feet and 128 feet deep. Prior to going into the hands of the receivers it had changed hands a great many times and there was continual complaint of the air being bad on account of the air-courses not being taken care of and allowed to become choked up; but the mine foreman for this company began cleaning out the air-ways and stopping up the leakages, opening up old air-courses, giving the air a direct road to travel, and the mine is now in good condition. It is ventilated by a fan. This mine employed 12 day men, top and bottom, and 25 miners, who worked 184 days and produced 11,366 tons of coal. Jno Lynch, mine foreman.

Mine No. 2 of the Cherokee Coal Mining Company is located one and one-half miles south of Cherokee, connected with the Frisco railway. This is a small mine working the upper vein, which is about twenty-four inches thick. There are compressed-air machines installed here to mine the coal. They mine in the fire-clay underneath the coal. There are only about four men working in this mine and there is sufficient air for all of them.

Mine No. 39 of the Central Coal and Coke Company is located one and one-half miles west and one and one-fourth miles north of Weir, and connected by a switch with the Frisco railway. There are good top buildings and good machinery, shaker-screens, self-dumping cages with covers and safety-catches attached. The shaft, which is well timbered, is 8 x 16 feet and 121 feet deep. This mine has been worked on the low back entry system and later changed to brushing both entries. The west side of the shaft was worked out, all of the men working on the other side. Ventilated by a fan and the air was good. This is a dry mine and the roads are in a good condition. Gives employment to 15 day men, top and bottom, and 24 miners, who produced 11,222 tons of coal in 94 days. Jas. Lavery, mine foreman.

Mine No. 18 of the Central Coal and Coke Company, is located two miles west and one-fourth mile north of Weir. The shaft is 7 x 15 feet and 90 feet deep. Forty-three men were employed, producing 12,795 tons of coal. This mine is now abandoned. Thos. Scott, mine foreman.

Mine No. 44 of the Central Coal and Coke Company is located two miles south of Cherokee, on the Frisco railway. This is a new



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mine and is well equipped on top to handle a large output with good machinery. The shaft is $7\frac{1}{4} \times 15\frac{1}{2}$ feet and 126 feet deep. Where they struck the coal it was pitching very steep and dipped thirty-nine feet, then raised again, making a very steep hill. There is a very large bottom, well timbered. They have a first-class fan and engine, and an escapement-shaft with stairs, and have brushed all of their air-courses around the shaft to the air-shaft, which will insure them a good volume of air at all times. The entries are all brushed and the roads are in a good condition. With their large air-courses and the fan they have they can supply an abundance of air with the fan running at about half speed. They give employment to 45 men and the mine was in a process of development. Jno. M. Young, mine foreman.

Mine No. 42 of the Central Coke and Coal Company is located one and one-fourth miles west and one and one-half miles south of Scammon, connected with the M. K. & T. and the Frisco railways. This is a new mine, with new top houses and first-class machinery, shaker-screens and self-dumping cages, and is well equipped to handle a large output. It is developed on the double-entry system, all entries being brushed. The return air-courses are all brushed. This mine can supply abundance of air at present, and the preparations which are made will insure a good volume of air as the mine is being driven in. The shaft, which is well timbered, is 8×18 feet and 58 feet deep. They employ 21 top and bottom men and an average of 48 miners, who, working 64 days, produced 14,128 tons of coal. This mine was in process of development. Chas. Spencenberger, mine foreman.

Mine No. 43 of the Central Coal and Coke Company is located one mile west and two miles north of Scammon, connected with the Frisco and the M. K. & T. railways. This is a new mine, with a new top house and first-class machinery, shaker-screens and self-dumping cages with safety-catches. The shaft, which is well timbered, is 8×16 feet and 51 feet deep. There is a good, big bottom, well timbered. The roads are in good condition. The mine is worked on the double-entry system, all entries brushed. There is an overcast cut in the solid rock for a return air-course. There are four currents of air in the mine, ventilated by a good fan, which produces abundance of air. There were employed 32 day men and 107 miners, who produced 26,391 tons of coal, working 65 days. Jno. L. Dunn, mine foreman.

Mine No. 16 of the Central Coal and Coke Company is located one and three-fourths miles west of Scammon. This is an old mine.



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The old tipple was burned down and a new one has been built. There is good machinery, shaker-screens, self-dumping cages with covers and safety-catches attached. The shaft, which is well timbered, is 8x15 feet and 84 feet deep. The bottom timbers were burned out in the fire, and the bottom has been newly timbered and is in good condition. In several places on the entry there were loose and dangerous rocks hanging. Upon my notifying the mine foreman to pull some of them down and timber others that were loose he complied, and the roads are now in fair condition. This mine has been working brushing one entry and the other not being brushed, but recently they changed to the system of brushing all entries. The ventilation in this mine is good. There are employed 33 top and bottom day men and 113 miners, who worked 143 days and produced 76,672 tons of coal. J. G. White, mine foreman.

Mine No. 7 of the Central Coal and Coke Company, located one mile north of Scammon, was abandoned on May 15, 1907.

Mine No. 1 of the Curtis Coal Company is located one mile south of Scammon on the Frisco railway. This mine employed only five men, and has been closed for some time.

Mine No. 1 of the Diamond Coal Company, located two miles south of Scammon, is connected with the Frisco railway. The coal at this mine is hoisted with a horse. This mine employed about six men, but has been abandoned. M. C. Bolten, mine foreman.

Bud Hisle Coal Company, located two and one-half miles south of Scammon, is connected with the Frisco railway. This mine was opened up and worked a short time and then abandoned. Dan Grant, mine foreman.

Mine No. 1 of the Sunflower Coal Company is located one-half mile south of Scammon on the Frisco railway. This is a small shaft. The coal is hoisted with a horse. The shaft is 6x14 feet and 50 feet deep. The mine employs 20 men, and had sufficient air for this number. The mine is now abandoned. Geo. Wallace, mine foreman.

Mine No. 1 of the Earl & McGregor Coal Company, located three miles north of Columbus, has no railroad connection. This mine employs only two or three men, to supply the local trade. M. McGregor, mine foreman.

Mine No. 2 of the Hamilton Coal and Mercantile Company, located one-half mile north of Weir, is connected with the Frisco railway. This is a very old mine. The shaft is 8x16 feet and 90 feet



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deep. It is about worked out, and is now employing 36 miners, who produced 23,900 tons of coal. Jno. McGill, mine foreman.

Mine No. 5 of the Hamilton Coal and Mercantile Company, located one mile south of East Mineral, is connected with the M. K. & T. railway. This shaft is $7\frac{1}{2} \times 15\frac{1}{2}$ feet and 70 feet deep. There are employed 16 underground day men, 12 top men and 168 miners, who produced 93,942 tons of coal. This mine has four currents of air, and the roads are in good condition. It is ventilated by a fan producing 31,240 cubic feet of air per minute. It is nearly worked out and in a short time will be abandoned. J. Heg, mine foreman.

Mine No. 1 of the J. H. Bennett Coal Company is located one and three-fourths miles northwest of Weir, on the Frisco railway. The air in this mine is in a very poor condition, the air-courses being neglected and leakages in every stopping. At the present time the mine is not working. After improvements would be ordered to be made in this mine they would comply with the request; but in a short time complaint would be made again, and upon inspecting the mine it would be found that the break-throughs would be allowed to stand open. Apparently, the only time they would make an effort to stop leakages and endeavor to carry the air to the working-face was when they would be compelled to do so. This mine gives employment to 9 underground men, 7 top men and 65 miners, who worked 198 days and produced 34,828 tons of coal. Jas. Hope, mine foreman.

Mine No. 3 of the Norton Coal Company, known as the Blue Goose, is located three-fourths of a mile west of Scammon, connected with the Frisco railway. The shaft is 7×12 feet and 89 feet deep. The coal is hoisted with a steam-engine and dumped by self-dumping cages. There is an escapement-shaft 300 feet away, but the air-shaft is partitioned off from the main-shaft. It is $7 \times 3\frac{3}{8}$ feet. The sectional area of this shaft is rather small and the air-courses leading from the bottom are small, as the mine was opened up with not much thought of the future. Apparently they did not expect to produce a large output of coal or employ a large number of men. Since the company which now has the property began operations they have improved the air-courses considerably, but are handicapped on account of the manner in which the mine was opened. They now have four currents of air, and as they had a larger number of men working on some of those currents than on the others, they put in regulators to force a larger quantity of air into those sections of the mine. Upon receiving complaint of the



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air being bad in some sections of that mine I ordered the regulator which was used on that current of air where but a few men were employed to be closed more than it had been, as this would force more air into that section where the complaint came from, and also called their attention to the fact that the overcast should be made larger and the leakages stopped; and on account of the small sectional areas of the air-courses close to the bottom of the mine they could not afford to lose any air by leakages through the doors, so I requested that they put double doors on all of the entries. All of these improvements have been made. They also drove a road from the north side through to the escapement-shaft, which enables the men to reach the escapement-shaft without crossing the bottom. The coal is hauled to the bottom by a tail-rope, a double road extending in to eighth cross-entries on the north side. The roads are in good condition. There is excellent coal in this mine and it is considered good mining; and since the above improvements have been made the air is in a fair condition. This mine gave employment to 37 day men, top and bottom, and 139 miners, who worked 210 days and produced 105,558.60 tons. The mine is ventilated by a twelve-foot fan which produces 32,840 cubic feet of air per minute. Andrew Braidwood, mine foreman.

Mine No. 10 $\frac{1}{2}$ of the Crowe Coal Company is located two miles south of Scammon, on the Frisco railway. The shaft is 7x16 feet and 33 feet deep, and gave employment to 30 miners and 11 top and bottom men. When I was last there it was just about worked out and has since been abandoned. Fred Green, mine foreman.

Mine No. 1 of the Doss Bros. Coal Company is located two and one-half miles north and one mile east of Hallowell. This is a slope employing but three miners. The coal is twenty-six inches thick with fire-clay mining underneath. They mine in this fire-clay and then shoot the coal down. This slope is not fully developed. Sid Doss, mine foreman.

Mine No. 1, Clelland Bros. Coal Company, is located two and one-half miles north and two and one-third miles west of Hallowell. This is a small shaft, employing but three men. All coal is sold to local trade. This vein of coal is twenty-six inches thick and fire-clay mining. Thos. Clelland, mine foreman.

Mine No. 1 of the Henry Holman Coal Company is located one and one-fourth miles northwest of Scammon. The size of the shaft is 6x12 feet and 27 feet deep. This is a small mine, employing but four men. This mine had no escapement-shaft, but agreed to put one down at once. Henry Holman, mine foreman.

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Mine No. 4 of the Fleming Coal Company is located one and one-fourth miles southwest of Turck, connected with the M. K. & T. railway. The shaft is 7 x 16 feet and 50 feet deep. This mine has been very wet, but the roads have been corduroyed and ditched and are in a good condition. There are employed 18 top and bottom men and 80 miners, who worked 248 days, producing 66,499 tons of coal. The mine is ventilated by a twelve-foot fan producing 24,200 cubic feet of air per minute, and the general condition of the mine is good. Jas. Booth, mine foreman.

Mine No. 5 of the Fleming Coal Company is located one mile west of Turck, on the M. K. & T. railway. The shaft is 7 x 16 feet and 28 feet deep. This mine gives employment to 16 top and bottom men and 65 miners, who worked 245 days and produced 53,339 tons of coal. There is considerable water in this mine, but the roads have been corduroyed and ditched and are in good shape. The general condition of the mine is good. It is ventilated by a ten-foot fan producing 20,115 cubic feet of air per minute. Aug. Mason, mine foreman.

Mine No. 6 of the Fleming Coal Company is located three-fourths of a mile northwest of Turck, connected with the Frisco railway. The size of the shaft is 6 x 15 feet and 41 feet deep. This is a very old mine, employing but 12 men at the present time, and will be soon worked out. It has sufficient air for the number of men working. J. M. Bullock, mine foreman.

Mine No. 3 of the Fleming Coal Company is located one-half mile east of Turck, connected with the Frisco railway. They have built a good tippie and installed first-class machinery. The coal in this mine is being mined with compressed-air mining-machines. The roof is very soft, and by this method of mining so much less power is used it does not jar the roof any, and enables them to hold it up. They have developed a first-class bottom, well timbered, and are equipping the mine to handle a large output. The mine is in good condition. Wm. Williams, mine foreman.

Mine No. 1 of the Vanducker Coal Company is located one mile west and one-fourth mile east of Stippville. This is a small mine, employing three men. The coal is hauled by wagons and sold to local trade. Frank Vanducker, mine foreman.

Mine No. 5 of the Miller & Fitzgibbons Coal Company, known as the Wildcat, is located one-fourth mile south of Scammon. The shaft is 8 x 14 and 50 feet deep, and gives employment to 22 miners. This is an old mine, and had been abandoned until the



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present company began operating and working on the pillars of coal which had been left by the company which formerly owned it. Dan Miller, mine foreman.

Mine No. 12 of the Western Coal and Mining Company is located one-half mile west of Carona, on the Missouri Pacific railway. The shaft is 9 x 13 feet and 98 feet deep. The coal is hoisted with a steam-engine and dumped by self-dumping cages. This is a very wet mine and they do considerable ditching, but the water comes in so fast that they have not been able to keep the roads dry. They have installed an electric motor to haul the coal. There are four separate currents of air in this mine. It is ventilated by a twelve-foot fan producing 42,117 cubic feet of air per minute. The ventilation is in a fair condition. There are employed 14 day men, 3 boys, and 158 miners, who worked 244 days and produced 149,748.25 tons of coal. Frank Gardner, mine foreman.

Mine No. 3 of the J. R. Crowe Coal Company is located two miles west of Weir, on the Frisco railway. The shaft is 7 x 16 feet and 108 feet deep. This mine has a steam hoist with self-dumping cages. They have installed an electric motor to haul the coal. The roads are dry and in fair condition. This mine is in a long distance and the air is weak at the working-face. It is ventilated by a fan which produces sufficient air, but on account of the long distance and the many leakages the air is not carried well to the working-face. This mine gives employment to 50 miners who produced 50,780 tons of coal. F. H. Smith, mine foreman.

Mine No. 7 of the J. R. Crowe Coal Company is located two miles northwest of Weir, connected with the Frisco railway. This mine has a good tippie and has built a new engine-house, the old one having recently burned down. The mine is equipped with good machinery and self-dumping cages. The shaft, which is 8 x 16 feet and 124 feet deep, is well timbered. They have a good bottom with a solid top. The coal is very faulty. This is a dry mine, very well ventilated, and is in good condition. They give employment to 12 top and bottom day men and forty miners. Jas. Mallens, mine foreman.

Mine No. 5 of the Barrett Coal Company is located two miles south of Scammon, connected with the Frisco railway. The shaft is 8 x 12 feet and 33 feet deep. The coal is hoisted with a steam-engine. On account of this mine being so shallow a great deal of water runs in from the surface whenever there are heavy rains. On the south and east sections of this mine the roof is very soft

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and caves in very often, allowing the water to come in, and it is a hard matter to keep the roads dry. On the west side of the mine the roof is somewhat better. The mine is ventilated by a fan, and the air is in fair condition. They employed 70 miners and produced 50,645 tons of coal. This mine will be worked out in a short time. Mike Welsh, mine foreman.

Mine No. 7 of the Norton Coal Company is located three miles southwest of Cherokee, connected with the Missouri Pacific railway. The size of the shaft is 8 x 16 feet and 115 feet deep. The roads are dry and in good condition. They have improved this mine recently by retimbering the bottom, putting in two new cages, installing a new fan, making an overcast and hanging fifteen doors. They now have four currents of air. The west side of this mine the coal is very faulty, as also in the north off the west. They are driving entries in the north and west through this fault and expect to strike better coal soon. The mine is ventilated by a sixteen-foot fan which produces 35,400 cubic feet of air per minute. They gave employment to 20 top and bottom men and 67 miners, who worked 197 days and produced 46,153 tons of coal. Thos. Graham, mine foreman.

Mine No. 8 of the Columbus Coal Company is located three miles south of Scammon, on the Frisco railway. The size of this shaft is 8 x 16 feet and 60 feet deep. This is a new mine, and, while there is some water in it, the roads are kept in fair condition. They had been driving two entries parallel to each other but brushing only one of them and using the break-throughs for roadways, but since orders were given that break-throughs should not be used for roadways they have been brushing all entries. Their escapement-shaft being too close to the mine, I called their attention to the law, which requires the escapement-shaft to be 300 feet from the main shaft. They then sank another escapement-shaft. There are four currents of air. The mine is ventilated by a ten-foot fan which produces 31,200 cubic feet of air per minute. The mine employed 105 men, and is well equipped to handle a large production when they have it fully developed. The general condition of the mine is good. D. R. Casselman, mine foreman.

The Little Butterfly mine of the Columbus Coal Company is located one-fourth of a mile northwest of Stippville. The coal is hauled by wagons. The shaft is 6 x 8 feet and 23 feet deep. This is a small mine, employing only a few men.



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CRAWFORD COUNTY.

Crawford county is the largest coal-producing county in the state and the indications are that it will continue to remain so for some time. There are sixty-five coal-mines, which give employment to 6025 men, and they produced 3,669,359.30 tons of coal for the year 1907. The coal lies at a depth of from 30 to 250 feet, and the thickness of the coal ranges from 32 to 44 inches. The mines are worked on the room-and-pillar system and the coal is shot off of the solid. On account of the great amount of powder that is used in some of the larger mines, if a door is left open at night by the shot-firers or if the fan is not kept running rapidly all night, the next morning when the miners go to work there is often an accumulation of carbonic oxid gas (CO), commonly known as white damp, and carbonic acid gas (CO₂), known as black damp. In one instance, where a door had been left open and the men had gone to work, they were overcome and had to be carried out; their lights all burned bright, but the accumulation of white damp was so great that if they had not received assistance they would have died in a short while. It was impossible to find out who had left the door open. Again, when the room is driven in 75 or 100 feet without a break-through, it is a common occurrence for the miner to be overcome by the accumulation of white damp generated from the explosion of the powder used to shoot his coal the night before. In the north part of the county, where the coal lies at the greatest depth, the mines generate considerable carbureted hydrogen (CH₄), which, when mixed with air, becomes an explosive fire-damp, and men are often severely burned. These feeders of gas are found generally just after a place has gone through a horse-back. There is not sufficient attention being paid to the handling of this gas in these deep mines, as the impression prevails that there is not enough gas to be dangerous, as this is the same vein of coal that has been worked in this district for so many years and no large body of gas has accumulated; but in these deeper mines they are meeting with heavier feeders of gas and more are getting burned, generally because the proper precaution is not taken, either by the mine foreman or by the miners. The safety-lamps which are kept at the mines in the north end to examine the mines for gas are so often kept in such bad condition that, instead of being a safety-lamp, they are a very dangerous lamp to carry into a body of gas, on account of allowing the gauze on the lamp to become clogged up with dirt and grease. The companies are now beginning to pay more attention to this accumulation of gas in these deep mines,

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and it is to be expected that the number of accidents from explosions of gas will be reduced materially. Hopper scales are used at nearly all the mines in this county. We have tested all of these scales, some of them several times, and whenever they were found to be inaccurate they were quickly adjusted.

RECORD OF INSPECTION.

Central Coal and Coke Company mine No. 17 is located one mile northwest of Nelson. There is a steam hoist at this mine, with self-dumping cages and shaker-screen. The shaft is 8x16 feet and 130 feet deep. It is ventilated by a sixteen-foot fan producing 21,890 cubic feet of air per minute. The mine was started on the double-entry system, then changed to the single-entry system, and later two entries were driven parallel, but one of them was not brushed, which made a small air-course, and now, inside, close to the face, they are brushing both entries. On account of the many changes in the method of working this mine the air is not carried so well to the face as it would have been had they continued to brush both entries, but there is an abundance of air going into the mine, and where it is weak at the face it is usually easy to remedy it by stopping up the leakages. This is a dry mine but the roads are kept sprinkled. The fan runs slow while the shots are being fired. This precaution is used to guard against explosions. This mine employs 75 miners, 17 day men and 5 boys, producing 61,802 tons of coal, working 173 days. Jno. J. Hoyer, mine foreman.

Central Coal and Coke Company Mine No. 31 is one-half mile east and three-fourths of a mile south of Nelson. This is an old mine, started on the single-entry system, then changed to the low back-entry system. Now all entries are brushed. It has broken through into an abandoned mine, from which comes considerable water and black damp, making the roadways very wet and choking up the air-courses. The coal is hauled by two electric motors. After ordering man-holes made on the motor road it was done. The men in the northwest section of the mine had very poor air until an entry was driven from the second to the sixth north, which gave a brushed air-course and supplied good air. On account of the black damp coming out of the old works, from time to time we have asked the mine foreman to make improvements, and he has always complied with our request. This mine is ventilated by two fans, one a twelve-foot fan run by steam-engine, and the other an eleven-foot electric-fan. They produce a volume of 27,000 feet of air per minute. The mine employs 145 miners, 47 day men and 3



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boys, producing 139,706 tons of coal, working 195 days. William Jones, mine foreman.

Central Coal and Coke Company mine No. 38 is located at Curranville. There is a good engine and machinery at the top, with self-dumping cages and shaker-screens. The shaft is 8 x 16 feet and 57 feet deep. The cages have covers and safety-catches. This mine was very well developed, with a good bottom well timbered, and with three parallel entries brushed six feet high from the pit bottom to the third pair of cross-entries. All the entries in the mine were brushed. Then a change was made to the low back-entry system, switches were put in the cross-cuts, and curtains hung to carry the air to the face of the entry. After requesting that several doors be put up and all the cross-cuts be made air-tight it was done. They then began brushing both entries, which has greatly improved the air. I have ordered more doors put in, and the superintendent has said he will order the lumber and have them built. This mine is ventilated by a sixteen-foot fan producing 27,200 cubic feet of air per minute. The mine is very dry and the roads very dusty. The mine boss has agreed to clean them up. This mine employs 95 miners, 25 day men and four boys, producing 83,884 tons of coal working 187 days. Frank Simmons, mine foreman.

Central Coke and Coal Company mine No. 27 is one mile southeast of Chicopee. The shaft is 8 x 15½ feet and 60 feet deep. This mine gives employment to 101 miners, 44 day men on top and bottom and 4 boys. Working 202 days they produced 75,230 tons. This was a very old mine and had considerable water. In the spring, when the heavy rains came, a great deal of water would run down from the surface into this mine. The company had installed several pumps and made every effort to keep the mine dry enough to allow the men to work, as it was a very good piece of work. Finally, on August 1, 1908, the mine was closed down and abandoned. Geo. Wickwire, mine foreman.

Mine No. 15 of the Central Coal and Coke Company is five miles northwest of Weir, connected with the Frisco railway. This mine is well equipped to handle a large output of coal, having double roads for some distance, and they are kept in a good condition. They had been working on the low back-entry system but have now changed and are brushing all entries. The air was very weak in some portions of this mine on account of so many leakages and the long distance the air had to travel. Upon my request, air-

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holes were sunk close to the working-face, which gave the miners a good current of fresh air. The leakages were stopped and a new overcast put in. The ventilation in this mine is now good. The scales were not weighing correctly, and upon my request the company put in new ones. The roads have been cleaned by hoisting the dust to the top. The mine is ventilated by a fan, with four currents of air, and is in good condition. This mine employs 43 underground day men, 20 top men, 5 boys and 140 miners, who worked 138 days and produced 98,585 tons of coal. Frank Thomas, mine foreman.

Mine No. 41 of the Central Coal and Coke Company is located one mile west and two miles north of Weir, connected with the Frisco railway. This mine is well equipped with buildings and machinery on top and the roads in the mine are kept in good condition. There are only three currents of air. At the southeast section the mine is not working at the present time. This mine had been worked on the low back-entry system, but they are now brushing all entries. The ventilation is good, and so are conditions generally. The air has always been carried well to the working-face, and credit is due the mine foreman for the manner in which he looks after the ventilation. There are employed 8 top men, 12 underground men, 1 boy and 72 miners, who worked 125 days, producing 45,877 tons of coal. They have cleaned the roads, loading the dust into cars and hoisting it to the top. Dave White, mine foreman.

Clemens & Son Coal Company's mine No. 3, located two miles west of Pittsburg, is an old mine and had been worked out, but the company secured some more coal-land adjoining and expected to start up and work this new coal. It is a very wet mine and has been flooded several times. Gave employment to 17 day men, top and bottom, 1 boy and 50 miners, who produced 46,095 tons. At the present time it is closed down. S. S. Boone, mine foreman.

Clemens & Son mine No. 1 is located one mile north and one-half mile west of the Missouri Pacific depot at Pittsburg. This is an old mine and just about worked out. The company was endeavoring to get out the coal without putting any more expense on the mine, which caused it to get into a very bad condition. At our request the air-courses were cleaned, the cross-cuts filled and new curtains hung, which improved the mine. Ventilated by a twelve-foot fan; but as the men are all working on one side of the shaft they have only one current of air. The mine employs 9 day men, top



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and bottom, and 25 miners, who worked 195 days, producing 17,922 tons of coal. Harry Hornbuckle, mine foreman.

Clemens & Son Coal Company's mine No. 4 is located one-half mile west of Mulberry. This mine was started on the single-entry system, but since this company has taken hold of the property they have improved it by driving the double entry. They have improved the tipple, put a new foundation under the engine, got a new boiler, enlarged the blacksmith shop, and put in new drilling machinery; have put in new buntons in the shaft from top to bottom, put in self-dumping cages with covers and safety-catches attached, enlarged the pit bottom and put in some good timbers to secure the roof, sunk the sump ten feet deeper, changed gauge of the track from thirty-six to forty inches; and have driven cut-off entries brushed six feet high, giving them a good air-course around the mine. The shaft is $7\frac{1}{2}$ x 16 feet and 69 feet deep. Ventilated by a fourteen-foot fan producing 20,000 feet of air per minute. The fan is run slow while the shots are being fired. The roads are well sprinkled. They are preparing to put in another overcast. They have four currents of air. They employ 16 day men, top and bottom, and 46 miners, who worked 165 days and produced 31,216 tons of coal. Wm. Nesbitt, mine foreman.

Western Coal and Mining Company mine No. 11 is located one and one-half miles southwest of Yale. This mine has a good engine-house, tipple and machinery, shaker-screens, and self-dumping cages (without safety-catches). This mine was opened up and worked a long while on the single-entry system; they then drove two entries parallel, but brushed only one of them. They are now working on the double-entry system, brushing both entries. Foremen at this mine have been changed four times within the last year. On account of those changes the mine is in bad condition, as apparently each foreman would endeavor to get out the coal as cheaply as possible while he was there. The coal is hauled to the bottom by an electric motor. The roads are in fair condition, but there is considerable trouble because of insufficient air at the working-face. The shaft is 8 x 13 feet and 95 feet deep. Ventilated by a sixteen-foot fan producing 15,500 cubic feet of air per minute. There are employed 26 day men, top and bottom, and 167 miners, who worked 245 days and produced 179,599 tons of coal.

Mine No. 13 of the Western Coal and Mining Company is located one mile northwest of Yale on the Missouri Pacific railway. Good machinery, shaker-screens, self-dumping cages with covers

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and safety-catches attached are installed at this mine. The shaft, which is well timbered, is 8 x 13 feet and 95 feet deep. This mine was started on the single-entry system, then changed to the low back-entry system, and later to brushing both entries. The air-courses and stoppings in this mine have been neglected, but upon my notifying the company that they should remedy this they complied, and also hung some doors which I had requested them to do, which has greatly improved the ventilation. The roads are in good condition. The mine is very dry. Ventilated by a sixteen-foot fan producing 25,500 cubic feet of air per minute, with four separate currents. The roads were drier than they should have been. I called the foreman's attention to it and he promised to keep them well sprinkled. The fan is slowed down while the shots are being fired. This mine employs 13 day men, top and bottom, and 115 miners. Working 220 days they produced 113,391.15 tons of coal. Thos. Griffith, mine foreman.

Mine No. 15 of the Western Coal and Mining Company, is located northeast of Franklin, connected with the Missouri Pacific railway. This is a new mine and is well equipped to handle a large output. It has first-class top buildings and tippie, with good machinery, shaker-screens, self-dumping cages with covers and safety-catches attached. The shaft, which is well-timbered, is 8 x 13 feet and 215 feet deep. This mine was well developed, with a large bottom, which is timbered well. Has four currents of air, with two overcasts in it. There were three parallel entries driven from the bottom, and all of these brushed six feet high. They then began working on the low back-entry system, and later changed to the double brushed-entry system. This is an extraordinarily dry mine and has had five very bad explosions. Very little gas accumulates here—about the only time that can be detected is when a place is driven through a horseback or in a considerable distance ahead of the air. There is not a particle of water in this mine; even in the entries the holes which are drilled into the solid coal are perfectly dry. It is ventilated by a fan which produces abundance of air, and with those three parallel brushed entries on each side of the mine will insure first-class air-courses and a good volume of air at all times. After the second explosion had occurred in this mine I ordered safety-holes made in each section of the mine so that the shot-firers could run into them after they had lighted the shots. The company began at once and made nine safety-holes in the mine. These holes are cut into the solid coal a distance of about four feet and about three feet wide, then widened; a solid



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frame door is then put up in the mouth of the hole, the frame being cut into the solid coal. One of those safety-holes close to the bottom had an additional protection by a stopping of dirt put in close to it and then timbers which were about as heavy as railroad ties, placed across the entry and notches cut into the rib about three feet. These were then built in there solid. A bucket of water is placed in each safety-hole. These safety-holes have been the means of saving the lives of those who have gone into them, no shot-firers having been killed who took this precaution after lighting the shots. This mine was developed very rapidly. On account of the work being good the miners were always anxious to get started, and although the mine has only worked a short while, it is now a large producer of coal. A few months after they began developing they were employing 21 day men, top and bottom, and 61 miners, who had produced up to that time 18,804.5 tons of coal. Alex. McAllester, mine foreman.

Mine No. 16 of the Western Coal and Mining Company is located west of Franklin, connected with the Missouri Pacific. This mine is well equipped to handle a large output with first-class top buildings and machinery, with the latest improved shaker-screens and self-dumping cages with covers and safety-catches attached. This shaft, which is well timbered, is 8x13 feet and 195 feet deep. It is a new mine and not fully developed. They have made a large bottom and timbered it well. Three parallel entries are driven on each side of the mine, brushed six feet high. It is ventilated with a fan which produces an abundance of air, and with such large air-courses as are driven away from the bottom of this mine will insure good air as the mine is being driven in. This mine was sunk on a very bad fault, but after cutting the fault they found much better coal and are now preparing to put up an overcast and have four currents of air. This is a very dry mine but has been developed without having any serious explosions. It gives employment to 40 miners, who produced 6300 tons of coal. They have safety-holes in this mine, cut into the solid coal and doors put on, for the shot-firers to go into after lighting the shots. A bucket of water is kept in each hole. Francis Keegan, mine foreman.

Mine No. 7 of the Western Coal and Mining Company is located one-half mile southeast of Fleming depot, connected with the Missouri Pacific railway. This is a very old mine, and this year employed 17 day men, top and bottom, and 65 miners, who worked 137 days and produced 49,907 tons of coal. At the present time it is abandoned.

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le Mine No. 10 of the Western Coal and Mining Company is located
o two miles southwest of Fleming, connected with the Missouri Pa-
it cific railway. This mine is well equipped on top with good build-
l- ings, tippie and machinery. The roads are in good condition.
t They have been working on the low back-entry system, but have
f changed and are now brushing all entries. The southwest section
1 is not working, so there are only three currents of air. The air was
, weak in the northeast section of the mine on my last visit, but upon
r my request they put in some curtains and the ventilation of the
t mine is now in a fair condition. This mine employs 7 top men and
, 7 underground men, 1 boy and 108 miners, who worked 263 days
and produced 97,194 tons of coal. D. Fulton, mine foreman.

Mine No. 14 of the Western Coal and Mining Company is located
one mile northwest of Fleming, connected with the Missouri Pacific
railway. This mine has a fine tippie, good top buildings, good ma-
chinery, self-dumping cages and shaker-screens. The shaft is well
timbered. The roads in the mine are dry and in good condition.
Ventilated by a fan which produces 1,800 cubic feet of air per min-
ute. They have been working on the low back-entry system, but
have changed and are now brushing all entries. They are well
equipped to handle a large output. The northwest section of the
mine is idle on account of fault. The mine employs 10 under-
ground day men, 6 top men, 1 boy and 112 miners, who worked 260
days and produced 114,109.95 tons of coal. Phillip Razor, mine
foreman.

Mine No. 7 of the Pittsburg-Midway Coal and Mining Company
is located one mile west of South Midway, connected with the
Frisco and A. T. & S. F. railways. This is an old mine, very shal-
low, and the roof is very soft. Very often the air-courses cave in,
which causes the air to become bad. In going through the mine I
found the air-courses badly choked, and at my request they were
cleaned out, putting the ventilation in much better condition. The
only means of escape at this mine was a straight ladder in the air-
shaft. I ordered another escapement-shaft and the company com-
plied at once by sinking one. This mine is ventilated by a ten-foot
fan which produces sufficient amount of air for the number of men
working. This is a slope and the coal is pulled out of the slope
with mules on a tramway over to old No. 7 mine, where it is dumped
into the railway cars. This mine employs 16 day men, top and
bottom, and 27 miners. Working 204 days they produced 51,887.55
tons of coal. Robt. Penman, mine foreman.