REPORT

OF THE

Coal Mine Inspector

FOR THE

STATE OF UTAH

For the Years 1897 and 1898.

SALT LAKE CITY.
The Deseret News.
1899.

REPORT

OF

State Coal Mine Inspector

For 1897.

OFFICE OF THE STATE COAL MINE INSPECTOR.

SALT LAKE CITY, UTAH,

February 1, 1898.

To His Excellency, Heber M. Wells, Governor:

In obedience to the provisions of Chapter CXIII of the laws of Utah, 1896, as continued in force by Chapter 2 of Title 42 of the Revised Statutes of Utah, I have the honor to herewith submit my annual report covering that portion of the year 1897 after my appointment, as also as full a report as it is possible for me to make with the information at my command touching that portion of said year prior to my induction into said office:

This report is not as complete in all respects as I would like to have made it owing to the fact that there was practically no record kept by my predecessor for the period of his incumbency in this office during said year, with the exception of a complete record of all accidents. Taking these matters into consideration, together with the further fact that three quarters of the year had elapsed before I received my commission, thus rendering the time for compiling my report com-

paratively short, it has been impossible for me to furnish a more accurate report at this time.

The management of the respective properties in nearly all instances, and especially in the case of the larger mines, have cheerfully responded to all requests made by me upon them for information of every character respecting their property. They have also shown a commendable willingness to comply with all suggestions made by both myself and my predecessor relative to providing every possible appliance looking to the safety of their employes while at work, including the providing of a thorough system of ventilation, which in all the larger properties is furnished by artificial means, thereby rendering it far more satisfactory than would be the case did they depend upon natural resources.

The coal mining industry is a rapidly growing one in our state, and bids fair in the immediate future to become one of our chief revenue producers. The output for last year shows a decided increase over the production of 1896 in all districts in the state with the single exception of Summit County, where there is a marked decrease occasioned entirely by the closing down of the silver mines at Park City upon which this district depends almost exclusively for a market.

I have the honor to be,

Yours very respectfully,

GOMER THOMAS,
State Coal Mine Inspector.

MINES EMPLOYING MORE THAN SIX MEN.

NAME OF MINE.	KIND	OPERATED BY	P. O. ADDRESS
Castle Gate	Drift	Pleasant Valley Coal Co.	Salt Lake City.
Winter Quarters No. 1.	"	" " " "	" " "
Winter Quarters No. 2.	"	" " " "	" " "
Pleasant Valley	"	Union Pacific Coal Co,	Scofield.
Halladay.	"	Halladay Coal Co.	Sunnyside.
Cullen	"	Grass Creek Coal Co.	Salt Lake City.
Church	"	" " " "	" " "
Hopkins.	Slope	Hopkins Coal Co.	Coalville.
Wasatch	"	Weber Coal Co.	Salt Lake City.
Wilson Bros.	"	Salt Lake Coal Co.	" " "
Edmunds	"	Edmunds Brothers.	Manti.
Sterling	"	Sterling Coal & Coke Co.	"

MINES EMPLOYING LESS THAN SIX MEN.

Name of Mine	Kind	Operated by	P. O. Address
Aberdeen . .	Drift	Cove Canyon Coal Co . . .	Price.
Bear Canyon .	"	Don C. Robbins	Salt Lake City.
Coray . . .	"	Andrew Coray & Co.. . . .	Cedar City.
Deer Creek .	"	E. H. Cox & Co	Huntington.
Deseret . . .	"	Deseret Coal and Coke Co .	Manti.
Fairview. . .	"	Ezra D. Jones, Lessee . . .	Milburn.
Dexter . . .	Slope	Betsy Dexter Co.	Coalville.
Griffith . . .	Drift	Orangeville Coal & Coke Co.	Orangeville.
Kanarra . . .	"	Kanarra Coal Company . . .	Kanarra.
Kimball . . .	"	O. G. Kimball.	Scofield.
Pittsburg . .	"	Pittsburg Coal Co	Orangeville.
Wood & Taylor	"	George W. Wood..	Cedar City.
Thomas . .	Slope	Sterling Coal and Coke Co .	Manti.
Huntington-Emery . . .	Drift	James L. Maxwell.	Huntington.
Llewelyn . .	"	Llewelyn Brothers. . . , .	Scofield.
Williams . .	"	Evan Williams	"
Lamont.. . .	"	James F. Lamont	Mount Pleasant
Huntington .	"	E. B. Jones	Huntington.
Boyer . . .	"	William Boyer	Upton.
Huffman . .	"	Jake Huffman	Coalville.
Clark	"	Clark Brothers	Upton.
Castle Valley	"	Castle Valley and Mining Co.	Orangeville.

PRODUCTION OF UTAH COAL MINES FOR 1897.

Name of Mine.	Owned by	No. Short Tons.	Price Per Ton on Car.	Average No. Days Worked.	No. Men Employed.
Castle Gate	P. V. Coal Co.	232,852	$1.30	230	284
Winter Quarters No. 1 & 2	" " "	210,679	1 25	244	225
Pleasant Valley	U. P. Coal Co	23,641	1.20	50	77
Cullen and Church	Grass Creek Coal Co	8,200	1.50	177	12
Hopkins	Hopkins Coal Co	9,154	1 58	180	24
Wasatch	Weber Coal Co	34,111	1 16	130	59
Wilson	S. L. Coal Co	4,130	1.65	175	10
Kimball	O. G. Kimball	663	1.75	130	1
Thomas	Sterling Coal and Coke Co	236	1.50	200	4
Lamont	James Lamont	150	1.70	70	2
Huntington	S. J. Harkness	500	1 35	67	6
Llewelyn	Llewelyn Bros	75	1.75	20	2
Williams	Evan Williams	60	1.75	60	1
Aberdeen	Price Trading Co	544	1.55	67	2
Huntington-Emery	J. S. Maxwell & Co	160	1.50	60	2
Edmunds	Edmunds Bros	1,113	1.70	130	7
Castle Valley	Castle Valley Coal Co	575	1.75	170	2
All other sources	Various Individuals & Companies	55,250			
	Totals	582,092			720

Average price per ton on cars, $1.52

PRODUCT OF COAL IN UTAH FROM 1876 TO 1897.

Year.	Tons.
1876	50,400
1877	50,400
1878	67,200
1879	225,000
1880	225,000
1881	225,000
1882	150,000
1883	150,000
1884	150,000
1885	213,120
1886	200,000
1887	180,021
1888	259,050
1889	236,651
1890	318,159
1891	371,045
1892	361,314
1893	418,049
1894	447,276
1895	472,958
1896	503,243
1897	582,092

Table Showing the Number of Tons of Coal, Coke, and Asphaltum Produced in Utah During the Year 1897, *as also the Number of Tons Imported and Exported During said Year.*

	BITUMINOUS COAL.	ANTHRACITE.	COKE.	ASPHALTUM.
Production in Utah	528,092		23,639	1,574
Imported into Utah	300,317	11,500	12,162	
Totals	882,409		35,801	
Exported from Utah	205,197			1,574
Total consumption in Utah	677,212			

FATAL ACCIDENTS.

During the year 1897 three fatal accidents occurred in my jurisdiction, which resulted in the death of three persons.

The first of these occurred on January 14th, 1897, at about 4:35 o'clock p. m. George H. Martin, a miner employed in the P. V. Coal Company's Winter Quarters Mine No. 1, sustained injuries from which he died within about two and one-half hours; the accident occurred at room No. 8, outside first rise. Martin and partner had started a cross-cut to the next parallel room through the pillars, the top coal at the point where they were at work overhung the bottom coal, and Martin was picking this down when the top coal toppled and bounced out, seven or eight tons falling on him almost entirely burying him. The injury consisted of a fracture of the sacrum, compound fracture of the caccyx, a large wound on the right hip, and bruise of the forehead on the right side, from which death resulted within the time stated.

August 9th, at 2:50 o'clock, p, m., an accident occurred at Winter Quarters mine No. 1, at Scofield, which resulted in the death of Joseph J. Bishop, caused by the fall of a thin piece of sandy roof rock, very near the working face of the cross-cut in which he and his father had been working, between rooms 8 and 9 of the outside second rise entry. This piece of rock was known by Bishop and his father to be loose, and a prop had been placed to hold it up; a shot had been fired near the right side of the face, and about ten or twelve feet from the prop in question, which was nearest the left side of the face; about ten or fifteen minutes before the accident, the men had returned after firing a shot and about half loaded a pit car. Bishop was working under the rock in question and close to the prop which was set up under it, when both the prop and rock fell, the rock striking him on the head and killing him instantly. This rock and prop had, in all probability, been loosened by the shot, which had recently been fired by Bishop and father.

The injuries which caused Bishop's death were a compound fracture of frontal, paretal and occipital bones, compound fracture of nasal, superior and inferior maxillary bones.

The report of the Assyrian Asphalt company, whose mine is situated in Wasatch County, shows the death of a man at their mine, occasioned by an accident therein, but fails to give his name or the date upon which he met his death, and I have received no further information on the subject.

NON-FATAL ACCIDENTS.

There were eighteen non-fatal accidents in the State during the year 1897, fourteen of which occurred at the Pleasant Valley Coal Company's mine at Castle Gate, and four at the Winter Quarters mine at Scofield, belonging to the same company. Following is a full statement of said accidents in detail:

January 18, 1897, at 8 o'clock a. m., G. Alberto, a miner employed in the P. V. Coal Company's Castle Gate mine, was injured while working in room No. 7, entry No. 3, and 9th rise. He was engaged in picking slate out of the coal that had been blown down by the shot of the previous evening. His partner was pulling down with a pick some loose coal and bone that had not fallen when the shot went off; a large piece of this came down striking Alberto on the foot and ankle, causing a severe sprain on the left ankle, and probable fracture of the external melliolus. H. B. Assodooran, attending physician.

Jan. 20, at 9 o'clock a. m., Mike Bombino was injured in the P. V. Coal Company's Castle Gate mine by the falling of a piece of rock from the roof. A few minutes before the accident Bombino had discovered that the rock was loose, and had put a prop under it for safety; he then began mining directly beneath the rock, when both the rock and prop fell, the former striking him on the left leg, and then rolling over on his body. The injury consisted of a compound fracture of the lower third of both the tibia and fibula of the left leg, laceration of the lower end of all the muscles of the calf, with the laceration and dessection of the skin half around the leg. Dr. H. B. Assodooran, attending physician.

Jan. 25, at 8:30 a. m., Richard Edwards, a driver in

the P. V. Coal Company's Castle Gate mine, suffered a concussion and a slight abrasion at the region of the fourth, fifth and sixth ribs on the right side, and in the front part of the chest. The front car Edwards was using, jumped the track on the switch, going into the room off No. 4 entry, off 10th rise; he attempted to lift the car back onto the track, and in doing so, he passed between the car and the rib of coal, when the mule started and squeezed him between the car and the rib, causing the injury mentioned. H. B. Assodooran, physician.

Feb. 1st. James Snedden was injured at 3:30 p.m. in the P. V. Coal Company's Castle Gate mine. Snedden and his partner had finished their mining and had drilled and charged their shot holes; they were engaged shoveling loose coal back from the face when a piece of the undermined coal bounced and striking Snedden on the foot and ankle, knocked him down and caused the injury, which consisted of a sprain of the left foot and ankle, and a scalp wound on the back of the head.

Feb. 13th. At 3:40 o'clock p.m. Nephi L. Griffiths, driver in the P. V. Coal Company's Castle Gate mine, was injured by being squeezed between his car and the coal and the ninth rise. He had stopped his car and was putting in sprags to ease the car down the grade, when the mule started. The accident consisted of severe contusions of the sixth, seventh, eighth and ninth ribs at the sternal ends and disatticulation of eighth rib from the cartilage.

March 1st. At about 7:10 o'clock a.m., William Jenkins, a miner in the employ of the Pleasant Valley Coal Company at the Castle Gate mine sustained injuries, several contusions on the right side of the chest, at region of fourth, fifth, sixth and seventh ribs. Jenkins and two others were going into the mine together to their working places by way of the main entry after the mine had started up, and the hoists were running, which is against the rules of the mine. They had reached the outside main hoist on their way in and were just passing it when a loaded trip of fourteen pit cars came down the entry from the inside main hoist; as the hoist they were passing was also running

at the time they did not hear the trip running, and Jenkins was struck by it before they were aware of its approach. The position of the ropes, however, would plainly warn them that the inside hoist trip had gone in with the empty cars, and that the loaded trip was apt to come down at any moment. The other two men, Thomas Lamph and William Lamph, were also struck by the same trip.

In the same accident William T. Lamph was injured. His injures consisted of several scalp wounds and a wound on the leg and knee.

Thomas Lamph was also injured in the same accident. As a result of his injuries he suffered an amputation of the right arm at the upper third of the humerous, several cuts on the scalp, and several contusions and abrasions of the body.

April 10th, at 7:10 a.m., Charles Carrera, a miner in the P. V. Coal Company's Castle Gate mine, suffered laceration of side of face and upper lip, contusion of right shoulder, with slight abrasion of same. His injury was caused by falling rock from roof while Carrera and partner were riding in empty cars to their working place, fourth level, off sixth rise, entry.

May 6th, at 7:50 a.m., Mike Kaski was injured at Winter Quarters mine No. 1, sustaining several severe injuries about his face and body, caused by the premature explosion of some giant powder, which they were throwing into the car, by holding the same over a miner's lamp.

In the same accident Alex Hill suffered the loss of his right eye, left hand, and several minor injuries.

August 10th, at about 11:40 o'clock a.m., Charles Smith, aged twenty-two years, driver, at Castle Gate, was injured on the main switch of the second level of tenth rise entry; nature of accident, compound fracture of the right leg midway between knee and calf, also fracture of the left leg below the knee, and dislocation of left hip. At the switch at which the accident happened the tracks are a down grade toward the 10th rise entry, on which the cars are handled by a hoist to pull them out, and a block is placed behind the empty cars after they are dropped in by

the hoist to prevent them from running by gravity back toward the 10th rise entry. At the time of the accident Charles Smith, the injured man, and Alex. Harrison, both drivers, were waiting at the switch for the boards to be pulled out, and the empty cars dropped in, when the hoist trip came to this place both of them called out and signaled to the man in charge that everything was ready to pull out the boards and drop in the empty cars, which he proceeded to do. As the empty cars went into the siding Alex. Harrison pulled the sprags from the loaded cars and allowed them to run down toward the switch, where the hoisting rope could be attached to them; at the same it was Charles Smith's duty to place the block behind the empty cars that were being dropped into the siding, in order to prevent them from running back. In this case, through some oversight, or neglect, the block had not been removed when the previous empty trip had been hauled away by the two drivers so as to leave a clear track for the next empty trip, and as the employees came into the siding they struck the block that knocked the front cars off the track in a direction toward the loaded trip, there being about five feet clear between the cars when on the track. Smith probably saw the block and that the accident was liable to happen, and was at the time hurrying to remove the block. At any rate, he was between the two trips and so close to the block that when the cars jumped the track they struck him and knocked him against the loaded cars, which were by this time in motion, in such a manner that his legs got between and under the cars which caused the breaking of his legs. The supposition being that the dislocation was caused by him thus being struck by the empty cars when they jumped the track.

Sept. 16th, at 2:52 o'clock p. m., James Harvey was injured at Castle Gate. His injuries consisted of a compound fracture of both tibula and fibula of the lower third of the right leg. At the time of the accident Harvey and his partner were engaged in pulling the pillar belonging to their room, and loading a car of coal near one corner of the pillar, when two pieces of rock fell from the roof, the smaller one striking the car and the larger one, weighing about

seventy pounds, hitting Harvey on the leg below the knee. In all probability both men knew that this pillar was loose as their attention had been called to it about twenty minutes before by the inspector of their district.

Sept. 22nd, at 10 o'clock a. m., John Marlow was injured at the Castle Gate mine No. 1. His injuries consisted of a laceration of the correa at the junction of the scaloratic coat; at the time of the accident Marlow was working alone in room No. 2 on the third level of 10th rise, and while making an undermining, a small piece of coal knocked out by his pick struck him in the eye injuring it so severely that it was afterwards found necessary to remove the eye.

Nov. 8th, at about 11:45 o'clock a. m., John Pissetto was injured in mine No. 1, Castle Gate. He was working in a pillar on the second level of the 5th rise where he had been employed for six or seven months drawing entry stumps; on this occasion he and his partner were driving a room into a large pillar in order to split it and draw the coal back, when a bounce of the coal occurred, some of the pieces of flying coal hitting him in the face in the region of the left eye causing a laceration of the forehead above the left eye, and also of the left eyebrow and lid.

Nov. 23rd, at 11 o'clock a. m., William Burnside was injured in mine No. 1 Gastle Gate, second dip room No. 20. Some coal which been undermined by Burnside and partners the evening prior to the accident, and which had not been propped up fell, striking Burnside on the left foot, causing a severe contusion but breaking no bones.

Nov. 31st, at about 2 o'clock a. m., John E. Lewis was injured in Winter Quarters mine No. 1 at Scofield. Lewis was turning a room near the face of the 4th rise entry; he and his partner, it is stated, had put off a shot in their working place, they were going back into the entry a short distance to wait for the smoke to clear away, and while they were thus waiting, a small piece of coal fell from the side of the entry, striking Lewis on the shoulder and side, bruising the right shoulder blade and fracturing the sixth rib.

Dec. 27th, at about 1 o'clock p. m., Andrew

Mackay, a miner, was injured in mine No. 1 at Winter Quarters, entry No. 1 rise, room No. 14. He and his partner were pulling the pillars of room No. 14, he was cleaning the floor preparatory to putting in a prop when a piece of rock fell from the roof hitting him on the side of the head and arm, and a large piece striking him on the ankle, causing a dislocation of the right ankle, a sprain of the left ankle, a small scalp wound and a bruise on the left arm.

COAL FIELDS OF SUMMIT COUNTY.

This district, which is known as the Coalville, Grass Creek district, and the product in the market as the Weber coal, comprises vast deposits of coal, the extent of which, while not yet accurately determined by complete geological surveys, shows in the outcrop for a distance of about twenty miles.

Operations more or less extensive have been carried on here for the past twenty-five years.

It was known by the early settlers of this valley, that most of the Chalk Creek and upper Weber basins were underlaid with coal, and the farmers made use of it by digging from the outcrop of the veins fortheir winter fuel.

The general course of the measures in this district is northeast and southwest and dips to the northwest at angles varing from 5 to 85 degrees. There are but two veins of practical workable value, only one of which has been profitably worked, and upon it is found all the principal mines of this district; the other one is known locally as the "four foot" vein.

The discovery of the silver mines of Park City, and the operation of mills to work their product, created a convenient market for the coal of this district of which it stood much in need. The greater part of the coal at present used to operate the mines and mills of Park City as also a considerable amount of that used for family purposes is furnished by the mines of Coalville and Grass Creek. While on the other hand very little coal is shipped out of Coalville to any other point.

The coal belt of this district is comprised of several distinct veins, all of which have been more or less extensively prospected, but only two of them having so far been found of any practical value, as above stated. On one of these veins is found the Wasatch mine, which was operated as early as 1860, but which was not worked to any considerable extent until the incorporation of the Home Coal Company about the year 1882. This company continued to work this property quite extensively until 1896, when it gave way to the Weber Coal Company, which now owns and operates the same. On the same vein is found the Hopkins mine, owned and operated by the Hopkins Coal Company, the Wilson Brothers mine, owned by the Salt Lake Coal Company, and the Allen Hollow mine owned by a Salt Lake company. On a continuation of this vein, in Grass Creek, is found the famous Grass Creek vein, which was worked for several years by the Union Pacific Coal Company, and is now operated by the Grass Creek Coal Company, at what is known as the Church mine, the Cullen mine and the "New Tunnel," so-called. The Red Ash vein, which is but a continuation of the "four foot vein" outcrops to a considerable extent in Grass Creek, and was worked some several years ago, but has been idle for several years.

The other prospects on these veins are the Huffman mine, about five miles east of Coalville, the Boyer mine and the Huff Creek mine, about twelve miles east of Coalville. There are also several small veins outcropping near Wanship, about nine miles south of Coalville, varying from two to five feet in thickness.

Besides these there is a prospect called the Stallings mine, situated about twenty-five miles southeast of Coalville and about eighteen miles from the Echo and Park City branch of the Union Pacific railway. The coal from this prospect is of good quality for blacksmithing purposes, and the vein is about eight feet in thickness.

WASATCH MINE.

My first official visit to this mine was on the 21st of October, 1897. I found fifteen men working in the

mine and six men outside. The miners were taking out pillars in the upper workings; artificial ventilation is now provided by means of a steam jet assisted by the heat of the steam pipes in the shaft, which, at that time, passed 52,000 cubic feet of air per minute through the mine. The current is divided at the bottom by regulators and is carried along the lower levels to the faces, thence up the last rise break-through to the next level above, and through the break-through between the rooms, thence through rise air-ways to each succeeding level above, thence through the upcast air-way and air-shaft to the surface. The coal is taken out from above the 300-foot level and lowered down inclines driven diagonally across the pitch by means of wire ropes conducted over sheave-wheels; at the top of the incline the empty cars at the other end of the rope being hauled up by force of gravity of the descending loaded cars. From the working places to the top of the incline loaded and empty cars are handled by means of horses and mules.

I found the mine admirably equipped with machinery, having one double hoisting engine, cylinders 12x14, and the drums five feet in diameter. Three boilers, each twenty feet long, five feet in diameter, with ten-inch flues, one boiler sixteen feet long, 54-inch diameter, with 54 $3\frac{3}{4}$ inch flues, one 10-horse power engine for operating, revolving and shaking screens and slack coal elevators, two $1\frac{1}{8}$ inch crucible steel ropes, each 1,200 feet long, two Mitchell automatic tipples, two standard Buffalo scales for weighing coal in mine cars, one Fairbank wagon scales, one Knowles plunger pump, 12x5x12, one Knowles piston pump, No. A., one piston Knowles, No. B., 6 inch water column pipes and 4 inch steam line for carrying water and steam, one 10,000-gallon water tank.

I also inspected this property on December 17, 1897, and found the management fighting a small gob fire which it had been fighting for several days, and which was at this time under control.

The mine was working less than half time with fifteen miners and six outside men. The amount of air on this date was 53,200 cubic feet per minute. The

management has also provided, as required by law, a supply of suitable timber for props and cap pieces, which were kept convenient to the working faces. I found everything in a safe condition.

The production of the mine from 1881 to 1897 is given below:

Year.	Tons.
1881	22,870
1882	29,204
1883	35,967
1884	23,718
1885	21,858
1886	22,802
1887	27,710
1888	28,603
1889	34,701
1890	32,565
1891	37,252
1892	39,278
1893	37,212
1894	*41,856
1895	43,525
1896	54,424
1897	34,011

*Estimated.

Analysis of coal from Weber Coal Company's Wasatch mine:

Moisture	8.38	per cent
Volatile matter	46.89	"
Fixed carbon	40.45	"
Ash	3.33	"
Total	99.05	"
Sulphur	.95	"

Improvements during 1897, 11 new mining cars.

SCHEDULE OF WAGES PAID.

Miners are paid 30 cents per ton for run of mine coal.

Lowest wages paid to men, 20 cents per hour.
Highest wages paid to men, 31¼ cents per hour.
Boys (drivers) are paid 18¾ cents per hour.

WILSON BROTHERS' MINE.

My first official visit to the above mine was made on the 24th of October, 1897. This property is operated by the Salt Lake Coal Company, Asa Wilson, superintendent. Fred Simon, manager. This mine is at the head of Spring Hollow, 3½ miles northeast of Coalville, in Summit County. The surface improvements consist of a 25-horse power Cooper engine and steel hoisting rope. At this time the mine depended upon natural ventilation; eight men were employed inside and three men outside. There are three rooms and two entries. The coal is hoisted through a slope. The vein in this is the same, and of the same thickness as the Wasatch mine. It is in good condition, escapement way and other means of safety being provided. The management has provided, as required by law, a supply of suitable timber for props and cap pieces.

The output of this mine for the year 1897 was 4,130 tons. On December 16th, 1897, I made my second visit of inspection to this property and found it still in a good condition.

HOPKINS MINE.

My first official visit to this mine was made October 23rd, 1897. This mine is about one mile in a northerly direction from Coalville. At the time of my visit there were twenty-five men employed; as far as operations have progressed, the mine has been worked in a systematical manner. It is worked on the room and pillar system. The machinery equipment, consisting of a pair of 12x16 geared hoisting engines, two boilers of about 50-horse power each, screening and other apparatus, are in excellent condition, and suffi-

cient for a capacity of 300 tons daily. The main opening is a slope driven on the dip of the vein, which is at an angle of twenty-five degrees. The slope is down about 1,100 feet, and there are three pumps,—one sinking pump and two stationary pumps, for handling the water. The quantity of water so far developed is little in excess of the amount necessary for feeding the boiler, and is lifted from the sump into settling tanks at the surface.

My second visit to this property was made December 18th, 1897, when I found twenty-five miners on the inside, and four men employed on the outside. At that time they were working one entry and ten rooms, and were cleaning and getting ready to sink the slope for another level. The second opening from the lower level to the surface has just been completed. By means of this opening the mine is provided with a good ventilation. The amount of air traveling through the slope is 25,000 cubic feet per minute.

This mine bids fair to become one of the best producers in the district. The coal is of a superior quality, and excels that of all other mines in the district for hardness.

No trouble has been experienced from gases, and the mine is comparatively safe. Suitable timbers and props are kept convenient to the working places, and in all other respects the management has complied with law and provided for the safety of the employes.

The amount of coal produced in 1897 was 9,154 tons, about double the production of 1896.

ALLEN HOLLOW MINE.

This mine is located about one and one-half miles in a northerly direction from Coalville. The coal is of a fine quality, but the mine has not been operated during the past three years. A "want" has been encountered in the present workings, in which the coal has entirely pinched out. This would be overcome in all probabilities however, by sinking.

CULLEN MINE.

The Cullen mine was opened about twenty-one

years ago by the Algood Brothers company, and later became the property of Matthew Cullen and Henry Spriggs. Five years ago Cullen and Spriggs sold to the Grass Creek Coal company. There are four openings near the Cullen mine belonging to the same company known as the Barber mine, Stallings mine, and Old Church mine. This mine has been worked in a desultory way for twenty-five or thirty years, and has produced an excellent quality of coal. The output has been over thirty tons a day; it is hauled by wagons and loaded in cars at the Cullen mine. The output of the Barber and Stalling mines is about twenty tons per day. The fourth is the New Tunnel; this opening is on the same vein about 1500 feet north of the old Church mine. The coal was struck in the tunnel on the 26th of Nov., 1897. The tunnel is 610 feet to the coal. It was driven by Gomer Thomas & Sons up to Oct. 1, 1897, when Gomer Thomas was appointed State Coal Mine Inspector. It was then driven by Lehi Thomas and Gomer Thomas Jr. to the coal. This mine will have about one thousand feet to the rise, the vein is about twelve feet thick. The railroad is now completed to the mouth of the tunnel, the company is now prepared to ship coal therefrom. This mine has a large field of coal which can be mined at small expense. This tunnel is not yet provided with an escapement, and has about three hundred and fifty feet to go to the rise. The ventilation will be poor until this outlet is completed, being supplied entirely at present from natural sources. Natural ventilation is always uncertain and unreliable owing to the atmospheric conditions, the changes of the barometer and thermometer and the direction and changes of the wind, particularly so in shallow mines. The management has been disposed to do all in its power to insure safety and to comply with all the requirements of the law, but much remains to be done to place the mine among the progressive producers. The coal from this, as well as from the other mines belonging to this company, is of an excellent quality.

This mine is worked entirely by contract, and during the year 1897 produced 8,200 tons.

DEXTER MINE.

My first official visit to this mine was October 29th, 1897. This mine is situated about one mile south of Coalville, and is owned by Lucy Dexter & Co. The vein is seven feet thick, and of poor quality, and none of the product is shipped out of Coalville.

Besides this there are other properties from which considerable coal has been extracted in the past, but they are at present idle on account of the poor quality of the coal.

CASTLE GATE MINE.

This mine is the property of the Pleasant Valley Coal company, and is located at Castle Gate, in the county of Carbon, 108 miles southeast of Salt Lake City, on the line of the Rio Grande railway. My first official visit of inspection was made on Oct. 30th, 1897, and covered the time from that date to Nov. 3rd, inclusive.

Four hundred men and 20 mules are daily employed in and about this mine.

Artificial ventilation has been provided by means of a Guibal exhaust fan which at that time passed 69,430 cubic feet of air per minute through the mine. I found the mine well equipped with machinery, having a Thompson Houston electric haulage plant, four electric hoists and other modern appliances. To dampen the dust, which is of a dangerous nature, water is conveyed to every portion of the mine by means of a system of pipes laid throughout the mine by means of a hose and steam. The working faces and all other portions are kept constantly sprayed by men employed for that purpose.

I found on my first visit some carburetted hydrogen gas, and while there were some small quantities of this gas over the old cave, the quantity was too small to be dangerous. The company has employed four competent fire bosses whose duty it is to visit all parts of the mine twice each day, to remove all gases and to see that all places are safe for the employes. There are four tunnels and three escapement ways the re-

quired distance apart, by means of which ingress and egress is available to persons employed in the mine. A suitable supply of timbers for props and caps is kept on hand, and within three hundred feet of the working faces.

This is by far the most extensively and systematically operated coal mine in the State, and the management is to be commended for its progressive spirit and the many precautionary measures adopted for the safety and comfort of its employees.

It has been operated on the single entry system, but as the workings are now attaining a great depth the double entry system has been adopted. I think this course is wise, and that all large mines should adopt this system. I have suggested that all break-throughs and cross-cuts should not be at a greater distance apart than seventy-five feet.

The outside workings consist of a large electric plant, which is large enough to supply the town with light in addition to furnishing that necessary for lighting the workings, one elevator, one conveyor, large bins for slack used to supply the coke ovens of which there are now 104 in use.

The output of coal from this mine in 1897 was 232,852 tons.

Following is an analysis of the coal:

Moisture	1.50	per cent
Volatile matter	44.62	"
Fixed carbon	50.22	"
Ash	3.20	"
Total	99.54	"
Sulphur	46	"
	100.00	"

WINTER QUARTERS MINE, NO. 1.

This mine is the property of the Pleasant Valley Coal company, and is situated about sixteen miles up a canyon off the main line on a branch of the Rio Grande Western railway. My first official visit of in-

spection to this property was made on October 28, 1897. The average number of men employed at that time was 267 inside and outside. They were also using eighteen horses.

The mine is provided with artificial ventilation, and is equipped with a Guibal exhaust fan, running at the rate of fifty-two evolutions a minute, which, at that time, passed 26,750 cubic feet of air per minute through the mine. The current of air, however, is not what it should be, on account of the friction in the return air-way, which is small, being driven for some considerable distance through rock. When I came to consult with the mine foreman in relation to this air-way, he informed me that the management had made arrangements to begin widening this air-course on November 1, 1897.

This mine is equipped with modern electric hoists and appliances for rapid and economic production. It has two stationary hoists, one 1,800 feet on the main level 60-horse power, which can make a trip of fourteen cars in about three and one-half minutes. Another hoist is placed at the head of the first rise 1,300 feet from the main level, which places the coal for the first hoist to run it outside to the dump.

There are two escapement ways provided, one through the old No. 3, the return airway, and one at the head of the first rise, 200 feet east of No. 3. This, I suggested, should have a little repairing done upon it, such as timbering, so that it will be safe for the men to travel through it. And, as there is no trouble from gas, the mine is comparatively safe. The management has provided good timbers for all purposes, which are kept convenient to the working places. It has also complied with the law in other respects in providing for the safety of the employees.

The amount of coal produced in 1897 has been estimated in connection with the output of No. 2 mine, both mines producing 210,693 tons.

The analysis of coal at this mine is as follows:

Moisture	3.20	per cent.
Volatile matter	45.67	"
Fixed carbon	47.22	"
Ash	3.35	"
Total	99.44	"
Sulphur	56	"

WINTER QUARTERS MINE NO. 2.

This mine is also the property of the Pleasant Valley Coal company. My first visit to it was made on the 27th of October, 1897, at which time I found the property in good condition. It is provided with artificial ventilation, supplied by an 18-foot Guibal fan with a good and sufficient amount of air for the number of men employed, about 17,257 cubic feet per minute passing through the mine. There are 53 men and five horses employed in and about the mine. At this time the miners were engaged taking out pillars from the old workings. This mine at one time was the greatest producer in Utah.

This mine has a fire clay floor, and as the dust is not of an inflammable nature, the same attention with regard to spraying is not required that is found necessary in this company's Castle Gate property. The outside machinery consists of a 350-horse power electric plant, and a large elevator and conveyor, and spacious storing bins for slack and nut coal. The entries as also the outside workings are lighted by electricity.

PLEASANT VALLEY MINE.

This mine is situated at Scofield, Carbon County, on the Rio Grande Western railway 110 miles southeast of Salt Lake City. It is the property of the Union Pacific Coal company, and is under the direct supervision of George L. Black, assistant superintendent of the Union Pacific Coal department. My first official visit to this mine was made on October 29th, 1897, at which time I found the mine closed down, and was informed

that it had not worked since June 1st, 1897. It is now sealed and the date of re-opening is uncertain.

This mine worked 50½ days during 1897, with an average force of 77 men. No accidents occurred during that time.

The output of coal during 1897 was as follows:

Lump	4,810	tons
Run of mine	14,729	"
Slack	4,073	"
Total	23,641	"

The analysis of this coal mine is as follows:

Moisture	4.36	per cent
Volatile matter	46.03	"
Fixed carbon	45.10	"
Ash	4.51	"
Total	100.00	"
Sulphur	77	"

KIMBALL MINE.

This mine is owned by O. G. Kimball of Scofield, and is located about two miles from the Rio Grande Western depot at Scofield. My first official visit to it was made October 29th, 1897.

This mine has produced a small quantity of excellent coal every year since 1885. The output has been used for local trade, and the property is only operated during the autumn months. During the year 1897 the product amounted to 663 tons.

No improvements were made during this year.

SAN PETE COUNTY DISTRICT.

The principal coal fields of this district are situated about five miles south of Manti near the village of Sterling. The dip of the vein is at an angle of about 13 degrees at the surface, pitching to the southeast. The only openings are those of the Sterling Coal and Coke company, and the Edmunds mine, both

on the same vein, and about a quarter of a mile apart. The vein somewhat in thickness and quality, the average thickness being from five to six feet and carrying in places bands of shale and bony substances.

STERLING COAL AND COKE COMPANY'S MINE.

My first official visit to this property was made December 3rd, 1897. The development consists of an incline driven diagonally across the dip of the measures a distance of about seven hundred feet, but the operators were driven from the incline by water, and no coal has been extracted from this point for nearly two years. The mine is equipped with a 50-horse power engine with tipple structure, screens, loading tracks and apparently all that is needed for its operation and to run an ordinary mine.

The drowning of the incline caused the management to begin the driving of a drain tunnel across the measures from a point below the level of the mouth of the incline, for the purpose of draining this incline. It is estimated by the management, that by means of this drain tunnel, it will be enabled to drive this incline several hundred feet further. At this time this tunnel was in a distance of five hundred feet, and, on the 4th of December, work was resumed with a force of 20 men. The management expects to be able to resume the shipment of coal about July 1st, 1898.

No coal was mined during the year 1897.

Number of men employed in driving tunnel	20
Number of days worked	26

Following is an analysis of the coal from this mine:

Moisture	3.78 per cent.
Volatile matter	50.11 per cent.
Fixed carbon	44.65 per cent.
Ash	1.46 per cent.
Total	100.00

EDMUNDS MINE.

The Edmunds mine is situated in San Pete County about five miles from Manti, on a spur of the San Pete Valley railroad, and is operated by Edmunds Brothers, of Manti. The workings consist of two inclines driven diagonally across the dip of the veins.

At the time of my first official visit to this property on December 2nd, 1897, I found the oft repeated mistake of attempting to secure a profitable output without attaining depth, and such improvements as have been made are not of a permanent character. The capacity of the outside equipments would not exceed twenty-five tons per day, while the hoisting power is furnished by one of those little animals upon which our Savior rode into Jerusalem, assisted by a horse. With those faithful animals, accompanied by the industry of the operators, quite a quantity of coal is produced. At the time of this visit I found the air very poor, and advised the management to connect the break-throughs and widen the air-ways.

Following is the analysis of the coal:

	Total coal	Middle coal	Bottom coal
Moisture	7.07	7.15	6.34
Volatile	43.18	42.74	42.60
Fixed carbon	44.07	45.80	45.46
Ash	5.68	3.95	5.56

HUNTINGTON MINE.

This mine is situated on Huntington Creek, in the extreme western border of Emery county, about twelve miles southwest of Scofield and about fifteen miles from Fairview. It was formerly owned by an eastern company, but is now in charge of S. J. Harkness of Scofield, and is worked by E. B. Jones, lessee, of Fairview. Owing to it being so high, the mine is only worked a few months in the fall of the year, and the product is used entirely to supply local trade. This product is a fair quality of coking coal.

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Output of mine during 1897.. ...500 tons.

Number of men employed..... 6

Number of days worked..... 67

Improvements, Air-course $60.00.

Following is an analysis of the coal:

Moisture.....	3.7	per cent.
Volatile matter.....	43.3	per cent.
Fixed carbon.....	48.9	per cent.
Ash.....	4.1	per cent.
Total.....	100.00	per cent.

WALES MINE.

This mine, the property of the Sanpete Valley railway company, is the oldest coal mine in the state, having been operated as early as 1855, when the output was consumed by the surrounding settlements.

There is another opening on the same vein a short distance off the Wales mine, which is owned by T. J. Reese and W. F. James; this mine has produced tons during the past year. These properties are situated near Wales, Sanpete county, on what is known as the White mountain.

BEAR CANON MINE.

This mine is owned by J. L. Maxwell, and situated in Bear Canon, a branch of Huntington, and about fourteen miles from the town of Huntington. It is little more than a prospect, the face of the main drift being less than one hundred feet from the outcrop line. There are usually about two or three men employed for two or three months of each year. The product is used entirely to supply the settlements of Castle Valley. The vein is about eleven feet thick and is found in the Laramie division of the Cretaceous.

Following is the analysis of the coal:

Moisture	3.7 per cent
Volatile matter	43.3 "
Fixed carbon	48.9 "
Ash	4.1 "

The output of coal for 1897 was 160 tons, and the improvements amounted to sixty dollars.

LAMONT MINE.

This mine is located in San Pete County twelve miles east of Mt. Pleasant. The output for 1897 was about 150 tons. It is not yet fairly opened.

Improvements were placed on the property during 1897 to the amount of about $500.00, which consisted chiefly of wagon roads, chutes and bins.

HOLLADAY MINE.

This mine is near Sunnyside, twelve miles from the Denver & Rio Grande railroad, in Emery County. It proved upon development to be of more importance than was at first supposed it would. G. J. Holladay of Salt Lake City, together with his father, brother and other gentlemen, are the owners of about one thousand acres of coal land, embracing an entire mountain, and are now engaged mining coal for shipment to Salt Lake City. This coal contains 420 feet more of gas to the ton than is obtained from the best Colorado product, and is the best for coking purposes that has yet been discovered. A company has been formed for the development of this property with a capital stock of $200,000.00, and work will be commenced on a large scale in the near future it is expected.

The amount of coal produced in 1897 was tons.

ABERDEEN MINE.

This property is near Price, Carbon County, on the D. & R. G. railroad, and is owned by J. M. Whit-

more, S. N. Whitmore and A. Bulanger. It is generally known as the property of the Price Trading Company. The output for 1897 was 543 tons, all of which is sold at Price to supply local trade.

The miners are paid 50 cents per ton and the company furnishes all powder, fuse and tools.

CASTLE VALLEY MINE.

This mine is in Castle Valley near Orangeville, and is owned by the Castle Valley Coal Mining company.

It was worked during 1897 170 days, with two men, and the output was 575 tons.

WALES MINE.

This mine is located near Wales in Sanpete Valley, and is the property of the Sterling Coal and Coke Company of Manti, and is now worked by William F. Thomas of Wales. The output of coal for 1897 was 236 tons, at a cost of $1.50 per ton, and the product sold at the mine for $2.50 per ton.

Improvements were made on this property during 1897 to the amount of $2,000.00.

LLEWELEN MINE.

The Llewelen mine is owned by Llewelen Brothers of Scofield, and is located on Mud Creek near Scofield, on the Rio Grande Western railroad. It was opened in 1897, and has produced a small quantity of excellent coal which has been used to supply local demands. The property has only been operated during the autumn months. The output for 1897 was 75 tons.

Improvements during 1897, track laying, $20.00. Two men were employed during a period of twenty days.

WILLIAMS MINE.

This mine is owned by Evan Williams of Scofield,

Carbon county, is located on Mud Creek, near Scofield, on the Rio Grande Western railway, and was opened in 1897. The quality of coal from this mine is about the same as that found in the Llewelen mine. The output for 1897 was about sixty tons, and one man was employed therein during sixty days of last year.

HYDRO-CARBON MINES.

Owing to the late season of the year at which I was appointed, the poor facilities for traveling to these properties, which are located some seventy miles from the nearest railroad, and the further fact that they cease operations during the winter months of each year, I have been unable to make an official visit to this district. I will endeavor to do so, however, immediately after the resumption of operations in the spring. All the information at my command, therefore, relative thereto, is such as I have been able to obtain from the annual report of my predecessor, which was submitted to the Governor February 1st of last year, and which was quite explicit in this regard, and from such information as has been furnished me by the management of the different properties. Knowledge obtained in this manner is never as satisfactory as that gathered by a personal inspection.

DU CHESNE MINE.

This property is owned and operated by the Gilsonite Asphaltum company of St. Louis, Missouri, and consists of a vertical fissure cutting the formation from southeast to northwest of an average width of 2½ feet between walls of oily sandstone. The annual output for 1897 amounted to 674 tons, 5 men were employed during 185 days.

The only improvements reported is a new hoist erected at a cost of $300.00.

The general office of the company is at St. Louis, Missouri, with general European agent at Hamburg, Germany, and eastern sales agent at New York.

The substance is used for insulation, varnishes, laquers, japans, paints, roofing, paving and for various other purposes.

A portion of last year was occupied in opening up the mine and clearing away the debris occasioned by the explosion of November, 1896.

PARIETTE MINE.

This property owned by the Assyrian Asphalt company is located in the eastern portion of Wasatch county, near the south boundary line of the Uintah reservation. Its output for 1897 amounted to 1000 tons. The improvements for this year consisted of a new bunkhouse and a dynamo and other machinery for establishing an electric light plant.

OTHER DISTRICTS AND PROPERTIES.

Beside the mines especially mentioned, there are a large number of smaller properties operated on a small scale by individuals for home consumption or for strictly local trade, and while most of these may not, strictly speaking, be called mines, some of them are prospects of great promise, and only await transportation facilities, to become large and profitable possessions. I have not visited many of these during the three months of my incumbency in office.

COKE.

Little can be said regarding this industry, except to echo the sentiment expressed by my predecessor in his last report. The only company at present engaged in burning coke finds the competition with the eastern product quite sharp, but it is thought that as soon as better provisions for burning it are made, and the business is entered into upon a larger scale, this difficulty will be to a great extent, if not entirely, overcome, as the coal mined by a number of Utah companies is of as good a quality for burning coke as any found any other place and there is no reason why it should not be produced as cheaply here as elsewhere.

The only company engaged at present in this industry is the Pleasant Valley Coal company at its Castle Gate mine, where it has 104 coke ovens which last year turned out 23,619 tons of coke.

Report for 1898.

REPORT

OF

State Coal Mine Inspector

For 1898.

OFFICE OF THE STATE COAL MINE INSPECTOR OF THE STATE OF UTAH,
SALT LAKE CITY, UTAH,
December 31st, 1898.

To His Excellency, Heber M. Wells, Governor of the State of Utah:

SIR.—In obedience to the requirements of an act of the Legislature of the State of Utah, 1896, entitled "An act for the protection of the lives of coal miners; the appointment of a coal mine Inspector for the State of Utah; defining the duties of said inspector, mine owners, lessees and operators, and prescribing penalties for a violation of the provisions of this act, and repealing all inconsistent acts," I have the honor to submit herewith the anrual report of this department for the year ending December 31st, 1898.

It is absolutely necessary to supply a statement of the product, and of the classes of the mines inspected during the year, 1898, so as to compare with the years immediately preceding.

I am gratified, however, that in seeking this information, the fact has appeared, that while the products of the coal and hydro-carbon mines show such a marked increase over previous years, that such marked increase has not been attended with the casualties and accidents in proportion to the increased production.

In some instances, I have been unable to obtain exact and accurate statements of the output of some of the mines, these, however, embraced only a few of

the small producers. In such cases I have, with all obtainable information, made approximate estimates of the products.

I cordially commend the manner, not only with which the operators have furnished me with an account of their productions, but with which they have otherwise assisted me in my labors, and complied with all suggestions, which the duties of my position required me to make to them.

A few of the large producers have with commendable forethought and sagacity, begun and continued the operation of their properties upon intelligent and scientific methods, and their reward is apparent, not only in their present output, but in the present condition and future capacities of their great properties.

The present immense production and ultimate possibilities of the great metaliferous mines of Utah, are matters of common knowledge and every day talk; but there are comparatively few, even, of our own citizens, who appreciate the extent and value of our coal and hydro-carbon deposits, indeed we can scarcely comprehend the vast possibilities which a judicious appropriation of our great material advantages insure.

Nature has only backed and combined within the "Mountain Walled Treasury of the Gods," mineral wealth equal to, if not surpassing, all other States or localities but has deposited at our doors, hydro-carbon wealth unknown to any other portion of the world.

With the production of this great wealth, the utilizing of our inexhaustible iron deposits, and the economical productions of our metaliferous ores, all depend in a greater or less degree upon our coal fields. Who can measure the future of our great coal mines?

I am gratified to record that the mine owners of the State of Utah, have in general, complied with the mining laws of the State.

Very respectfully submitted,

GOMER THOMAS,
State Coal Mine Inspector, State of Utah.

During the year 1898, three fatal and fourteen non-fatal, accidents have happened in the coal mines within the State of Utah, the same being as follows, to-wit:

"NON-FATAL."

At about 3.30 o'clock, on the 4th day of January, 1898, Edward L. Jones was injured in Castle Gate mine, on the 2nd level and fourth raise, and suffered contussion of the hip.

At the time of the accident Jones and his partner were engaged in laying track; as Jones was picking up a piece of rail, a thin piece of rock fell from the roof striking a glancing blow, causing the injuries as stated above.

2. On the 6th day of January, 1898, at about 8.30 o'clock, Baptiste Trevier, a miner employed in No. 1 mine at Winter Quarters, was injured in room No. 12, of Entry No. 2, by a falling prop, which struck him on the left side, causing a fracture of the 8th, 9th and 10th ribs on the left side.

3. On the 12th day of January, 1898, at about 8.30 o'clock, a. m., William Ayre, a car pusher in Winter Quarters mine was injured on the trustle of chute.

Ayre was pushing the cars into the tipple, but was new hand. He attempted to stop a car by placing an iron bar in front of the wheel of the moving car. In doing this he shoved the bar too far through, getting his fingers caught between the wheel and the rail.

4. On the 25th day of January, 1898, at about 10.30 o'clock, a. m., Tony Fazio, a miner employed in Castle Gate Mine, was injured in room No. 4.

At the time of the accident, Fazio and his partner were engaged in under-mining the coal, in the face of their room. Fazio was in a stooping position at his work. While thus engaged, a "Bounce" from the face and the rib of the room took place. The coal loosened came from the top of the seam in small pieces, striking him on the head causing his injuries. He suffered a contusion of temporal bone.

5. On the 25th day of January, 1898, at about 3 o'clock p. m., William Kotki, a miner in Winter Quarters Mine No. 1, was injured in room No. 10 of the second raise. At the time of the accident Kotki and his partner were loading a car at the face of their room, Kotki was working between the face of the room and the car. While thus engaged two pieces of

rock weighing about 200 pounds each fell from the roof, striking the coal and bouncing toward the car, one of the pieces striking Kotki on the leg and fracturing it.

6. On the 28th day of January, 1898, at about 11 o'clock a. m., James Neilson, a miner in Winter Quarters Mine No. 1, in room No. 8 of the Entry No. 3, was injured. At the time of the accident, Neilson and his partner were loading a car under a loose rock, which they had been trying to get down. They could not get it down very easily, so they decided to put a prop under it. They stood the prop up against the rib, with the foot near the place where it was to be set. While they were engaged in loading the car, the rock fell, striking Neilson. Luckily most of the weight was taken off by the reclining timber, or the accident may have proved worse. He sustained a fracture of the pelvis.

7. On the 3rd day of March, 1898, at about 3:30 o'clock p. m., C. H. Halverson, a driver in the Castle Gate Mine No. 1, was injured on the level between the 4th and 6th raises. Halverson was hauling coal between the 4th raise and the 6th raise entries. While making his usual trip the front car, on the front of which Halverson was riding, jumped the track towards the right side of the entry, the mule turned to the left, and Halverson's left leg was caught between the end of the car and the shafts on the mule, causing a compound fracture of the lower end of the fimer of the left arm.

8. On the 9th day of July, 1898, at about 3 o'clock p. m., James O. Clark, a miner in the Wasatch mine at Coalville, was injured in room 21, of entry No. 2.

Clark was engaged in placing a prop under a piece of loose rock, which he had tried to pull down with his pick. He was engaged in making a place for the prop, when the rock fell, striking him and forcing his head against a shovel which he was using, causing a deep cut over his eye, and straining his back.

9. On the 15th day of July, 1898, at about 2:30 o'clock p. m., David Burns, a miner in Winter Quarters Mine No. 1, on the 8th raise, was injured. Burns and his partner were working the 8th raise entry, the

clod roof, which was immediately above the coal, had been left up for a distance of about five feet back of the face of the coal. Burns started to do some undermining, at the face and under the clod roof, without putting a prop under it to sustain it. While thus engaged the clod fell causing his injuries.

10. On the third day of September, 1898, at about 9:30 o'clock a. m., Walter Henry Wilde, a miner in the Grass Creek Coal Co.'s mine, was injured on the main entry.

The accident was caused by a large piece of rock, weighing about two hundred pounds suddenly falling from the roof. Three men were with him and they were working under the direct care of the mine foreman, timbering the main entry. Wilde sustained injuries to his head, shoulders, back, legs, and sprained his left wrist.

11. On the 1st day of September, 1898, at about 10 o'clock p. m., John E. Erickson, a driver on the 5th raise in Winter Quarters Mine No. 1, was injured. At the time of the accident Erickson was coming down the fifth raise with a trip and was riding on the rear end of the last car. Some coal having fallen off the first car, causing the second car to leave the track, knocking out a prop and letting some rock fall on him, which caused the following injuries, to-wit: Superficial scalp wound at the junction of the left parietal and occipetal bones.

12. On the 18th day of October, 1898, at about 4:30 o'clock p. m., Edward Edwards was injured in the Castle Gate mine. He sustained a slight contusion of the right hip, and probable contusion of the spinal column, by a falling platform on which he was standing.

13. On the 19th day of October, 1898, at about 1:45 o'clock p. m., William Street, a driver in Winter Quarters mine, was injured. The cause of the accident is not definitely known. He was driving a spiked team, hauling on the main entry. He was found between the cars. He had either fallen by his foot slipping on the rail or some similar cause, causing the following injuries: Injured about the right side of neck and breast.

14. On the 15th day of November, 1898, Gabrial Stringari, a miner in Castle Gate mine, was injured in the room he was working in. At the time of the accident he was working near the face of the room when a "bounce" occurred, causing the dust to raise from the dry coal, which was ignited by his lamp, burning his face and hands.

"FATAL ACCIDENTS."

On the 28th day of May, 1898, William C. Davis, a miner in Castle Gate mine, was fatally injured in First Dip in room 19. Davis and his brother were working the first room on the First Dip entry. The night before the accident the room had been left as usual with a cut across the full width of the face, but shots were put in only the right hand half of the face, which was blown down, and the left hand half left standing with one loose end. Davis thought he would make the mining on the left hand side a little deeper. He had gone about one foot further, making in all about five feet, when a large piece of coal fell from above him, weighing about 700 pounds, catching his head. He immediately died from the effects of the same.

2. On the 8th day of July, 1898, at about 10 o'clock, a. m., Theodore Kranwurkel, a timberman, employed in Castle Gate Mine No. 1, was fatally injured.

At the time of the accident Kranwurkel and his partner were engaged in timbering. They started in pulling down some rock. One large piece however, they could not get down, and they concluded to put a prop under it. While Kranwurkel was engaged in digging a hole for the prop, a "Bounce" took place, knocking down some of the rock, the large piece referred to gave way and struck Kranwurkel on the back, from which he died.

COPY OF VERDICT OF CORONER'S JURY.

STATE OF UTAH,
CASTLE GATE PRECINCT, } ss.
COUNTY OF CARBON.

An inquest having been held at the Magnolia Hall in Castle Gate Precinct, Carbon County, on the 9th day of July, 1898, before Henry Duerden, Justice of

the Peace of Castle Gate Precinct, in said county, upon the body of Theodore Kranwurkel there lying dead by the jurors whose names are hereto subscribed. The said jurors upon their oath do say that the deceased came to his death while following his employment by the fall of rock in Castle Gate Mine, which resulted in the fracture of the spinal column accompanied with heart failure. Verdict accidental.

Signed WILLIAM FEATHERSTONE,
W. K. INGLE,
PHIL. JOHNSTON.

Attested.

HENRY DUERDEN, Justice of the Peace.

On the 4th day of August, 1898, at about 8 o'clock, a.m., Lorenzo Tyler, a roller-man in Castle Gate Mine, was fatally injured on the Main Entry.

It was the duty of said Tyler to oil the rollers to the 10th raise on the Main Entry. On the morning of the accident he started to oil the rollers at the bottom of the 10th Raise from there he went towards the mouth of the mine, oiling the rollers as he went along. He had reached and passed the roller at the mouth of the Main Entry Hoist, which was running at the time, when a trip came past knocking him down with his leg under the trip, most all of the cars passing over him. It seems he did not see or hear the trip coming. His leg was amputated at the hospital, from the results of which he died the next morning.

COAL PRODUCTION IN THE STATE OF UTAH, FROM 1876 TO 1898, INCLUSIVE.

Year.	No. of Short Tons.	Year.	No. of Short Tons.
1876	50,400	1888	259,501
1877	50,400	1889	236,651
1878	67,200	1890	318,159
1879	225,000	1891	371,045
1880	225,000	1892	361,314
1881	225,000	1893	418,049
1882	250,000	1894	447,276
1883	250,000	1895	172,958
1884	250,000	1896	503,243
1885	213,120	1897	582,092
1886	200,000	1898	673,297
1887	180,020		

COAL PRODUCTIONS FROM THE SEVERAL MINES WITHIN THE STATE FOR 1898.

Name of the Mine.	Operated by	No. of Tons
Castle Gate,	P. V. Coal Co.,	261,828
Winter Quarters,	P. V. Coal Co..	313,851
Kimball,	O. G. Kimball,	500
Deseret Coal & Coke Co.,	J. P. & Lewis Larson,	800
Black Oaks,	Evan Williams,	50
Black Baby,	Black Baby Coal Co.,	300
Tutle,	Tutle Coal Co.,	2,500
Cluff,	John Dutton,	210
Hopkins,	Hopkins Coal Co.,	8,777
Grass Creek,	Grass Creek Coal Co.,	9,138
Wasatch,	Weber Coal Co.,	15,433
Wilson,	Salt Lake Coal Co.,	7,620
Dexter,	Dexter Coal Co.,	300
Black Diamond,	Black Diamond Coal Co.,	450
Carlton,	Hans Carlton,	2,500
Coney,	Andrew Coney,	150
Black Hawk,	S. S. Grange,	450
Bullock & Jones,	Thos. Williams,	215
Aberdeen	Whitmore Bros & Ballinger	500
Stirling,	Stirling Coal & Coke Co.,	2,580
Uinta County Mines,		5,000
Other Small Mines,		40,145
Total,		673,297

COAL PRODUCTION IN UTAH FOR 1898, BY COUNTIES.

COUNTY.	Number of Mines	Loaded at Mines for Shipment.	Sold to Local Trade and Used by Employees.	Used at Mine for Steam and Heat.	Made into Coke.	Tons Total Production.	Total Value.	Average Price per Ton	Average Number of Days Active.	Average Number of Employees.
Carbon	5	566,593	6,286	4,200	86,275	577,079	$669,411.64	$1.16	783	574
Summit	5	22,350	15,673	3,245	none	41,268	53,648.40	1.30	817	77
San Pete	5	2,020	6,660	150	none	8,730	12,895.00	1.50	810	40
Grand	2	none	625	none	none	625	625.00	1.00	120	4
Emery	1	none	450	none	none	450	562.38	1.25	250	4
Uintah	6	none	5,000	none	none	5,000	7,500.00	1.50	150	16
Other small mines		none	40,145	none	none	40,145	40,145.00	1.00	817	70
Total		590,963	74,839	7,595	86,275	673,297	$784,787.42	$1.17	2937	685

Utah's total production in 1898, 673,297 short tons; cash value $784,787.42—showing an increase of 91,205 short tons or $284,240 in 1897.

Production of Coal and Coke and Asphaltum, and Imports of the same in the State of Utah, for the Year 1898.

	BITUMINOUS.	ANTHRACITE.	COKE.	GILSONITE.
Production in Utah.....	673,297		30,400	2,560
Imported into Utah.....	172,404	6,804	24,425	
Total.....	845,701	6,804	64,825	2,560
Exportation from Utah..	153,676			2,560
Consumed in Utah.....	692,025	6,804	64,820	

MINES EMPLOYING MORE THAN SIX MEN.

NAME OF MINE.	KIND	OPERATED BY	P. O. ADDRESS.
Castle Gate . .	Drift	P. V. Coal Co.	Salt Lake City, Utah.
Grass Creek .	Drift	Grass Creek Coal Co.	Salt Lake City, Utah.
Hopkins . .	Slope	Hopkins Coal Co.	Coalville, Utah.
Hallady . . .	Drift	Halladay Coal Co.	Salt Lake City, Utah.
Manti Coal Co.	Slope	Manti Coal Co.	Manti, Utah.
Pleasant Valley	Drift	Union Pacific Coal Co.	Omaha, Neb.
Sterling . . .	Drift	Sterling Coal Co.	Salt Lake City, Utah.
Winter Quarters No. 1 .	Drift	P. V. Coal Co.	Salt Lake City, Utah.
Winter Quarters No. 2 .	Drift	P. V. Coal Co.	Salt Lake City, Utah.
Wasatch . .	Slope	Weber Coal Co.	Salt Lake City, Utah.
Wilson . . .	Slope	Salt Lake Coal Co.	Salt Lake City, Utah.

Mines Employing Less Than Six Men.

NAME OF MINE	KIND.	OPERATED BY	P. O. ADDRESS.
Black Hawk	Drift	S. S. Grange	Huntington, Utah.
Dear Creek	Drift	Dear Creek Coal Co.	Huntington, Utah.
Rocksprings'	Drift	Rock Springs Coal Co.	Vernal, Utah.
Black Diamond	Drift	Black Diamond Coal Co	Hales, Utah.
Carlton	Drift	Hans Carlton.	Fairview, Utah.
Coney	Drift	Andrew Coney.	Cedar City, Utah.
Bullock & Jones	Drift	Thomas Williams.	Cedar City, Utah.
Black Baby	Drift	Black Baby Coal Co.	Green River, Utah.
Cluff	Drift	John Dutton.	Cedar City, Utah.
Black Oak	Drift	Evan Williams.	Scofield, Utah.
Kimball	Drift	O. G. Kimball.	Scofield, Utah.
Dexter	Slope	Dexter Coal Co.	Coalville, Utah.
Fairview	Drift	Ezra D. Jones.	Melburn, Utah.
Griffiths	Drift	Orangeville Coal and Coke Co.	Orangeville.
Kanoma	Drift	Kanoma Coal Co.	Kanoma, Utah.
Pittsburg	Drift	Pittsburg Coal Co.	Orangeville, Utah.
Wood & Taylor	Drift	G. W. Wood.	Cedar City, Utah.
Huntington	Drift	J. S. Maxwell.	Huntington, Utah.
Llewelyn	Drift	Llewelyn Bros.	Scofield, Utah.
Lamont	Drift	James F. Lamont.	Mount Pleasant, Utah
Boyer	Drift	William Boyer.	Upton, Utah.
Huffman	Drift	J. Huffman.	Coalville, Utah.
Clark	Drift	J. Clark.	Upton, Utah.
Castle Valley	Drift	Castle Valley Coal Co.	Orangeville, Utah.
Ballard	Drift	Ballard.	Thompson Springs, Utah.

FEES COLLECTED FOR INSPECTION OF COAL MINES.

Name of Mines	Amount Collected.
Castle Gate and Winter Quarters	$ 90.00
Grass Creek	40.00
Wasatch	40.00
Hopkins	30.00
Wilson	10.00
Sterling	20.00
Parrette	20.00
Manti Coal Co.	10.00
St. Louis	20.00
Total	$280.00

NO. OF CERTIFICATES FOR MINE FOREMEN AND FIRE BOSSES ISSUED DURING THE YEAR.

Date.	Name.	Place.	Certificate No.
Mar. 10,	H. L. Thomas,	Coalville, Utah,	1
Mar. 10,	John E. Pettit,	Coalville, Utah,	2
Mar. 10,	J. M. Faddis,	Coalville, Utah,	3
April 16,	Frank Cameron,	Castle Gate, Utah,	4
April 16,	Robert Forrester,	Castle Gate, Utah,	5
April 16,	Robert Howard,	Castle Gate, Utah,	6
April 16,	Henry Parmley,	Castle Gate, Utah,	7
April 18,	Thomas J. Parmley,	Scofield, Utah,	8
April 18,	William Parmley,	Scofield, Utah,	9
April 18,	James Russell,	Scofield, Utah,	10
Sept. 15,	W. S. Car,	Manti, Utah,	11
Oct. 20,	H. R. Thomas,	Moroni, Utah,	12

FIRE-BOSS CERTIFICATES.

Mar. 25,	James A. Harris,	Castle Gate, Utah,	1
Mar. 25,	David Crow,	Castle Gate, Utah,	2
Mar. 25,	Michael Beveridge,	Castle Gate, Utah.	
Aug. 27,	Robert Williams,	Castle Gate, Utah,	3
Oct. 27,	John Waddell,	Castle Gate, Utah,	4

The following is a list of the names of those who comprise the Board of Examiners for mine foremen and fire bosses.

SUMMIT COUNTY.

Gomer Thomas, State Mine Inspector, Chairman,
Mark Hopkins,
James Robinson.

CARBON COUNTY.

Gomer Thomas, State Mine Inspector, Chairman,
H. G. Williams,
James Harrison.

SAN PETE COUNTY.

Gomer Thomas, State Mine Inspector, Chairman,
William Ellingford,
H. S. Kerr.

PRECIOUS MATERIALS OF UTAH.

Among the precious materials found in Utah, which the markets of the world constantly demand are: Aluminum, Antimony, Asbestos, Asphaltum, Bismuth, Barytes, Borax, Coal, Cobalt, Gypsum, Iron, Kaolin, Gilsonite; for varnish: Teredo, Proof Paint; lubricants and insulating compounds: Nitre, Manganese, Marble, Phosphates, Plumbago, Salt, Soda, Sulphur, Zinc, Onyx, and every kind of and grade of valuable building and Lithographic Stone, Slate, and valuable clays and mineral water. The only material not known to exist in large quantities, is tin, and that metal is found in many places, but has not been developed to any great extent. There is sufficient asphalt to pave the cities of the earth. Sulphur mined 98 per cent pure, sufficient to supply the markets of all countries. Miles of pure Gypsum from which 2000 tons of plaster of paris is made annually and that could be utilized for all the demands of art in alabaster for aeens of time. Marble is found in every shade and color, with the vari-hued granite. Onyx as delicately tinted, quantity mottled and vari-colored as the world has ever produced and some of it richer in design than the high priced product of old Mexico. More Coal and Iron than any other State of its size.

Mountains of Salt, and a sea from which enough can be evaporated daily to supply all humanity.

Pyrites of Iron for the manufacture of sulphuric acid. Kaolin of a fibre that will make the most delicate of egg-shell China. Without exaggeration, Utah, is the most prolific of all natural resources for the handiwork of man as applied to manufacture and commerce of any like area on the face of the globe, and its every resource is yet in the very embryo of development.

The discovery of crude oil, of a good gravity, on the banks of the Green River and in Uinta County, is but the beginning of the opening of great petroleum fields, that will add another valuable commodity to the Commercial Wealth of the State.

The natural gas wells, opened in Salt Lake county, have for several years demonstrated their

value, and are utilized by business firms, manufacturers and private families. There is no doubt but that beds of petroleum underlie these gas wells which will be developed in time.

In the Uinta, Wasatch, Emery, Utah and Carbon counties, are vast deposits of gilsonite, mineral wax and elaterite, that have a market for all that can be produced. The principal gilsonite mines are the St. Louis Gilsonite & Asphaltum Co., Fort Duchesne, and the Uinta Gilsonite Co., of Denver, which is located on a southern extension of the St. Louis Gilsonite & Asphaltum Co's claims. Also, the Parrette mine owned by Culmer Bros.; the Castle Peak mine, owned by a Denver company, and the Raven Mining Co. of Illinois, who have leased a large track of land from the Indians in Uinta county. The last named company have a large force of surveyors on the ground staking off claims, etc. There is also a Syndicate in Emery county. They have bonded some property from Price and Castle Gate parties and have surveyors on the ground.

There is another company with Geo. F. Timms of Washington D. C., at the head of the same, who are now ready to ship gilsonite and mineral wax.

These mines are about six miles from Calton Station, in Utah county.

A Denver company has bonded a large tract of gilsonite land near Soldiers' Summit, in Utah county, now owned by W. S. Goss, J. Curtis and Henry Wade & Company of Colton.

Coke is also produced in Salt Lake and Ogden, from coal brought from Castle Gate mine. It is coked in a species of retort, operated somewhat on the plan of a gas retort; somewhat as a by-product coke oven. It is made by the Salt Lake & Ogden Union Gas & Electric Light Company. This company made through this process 1,800 tons of coke.

COAL AND COKE.

The principal coal fields are located near Coalville Summit County; Castle Gate and Pleasant Valley, in Carbon County; Sunnyside and Castle Valley and Huntington in Emery County; Sterling and Wales in Sanpete County; Thompson's Springs and Green River

in Grand County, near Vernal, Uintah County; Cedar City, Iron County.

This year over 673,297 tons of coal has been produced in the State of Utah.

Good coking coal is found in Carbon and Emery Counties, and the principal place of making coke is at Castle Gate. This coking plant has 108 ovens which made 29,200 tons of coke during the year 1898.

IRON.

Iron is also found in large quantities all over the State. The same is found in very large quantities in Iron County. The principal deposits aside from Iron County are found in Cache, Juab, Morgan, Salt Lake, Utah, and Wasatch and Weber Counties. The iron mountain in Iron County contains a large quantity of Magnetic and Hematite iron ore. Near Iron City are belts of iron ore five miles wide and twenty miles long of the richest quality. Said iron is near the great coal measures, and when transportation facilities are afforded (and the present prospects are very bright for the same with two railroads enroute for the fields), Utah could within one year, be able to manufacture all the iron and steel for railroads and all other purposes for which these metals are used, for the entire Trans-Mississippi country.

CASTLE GATE MINE.

The Castle Gate Mine is the property of the Pleasant Valley Coal Co., and is situated at Castle Gate station, 108 miles south of Salt Lake City, in Carbon County, on the Rio Grande Western railway. My first official visit of inspection was on Feb. 17-23. The average number of men employed daily inside and out was 400, and from 22 to 25 mules. Artificial ventilation is furnished for this mine by a Guhal exhaust fan, 22 ft. in diameter, which at that time passed 74,325 cu. feet of air per minute through the mine. This mine is equipped with machinery consisting of a Thompson and Houston Electric Hanlaye plant with four electric hoists running with an output of 1,200 tons per day. I found on this visit a few small feeders of carburetted hydrogen gas, but no accumulation of standing gas in

the mine. I found all the sprinklers and sprays in good working order, and also sufficient props and caps close to the working places. I also examined the scales for weighing miner coal and found them all right.

On my second official visit of inspection, April 10-15, I found the mine in a fair condition, but there was still a few feeders of carburetted hydrogen gas, but not large enough to be dangerous. I found about the same amount of air as in my first, but a few less men at work. On this visit I instructed the foreman that he should take all precautions possible in taking down loose rock and timbering the main traveling ways, as a large per cent. of the accidents happened on this account.

My third official visit of inspection was Aug. 25-31. On this visit I found a small amount of gas in the mine, on which account the mine was shut down on the 26th day of August. This occurred on account of shutting off too much air from a district of the mine where there were a few small feeders of carburetted hydrogen gas. The speed of the fan was increased and by noon, the same day, the mine was clear from gas, as I visited it at noon and found it all clear, with a little over 75,000 cu. ft. per minute, with six men in the mine.

My fourth official visit of inspection was on Oct. 20-29. The mine was in good running order with everything running smooth. After looking over the mine carefully, I found that there had to be some improvements made in regards to the ventilating of the mine as the mine produced more gases daily, it was necessary to have more air, as the volume of air now is hardly sufficient for the great increase of output and number of men and mules. On this visit I found a little, 75,000 cubic feet of air passing through the mine per minute. With the fan running at its full capacity, which is just about enough to keep the mine clear without increasing the number of men and mules. I suggested, therefore, to Supt. W. G. Sharp, that they should make their air courses larger in places and clean and timber them and put in larger exhaust fan, that would double the amount of air now in the mine. I also suggested

that they should make four splits, so that they would have four separate districts, each to be furnished with fresh air from the main intake. This would put the mine in a safe condition for a larger output and an increase of employees. As the traveling way in this mine is low and long (nearly one and one-half miles) I suggested that they should put on a man tripp to haul the men in and out of their working places, which would be a great improvement to the employer and employee. All this the management has promised to do.

The management has provided, as the law requires, a supply of suitable timber for props and caps near the working places.

This mine is by far the most extensively and systematically operated coal mine in the State.

The management is to be commended for its progressive spirit, and the many precautionary methods adopted for the safety and comfort of its employees.

The output for this mine for 1898, is 261,828 short tons, which shows an increase of 28,976 short tons over 1897, and made into coke, 1898, 29,200 tons.

Analysis of coal from Castle Gate Mine.

Moisture	1.50 per cent.
Volatile Matter	44.62 per cent.
Fixed Carbon	50.22 per cent.
Ash	3.20 per cent.
Sulphur	.46 per cent.
	100.00

On my fourth official visit of inspection, Oct 29th to Nov. 1st, I found the mine working full time with usual number of men, working two shifts, and found the ventilation in very good shape, but found a large squeeze coming on in some parts of the mine, where they had been taking out the pillars, which was causing considerable trouble in some parts of the main traveling ways, so as they would have to be re-timbered and made higher. The mine is in a good condition for taking out coal. This mine is the largest coal producer in the State.

The output of this mine for 1898, was 313,851 short tons, showing on increase of 103,172 short tons over 1897, the output for 1897 being 210,679.

This company has made improvements on this mine and Castle Gate mine to the amount of $50,000.00 in the year 1898.

The analysis of coal from Winter Quarters mine is as folllows:

Moisture	3.20 per cent.
Volatile matter	45.67 per cent.
Fixed carbon	47.22 per cent.
Ash	3.35 per cent.
Sulphur	.56 per cent.
	100.00

WINTER QUARTERS NO. 2.

This mine is also the property of the P. V. Coal Co., situated on opposite side of canyon from Winter Quarters No. 1. This mine has not produced any coal in 1898.

WINTER QUARTER MINE.

Winter Quarters mine is the property of the Pleasant Valley Coal Co., and is situated about sixteen miles up a canyon, off the main line, on the branch of the Rio Grande Western Railway from P. V. Junction.

My first official visit of inspection was on February 23–27. On this visit I found a great improvement from my last, when I had suggested to enlarge the main return air course, which was by this time completed, and a great deal larger amount of air traveling through the mine.

This mine is provided with artificial ventilation by a Guibal exhaust fan, running at the rate of fifty-five revolutions per minute and producing between 40,000 and 50,000 cubic feet of air per minute, which was distributed to the faces of the working places. I found sufficient timber for props and cap pieces.

On my second visit, April 15–19, I found the mine

working full time and everything in very fair condition.

My third visit of inspection was August 11–14. I found 285 men working with the ventilation in good condition and a supply of timber on hand close to the working places. I also examined the scales for weighing miners coal, and found it correct. There is no gas in this mine; it is comparatively safe in regard to gases, and dust is not very dangerous, but management sprinkles traveling roads.

KIMBALL MINE.

The Kimball mine is owned by O. G. Kimball of Scofield and is located about two miles north-west of Scofield. It employs about 2 men about two months in a year. The output of the Kimball was 500 tons in 1898. This mine supplies the local trade for Scofield.

LLEWELYN MINE.

The Llewelyn mine is owned by Llewelyn Bros. of Scofield. This mine has been idle during 1898. It is located on Mud Creek.

WILLIAMS MINE.

This mine is owned by Evan Williams of Scofield. It is located five miles up Mud Creek. It has produced 50 tons of coal for local use in 1898.

PLEASANT VALLEY MINE.

The Pleasant Valley mine is situated at Scofield, Carbon County on a branch of the Rio Grande Western R. R., 102 miles southeast of Salt Lake City and is owned by the Union Pacific Coal department, and has been idle all through 1898. It is a large vein of coal, 28 ft. thick.

The analysis of this coal is:

Moisture	4.36 per cent
Volatile matter	46.03 per cent
Fixed Carbon	45.10 per cent
Ash	4.51 per cent
Total	100.00 per cent
Sulphur	.77

ABERDEEN MINE.

This mine is owned by Whitmore and Ballinger of Price, Carbon County, and is situated 12 miles northeast of Price. It supplies the local trade of Price. It works two months in the spring of the year and two months in the fall. This mine has a large vein of coal and of good quality. The output of this mine for 1898 was 500 tons.

THE SUNNY-SIDE MINES.

There has been no work done other than prospecting during 1898 on these mines. The owners of this property are in some way mixed up, so that the mines have done nothing during 1898. The Halladay Coal Co. claims it, also R. A. Kirker. This property is situated 13 miles east of Sunny-Side station.

SUMMIT COUNTY MINES.

The Wasatch mine is situated in Summit county in Coalville, Grass Creek district, on a spur of the Echo & Park City branch of the Union Pacific railroad, and three miles east from Coalville. This mine is owned by the Weber Coal Co. of Salt Lake City, and under the supervision of T. J. Lewis.

My first visit to this mine was on February 8th. I found the mine working full time, employing twenty-five men. I found the mine well ventilated, but bothered considerable with got fires. This mine is ventilated by artificial ventilation with steam jet and exhaust steam.

My second visit was on May 21st. I found the mine working about half time, employing seventeen men, with a sufficient amount of air at the face of all working places. They were also troubled with "got" fires on this visit.

On my third visit, July 14th, I found the mine still working half time, taking out burnt coal from after a got fire, employing twelve men. The ventilation was in a fair condition.

My fourth visit, November 11th, I found the mine working full time with twenty-five men. The ventilation was in good condition.

The work done at the Wasatch mine during the year 1898 was done mainly with the view of keeping the mine in working order and to preserve the property from going to wreck.

The closing of the Ontario and Daly mines in Park City in 1897 was the cause of the decrease of output of this mine in 1898, as those mines were the principal consumers of the coal from this mine.

The output of coal of this mine for 1898, was 15,433 short tons, which shows a decrease of 18,677 short tons. The output for 1897 being 34,100 short tons.

The managemennt have provided, as the law requires, a supply of suitable timber for props and caps. which were kept convenient to the working places.

This mine is the fourth largest in the State. It could be made to produce 300 to 500 tons of coal per day if the market would allow it.

The analysis of coal from Weber Coal company's mine is as follows:

Moisture	8.33 per cent.
Volatile matter	46.89 per cent.
Fixed carbon	40.45 per cent.
Ash	3.33 per cent.
Sulphur	.95 per cent.
	100.00

GRASS CREEK COAL CO. MINE.

Grass Creek mine is owned and operated by Grass Creek Coal Co., and is situated on the Grass Creek Terminal R. R., six miles off the E. & P. C. branch of the U. P. R. R.

My first visit to this mine was January 7th. I found the mine working full time with a force of ten men. This mine, at the time of my first visit, had no escapement and no outlet for the air. It was ventilated by a fan with a six-inch pipe, while driving an air-course to the Old Church mine. This is a very wet mine, and the amount of air was very small.

My second visit on April 30th. I found the mine working full time. The amount of air was very small on account of the airway not being completed, which the company was working at night and day, to finish.

My third visit was on July 5th. The mine was then working full time with a force of fifteen men. On this visit I found the air was good, having got the air course and escapement way finished and was in a prosperous way and would soon become one of our leading mines. This mine is opened on the Old Church property.

My fourth visit was on Nov. 3rd. On this visit I found 25 men employed, and the men working full time with the ventilation good.

The output of this mine and the Old Church mine for 1898 was 9,138 short tons. On this visit to the Old Church mine I found the men in an unsafe condition. On the 25th of the same month I notified the management that the Old Church mine was in an unsafe condition and giving him the following reasons:

1st. That said mine has not escapement way to get out in case the main entry should cave in or otherwise become closed.

2nd. All the pillars in said mine are left entirely too small to be safe. I therefore gave him 20 days to make this said mine in a safe condition. At the end of 20 days I visited the mine again, and saw that the management had the work under way to make it safe,

so I extended the time until Jan. 10th, 1899, by which time I think they will have it in a safe condition.

The analysis of the coal is as follows;

Moisture	7.28 per cent.
Volatile matter	45.79 per cent.
Fixed carbon	43.45 per cent.
Ash	3.25 per cent.
Sulphur	.23 per cent.
	100.00

WILSON MINE.

The Wilson mine is owned and operated by the Salt Lake White Ash Coal Co., and is situated at the head of Spring Hollow, about three and one-half miles northeast of Coalville in Summit county.

I visited this mine three times during the year and found less than six men working, until my last visit on November 11th, when I found ten men working. This mine has a natural ventilation. I found sufficient air in the face of all workings.

The output of this mine for 1898 was 7,620 short tons, showing an increase of 3,400 short tons, 1897 being 4,130 short tons.

HOPKINS MINE.

The Hopkins mine is the property of the Hopkins Coal Co., and is situated in Summit county, in the Coalville Grass Creek district, on a spur of the Echo & Park City branch of the Union Pacific, about one mile from Coalville.

I made three visits to the mine during the year. My first official visit was on March 8th. I found the mine in a very fair condition, with a large amount of air distributed to all the working faces.

On my second and third visits I found the mine not looking so good. They had struck a large stream of water in one of the inside rooms. The machinery was not large enough to keep it out, so they had to abandon the lower part of the workings.

The prospects are very poor for the coming year. The output of the mine for 1898 was 8,777 short tons.

DEXTER MINE.

The Dexter mine is situated one mile southeast of Coalville, and is owned and operated by John Dexter & Co.

This mine produces a small amount of coal for local trade and for burning lime on the property.

The output of this mine for 1898 was 300 tons.

SANPETE COUNTY MINES.

STERLING COAL AND COKE CO. MINE.

The Sterling Mine is owned and operated by the Sterling Coal and Coke Company, of Salt Lake City, Utah.

This mine is situated six miles south of Manti, of the terminal of the Sanpete Valley Railroad. It is worked by a tunnel 2,200 feet across the measures.

On my first visit to the mine, March 21st to 23rd, 1898, the company was working a small force of men, driving a rock tunnel. They had no coal in the mine.

My second visit to this property was on the 23rd day of August, 1898, and I found the mine very much improved, they had just struck the coal in the tunnel.

I again visited the mine on the 22nd day of Oct., 1898, and found it in a little better condition, with 20 men working. The air was in a very bad condition.

They had a fan that was worked by an air compressor with a four inch pipe, which was not large enough for the number of men employed. By the latter end of the same month they had completed the air course and escapement way.

They have increased the force to 45 men—20 white men and 25 Japanese, as the mine was so wet that they could not get white men to do the work.

The management of the company is to be commended for their progress, as they have spent thousands of dollars in completing the tunnel, and have done everything that could be done to better the condition of their employees.

The output of coal for the year 1898 was 2,580 short tons.

THE EDMUNDS MINE.

The Edmunds mine is owned and operated by Tuttle & Johnston of Manti, or the Manti Coal Co. of Manti, Sanpete county, Utah, and situated about six miles south of Manti.

The mine works only a few months in the winter, employing six or eight men.

I visited this property on the 23rd day of October, 1898, and found it very poorly ventilated. The only means of ventilation was natural ventilation.

The output of this mine for the year 1898 was 2,500 short tons.

THE DESERET MINE.

The Deseret mine is situated in Huntington Creek, Sanpete county, Utah, and works only a few months in the year, employing four men and supplying the local trade.

The output for the year 1898 was 800 tons.

BLACK DIAMOND MINE.

The Black Diamond mine is owned and operated by Thomas & Chusteson, and is located near Wales, Sanpete county, Utah.

The output for the year 1898 was 450 tons.

THE CARLTON MINE.

The Carlton mine is owned and operated by Hans Carlton of Fairview, and is situated twelve miles east of Fairview. This mine has a twelve foot vein of first-class coking coal.

The output for the year 1898 was 2,500 tons.

IRON COUNTY MINES.

BULLOCK AND JONES MINE.

This mine is situated near Cedar City, Iron County, Utah, and employes 2 men 2 months in a year.

The output for the year 1898 was 214 tons.

CLUFF MINE.

The Cluff mine is owned and operated by W. W. Cluff, of Coalville, Summit County, Utah, and is situated near Cedar City, in Iron County, Utah.

John Dutton, of Cedar City, has charge of this property. The output for the year 1898 was 210 tons.

THE CONEY MINE.

The Coney Mine is situated near Cedar City, Iron County, and is owned and operated by Andrew Coney, of Cedar City, Iron County, and employs two men about one month in the year.

The output for the year 1898 was 100 tons.

GRAND COUNTY MINES.

BLACK BABY MINE.

The Black Baby Mine is situated near Green River, Grand County, Utah, and is located along the Rio Grande Western railway. It is owned and operated by the Black Baby Mining Company, of Green River, Grand County, Utah.

The mine is only in a short distance, and is merely a prospect. The output for the year 1898 was 300 tons.

BALLARD MINE.

The Ballard Mine is situated near Thompson's Springs, in Grand County, along the line of the Rio Grande Western R. R., and is owned and operated by Ballard of Thompson's Springs, Grand County, Utah.

The output for the year 1898 was 325 tons.

EMERY COUNTY MINES.

GRANGE AND GARDNER MINE.

This mine is situated near Huntington, Emery County, Utah, and owned and operated by S. S. Grange and Gardner Huntington.

It is only worked for a few months in the year, to supply the local trade of Huntington.

The output for the year 1898 was 450 tons.

I would recommend that the present Legislature create an office of statistics for the State of Utah.