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SEVENTH ANNUAL REPORT
OF THE
STATE INSPECTOR OF
COAL MINES
COLORADO
1919

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SEVENTH ANNUAL REPORT

OF THE

State Inspector of Coal Mines

1919



DENVER, COLORADO
EAMES BROTHERS, STATE PRINTERS
1920

CONTENTS

	Page
Personnel of the State Coal Mine Inspection Department.....	3
Field Force and Districts.....	3
Letter of Transmittal.....	4
Financial Statement—Receipts and Disbursements.....	5
Summary of the Coal Production in 1919.....	6
Introduction	7
Table 1—Directory of Coal Mines, insert between.....	12-13
Table 2—Power Equipment of Coal Mines, insert between.....	12-13
Table 3—Ventilating Equipment of Coal Mines, insert between.....	12-13
Table 4—Mining Machines and Explosives used.....	13
Table 6—Production and Distribution of Coal.....	22
Table 7—Number injured by Cause.....	23
Table 8—Number killed by Cause and Occupation.....	24
Table 10—Coal Mine Employes Classified by Occupation.....	27
Table A—Number Killed and Injured by Companies, Tons Produced and Number of Men Employed for Each Fatal and Non-Fatal Ac- cident and per 1,000 Men Employed.....	28
Table B—Production by Mines and Counties.....	34
Table C—Production of Counties by Months.....	46
Table D—Increase and Decrease by Counties 1918-1919.....	48
Table E—Coke Production by Companies and Counties.....	48
Table F—Coal Production in Prepared Sizes by Counties.....	49
Table G—Men of Different Nationalities Employed in and about the Mines	50
Special Reports on the Empire and Oakdale Explosions.....	51
Reports of Fatal Accidents Arranged by Months.....	55
Report on New Mines.....	74
List of Shotfirers Receiving Certificates for Non-Gaseous and Gaseous Mines	78

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PERSONNEL OF COAL MINE INSPECTION
DEPARTMENT

JAMES DALRYMPLE, Chief Inspector.....Denver, Colo.
JAMES DALRYMPLE, JR., Deputy Inspector.....Trinidad, Colo.
W. M. LAURIE, Deputy Inspector.....Aguilar, Colo.
W. H. JAMES, Deputy Inspector.....Walsenburg, Colo.
JAMES W. GRAHAM, Deputy Inspector.....Lafayette, Colo.
HENRY P. KING, Deputy Inspector.....Denver, Colo.
ADA R. TIBBITS, Chief Clerk.....Denver, Colo.
BIRDIE DORSEY, Assistant Clerk.....Denver, Colo.

FIELD FORCE AND DISTRICTS

The State Has Been Re-Districted as Follows:

JAMES DALRYMPLE, JR., 1201 Garfield Ave., Trinidad, Colo.....
District No. 1

Includes the following mines: Primero, Frederick, Sopris, Starkville, Morley, Engleville, Gray Creek, Boncarbo, Piedmont, La Belle, Jeffryes, Santa Fe, Bear Canon, Three Pines, Thor, Wootton, Sunlight, Baldy Mountain, Hines, Keystone, Verdun, Leone, Henderson, Deep Vein, Liberty, Fisher's Peak, Pickford, Boshar, Brown Wood, Phillips, Star, Prospect, Toller, Forbes.

W. M. LAURIE, Arlington Hotel, Aguilar, Colo.....District No. 2

Includes the following mines: Lester, Ludlow, Rouse, Black Diamond, Rugby, Primrose, Mallot, Wichita, Star, Rapson, Southwestern, Jewel, Empire, Royal, Alta, Pryor, Cameron, Ravenwood, Ideal, Cap Rock, Hezron, Bunker Hill, Delagua, Cass, Tabasco, Greenville, Black Diamond, Berwind, Mutual, Brodhead.

W. H. JAMES, P. O. Box 145, Walsenburg, Colo.....District No. 3

Includes the following mines: Oakdale, Reliance, Caddell, Cuchara Canon, Toltec, Pietou, Jobal, Maitland, New Maitland, Vesta, Gordon, Turner, Breen, Larimore, Summyside, Kebler Nos. 1 and 2, Walsen, Robinson 1 and 2, and all mines in Fremont county.

JAMES W. GRAHAM, P. O. Box 85, Lafayette, Colo.....District No. 4.

Includes mines in the following counties: Boulder county, Rio Blanco county, Garfield county, Gunnison county, Mesa county, Montrose county, Ouray county and Pitkin county.

HENRY P. KING, 1255 Lafayette, St., Denver, Colo.....District No. 5

Includes mines in the following counties: Routt county, Weld county, La Plata county, El Paso county, Jefferson county, Jackson county and Montezuma county.

LETTER OF TRANSMITTAL

Denver, Colorado, March 12, 1920.

To His Excellency,
OLIVER H. SHOUP,
Governor of Colorado.

Sir: Herewith I have the honor to submit to you, in accordance with Section 37 of an Act entitled "Coal Mining Laws," the Seventh Annual Report of this department.

The period covered began January 1 and ended December 31, 1919.

Respectfully,
JAMES DALRYMPLE,
State Inspector of Coal Mines.

STATEMENT SHOWING RECEIPTS AND DISBURSEMENTS FROM JANUARY 1 TO DECEMBER 31, 1919

RECEIPTS

Tax collected on coal mined	\$20,972.72
From sales of copies of the Coal Mining Law	399.55
Refund on mileage books and sale of old anemometers...	183.61
Balance brought forward from 1918	20,373.09
Total	\$41,748.97

DISBURSEMENTS

Salary, chief inspector	\$ 4,000.00
Salary, five inspectors	13,047.46
Salary, chief and assistant clerk	3,096.37
Expenses, chief and deputy inspectors	5,295.76
Mileage books for chief and deputy inspectors	1,560.00
Automobiles, supplies and repairs and one new Ford machine	904.77
Board of Examiners, per diem and expenses	255.01
Printing	2,144.85
Postage	470.00
Stationery supplies	126.75
Telephone service	105.85
Telegraph service	41.32
Express service	11.93
Instruments, safety lamps, repairs of anemometers, etc...	66.12
Extra clerical help	184.68
Electrical supplies	170.45
Miscellaneous	121.37
Total	\$31,602.69
Surplus	\$10,146.28

FIELD EQUIPMENT

Twelve Anemometers.	One Aneroid Barometer.
Five Speedometers.	One Burrell Gas Detector.
Four Psychrometers.	One Gas Testing Box.
Five Marseant Safety Lamps.	Four Ford Machines.
Five Koehler Safety Lamps.	

It has been the custom of this department to charge the tax on coal mined in the last quarter of the year, but not collected until January and February of the following year to the year in which the coal was mined. Beginning with the 1919 financial statement the tax receipts will be charged to the year in which they were collected. Therefore, the surplus of 1918 which read \$29,134.49 is brought forward in 1919 to read \$20,393.09, and the tax due for October, November and December, 1918, and collected in January and February, 1919, is charged to the latter year.

SUMMARY OF THE COAL PRODUCTION OF COLORADO 1919

Number of mines operated	241
Number of new and old mines opened	25
Number of mines closed, 17; abandoned, 9; total	26
Tons of sub-bituminous coal produced	2,317,975
Tons of semi-bituminous coal produced	1,101,141
Tons of bituminous coal produced	6,914,935
Tons of Anthracite coal produced	72,492
Total number of tons of coal produced	10,406,543
Decrease 1919	2,251,512
Tons of run of mine coal produced	3,722,243
Tons of lump coal produced	3,222,576
Tons of egg coal produced	42,592
Tons of nut coal produced	700,963
Tons of pea coal produced	165,920
Tons of slack coal produced	2,552,249
Per cent of slack produced	38.2
Tons of coal mined by hand	6,303,805
Tons of coal mined by machines	4,102,738
Kind and number of machines used: Compressed air, 181; Electric, 228; total	409
Tons of coal mined for shipment	9,749,610
Tons of coal shipped out of the state	2,906,268
Tons of coal sold to local trade and used by employes	386,957
Tons of coal used at mines for steam and heat	269,976
Tons of coal made into coke	1,217,918
Tons of coke made	607,754
Number of coke ovens used	518
Number of days coke ovens were operated	347
Number of men employed at coke ovens	299
Number of miners employed (average): pick, 4,182; machine, 2,401; total	6,583
Number of other underground employes	10,053
Number of surface employes	2,746
Total number of men employed in and about the mines	12,799
Number of employes foreign born	8,889
Number of employes speaking English	9,121
Average number of days worked at mines producing 6,000 or more tons annually and at which 11,874 men worked	221.4
Daily production per miner	7.1
Annual production per miner	1,580.8
Number and type of safety lamps used: Flame, 524; Electric, 5,029; total	5,553
Number of carbide lamps used	6,702
Number of pounds of carbide used (approximately)	242,589
Number of pounds of permissible powder used	678,158
Number of pounds of black powder used	1,517,843
Number of pounds of dynamite powder used	62,491
Number of men killed: Underground, 89; surface, 2; total	91
Number of men injured	1,283
Number of men killed per thousand employed	7.1
Number of men injured per thousand employed	10
Number of tons of coal produced for each life lost	114,357
Number of tons of coal produced for each non-fatal accident	8,110
Number of men employed for each life lost	141
Number of men employed for each non-fatal accident	10
Number of widows left	47
Number of children left fatherless	104
Cost of development work in mines during year 1919, approximately	1,061,316
Number of days lost account of car shortage (reported by 50 mines)	1,204
Number of tons of coal lost through shortage of labor (reported by 70 mines)	1,051,068

Remarks. In the percent of slack the egg, nut and pea coal is included.

Seventh Annual Report

OF THE

State Inspector of Coal Mines

1919

INTRODUCTION

The coal production of Colorado in 1919 was 10,406,543 tons, showing a decrease of 2,251,512 tons as compared with 1918. Immediately after the armistice was declared, the tonnage dropped to what would have been considered normal before the war. The year began with the production steadily falling off until June when it was as low as 785,000 tons, from then on it began to rise again until in October it went over a million tons. The slump in the market closed most of the numerous small mines which the press of greater production to win the war had opened in the southern field, and which were able to help materially in supplying the local trade. These did not resume operations in 1919, consequently fewer mines operated in 1919 than in 1918.

In the early fall it was evident that a coal shortage prevailed and that the coal reserves usually laid in for the winter months were very low, therefore the coal strike looked serious, but the situation was saved from the fact that such mines operating under union contract were exempted from participating in the strike, and that many independent mines were able to operate without much loss of time and labor. In November the total production was 625,447 tons, or about 59 per cent of the normal output of that month. What further added to the decrease of the production was the closing down of five of the largest producing mines of the Colorado Fuel & Iron Company in September, when the steel strike closed the Minnequa plant, the product of these mines being a coking coal reserved solely for the Minnequa ovens. The strike disclosed one important fact—that the labor situation has improved in Colorado, as the animosity of the past was not shown in this strike.

Heretofore this department always included in making up the average numbers of days worked annually, small wagon mines scattered in twenty different counties, also mines closed during the year were included. This brought the average number of days worked in Colorado below a two hundred day year. It has been

shown by the reports submitted to this department that out of the 12,799 men employed in and about the mines in 1919, 11,874 men actually worked on an average of 221.4 days in mines producing 6,000 or more tons annually. Therefore, only 925 men worked a smaller average number of days. There are many wagon mines that open only for the winter months to supply local trade at points where there are no immediate railroad connections, also many small mines are opened on a chance of doing business and not meeting with immediate success, close down. They are listed in this office and come under the jurisdiction of the Coal Mining Law and their operations are included in our annual report. Segregating these small mines from the mines producing 6,000 or more tons, and where the great majority of men are employed, will give a more equitable distribution of days worked in the state.

Showing by counties number of men employed and number of days worked in the mines of Colorado producing 6,000 or more tons of coal during the year 1919:

Counties	No. of Days Worked	No. of Men Employed
Boulder	231.3	1,251
Delta	155.5	60
El Paso	242.4	291
Fremont	265.8	1,164
Garfield	306	10
Gunnison	239.7	502
Huerfano	221.4	2,622
Jackson	234	28
Jefferson	280	154
La Plata	163.9	134
Las Animas	229.1	3,858
Mesa	178.2	141
Routt	157.6	1,077
Weld	194.9	582
Totals	221.4	11,874

Improvements Made.

There was a great outlay of money in 1919 to improve the working efficiency of the mines and the living conditions at the coal camps. Many new dwelling houses, churches, school and bath houses were built and a great many sanitary toilets were constructed. Even chicken houses were not overlooked. Numerous water systems were installed to supply water for all domestic and other purposes in many camps. Tipples, powder magazines and railroad yard tracks were constructed. Machinery of the most modern and approved style, electric and steam power plants were installed in many mines. In fact, the coal industry of Colorado is progressive, keeping apace with the most advanced improvements in coal mining.

Number of Mines Inspected.

During the year this department examined 272 mines, 241 being producing mines. There were 831 inspections made, of which 22 were joint inspections. During 1919, 26 mines were finished or temporarily closed. It is very difficult to keep a correct record

of the small wagon mines; they open and close without notifying this department and the owners and names of these mines change constantly. For instance one mine opened and worked 19 days and produced 68 tons; then claiming lack of business, closed. Probably that same mine will open under another name with the same results.

Fatal accidents investigated.....	91
Inquests attended	53
Scales examined	26
Complaints investigated	37
Prosecutions	9
Miles traveled by auto.....	23,000
Miles traveled by rail.....	49,400
Miles purchased	61,400
Miles on hand	12,000

Reporting of Fatal Accidents.

In the past, accidents resulting in death more than thirty days after date of injury were not reported by the owner to the state inspectors. In January, 1919, the representatives of the mine owners, assisting in amending the Coal Mining Law, mutually agreed, in order that the statistics of Colorado conform with the federal statistics, that all deaths to employes in and around the coal mines, regardless of the length of time between accident and death, be reported to the State Inspector. Therefore, the department respectfully requests that amended section 163 be complied with and the federal government receive from the Colorado Coal industry data in accordance with its wishes—to arrive at the correct number of deaths resulting from coal mining.

Explosions in Our Coal Mines.

In reviewing these disasters beginning January, 1912, up to and including 1919, I find that of 12 explosions, Mine Superintendents are held wholly responsible for four of them and partly responsible for three of them. I believe that if the Superintendents were certified men, and were held equally responsible with the mine foreman for the safety of the property and the lives therein, that a great many of these disasters would be prevented through greater co-operation and a more rigid enforcement of the State Mining Laws, brought about by the joint feeling of responsibility.

Responsibility for fatal accidents in 1919 as placed by the inspectors:

On deceased	10
On owner	34
On co-worker	1
On deceased and co-worker.....	5
On deceased and owner.....	4
On owner and co-worker.....	---
Unavoidable	30
Unable to place.....	7

FATAL ACCIDENTS, 1919,
BY MONTHS, AGE AND EXPERIENCE

Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
7	3	19	6	2	5	3	23	5	11	0	7	91

Age of Deceased	Number Accidents	Years Experience	Number Accidents
16 to 21	8	1 to 5	24
21 to 25	6	5 to 10	27
25 to 30	21	10 to 15	14
30 to 35	23	15 to 20	8
35 to 40	12	20 to 25	4
40 to 45	8	25 to 30	3
45 to 50	7	30 to 35	4
50 to 60	5	35 to 40	2
Not known	1	Not known	5

There were 91 lives lost; 89 under ground and 2 on surface. Sixty of them were from general causes, such as falls of rock, falls of coal, mine cars, motors, electricity, etc., and 31 from explosions of gas. The number killed by electricity, compared with 1918, has more than doubled; three of them were caused by coming in contact with insulated wires carrying 440 volts in mines that were extremely damp or wet. Under such conditions it is very apparent that a better grade of insulation is necessary or that electricity be prohibited in such mines. Those not familiar with electricity, at least to some extent, take it for granted that when wires are insulated they are safe, but if they are not safe they are more dangerous than if they were not insulated. The men killed left 47 widows and 104 children.

Non-Fatal Accidents.

There were 1,283 non-fatal accidents during the year, an increase of 56 compared with 1918. For comparisons as to killed and injured per 1,000 employed and number of tons produced per fatal and non-fatal accidents, see Table A.

Many of the annual reports filed with this office are very unsatisfactory because they give very incomplete data to supply Tables Nos. 1, 2, 3 and 4. Whether this is due to indifference or to lack of knowledge on the part of mine owners as to what constitute their own equipment and other features of their property, is not

known to this department. Complete statistics are important to all industries, and as such, are in demand. The large operators realize the importance of statistics and endeavor to give full details as required, knowing that all disputes of cost and production, of fatal and non-fatal accidents and of labor differences are adjusted on data obtained from statistical compilations. It is a great regret that Tables Nos. 1, 2, 3 and 4, which are compiled in accordance with the requirements of the federal standardized plan of statistics are so incomplete. They are gotten up with great labor and in reality are not complete enough to be of real value. Therefore, an appeal is made to those operators who are negligent in giving correct and complete data in their annual reports to mend their ways; to help in contributing to the total sum of coal statistics, not only for the general betterment of business methods, but for the combined effort to advance the knowledge of the world coal industry.

Pertaining to Lamps.

The following order was considered necessary on account of so many key locked safety lamps being found in the possession of mine officials, that could not be relighted without taking them apart. Generally matches were found on the persons carrying such lamps:

“After December 31, 1919, ONLY Koehler and Wolfe types of safety lamps will be allowed for testing purposes in the coal mines of Colorado.

“They shall be magnetically locked during working hours, and in such condition that they can be lighted by the igniter without taking the lamp apart.

“I am giving you until January, 1920, to provide yourselves with the necessary equipment for the carrying out of this order.

(Signed) JAMES DALRYMPLE.”

Issued September 26, 1919.

The Use of Electric Head Lamps in Coal Mines and the Object to be Attained.

Electric lamps are a protection against mine fires, explosions of gas, pollution of the atmosphere and greater illumination, therefore, greater protection where, in their absence, flame safety lamps would be required.

We find in some of the mines, where electric lamps only are used, for general purposes, a tendency on the part of the mine officials to allow employes to work in places where the gaseous condition is such that they could not work in otherwise. These

officials seem to think that one of the purposes to be served by the use of the electric lamp is to enable them to work places that otherwise could not be worked under the existing conditions. This is a false impression, and a serious mistake, as such conditions are both dangerous and injurious to life. Deputy inspectors have instructions not to allow workmen to work under such conditions.

Advance announcement is hereby made of an approval recently granted by the Bureau of Mines. The next issue of Coal Mine Fatalities will contain the following statement:

“Approval No. 17 covers the Wheat permissible electric mine lamp, manufactured by the Koehler Manufacturing Co. Inc., Marlboro, Mass., to be used with a flexible cord identified by the Bureau’s specification CD-31, and with battery plates manufactured by the General Lead Battery Company, Newark, N. J. The only bulbs approved for use with this lamp are the BM-17 bulbs manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

(Signed) VAN H. MANNING,
Director, U. S. Bureau of Mines.”

Issued October 14, 1919.

Mine Maps.

A great many of the maps received do not show the different features required by law. It is absolutely necessary that all the features be shown. Maps that do not meet this requirement shall not be accepted by this department.

Maps made on a scale of 200' to the inch should be abolished where the property can be contained on a sheet 8' x 8' on 100' scale. The 200' scale is so fine that it is very difficult to discern the different features. Wherever this change can be made I will fully appreciate it being done.

During the year just closed we have discovered in several instances where men holding Second Class Certificates were filling positions requiring First Class Certificates. In one case, a man without a certificate of any kind applied for a position, got it, and held it until it was discovered that he was not a certified man.

To prevent such occurrences in the future I recommend that employers require all certified men holding certified positions to bring their certificates to the mine office, where they shall be so placed that they can be readily seen by the State Inspectors.

In conclusion, I beg to tender my sincere thanks to the Deputy Inspectors and clerical help for their able assistance.

Respectfully submitted,

JAMES DALRYMPLE,
State Inspector of Coal Mines.

TABLE No. 1

DIRECTORY OF COAL MINES IN STATE OF COLORADO FOR THE YEAR ENDED DECEMBER 31, 1919.

[illegible]

TABLE No. 4
MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR END
DECEMBER 31, 1919.

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)			
		No Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible	
American Smelting & Refining Co.	Boncarbo		9	28,514	142,738	171,252				21,984
American Smelting & Refining Co.	Cokedale			1,779		1,779				
American Smelting & Refining Co.	San Juan			18,871		18,871				1,044
Anchor Coal Co.	Anchor No. 2				2,868	2,868	3,425	25		
Anezi, Mike	City	1		673		673				
Anderson, Stewart	Peerless			50		50				
Axial Basin Development Co.	Colton			1,772		1,772	2,875	50	50	
Azar Coal Co.	Moore			154		154	125		270	
Aztec Coal Mining Co.	Toltec	4	4	8,763	36,326	45,089	4,300	2,135	2,400	
Baldwin Fuel Co.	Baldwin-Star			4,441		4,441	3,000			
Barnes, F. J.	White Ash			982		982	2,500			
Baudino & Co.	Morning Star			4,009		4,009	250	50		
Bear Canon Coal Co.	Bear Canon		1	40,297	1,039	41,336				
Bear River Coal Co.	Bear River			72,765		72,765	1,413			
Berglund, Clara	Berglund			1,800		1,800	1,100			
Big Four Coal & Coke Co.	Centennial	10	2	8,471	20,000	28,471	13,075	7		
Big Six Coal Co.	Sunnyside	2			7,525	7,525	7,500	10		
Black Canon Coal & Fuel Co.	Caddell		2	9,465	9,288	18,753	13,500			
Black Diamond Coal Co.	Black Diamond			100		100	100			
Black Diamond Niggerhead C. M. Co.	Three Pines	Not rep		4,736		4,736				
Black Hawk Coal Co.	Primrose			12,127		12,127				775
Book Cliff Coal Co.	Book Cliff			8,464		8,464	750	3		
Boulder Black Diamond Coal Co.	Black Diamond	2			24,273	24,273	6,000			

TABLE No. 4—(Continued)
MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED
DECEMBER 31, 1919.

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)		Explosives Used (Pounds)			
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
Boulder Valley Coal Co.	Boulder Valley	8	---	2,358	34,066	34,066	---	---	2,500
Bracken & Cozza	Harvey Gap	---	---	13,139	---	2,358	---	---	1,150
Breen Coal Mining Co.	Breen	---	1	---	7,812	20,951	5,550	---	1,650
Brennan Coal Co.	Brennan	---	2	---	20,798	20,798	8,675	---	---
Broyles Coal Co.	Star	Not	rep	320	---	320	---	---	---
Caddell Bros.	Hezron Lease	---	---	12,962	---	12,962	---	---	---
Caddell & Carlson	Cuchara Canon	---	---	649	---	649	650	---	---
Calumet Fuel Co.	Perin's Peak	---	3	---	61,950	61,950	---	---	---
Caminotti & Co.	Star	---	---	878	---	878	---	---	---
Canon Reliance Coal Co.	Canon	---	2	39,395	26,410	65,805	---	---	---
Canon Reliance Coal Co.	Reliance	1	3	800	22,331	23,131	---	---	6,000
Caprock Fuel Co.	Caprock	---	---	2,151	---	2,151	---	---	150
Cedar Hill Coal & Coke Co.	Greenville	---	---	21,895	---	21,895	---	---	12,000
Cedar Hill Coal & Coke Co.	Black Diamond	---	---	3,556	---	3,556	375	---	4,000
Champion Fuel Co.	Champion	7	---	4,853	44,000	48,853	11,280	45	---
Chew, J. S.	Missouri	---	---	677	---	677	575	---	---
Colorado-American Coal Co.	Sunlight	---	---	234	---	234	---	---	400
Colorado Fuel & Iron Co.	Coal Creek	---	---	173,972	---	173,972	13,000	9,803	---
Colorado Fuel & Iron Co.	Rockvale	---	---	167,689	---	167,689	---	8,650	18,563
Colorado Fuel & Iron Co.	Fremont	---	2	139,019	4,298	143,317	12,325	7,003	---
Colorado Fuel & Iron Co.	Nonac	---	1	8,759	6,054	14,813	5,100	95	---
Colorado Fuel & Iron Co.	Crested Butte	---	---	114,991	---	114,991	---	---	212
Colorado Fuel & Iron Co.	Elk Mountain	---	2	1,654	---	1,654	---	---	---

TABLE No. 4—(Continued)

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1919.

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible
Evans Fuel Co.	Evans	6			101,081	101,081	1,009		500
Federal Coal Mining Co.	Lennox		rep	2,910		2,910			
Fiant, E. M.	Me. Elmo			695		695	1,500	150	
Fickes, Frank M.	Coalby Red Canon			1,690		1,690			
Foreman, Thos. D.	McKee			145		145			
Fox Coal Mining Co.	Fox	3		3,491	43,133	46,624	16,175		
Freeman, J. R.	Freeman			78		78		8	
French & Fielding	School Section Lease			659		659	20	50	
Galloway Bros.	Galloway			300		300	250		
Garfield Coal Co.	Garfield			4,775		4,775	2,625		
Gibson Lumber & Fuel Co.	Royal Gorge			27,434		27,434	4,000	1,000	4,000
Gilbert, Bell & Halden	Economy			200		200			
Gilson Asphaltum Co.	Carbonera			14,475		14,475			
Globe Coal Mining Co.	Capitol	5			21,083	21,083	8,525		1,900
Gordon Coal Co.	Gordon			64,711		64,711	21,000		
Grabowski, T. S.	Black Hawk			750		750	225	550	4,000
Grand Junction Mining & Fuel Co.	Cameo		4	7,008	29,140	36,148		50	
Green Valley Coal Co.	Green Valley			2,229		2,229	750		
Gregory, Geo.	Marr			1,200		1,200	1,375	50	
Hall, C. W. & Son	Red Mountain			4,701		4,701	1,450		
Harris, E. R., Coal Co.	Double Dick	Not	1	3,841	217	4,058	4,100	172	
Hart Coal Co.	Hart	rep		325		325			
Hawkeye Coal Co.	McDowell			482		482	200		

Hayden Bros. Coal Corporation	Hayden	1	61,475	61,475	38,625	500
Hayden Valley Mutual Coal Co.	Dry Creek		1,800	1,800	1,375	
Hesperus Fuel Co.	Hesperus		22,036	22,036		6,023
Hines Coal Co.	Hines		3,964	3,964		
H. M. & L. W. Coal Co.	Phrestone	2	3,964	16,754		
Holland, C. W.	Holland	Not	409	409		
Hotchkliss, W. S.	Rollins		172	172	50	
Hoye, J. P.	Beshoar	Not	1,217	1,217		
Huerfano Coal Co.	Ludlow	3	103,819	7,374		15,150
Hunter, J. B.	Hunter		599	599	50	
Ideal Fuel Co.	Jewel	2	18,729	4,168		8,000
Independent Lumber Co.	Kurtzville		1,759	1,759	500	
International Fuel Co.	Wolf Creek		27,086	18,250	1,000	
Jay & Holt	Bennett		379	379	144	
Jeffrey's Fuel Co.	Jeffrey's (Not in use)	2	13,529	13,529		
Jones & Trachta	Douglas Creek		730	730	759	
Juanita Coal & Coke Co.	King Creek (Not in use)	1	69,179	10,825	400	
Kennedy, H. A.	King Creek		77	77	25	
Keystone Mining Co.	Keystone		43,762	43,762	25	
Knapp, Richard	Smith	Min	150	150		
Leone, L.	Leone		817	817		50
Lewis, J. T. & Son	Lewis		2,400	2,400	875	
Leyden Coal Co.	Leyden	11	52,843	78,783	4,766	
Liberty Coal Co.	Liberty		3,289	3,289		319
Liberty Coal & Mining Co.	Nearing		2,259	2,259	1,150	
Littell-Ross Coal Co.	Horace		32,923	32,923	1,125	100
Loma Fuel Co.	Jobal		34,437	34,437	7,000	890
Louisville Mining Co.	Nomparell	4	27,717	27,717	2,500	
Lowie Bros.	Old Farrell	Not	68	68		
Marchetti, Andrew	Marion	rep	445	445		100
Marsh, R.	Fishers Peak		753	753		
Marshall Coal Co.	Red Ash	2	8,747	14,448	20,000	5
Mattivi, Steve	Bunker Hill		609	609		
McGowan, L. H.	Vesta	2	1,797	34,137	300	
McLaughlin	Henderson		364	364		
McNally & Thompson	Maitland	2		30,774		4,400
McNeil Coal Co.	McGregor	5		82,256	34,600	800
Midwest Coal & Iron Co.	Midwest (Not in use)	1		15,884	8,900	50

TABLE No. 4—(Continued)

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1913.

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible Explosives
Miners Coal & Coke Co.	Williams	.....	5	1,074	.....	1,074	.....	.....	2,000
Moffatt Coal Co.	Moffatt Nos. 1 & 2	.....	.....	235,807	69,443	305,250	123,475	68	46
Moffitt-Carlille	Moffitt-Carlille	.....	.....	302	.....	302	300	.....	.....
Morris Coal Co.	Morris	.....	.....	light MI	.....	430	.....	.....	.....
		(See	Sun	.....	ne)	.....	.....	.....	.....
Mutual Coal Co.	Mutual	.....	4	21,335	145,709	167,044	30,000	200	3,300
National Fuel Co.	Monarch No. 2	8	.....	27,197	99,795	126,992	57,725	.....	300
National Fuel Co.	Thor	.....	.....	25,837	.....	25,837	.....	.....	3,707
National Fuel Co.	Puritan	10	1	14,319	212,170	226,489	89,100	.....	.....
New Maitland Coal Co.	New Maitland	1	.....	1,650	5,025	6,675	3,375	200	.....
New Santa Fe Coal & Coke Co.	New Viola	1	.....	62	497	559	.....	.....	.....
Northern Colorado Fuel Co.	Coalmont	Not	rep	1,260	.....	1,260	150	.....	200
North Park Coal Co.	Moore	.....	.....	48,145	.....	48,145	32,575	150	.....
Oakdale Coal Co.	Oakdale	3	3	87,812	58,542	146,354	25,000	.....	50,000
Oberding, Wm. J.	Knauss	.....	.....	679	.....	679	200	50	.....
Ohio Creek Coal M. Co.	Ohio Creek (Not in use)	.....	1	6,688	.....	6,688	6,250	.....	.....
O. K. Coal Co.	O. K.	.....	.....	4,077	.....	4,077	.....	.....	.....
Orecchio Coal Co.	Orecchio	.....	.....	7,407	.....	7,407	7,675	.....	.....
Ozello, D. & Co.	Carbon	.....	.....	400	.....	400	175	75	.....
Palisade Coal & Supply Co.	Palisade	.....	.....	29,600	.....	29,600	6,250	.....	.....
Paonia Coal Co.	Farmer	.....	.....	5,523	.....	5,523	1,700	10	300
Patterson, Alexander	City No. 2	.....	.....	6,145	.....	6,145	2,500	.....	.....
Petry, Samuel	Willie	1	.....	2,800	3,003	5,803	500	40	.....

Pickford Coal Co.	Pickford	800	138,352	800	40,000	50	1,200
Pikes Peak Consolidated Fuel Co.	Pikeview	51,444	138,352	189,796	40,000	50	1,200
Pischel Bros.	Zerbe	251	2,792	251	1,200	25	200
Prairie Canon Coal Co.	Prairie Canon	2,792	2,604	2,792	1,200	25	200
Prospect Coal Co.	Prospect	1	2,604	2,604	1,200	25	200
Pueblo Coal Mining Co.	Smith-Tanner	518	1,035	518	500	50	4,250
P. V. Coal Co.	P. V.	1,542	1,035	2,577	500	25	25
Quality Coal Co.	Verdun	490	1,035	490	500	25	25
Itapimi Bros.	Placita	10,336	16,483	10,336	500	25	25
Itapson Coal Mining Co.	Rapson No. 1	16,100	16,483	32,583	500	25	25
Reynolds & Babcock	Black Diamond	3,767	16,483	3,767	900	50	4,250
Rio Blanco Coal Co.	Fairfield	1,555	16,483	755	900	50	4,250
Rocchilo, James	Rocchilo	1,350	16,483	1,350	900	50	4,250
Rocky Mountain Fuel Co.	Simpson	123,183	22,940	148,723	2,500	50	4,250
Rocky Mountain Fuel Co.	Standard	29,512	94,209	123,721	46,048	50	4,250
Rocky Mountain Fuel Co.	Vulcan	18,286	68,891	87,177	19,569	50	4,250
Rocky Mountain Fuel Co.	Mitchell	10,098	47,423	57,521	26,616	50	4,250
Rocky Mountain Fuel Co.	Acme	7,880	94,797	102,677	10,261	53	53
Rocky Mountain Fuel Co.	Hecla	40,054	28,769	28,769	27,540	189	189
Rocky Mountain Fuel Co.	Gorham	40,054	25,110	65,164	7,838	120	120
Rocky Mountain Fuel Co.	Industrial	30,670	96,949	127,619	14,550	120	120
Rocky Mountain Fuel Co.	Midland	114	96,949	114	35,350	120	120
Rocky Mountain Fuel Co.	Alpine	47,583	40,201	47,583	18,450	120	120
Rocky Mountain Fuel Co.	Forbes Nos. 4 & 9	80,029	40,201	120,230	11,414	120	120
Rocky Mountain Fuel Co.	Piedmont	36,956	40,201	36,956	11,414	120	120
Rocky Mountain Fuel Co.	La Belle	30,234	63,791	30,234	24,762	120	120
Rocky Mountain Fuel Co.	So'western (Not in use)	15,774	63,791	15,774	3,092	120	120
Rocky Mountain Fuel Co.	Frederick	396	8,430	63,791	15,325	120	120
Rocky Mountain Fuel Co.	Grant	20,147	8,130	8,826	15,325	120	120
Rocky Mountain Fuel Co.	Routt Pinnacle	20,147	8,130	28,277	15,325	120	120
Royal Fuel Co.	Royal	173,561	58,916	173,561	808	808	2,841
Rugby Fuel Co.	Rugby	16,597	58,916	16,597	850	850	850
Russell, W. E. Coal Co.	Russell	3,881	58,916	58,916	16,350	200	1,250
Santa Fe Coal Co.	Santa Fe	3,881	42,913	3,881	10,500	200	1,250
Shamrock Coal Co.	Shamrock	2,444	42,913	42,913	10,500	200	1,250
South Canon Mine Leasing Co.	South Canon	2,444	1,000	2,444	590	590	6,000
Star Coal Co.	Star	1,289	1,000	1,000	350	350	6,000
States Coal Co.	States	1,289	1,000	1,289	350	350	6,000

TABLE No. 4—(Concluded)

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1919.

Name of Operator	Name of Mine	Mining Machines		Coal Mined by (Short Tons)			Explosives Used (Pounds)		
		No. Operated by Compressed Air	No. Operated by Electricity	Hand	Machine	Total	Black Powder	Dynamite	Permissible
Stokes, W. D.	Stokes	1	...	1,218	...	1,218	500	50	...
Strathmore Mine Co.	Strathmore	...	...	9,922	9,922	9,922	750	...	...
Sunshine Coal Co.	Sunshine	...	...	3,071	...	3,071	875	...	...
Sunnyside Coal Mining Co.	Sunnyside	...	5	626	81,644	82,270	38,950	...	600
Temple Fuel Co.	Brodhead No. 9	...	7	9,776	138,675	138,451	...	...	8,500
Temple Fuel Co.	Alta (Brodhead No. 10)	...	...	22,457	...	22,457	...	...	2,000
Thomas Coal Co.	Williamsville	...	...	2,001	...	2,001	1,500	...	...
Thomas, C. F.	Thomas	...	...	586	...	586	1,375	...	...
Todd, Geo. S.	Todd	...	...	228	...	228	250	...	...
Trinidad Coal Co.	Baldy Mountain	...	...	647	...	647	...	250	...
Trinidad Coal Mining Co.	Valley	...	...	3,344	...	3,344	...	...	2,500
Tudor Coal Co.	Danville	...	...	3,089	...	3,089	625	...	...
Turner Coal Co.	Turner	...	7	10,221	77,683	87,904	...	150	9,650
Union Coal & Coke Co.	Pryor	...	4	21,587	37,744	59,331	...	...	...
United Collieries Co.	Satanic	4	...	...	37,791	37,791	11,250	...	...
Utah Fuel Co.	Somerset	...	1	224,939	...	224,939	...	550	20,500
Vezzetti & Moschetti	Brookside	...	...	4,580	4,580	4,580	250	...	...
Victor-American Fuel Co.	Chandler	...	8	5,781	147,560	153,341	...	8,717	17,480
Victor-American Fuel Co.	Radiant	...	5	5,733	51,304	57,037	14,625	...	1,320
Victor-American Fuel Co.	Ravenwood	...	...	27,379	19,461	46,840	...	...	12,190
Victor-American Fuel Co.	Delagua	...	8	304,214	131,358	435,572	...	...	29,993
Victor-American Fuel Co.	Gray Creek	...	2	26,796	7,779	34,575	...	...	1,130
Victor-American Fuel Co.	Bowen	Not rep	...	2,505	...	2,505	...	...	...

Victor-American Fuel Co.	Cass	4	1,036	31,403	32,439	150	3,559
Victor-American Fuel Co.	Hills		20,933		20,933	83,825	7,439
Victor-American Fuel Co.	Pinnacle (Not in use)	2	151,954		151,954	494	494
Victor-American Fuel Co.	Wadge	4	44,560	48,316	92,876	14,850	570
Waite Coal Co.	Waite		497		497	175	
Walker Coal Co.	Walker		1,331		1,331	1,200	
Walter Coal Co.	Postal	Clsd	600		600		
Webber Farm Coal Ass'n	Webber		300		300		
Western Collieries Co.	Satanic		7,809	7,869	15,678		9,000
White River Lumber Co.	Lion Canyon		1,315		1,315		
Williamsburg Slope Coal Co.	Emerald		9,505		9,505	75	
Winton Coal Co.	Winton		1,147		1,147	750	
Woodford, H. H.	Baldy	Not	1,145		1,145		
Wootton Land & Coal Co.	Wootton-Turner	rep	4,035		4,035		1,500
Totals		181 228	6,303,805	4,102,738	10,406,543	1,517,843	678,158

Remarks—The Emerald Mine, operated by the Williamsburg Slope Coal Co., was taken over Dec. 1, 1919, by the Colo Fuel & Iron Co.

TABLE No. 6

PRODUCTION AND DISTRIBUTION OF COAL FROM ALL THE MINES
IN THE STATE OF COLORADO FOR THE YEAR ENDING
DECEMBER 31, 1919.

Total Production Distributed	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Coal Made Into Coke	Coke Made
10,406,543	9,749,610	386,957	269,976	1,217,918	607,754

Table No. 5 omitted. Applies to metal mining.

TABLE No. 7
NUMBER INJURED IN COAL MINES DURING THE CALENDAR YEAR ENDED DECEMBER 31, 1919.

CAUSES	Permanent Total Disability	Permanent Partial Disability	Temporary Disability		Total Injuries
			Time Lost More Than 14 Days	Time Lost Less Than 14 Days	
Underground:					
1. Falls of roof (coal, rock, etc.)	1	3	201	168	373
2. Falls of face or pillar coal	.....	.....	44	13	57
3. Mine cars and locomotives	.....	11	162	100	273
4. Gas explosions and burning gas	.....	2	2	3	7
5. Coal-dust explosions (including gas and dust combined)	.....	.....	1	1	2
6. Explosives	.....	.....	2	.....	2
7. Suffocation from mine gas	.....	.....	.....	.....	.....
8. Suffocation from mine gas	.....	.....	.....	.....	.....
9. Electricity	.....	1	5	4	10
10. Mining machines	.....	.....	29	28	57
11. Mines fires (burned, suffocated, etc.)	.....	2	28	28	58
12. Other causes	.....	6	147	189	342
In Shaft:					
13. Falling down shafts or slopes	.....	.....	3	1	4
14. Objects falling down shafts or slopes	.....	.....	1	.....	1
15. Cages or skips	.....	.....	2	.....	2
16. Other causes	.....	.....	1	1	2
Total number injured in mines	• 1	25	628	536	1,190
On Surface:					
17. Mine cars and mine locomotives	.....	.....	6	.....	6
18. Electricity	.....	.....	.....	.....	.....
19. Machinery	.....	.....	8	9	17
20. Boiler explosions or bursting steam pipes	.....	.....	4	1	5
21. Railway cars and locomotives	.....	.....	13	6	19
22. Other causes	.....	.....	23	23	46
Total number injured on the surface	.....	.....	54	39	93
GRAND TOTAL	1	25	682	575	1,283

A. PERMANENT TOTAL DISABILITY. Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis or other condition permanently incapacitating workman from doing any work of a gainful occupation.

B. PERMANENT PARTIAL DISABILITY. Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, and dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

C. In this column include only accidents which cause a loss of time more than the balance of the day or shift upon which the accident occurred.

TABLE No. 8

COAL MINE FATALITIES IN THE STATE OF COLORADO CLASSIFIED BY CAUSE AND OCCUPATION, FOR YEAR ENDED
DECEMBER 31, 1919.

CAUSES	UNDERGROUND AND SHAFT																Total Fatalities
	Foreman	Assistant Foreman	Fire Bosses	Pick Miners	Machine Miners	Machine Runners and Scrapers	Shot Fires	Drivers and Runners	Motormen and Assistants	Doorboys and Helpers	Trackmen and Bratticemen	Timberman and Rockmen	Pump and Pipemen	Electricians and Helpers	All Others	Total Underground	
Underground:																	
1. Falls of roof (coal, rock, etc.)	1			19	8	2	1	1				2					33
2. Falls of face or pillar coal				5	1	1	1	5									7
3. Mine cars and locomotives				1													
4. Gas explosions and burn- ing gas																	
5. Coal-dust explosions (in- cluding gas and dust combined)			1	18	4			5			2				1		31
6. Explosives																	
7. Suffocation from mine gases				1													1
8. Electricity (shock or burns)				3		1		2	1								7
9. Animals								1									1
10. Mining machines																	
11. Mine fires (burned, suffo- cated, etc.)														1			1
12. Other causes																	
Shaft:																	
13. Falling down shafts or slopes																	
14. Objects falling down shafts or slopes																	
15. Cages or skips															1		1
16. Other causes																	
Total underground	1	1	1	47	13	4	1	14	1		2	2		1	2		89

	Surface:	Underground:	Total	Percentage of total population
17. Mine cars and mine locomotives
18. Electricity (shock or burns)
19. Machinery
20. Boiler explosions or bursting steam pipes
21. Railway cars and locomotives
22. Other causes
Total
Grand total
Number employed in each occupation (a)

(a) To be supplied from Table 10.

TABLE No. 10.

COAL MINE EMPLOYEES CLASSIFIED BY OCCUPATION IN THE STATE
OF COLORADO DURING YEAR ENDED DECEMBER 31, 1919.

UNDERGROUND		Employed in and around the mines of Colorado
1. Foremen		187
2. Assistant foremen		50
3. Fire bosses		174
4. Pick miners.....		4,182
5. Machine miners.....		2,401
6. Machine runners and scrapers		490
7. Shot firers		140
8. Drivers and runners.....		952
9. Motormen and assistants.....		177
10. Doorboys and helpers.....		96
11. Trackmen and brattice men.....		344
12. Timbermen and rockmen.....		441
13. Pump and pipemen.....		126
14. Electricians and helpers		103
15. All others		190
Total underground		10,053
SURFACE		
1. Superintendents		165
2. Foremen		80
3. Blacksmiths and carpenters		250
4. Engineers and firemen.....		370
5. Machinists and helpers.....		103
6. Trackmen and helpers		70
7. All others at mine.....		1,275
8. Coke-oven employes		299
9. Office employes		134
Total surface		2,746
Total employes		12,799
Days mines were operated during year.....		221.4

Table No. 9 omitted, is covered by Table No. 8. Applies to Metal Mining.

Breen Coal Mining Co.	38	20,551	1	24	20,798	3	13	6,984	41.7	79
Brennan Coal Co.	24	20,798	1	24	20,798	3	13	6,984	41.7	79
Broyles Coal Co.	2	320	1	24	20,798	3	13	6,984	41.7	79
Caddell Brothers	14	12,962	1	24	20,798	3	13	6,984	41.7	79
Caddell & Carlson	3	619	1	24	20,798	3	13	6,984	41.7	79
Calumet Fuel Co.	65	61,550	3	21	20,650	3	21	20,650	46.1	46+
Caminotti & Co.	6	378	1	140	88,936	7	20	12,705	7.1	50
Canon-Reliance Coal Co.	140	88,936	1	140	88,936	7	20	12,705	7.1	50
Caprock Fuel Co.	7	2,151	1	61	25,451	1	61	25,451	16.4	16+
Cedar Hill Coal & Coke Co.	61	25,451	1	61	25,451	1	61	25,451	16.4	16+
Champion Fuel Co.	100	48,853	1	100	48,853	10	10	4,885	10	100
Chew, J. S.	2	677	1	390	278,273	523	90	6,385	2.6	111+
Colorado-American Coal Co.	9	234	12	390	278,273	523	90	6,385	2.6	111+
Colorado Fuel & Iron Co.	4,686	3,339,378	12	390	278,273	523	90	6,385	2.6	111+
Colorado Springs Co.	40	29,610	1	21	17,705	10	4	3,541	48.8	244
Colorado & Utah Coal Co.	220	312,734	2	110	156,367	44	5	7,107	9	200
Consolidated Coal & Coke Co.	66	67,151	1	66	67,151	4	16	16,788	15	60+
Converse, Frank	1	25,410	2	21	17,705	10	4	3,541	48.8	244
Corley, W. D.	41	13,610	2	21	17,705	10	4	3,541	48.8	244
Cracker Jack Coal Co.	12	13,610	2	21	17,705	10	4	3,541	48.8	244
Crested Butte Anthracite M. Co.	49	37,859	2	25	18,929	2	25	18,929	41	41
Crested Butte Coal Co.	22	1,601	1	8	301	1	8	301	125	125
Crown Fuel Co.	8	301	1	8	301	1	8	301	125	125
Curtis Coal Co.	26	8,165	1	26	8,165	3	9	2,722	38.5	115+
Davis, Thos. D.	2	1,042	1	26	8,165	3	9	2,722	38.5	115+
Deep Vein Coal Co.	3	1,643	1	26	8,165	3	9	2,722	38.5	115+
Diamond Fuel & Mining Co.	3	672	1	26	8,165	3	9	2,722	38.5	115+
Donnelly & Donnelly	4	1,655	1	26	8,165	3	9	2,722	38.5	115+
Drott, John H.	3	500	1	26	8,165	3	9	2,722	38.5	115+
Drysdale Coal Co.	15	1,396	1	26	8,165	3	9	2,722	38.5	115+
Elk Creek Mining Co.	30	19,680	13	4	3,514	4	13	11,421	240.7	74+
Empire Coal Mining Co.	54	45,686	13	4	3,514	4	13	11,421	240.7	74+
Engineers Leasing Co.	32	25,969	1	32	25,969	1	32	25,969	31	31
Eureka Coal Mining Co.	20	100	7	14	101,081	7	14	101,081	101,081	101,081
Evans Fuel Co.	99	101,081	7	14	101,081	7	14	101,081	101,081	101,081
Federal Coal Mining Co.	11	2,910	1	11	2,910	1	11	2,910	2,910	2,910
Fiant, E. M.	3	695	1	3	695	1	3	695	695	695
Fickes, Frank M.	2	1,690	1	2	1,690	1	2	1,690	1,690	1,690

TABLE A—Continued

COMPANIES	Total Production	No. of Men Employed	No. of Fatal Accidents	No. of Men Employed per Fatal Accident	No. of Tons Produced per Fatal Accident	No. of Non-Fatal Accidents	No. of Men Employed per Non-Fatal Accident	No. of Tons Produced per Non-Fatal Accident	Killed per 1,000 Employed	Injured per 1,000 Employed
Foreman, Thos. D.....	145	1	1	50	46,624	1	50	46,624	20	20
Fox Coal Mining Co.....	46,624	50								
Freeman, J. R.....	28	2								
French & Fielding.....	659	2								
Galloway Brothers.....	300	2								
Garfield Coal Co.....	4,775	7								
Gibson Lumber & Fuel Co.....	27,434	41								
Gilbert, Bell & Halden.....	200	1								
Gilson Asphaltum Co.....	14,475	10								
Globe Coal Mining Co.....	21,033	34								
Gordon Coal Co.....	64,711	70	2	35	33,255 +	3	23 +	21,570	28	42
Grabowski, T.....	750	3								
Grand Junction Mining & Fuel Co.....	36,148	46								
Green Valley Coal Co.....	2,229	3								
Gregory, George.....	1,200	3								
Hall, A. W. & Son.....	4,701	4								
Harris, E. R., Coal Co.....	4,058	6								
Hart Coal Co.....	325	2								
Hawkeye Coal Co.....	432	9								
Hayden Brothers Coal Corporation.....	61,475	80				13	6			162 +
Hayden Valley Mutual Coal Co.....	1,800	8								
Hesperus Fuel Co.....	22,036	45	1	45	22,036	9	5	2,449—	20.2 +	200
Hines Coal Co.....	3,964	7								
H. M. & L. W. Coal Co.....	16,754	19				1	19	16,754		53—
Holland, C. W.....	409	2								
Hotchkiss, W. S.....	172	1								
Hoye, J. P.....	1,217	4								
Huerfano Coal Co.....	111,133	120				5	24	22,239—		42—
Hunter, J. B.....	539	3								
Ideal Fuel Co.....	22,897	43				4	11—	5,729—		93—

Independent Lumber Co.	1,759	5	33	27,086	2	16—	13,542	30.3+	61—
International Fuel Co.	27,086	33	1	.....	.....	.....	.....	.....	43+
Jay & Holt	379	1	.....	.....	.....	.....	.....	.....	.....
Jeffries Fuel Co.	13,529	23	.....	.....	1	23	13,529	.....	.....
Jones & Trachta	730	1	.....	.....	.....	.....	.....	.....	.....
Juanita Coal & Coke Co.	69,179	60	.....	.....	2	30	34,590+	.....	33+
Kennedy, H. A.	77	2	.....	.....	.....	.....	.....	.....	.....
Keystone Mining Co.	43,762	43	.....	.....	2	22—	21,881	.....	46+
Knapp, Richard	150	4	.....	.....	.....	.....	.....	.....	.....
Leone, L.	817	2	.....	.....	.....	.....	.....	.....	.....
Lewis, J. T. & Son	2,400	3	.....	.....	.....	.....	.....	.....	.....
Leyden Coal Co.	131,626	113	113	131,626	3	38—	43,875+	8.8+	26+
Liberty Coal Co.	3,289	5	.....	.....	.....	.....	.....	.....	.....
Liberty Coal & Mercantile Co.	2,259	2	.....	.....	.....	.....	.....	.....	.....
Littell-Ross Coal Co.	32,923	53	53	32,923	2	26+	16,511+	18.9—	38—
Loma Fuel Co.	34,437	36	.....	.....	.....	.....	.....	.....	.....
Louisville Mining Co.	27,717	37	37	27,717	2	12	11,479	27.2+	85
Lowe Brothers	68	2	.....	.....	.....	.....	.....	.....	54+
Marchetti, Andrew	445	2	.....	.....	.....	.....	.....	.....	.....
Marsh, R.	753	2	.....	.....	.....	.....	.....	.....	.....
Marshall Coal Co.	23,195	27	27	23,195	4	7—	5,799—	37+	250
Mattivi, Steve	609	3	.....	.....	.....	.....	.....	.....	.....
McGowan, L. H.	35,934	43	.....	.....	.....	.....	.....	.....	.....
McLaughlin, Jas. E.	364	1	.....	.....	.....	.....	.....	.....	.....
McNally & Thompson	30,774	47	.....	.....	3	16—	10,258	.....	72+
McNell Coal Co.	82,256	78	.....	.....	.....	.....	.....	.....	.....
Midwest Coal & Iron Co.	15,884	37	.....	.....	5	16—	16,451+	.....	64+
Miners Coal & Coke Co.	1,074	13	.....	.....	.....	.....	.....	.....	.....
Moffat Coal Co.	305,250	259	130—	152,625	21	12+	14,536—	7.7+	81+
Moffitt-Carlile	302	2	.....	.....	.....	.....	.....	.....	.....
Morris Coal Co.	430	9	.....	.....	.....	.....	.....	.....	.....
Mutual Coal Co.	167,644	131	131	167,644	9	15—	18,627+	7.6+	69—
National Fuel Co.	379,318	376	.....	.....	33	11+	11,494+	.....	88+
New Maitland Coal Co.	6,675	14	.....	.....	1	14	6,675	.....	71+
New Santa Fe Coal & Coke Co.	559	13	.....	.....	.....	.....	.....	.....	.....
Northern Colorado Fuel Co.	1,260	23	.....	.....	.....	.....	.....	.....	.....
North Park Coal Co.	48,145	28	.....	.....	1	28	48,145	.....	36
Oakdale Coal Co.	146,354	169	20	7,318—	14	12+	10,454—	117.7+	82+

TABLE A—Concluded

COMPANIES	Total Production	No. of Men Employed	No. of Fatal Accidents	No. of Men Employed per Fatal Accident	No. of Tons Produced per Fatal Accident	No. of Fatal Accidents	No. of Men Employed per Non-Fatal Accident	No. of Tons Produced per Non-Fatal Accident	Killed per 1,000 Employed	Injured per 1,000 Employed
Oberding, Wm. J.....	679	2	.....	.....	.....	.....	.....	.....	.....	83—
Ohio Creek M. Coal Co.....	6,688	12	.....	.....	.....	.....	12	6,688	.....	.....
O. K. Coal Co.....	4,077	4	.....	.....	.....	.....	.....	.....	.....	.....
Orechio Coal Co.....	7,407	11	.....	.....	.....	.....	.....	.....	.....	.....
Ozello, D. & Co.....	400	6	.....	.....	.....	.....	.....	.....	.....	.....
Palisade Coal & Supply Co.....	29,600	47	1	47	29,600	.....	16—	9,866	21.3—	64—
Paonia Coal Co.....	5,323	5	.....	.....	.....	.....	.....	.....	.....	.....
Patterson, Alexander.....	6,145	10	1	10	6,145	.....	.....	.....	100	.....
Petry, Samuel.....	5,803	10	.....	.....	.....	.....	.....	.....	.....	.....
Pickford Coal Co.....	800	2	.....	.....	.....	.....	.....	.....	.....	.....
Pikes Peak Consolidated Fuel Co.....	189,796	157	.....	.....	.....	.....	13—	15,816—	.....	76+
Pischel Brothers.....	251	2	.....	.....	.....	.....	.....	.....	.....	.....
Prairie Canon Coal Co.....	2,792	14	.....	.....	.....	.....	.....	.....	.....	.....
Prospect Coal Co.....	2,604	7	.....	.....	.....	.....	.....	.....	.....	.....
Pueblo Coal Mining Co.....	518	3	.....	.....	.....	.....	.....	.....	.....	.....
P. V. Coal Co.....	2,577	6	.....	.....	.....	.....	.....	.....	.....	.....
Quality Coal Co.....	490	5	.....	.....	.....	.....	.....	.....	.....	.....
Rapini Brothers.....	10,336	10	.....	.....	.....	.....	.....	.....	.....	.....
Rapson Coal Mining Co.....	32,583	51	1	51	32,583	.....	9—	5,430—	19.6+	118—
Reynolds & Babcock.....	3,767	3	.....	.....	.....	.....	.....	.....	.....	.....
Rio Blanco Coal Co.....	755	2	.....	.....	.....	.....	.....	.....	.....	.....
Rocchio, James.....	1,950	3	.....	.....	.....	.....	.....	.....	.....	.....
Rocky Mountain Fuel Co.....	1,064,879	1,014	2	507	532,439+	183	6—	5,813+	.....	180+
Routt-Pinnacle Coal Co.....	28,277	41	.....	.....	.....	5	8+	5,645+	2—	126—
Royal Fuel Co.....	173,561	156	.....	.....	.....	7	22+	24,794+	.....	43—
Rugby Fuel Co.....	16,597	41	.....	.....	.....	.....	.....	.....	.....	.....
Russell, W. E. Coal Co.....	58,916	52	2	26	29,458	1	41	16,597	.....	24+
Santa Fe Coal Co.....	3,881	39	.....	.....	.....	9	6—	6,546+	38.5—	173+
Shamrock Coal Co.....	42,913	33	.....	.....	.....	.....	.....	.....	.....	.....
South Canon Mine Leasing Co.....	2,444	10	.....	.....	.....	3	11	14,301+	.....	91—

STATE INSPECTOR OF COAL MINES

33

Company	9	2	1,000	9	3	59	114,357	1	283	10	8,110+	7.1	100+
Star Coal Co.	9	2	1,000	9	3	59	114,357	1	283	10	8,110+	7.1	100+
States Coal Co.	2	1,289		2	1,289								
Stokes, W. D.	3	1,218		3	1,218								
Strathmore Mine Co.	10	9,922		10	9,922								
Sunshine Coal Co.	4	3,071		4	3,071								
Sunnyside Coal Mining Co.	97	82,270		97	82,270								
Temple Fuel Co.	158	160,908		158	160,908								
Thomas Coal Co.	4	2,001		4	2,001								
Thomas, C. F.	2	586		2	586								
Todd, George S.	2	228		2	228								
Trinidad Coal Co.	3	647		3	647								
Trinidad Coal Mining Co.	9	3,344		9	3,344								
Tudor Coal Co.	13	3,089		13	3,089								
Turner Coal Co.	89	87,904		89	87,904								
Union Coal & Coke Co.	66	59,331		66	59,331								
United Collieries Co.	32	37,791		32	37,791								
Utah Fuel Co.	193	224,939		193	224,939								
Vezzetti & Moschetti	12	4,580		12	4,580								
Victor-American Fuel Co.	1,163	1,022,582		1,163	1,022,582								
Walte Coal Co.	6	497		6	497								
Walker Coal Co.	3	1,331		3	1,331								
Walker Coal Co.	7	600		7	600								
Webber Farm Coal Association	2	300		2	300								
Western Collieries Co.	41	15,678		41	15,678								
White River Lumber Co.	4	1,315		4	1,315								
Williamsburg Slope Coal Co.	28	9,505		28	9,505								
Winton Coal Co.	3	1,147		3	1,147								
Woodford, H. H.	2	145		2	145								
Wootton Land & Fuel Co.	37	4,035		37	4,035								
Total	12,799	10,406,543		12,799	10,406,543								

TABLE B

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1919, AND CAPACITY OF MINE PER DAY IN TONS.

BOULDER COUNTY, 1919

Name of Mine	Name of Company	Mine Postoffice	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total No. of Tons Produced	Capacity of Mine Per Day, Tons
Simpson.....	Rocky Mountain Fuel Co.....	Lafayette.....	Sub-Bituminous	287	87	148,723	600
Standard.....	Rocky Mountain Fuel Co.....	Lafayette.....	Sub-Bituminous	290.3	107	123,721	500
Vulcan.....	Rocky Mountain Fuel Co.....	Lafayette.....	Sub-Bituminous	279.1	73	87,177	450
Mitchell.....	Rocky Mountain Fuel Co.....	Lafayette.....	Sub-Bituminous	294.5	43	57,521	200
Acme.....	Rocky Mountain Fuel Co.....	Louisville.....	Sub-Bituminous	192.1	98	102,677	700
Hecla.....	Rocky Mountain Fuel Co.....	Louisville.....	Sub-Bituminous	175.4	47	28,769	175
Gorham.....	Rocky Mountain Fuel Co.....	Gorham.....	Sub-Bituminous	233	51	65,124	235
Industrial.....	Rocky Mountain Fuel Co.....	Superior.....	Sub-Bituminous	243.4	121	127,619	800
Monarch No. 2.....	National Fuel Co.....	Broomfield.....	Sub-Bituminous	228	174	126,992	750
Fox.....	Fox Coal Mining Co.....	Gorham.....	Sub-Bituminous	186	50	46,624	500
Champion (Matchless)	Champion Fuel Co.....	Louisville.....	Sub-Bituminous	181	100	48,853	500
Centennial.....	Big Four Coal & Coke Co.....	Louisville.....	Sub-Bituminous	102	93	28,471	1,900
Nonpareil.....	Louisville Mining Co.....	Louisville.....	Sub-Bituminous	247	37	27,717	300
Cambro.....	Engineers Leasing Co.....	Lafayette.....	Sub-Bituminous	233	32	25,969	200
Black Diamond.....	Boulder Black Diamond Coal Co.....	Boulder.....	Sub-Bituminous	252.5	26	24,273	300
Red Ash.....	Marshall Coal Co.....	Gorham.....	Sub-Bituminous	211.5	27	23,195	200
Capitol.....	Globe Coal Mining Co.....	Lafayette.....	Sub-Bituminous	233.5	34	21,083	150
Cracker Jack.....	Cracker Jack Coal Co.....	Boulder.....	Sub-Bituminous	249	12	15,010	200
Strathmore.....	Strathmore Mine Co.....	Lafayette.....	Sub-Bituminous	247.5	10	9,922	50
Sunnyside.....	Big Six Coal Co.....	Louisville.....	Sub-Bituminous	255	19	7,525	100
Lewis.....	J. T. Lewis & Son.....	Gorham.....	Sub-Bituminous	240.5	3	2,400	15
Star.....	Star Coal Co.....	Lafayette.....	Sub-Bituminous	180	9	1,000	50
Crown.....	Crown Fuel Co.....	Lafayette.....	Sub-Bituminous	26	8	301	.....
Totals—Number	of Mines Operated, 23.....			220.6	1,271	1,150,706	.....

DELTA COUNTY, 1919

King.....	Juanta Coal & Coke Co.....	Bowie.....	Bituminous	155.5	60	69,179	600
Farmer.....	Paonia Coal Co.....	Paonia.....	Bituminous	174	5	5,523	125
Red Mountain.....	A. W. Hall & Son.....	Cedaredge.....	Bituminous	258	4	4,501	40
Green Valley.....	Green Valley Coal Co.....	Cedaredge.....	Semi-Bituminous	302	3	2,228	15
Kurtzville.....	Independent Lumber Co.....	Hotchkiss	Semi-Bituminous	107	5	1,759	15
Coalby Red Canon.....	Frank M. Fickes.....	Cedaredge.....	Semi-Bituminous	287	2	1,630	20
States.....	States Coal Co.....	Cedaredge.....	Semi-Bituminous	219	2	1,289	20
Winton.....	Winton Coal Co.....	Cedaredge.....	Semi-Bituminous	161.5	3	1,147	20
Converse.....	Frank Converse.....	Paonia.....	Bituminous	182	1	614	20
Bennett.....	Jay & Holt.....	Hotchkiss.....	Semi-Bituminous	95	1	379	10
Rollins.....	W. S. Hotchkiss.....	Delta.....	Semi-Bituminous	45	1	172	.....
Totals—Number	of Mines Operated, 11	.....	.....	180.5	87	88,682	.....

EL PASO COUNTY, 1919

Pikeview.....	Pikes Peak Consolidated Fuel Co.....	Colo. Springs.....	Sub-Bituminous	235	157	189,756	300
Keystone.....	Keystone Mining Co.....	Colo. Springs.....	Sub-Bituminous	239	43	43,762	500
Klondyke.....	W. D. Corley.....	Colo. Springs.....	Sub-Bituminous	293	40	35,410	250
City No. 1.....	Colorado Springs Co.....	Colo. Springs.....	Sub-Bituminous	289	40	29,610	750
City No. 2.....	Alexander Patterson.....	Colo. Springs.....	Sub-Bituminous	156	10	6,145	100
Danville.....	Tudor Coal Co.....	Colo. Springs.....	Sub-Bituminous	60.5	13	3,089	.....
Williamsville.....	Thomas Coal Co.....	Colo. Springs.....	Sub-Bituminous	267	4	2,001	50
Franceville.....	Thomas E. Davis.....	Colo. Springs.....	Sub-Bituminous	153	2	1,042	.....
Totals—Number	of Mines Operated, 8	.....	.....	211.6	310	310,855	.....

TABLE B—Continued

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1919, AND CAPACITY OF MINE PER DAY IN TONS.

PREMONT COUNTY, 1919

Name of Mine	Name of Company	Mine Postoffice	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total No. of Tons Produced	Capacity of Mine Per Day, Tons
Coal Creek.....	Colorado Fuel & Iron Co.....	Coal Creek.....	Semi-Bituminous.....	270.....	228.....	173,972.....	700.....
Rockvale.....	Colorado Fuel & Iron Co.....	Rockvale.....	Semi-Bituminous.....	282.....	275.....	167,689.....	800.....
Fremont.....	Colorado Fuel & Iron Co.....	Florence.....	Semi-Bituminous.....	283.....	210.....	143,317.....	600.....
Nonac.....	Colorado Fuel & Iron Co.....	Canon City.....	Semi-Bituminous.....	271.....	25.....	14,813.....	100.....
Chandler.....	Victor-American Fuel Co.....	Chandler.....	Semi-Bituminous.....	281.1.....	190.....	153,341.....	700.....
Radiant.....	Victor-American Fuel Co.....	Pyrolite.....	Semi-Bituminous.....	280.....	69.....	51,547.....	250.....
Canon.....	Canon-Reliance Coal Co.....	Canon City.....	Semi-Bituminous.....	254.2.....	87.....	65,805.....	400.....
Royal Gorge.....	Gibson Lumber & Fuel Co.....	Canon City.....	Semi-Bituminous.....	269.....	41.....	27,434.....	150.....
Emerald.....	Williamsburg Slope Coal Co.....	Florence.....	Semi-Bituminous.....	179.....	28.....	9,505.....	200.....
Orecchio.....	Orecchio Coal Co.....	Florence.....	Semi-Bituminous.....	289.5.....	11.....	7,407.....	25.....
Willie.....	Samuel Petry.....	Florence.....	Semi-Bituminous.....	240.....	10.....	5,803.....	15.....
Brookside.....	Vezzetti & Moschetti.....	Canon City.....	Semi-Bituminous.....	100.5.....	12.....	4,580.....	50.....
Double Dick.....	Harris, E. R. Coal Co.....	Coal Creek.....	Semi-Bituminous.....	283.....	6.....	4,038.....	20.....
Rocchio.....	James Rocchio.....	Coal Creek.....	Semi-Bituminous.....	211.....	3.....	1,950.....	5.....
Williamsburg Slope, 2.....	Donnelly & Donnelly.....	Florence.....	Semi-Bituminous.....	187.....	4.....	1,655.....	10.....
Smith-Tanner.....	Pueblo Coal Mining Co.....	Florence.....	Semi-Bituminous.....	121.....	3.....	518.....	10.....
Totals—Number.....	of Mines Operated, 16.....			243.9.....	1,202.....	833,394.....	.....

SEVENTH ANNUAL REPORT

GARFIELD COUNTY, 1919

Carbонера	Gilson Asphaltum Co.	Mack	Bituminous	306	10	14,475	60
South Canon	South Canon Mine Leasing Co.	Glenwood Spgs.	Bituminous	114	10	2,444	6
Harvey Gap	Bracken & Cozza	Newcastle	Bituminous	267	2	2,358	25
Berglund	Clara Berglund	Rifle	Bituminous	120	4	1,800	5
Zerbe	H. E. Pischel	Rifle	Bituminous	25	2	251	.....
Smith	Richard Knapp	Newcastle	Bituminous	26	4	150	.....
Midland	Rocky Mountain Fuel Co.	Glenwood Spgs.	Semi-Bituminous	.....	13	114	.....
Totals—Number	of Mines Operated, 7			151.3	45	21,592	

GUNNISON COUNTY, 1919

Somerset	Utah Fuel Co.	Somerset	Bituminous	259.5	193	224,939	1,800
Crested Butte	Colorado Fuel & Iron Co.	Crested Butte	Bituminous	266	141	114,991	800
Elk Mountain	Colorado Fuel & Iron Co.	Crested Butte	Anthracite	70	43	1,654	200
Floresta (finished)	Colorado Fuel & Iron Co.	Crested Butte	Anthracite	.....	.....	56	Fin.
Alpine	Rocky Mountain Fuel Co.	Baldwin	Semi-Bituminous	229.7	54	47,583	300
Anthracite-Smith	Crested Butte Anthracite M. Co.	Crested Butte	Anthracite	240	49	37,859	300
Bulkley	Crested Butte Coal Co.	Crested Butte	Bituminous	22	22	1,601	CL's'd
Horace	Littell-Ross M. Coal Co.	Crested Butte	Anthracite	264	53	32,923	200
Ohio Creek	Ohio Creek M. Coal Co.	Gunnison	Semi-Bituminous	179	12	6,688	75
Baldwin Star	Baldwin Fuel Co.	Baldwin	Bituminous	221	5	4,441	100
Totals—Number	of Mines Operated, 9. (Floresta is exc	epted)		193.6	572	472,735	

TABLE B—Continued
SHOWING BY COUNTIES MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL,
NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED
IN 1919, AND CAPACITY OF MINE PER DAY IN TONS.

HUERFANO COUNTY, 1919

Name of Mine	Name of Company	Mine Postoffice	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total No. of Tons Produced	Capacity of Mine Per Day, Tons
Walsen-Robinson.....	Colorado Fuel & Iron Co.	Walsen.....	Bituminous	288	461	348,822	2,300
Cameron.....	Colorado Fuel & Iron Co.	Part.....	Bituminous	269	235	184,532	800
Rouse.....	Colorado Fuel & Iron Co.	Rouse.....	Bituminous	244	241	175,457	1,000
Pictou.....	Colorado Fuel & Iron Co.	Pictou.....	Bituminous	256	161	141,666	1,800
Ideal.....	Colorado Fuel & Iron Co.	Ideal.....	Bituminous	221.5	167	108,242	750
Lester.....	Colorado Fuel & Iron Co.	Lester.....	Bituminous	48	172	28,352	700
Kebler No. 1.....	Colorado Fuel & Iron Co.	Tioga.....	Bituminous	75	45	5,176	125
Kebler No. 2.....	Colorado Fuel & Iron Co.	Tioga.....	Bituminous	156.5	69	20,373	200
Mutual.....	Mutual Coal Co.	Walsenburg.....	Bituminous	275	131	167,644	700
Oakdale.....	Oakdale Coal Co.	Oakview.....	Bituminous	284	169	146,354	800
Turner.....	Turner Coal Co.	Walsenburg.....	Bituminous	156	89	87,904	800
Sunnyside.....	Sunnyside Coal M. Co.	Strong.....	Bituminous	213.7	97	82,270	600
Gordon.....	Gordon Coal Co.	Walsenburg.....	Bituminous	256.5	70	64,711	325
Pryor.....	Union Coal & Coke Co.	Pryor.....	Bituminous	187	69	59,331	350
Ravenwood.....	Victor-American Fuel Co.	Ravenwood.....	Bituminous	278.1	79	46,840	500
Toltec.....	Aztec Coal Mining Co.	Toltec.....	Bituminous	254.7	76	45,089	350
Vesta (Carbonera).....	H. L. McGowan.....	Camp Shumway.....	Bituminous	247.1	43	35,934	350
Jobal.....	Loma Fuel Co.	Pictou.....	Bituminous	241.5	36	34,437	200
Maitland.....	McNally & Thompson.....	Maitland.....	Bituminous	249.8	47	30,774	200
Reliance.....	Canon-Reliance Coal Co.	Ojo.....	Bituminous	174.5	53	23,131	200
Breen.....	Breen Coal Mining Co.	Walsenburg.....	Bituminous	244.1	38	20,951	150
Brennan.....	Brennan Coal Co.	Walsenburg.....	Bituminous	288	24	20,798	250
Caddell.....	Black Canon Coal & Fuel Co.	Walsenburg.....	Bituminous	166.5	29	18,753	125
Rugby.....	Rugby Fuel Co.	Rugby.....	Bituminous	119	41	16,597	250
Hezron.....	Caddell Bros.	Lester.....	Bituminous	219	14	12,962	35
New Maitland.....	New Maitland Coal Co.	Camp Shumway.....	Bituminous	198.5	14	6,675	100
(Hickory Canon).....							

SEVENTH ANNUAL REPORT

JACKSON COUNTY, 1919

Caprock.....	Caprock Fuel Co.....	Walsenburg.....	Bituminous.....	231.5	7	2,151	25
Larimore.....	Drysdale Coal Co.....	Strong.....	Bituminous.....	26	15	1,396	Cl's'd
Cuchara Canon.....	Caddell & Carlson.....	Walsenburg.....	Bituminous.....	144	3	649	15
Bunker Hill.....	Steve Mattivi.....	Rugby.....	Bituminous.....	43	3	609	15
Totals—Number	of Mines Operated, 30.....			200.2	2,695	1,938,570	.....

Moore.....	North Park Coal Co.....	Coalmont.....	Sub-Bituminous.....	234	28	48,145	300
Coalmont.....	Northern Colorado Fuel Co.....	Coalmont.....	Sub-Bituminous.....	6.3	23	1,260	Cl's'd
Marr.....	George Gregory.....	Walden.....	Sub-Bituminous.....	120	3	1,200	.....
Totals—Number	of Mines Operated, 3.....			120.1	54	50,605	.....

JEFFERSON COUNTY, 1919

Leyden No. 3.....	Leyden Coal Co.....	Golden.....	Sub-Bituminous.....	226	113	131,626	1,100
Satanic.....	Western Collieries Co.....	Morrison.....	Sub-Bituminous.....	334	41	15,678	.....
Totals—Number	of Mines Operated, 2.....			280	154	147,304	.....

LA PLATA COUNTY, 1919

Perins Peak.....	Calumet Fuel Co.....	Durango.....	Bituminous.....	225.5	65	61,950	350
Hesperus.....	Hesperus Fuel Co.....	Durango.....	Semi-Bituminous.....	127.3	45	22,036	250
San Juan.....	American Smelting & Refining Co.....	Durango.....	Bituminous.....	139	24	18,871	450
O. K.....	O. K. Coal Co.....	Durango.....	Bituminous.....	234	4	4,077	40
Morning Star.....	Baudino & Co.....	Durango.....	Bituminous.....	256	4	4,009	20
Sunshine.....	Sunshine Coal Co.....	Durango.....	Bituminous.....	194.5	4	3,071	21
Black Hawk.....	T. Grabowski.....	Durango.....	Bituminous.....	119	3	750	.....
City.....	Mike Anezki.....	Durango.....	Bituminous.....	90	3	673	.....
Champion.....	Diamond Fuel & Mining Co.....	Durango.....	Bituminous.....	148	3	672	21
Carbon.....	D. Ozello & Co.....	Durango.....	Bituminous.....	175	6	400	10
Totals—Number	of Mines Operated, 10.....			170.8	161	116,509	.....

TABLE B—Continued

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1919, AND CAPACITY OF MINE PER DAY IN TONS.

LAS ANIMAS COUNTY, 1919

Name of Mine	Name of Company	Mine Postoffice	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total No. of Tons Produced	Capacity of Mine Per Day, Tons
Morley.....	Colorado Fuel & Iron Co.....	Morley.....	Bituminous	323	308	277,065	1,000
Sopris.....	Colorado Fuel & Iron Co.....	Sopris.....	Bituminous	248	343	274,440	1,200
Berwind.....	Colorado Fuel & Iron Co.....	Berwind.....	Bituminous	280	280	229,753	800
Frederick.....	Colorado Fuel & Iron Co.....	Valdez.....	Bituminous	237	262	227,339	947
Primero.....	Colorado Fuel & Iron Co.....	Primero.....	Bituminous	237	298	197,932	1,500
Starkville.....	Colorado Fuel & Iron Co.....	Starkville.....	Bituminous	225	270	193,970	850
Tabasco.....	Colorado Fuel & Iron Co.....	Berwind.....	Bituminous	230	204	165,136	700
Toller.....	Colorado Fuel & Iron Co.....	Tollerburg.....	Bituminous	200	160	95,112	500
Engle.....	Colorado Fuel & Iron Co.....	Engleburg.....	Bituminous	129	88	49,439	500
Delagua.....	Victor-American Fuel Co.....	Delagua.....	Bituminous	240.9	375	435,572	2,400
Gray Creek.....	Victor-American Fuel Co.....	Gray Creek.....	Bituminous	227.5	54	34,575	400
Cass.....	Victor-American Fuel Co.....	Delagua.....	Bituminous	156	44	32,439	300
Hills.....	Victor-American Fuel Co.....	Hastings.....	Bituminous	196.4	28	20,933	200
Bowen.....	Victor-American Fuel Co.....	Bowen.....	Bituminous	13	77	2,505	CU's'd
Forbes Nos. 4 and 9..	Rocky Mountain Fuel Co.....	Forbes.....	Bituminous	312.7	105	120,230	700
Piedmont.....	Rocky Mountain Fuel Co.....	Sopris.....	Bituminous	224.2	59	36,956	125
La Belle.....	Rocky Mountain Fuel Co.....	Sopris.....	Bituminous	277.2	25	30,234	125
Southwestern.....	Rocky Mountain Fuel Co.....	Agular.....	Bituminous	188.6	31	15,774	300
Royal.....	Royal Fuel Co.....	Agular.....	Bituminous	279.5	156	173,561	700
Boncarbo.....	American Smelting & Refining Co.....	Cokedale.....	Bituminous	311	156	171,232	800
Cokedale.....	American Smelting & Refining Co.....	Cokedale.....	Bituminous	25	14	1,779	CU's'd
Brodhead No. 9.....	Temple Fuel Co.....	Brodhead.....	Bituminous	271	119	138,451	500
Alta (Brodhead No. 10)	Temple Fuel Co.....	Brodhead.....	Bituminous	176	39	22,457	150
Ludlow.....	Huertano Fuel Co.....	Ludlow.....	Bituminous	240.9	120	111,133	600
Empire.....	Empire Coal Co.....	Agular.....	Bituminous	223.5	54	45,686	250

STATE INSPECTOR OF COAL MINES

41

Bear Canon	Bear Canon Coal Co.	Valloroso	Bituminous	228.5	50	41,336	200
Rapson	Rapson Fuel Co.	Rugby	Bituminous	218.7	51	32,583	300
Thor	National Coal Co.	Bowen	Bituminous	162	41	25,837	350
Greenville	Cedar Hill Coal & Coke Co.	Ludlow	Bituminous	228	30	21,895	300
Black Diamond	Cedar Hill Coal & Coke Co.	Rugby	Bituminous	62	31	3,556	150
Jewel	Ideal Fuel Co.	Agular	Bituminous	188.5	43	22,897	200
Jeffries	Jeffries Fuel Co.	Trinidad	Bituminous	300	22	13,529	200
Wimrose	Black Hawk Coal Co.	Rugby	Bituminous	113.7	22	12,157	200
Three Pines	Black Diamond Niggerhead Coal M. Co.	Trinidad	Bituminous	35.5	76	4,756	Cl's'd
Wootton-Turner	Wootton Land & Fuel Co.	Wootton	Bituminous	63	37	4,035	Cl's'd
Hines	Hines Coal Co.	Trinidad	Bituminous	144	7	3,964	25
Santa Fe	Santa Fe Coal Co.	Trinidad	Bituminous	33	39	3,881	300
Valley	Trinidad Coal Mining Co.	Sopris	Bituminous	138	9	3,344	25
Liberty	Liberty Coal Co.	Trinidad	Bituminous	171	5	3,289	70
Prairie Canon	Prairie Canon Coal Co.	Valloroso	Bituminous	60	14	2,732	50
Prospect	Prospect Coal Co.	Trinidad	Bituminous	124	7	2,604	50
Deep Vein	Deep Vein Coal Co.	Trinidad	Bituminous	257	3	1,643	50
Beshoar	Hoyle Coal Co.	Trinidad	Bituminous	100	4	1,217	50
Williams	Miners Coal & Coke Co.	Trinidad	Bituminous	60	13	1,074	15
Premium-Star	Caminotti & Co.	Rugby	Bituminous	38	6	878	40
Leone	L. Leone	Trinidad	Bituminous	126	2	817	15
Pickford	Pickford Coal Co.	Trinidad	Bituminous	100	2	800	6
Fishers Peak	R. Marsh	Trinidad	Bituminous	174	2	753	5
Baldy Mountain	Trinidad Coal Co.	Trinidad	Bituminous	202	3	617	15
New Viola	New Santa Fe Coal & Coke Co.	Trinidad	Bituminous	25	13	559	25
Verdun	Quality Coal Co.	Agular	Bituminous	36	5	490	20
Morris	Morris Coal Co.	Trinidad	Bituminous	66	9	430	Cl's'd
Henderson	Jas. E. McLaughlin	Trinidad	Bituminous	102	1	361	20
Broyles-Star	Broyles Coal Co.	Trinidad	Bituminous	54	2	320	Cl's'd
Sunlight	Colorado-American Coal Co.	Sopris	Bituminous	15	9	234	60
Moore	Azar Coal Co.	Trinidad	Bituminous	78	3	154	25
Baldy	H. H. Woodford	Trinidad	Bituminous	15	2	145	25
Eureka	Eureka Coal Mining Co.	Boncarbo	Bituminous	5	20	100	Cl's'd
Old Farrell	Lowe Bros.	Trinidad	Bituminous	19	2	68	Cl's'd
Totals—Number	of Mines Operated, 59			156.2	4,275	3,316,871	

TABLE B—Continued

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1919, AND CAPACITY OF MINE PER DAY IN TONS.

MESA COUNTY, 1919

Name of Mine	Name of Company	Mine Postoffice	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total No. of Tons Produced	Capacity of Mine Per Day, Tons
Cameo.....	Grand Junction Mining & Fuel Co.	Cameo.....	Semi-Bituminous	130.7	46	36,148	500
Palisade.....	Palisade Coal & Supply Co.	Palisade.....	Semi-Bituminous	206.5	47	29,600	150
Midwest.....	Midwest Coal & Iron Co.	Palisade.....	Semi-Bituminous	152.5	37	15,884	200
Book Cliff.....	Book Cliff Coal Co.	Grand Junction.....	Semi-Bituminous	223	11	8,464	100
Garfield.....	Garfield Coal Co.	Palisade.....	Semi-Bituminous	148	7	4,775	100
Anchor No. 2.....	Anchor Coal Co.	Fruita.....	Semi-Bituminous	311	3	2,868	50
P. V.....	P. V. Coal Co.	Cameo.....	Semi-Bituminous	137	6	2,577	75
Nearing.....	Liberty Coal & Mercantile Co.	Fruita.....	Semi-Bituminous	260	2	2,257	75
Stokes.....	W. D. Stokes	Palisade.....	Semi-Bituminous	159	3	1,298	50
Hunter.....	J. B. Hunter....	Fruita.....	Semi-Bituminous	120	3	1,599	15
Thomas.....	C. F. Thomas	Grand Junction.....	Semi-Bituminous	120	2	586	30
Holland.....	W. C. Holland....	Grand Junction.....	Semi-Bituminous	110	2	409	4
Black Diamond.....	Black Diamond Coal Co.	Grand Junction.....	Semi-Bituminous	50	1	100	4
Totals—Number	of Mines Operated, 13			163.4	170	105,487	

MOFFAT COUNTY, 1919

Collom.....	Axial Basin Development Co.	Axial.....	Bituminous	311	44	1,772	200
Walker.....	Walker Coal Co.	Craig.....	Bituminous	51	6	1,331	
Waite.....	Waite Mining Co.	Craig.....	Bituminous	40	3	357	
Hart.....	Hart Coal Co.	Craig.....	Bituminous	79	2	325	
Totals—Number	of Mines Operated, 4			120.2	55	3,925	

MONTEZUMA COUNTY, 1919

McElmo.....	E. M. Plant.....	Cortez.....	Sub-Bituminous.....	186.3	3	695
School Section Lease.....	French & Fielding.....	Mancos.....	Sub-Bituminous.....	144	3	659
Moffitt-Carlile.....	Moffitt-Carlile.....	Mancos.....	Sub-Bituminous.....	91	2	302
Webber.....	Webber Farm Coal Association.....	Mancos.....	Sub-Bituminous.....	75	2	300
Todd.....	Geo. S. Todd.....	Cortez.....	Sub-Bituminous.....	60	2	228
Freeman.....	J. R. Freeman.....	Mancos.....	Sub-Bituminous.....	20	2	78
Totals—Number.....	of Mines Operated, 6.....			96	14	2,262

MONTROSE COUNTY, 1919

Knauss.....	Wm. J. Oberding.....	Nucla.....	Sub-Bituminous.....	150	2	679
Missouri.....	J. S. Chew.....	Nucla.....	Sub-Bituminous.....	122	2	677
Liberty Bell.....	John H. Drott.....	Naturita.....	Sub-Bituminous.....	75	3	500
Totals—Number.....	of Mines Operated, 3.....			116	7	1,856

OURAY COUNTY, 1919

Economy.....	Gilbert, Bell & Halden.....	Ridgway.....	Sub-Bituminous.....	100	1	200
Lou Creek.....	H. A. Kennedy.....	Ridgway.....	Sub-Bituminous.....	15	2	77
Totals—Number.....	of Mines Operated, 2.....			57.5	3	277

PITKIN COUNTY, 1919

Placita.....	Rapini Brothers.....	Carbondale.....	Bituminous.....	163	10	10,336
Marion.....	Andrew Marchetti.....	Carbondale.....	Bituminous.....	58	2	445
Totals—Number.....	of Mines Operated, 2.....			110.5	12	10,781

RIO BLANCO COUNTY, 1919

Black Diamond.....	Reynolds & Babcock.....	Meeker.....	Bituminous.....	250.3	3	3,767
Lion Canon.....	White River Lumber Co.....	Meeker.....	Bituminous.....	150	4	1,315
Fairfield.....	Rio Blanco Coal Co.....	Meeker.....	Bituminous.....	242	2	755
Douglass Creek.....	Jones & Trachta.....	Rangleley.....	Bituminous.....	150	1	730
McKee.....	Thomas D. Foreman.....	Meeker.....	Bituminous.....	75	1	145
Totals—Number.....	of Mines Operated, 5.....			173.5	11	6,712

TABLE B—Concluded

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUMBER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1919, AND CAPACITY OF MINE PER DAY IN TONS.

ROUTT COUNTY, 1919

Name of Mine	Name of Company	Mine Postoffice	Character of Coal	Number of Days Worked	Average No. of Men Employed	Total No. of Tons Produced	Capacity of Mine Per Day, Tons
Harris.....	Colorado & Utah Coal Co.....	Mt. Harris.....	Bituminous.....	179.8	220	312,734	2,000
Moffat Nos. 1 and 2.....	Moffat Coal Co.....	Oak Creek.....	Bituminous.....	129.1	259	305,250	2,500
Pinnacle.....	Victor American Fuel Co.....	Oak Creek.....	Bituminous.....	210.3	149	151,954	1,000
Wadge.....	Victor American Fuel Co.....	Mt. Harris.....	Bituminous.....	203.9	98	92,876	700
McGregor.....	McNeil Coal Co.....	McGregor.....	Bituminous.....	134.7	78	82,256	600
Bear River.....	Bear River Coal Co.....	Bear River.....	Bituminous.....	136	63	72,765	500
Hayden.....	Hayden Brothers Coal Corporation.....	Haybro.....	Bituminous.....	127.6	80	61,475	500
Route-Pinnacle.....	Route-Pinnacle Coal Co.....	Coalview.....	Bituminous.....	150.7	41	28,277	200
Wolf Creek.....	International Fuel Co.....	Mt. Harris.....	Bituminous.....	196.5	33	27,086	300
Elk Creek.....	Elk Creek Mining Co.....	Pool.....	Bituminous.....	171.1	30	19,680	150
Curtis-Route.....	Curtis Coal Co.....	Pool.....	Bituminous.....	93.3	26	8,165	500
Lennox.....	Federal Coal M. Co.....	Pool.....	Bituminous.....	43.3	11	2,910	.....
Dry Creek.....	Hayden Valley Mutual Coal Co.....	Hayden.....	Bituminous.....	100	8	1,800	.....
Postal.....	Walter Coal Co.....	Oak Creek.....	Bituminous.....	50	7	600	.....
McDowell.....	Hawkeye Coal Co.....	Coalview.....	Bituminous.....	18	9	482	75
Totals—Number	of Mines Operated, 15			129.6	1,112	1,168,310	.....

SAN MIGUEL COUNTY, 1919

Galloway.....	Galloway Brothers.....	Norwood.....	Sub-Bituminous.....	120	2	300	.....
Totals—Number	of Mines Operated, 1			120	2	300	.....

TABLE C

PRODUCTION OF COUNTIES BY MONTHS—1919.

Months	Boulder	Delta	El Paso	Fremont	Garfield
January	131,650	10,359	36,427	75,796	1,779
February	112,031	5,799	31,668	65,339	1,474
March	108,621	6,448	30,155	62,136	1,279
April	77,742	4,768	22,106	70,546	1,276
May	72,975	2,974	17,508	65,970	867
June	65,710	4,577	15,112	69,858	1,002
July	70,262	4,593	14,414	70,038	1,175
August	93,243	5,604	16,663	71,527	1,587
September	94,638	7,274	22,749	72,365	1,523
October	125,658	11,400	34,305	83,431	2,177
November	55,645	11,833	25,051	49,706	2,377
December	142,531	13,053	44,697	76,682	5,076
Totals	1,150,706	88,682	310,855	833,394	21,592

Months	Gunnison	Huerfano	Jackson	Jefferson	La Plata
January	44,502	189,859	5,906	12,885	14,384
February	34,764	118,221	3,857	11,565	7,826
March	34,884	117,664	4,240	11,053	9,913
April	36,238	130,146	2,549	7,891	8,433
May	29,382	145,768	2,473	5,603	7,404
June	33,957	156,702	2,472	6,251	7,361
July	38,033	174,842	3,119	5,827	8,990
August	46,624	184,017	4,808	9,395	10,237
September	47,541	191,426	6,431	11,879	8,126
October	50,875	216,275	5,520	19,143	12,864
November	28,578	113,589	4,808	18,295	7,031
December	47,357	200,061	4,422	27,517	19,940
Totals	472,735	1,938,570	50,605	147,304	116,509

Months	Las Animas	Mesa	Moffat	Montezuma	Montrose
January	296,287	11,689	96	170	.....
February	270,809	7,172	70	82	.....
March	282,261	7,393	61	58	.....
April	274,630	4,732	54	21	.....
May	279,710	4,111	84	.....	.....
June	271,391	2,843	108	.....	35
July	281,472	5,553	98	.....	20
August	304,959	7,545	250	14	37
September	289,542	11,006	95	87	63
October	276,727	16,228	264	131	131
November	176,634	7,011	258	199	151
December	312,449	20,204	2,487	1,500	1,419
Totals	3,316,871	105,487	3,925	2,262	1,856

Months	Ouray	Pitkin	Rio Blanco	Routt	San Miguel	Weld
January	77	1,864	997	42,725	.....	79,434
February .....	.....	1,650	655	74,779	.....	72,867
March .....	.....	2,054	414	81,693	.....	61,438
April .....	.....	1,013	305	83,768	.....	40,732
May .....	.....	.....	213	106,802	.....	30,734
June .....	.....	.....	180	124,286	.....	24,255
July .....	.....	466	142	141,462	.....	24,794
August .....	.....	1,127	175	91,279	.....	37,560
September .....	.....	1,287	351	106,936	.....	53,897
October .....	.....	354	709	117,661	.....	91,134
November .....	.....	843	732	88,570	.....	34,136
December	200	123	1,839	108,349	300	107,829
Totals	277	10,781	6,712	1,168,310	300	658,810

TABLE C—Concluded
PRODUCTION OF COUNTIES BY MONTHS—(Continued).

Months	Total Tonnage
January	956,886
February	820,628
March	821,765
April	766,950
May	772,578
June	786,100
July	845,300
August	886,651
September	927,216
October	1,064,987
November	625,447
December	1,132,035
Totals	10,406,543

TABLE D

SHOWING BY COUNTIES INCREASE OR DECREASE OF PRODUCTION,
1918-1919.

Counties	Tons Produced 1918	Tons Produced 1919	Increase	Decrease
Boulder	1,331,181	1,150,706	.....	180,475
Delta	94,870	88,682	.....	6,188
El Paso	309,922	310,855	933	.....
Fremont	876,868	833,394	.....	43,474
Garfield	74,004	21,592	.....	52,412
Gunnison	651,995	472,735	.....	179,260
Huerfano	2,620,385	1,938,570	.....	681,815
Jackson	84,504	50,605	.....	33,899
Jefferson	125,810	147,304	21,494	.....
La Plata	141,040	116,509	.....	24,531
Las Animas	4,449,181	3,316,871	.....	1,132,310
Mesa	220,369	105,487	.....	114,882
Moffat	548	3,925	3,377	.....
Montezuma	1,927	2,262	335	.....
Montrose	1,020	1,856	836	.....
Ouray	641	277	.....	364
Pitkin	30,554	10,781	.....	19,773
Rio Blanco	4,798	6,712	1,914	.....
Routt	962,691	1,168,310	205,619	.....
San Miguel .....	.....	300	300	.....
Weld	675,747	658,810	.....	16,937
Totals	12,658,055	10,406,543	.....	.....

Decrease, 1919 2,251,512

TABLE E

COKE PRODUCTION IN 1919 BY COMPANIES AND COUNTIES.

COMPANIES	Total No. of Ovens Operated	Total Tonnage	COUNTIES	Total No. of Ovens Operated	Total Tonnage
Colorado Fuel & Iron Co.....	260	515,463	La Plata.....	28	3,842
American Smelting & Ref. Co.	258	92,291	Las Animas..	370	191,076
			Pueblo.....	120	412,836
Totals.....	518	607,754		518	607,754

On an average of 347 days were worked at the Coke Ovens.

REMARKS: The coke ovens in Pueblo county are operated by the Colorado Fuel & Iron Company as by-product ovens and turned out the 412,836 tons of coke reported in Pueblo county. The coal was supplied by mines in Las Animas county.

TABLE F
SHOWING BY COUNTIES THE COAL PRODUCTION OF 1919 IN PREPARED SIZES

Counties	Mine Run	Lump	Egg	Nut	Pea	Slack	Total
Boulder	568,126	284,897	.....	24,271	100	273,312	1,150,706
Delta	5,115	40,962	.....	12,601	.....	20,004	88,682
El Paso	175,916	63,118	.....	635	.....	71,186	310,855
Fremont	39,109	443,551	.....	125,002	23,494	202,237	833,394
Garfield	19,489	1,462	.....	397	.....	2,292	21,592
Gunnison	382,329	53,012	.....	11,464	.....	25,870	472,735
Huerfano	342,154	811,394	.....	253,209	46,167	485,646	1,938,510
Jackson	10,942	18,672	.....	5,665	.....	15,326	50,605
Jefferson	57,901	45,198	.....	5,799	1,055	38,406	147,304
La Plata	82,837	16,399	.....	4,479	.....	11,739	116,509
Las Animas	1,528,379	630,848	.....	93,645	87,612	976,387	3,316,871
Mesa	20,927	39,705	.....	16,963	.....	27,892	105,487
Moffat	2,143	1,437	.....	171	.....	174	3,425
Montezuma	1,965	263	.....	.....	.....	34	2,262
Montrose	1,266	503	.....	.....	.....	87	1,856
Ouray	277	.....	.....	.....	.....	277	277
Pitkin	10,781	.....	.....	.....	.....	10,781	10,781
Rio Blanco	2,042	3,502	.....	1,018	40	110	6,712
Routt	251,089	511,182	42,592	145,643	7,452	210,352	1,168,310
San Miguel	300	.....	.....	.....	.....	300	300
Weld	209,186	256,411	.....	.....	.....	193,213	658,810
Totals	3,722,243	3,222,576	42,592	700,963	165,920	2,552,249	10,406,543

In the mine run the Anthracite production of 72,492 tons is included.

TABLE G

TABULATION SHOWING THE NUMBER OF MEN OF THE DIFFERENT
NATIONALITIES EMPLOYED IN AND ABOUT THE
MINES OF COLORADO

(Poll taken in January, 1920)

Nationalities	No. of Men	Nationalities	No. of Men
American	3,651	Bulgarians	245
English	223	Greeks	405
Welsh	192	Russians	116
Scotch	210	Poles	176
Irish	104	Bohemians	63
Negroes	258	Swedes	63
Italians	2,292	Danes	9
French	148	Finlanders	54
Belgians	16	Japanese	18
Spaniards	122	Turks	7
Swiss	5	Rumanians	38
Mexicans	2,325	Macedonians	5
Slavonians	369	Dalmatians	2
Croats	857	Bosnians	1
Austrian Germans	221	Syrians	2
Germans	153	Lithuanians	2
Hungarians	93	Armenians	3
Servians	72	Argentinans	2
Montenegrins	18		
		Total	12,540
		Unclassified	259
			<hr/> 12,799

REPORTS ON THE EXPLOSIONS WHICH OCCURRED AT THE EMPIRE AND OAKDALE MINES

Dear Sir:

I have the following report to make concerning the causes of the explosion at the Empire Mine, occurring on the morning of March 31st, 1919, which resulted in the death of thirteen persons.

The mine is situated one-half mile west of the town of Aguilar, Las Animas County, Colorado, on the Colorado and Southern Ry., and is operated by The Empire Coal Mining Co., of Denver, Colo. Mr. J. W. Siple of Denver, Colo., is manager and one of the owners of the operating company. The mine is opened by parallel slopes and is dipping from 8 to 19 per cent to the southwest, and intersects the old workings of the old Peerless mine located one mile to the south of the Empire opening. The seam operated is known as the Walsen or Peerless seam and is traversed by numerous faults and lava dikes, the seam up-throwing and downthrowing as much as twenty feet in places, and gas is given off freely in this troubled section, with strong feeders issuing forth into the mine workings from fissures or goves in the roof, and a strong volume of air is necessary at all times to dilute and carry away the gases given off and keep them harmless, and below the point of ignition. The mine is ventilated by a force fan, electrically driven; the ventilation is continuous down as far as the 6th south, where it splits, and about 8,000 cu. ft. per minute passes through the old Peerless workings and about 24,000 cu. ft. passes out through the main haulage slope. The haulage is done by electric hoists and animals, the workings encounter a great amount of water: the drainage is done with electric pumps, the motors being the alternating current, squirrel cage type, all switches being the encased oil type carrying 440 volts. the hoist used in the first dip workings is the same type motor and started by an oil switch, friction drive and using no resistance in starting. The hoists used in the Peerless section have the same type of motors, but start with controllers using resistance of the grid type. The electric feed lines are rubber-covered-insulated copper wire and were well put up on insulators, and having only one knife blade cut out switch, this being on the main intake, cutting the power off the entire working section.

The explosion occurred in the lower section of the mine, known as the 6th south, and the 1st dip, off the 5th, south entries; these entries are very wet, and the force was expended before it reached the 5th south section: there is no evidence of coal dust having any part in explosion. There were three men work-

ing in the 6th south section and 10 men working in the 1st dip section, and from the position of bodies found it is very evident that all were killed instantly. From evidence introduced at the inquest, it seems that the fan stopped some time on the morning of the explosion between 6:30 and 7:30 a. m., due to a bearing burning out on the motor driving the fan; the explosion occurred some time about 8:45 a. m.; seemingly the fan was stopped from one to two hours, which caused the accumulation of gases ignited by some unknown agency. The mine foreman was notified by telephone from the inside of the mine that the ventilation had stopped, about 7:45 a. m., by one of the workmen who had noticed the disarrangement of the ventilation. The mine foreman then went to the fan and tried to start it and found that there was something out of order on the driving motor, and went in search of the electrician, who arrived about 8:00 a. m., and who went immediately to the fan and on examination told the mine foreman that it would take from two to three hours to repair the motor; the mine foreman stated that he would go and have the men withdrawn from the mine but the explosion occurred before he had telephoned for the men to come out of the mine. This occurred about 8:45 a. m., or 45 minutes after the electrician had arrived on the works. I arrived at the mine about 10:45 a. m.; the fan was still out of commission. There being considerable natural ventilation through the old Peerless workings, I went immediately into the mine, and on arriving at the 6th south entries and saw the violence at that point and the close proximity of the location of the working places where the men were at work, I was convinced that there was no chance of any person surviving the effects of the concussion and after-damp given off from the affected district. I notified the helmet crews that were in readiness, that I thought it advisable to restore the ventilation and recover the bodies as soon as the fan was ready for service. This opinion was concurred in by Mr. Robt. McAllister, Inspector for The Colorado Fuel and Iron Co., Mr. Davis of The Royal Fuel Co., and Mr. Parker, Supt. of Berwind Mine. The fan started at 12:30 p. m., and work restoring the ventilation and recovery of the bodies commenced immediately. Eleven bodies were recovered by the shift in my charge and the two remaining bodies were recovered by the rescue party led by Deputy Inspector Laurie of District No. 1, who entered the mine at 6:00 p. m. No direct evidence as to the initial cause of the ignition was found upon investigation, but there is evidence apparent in the 6th south entry that the initial point of the ignition was in the vicinity of an electric pump located about 225 feet from the face of the 6th south entry, the forces having radiated in either direction from this point; there being very little force apparent at this point, the forces gaining violence in either direction from this point and losing its violence before it reached the 5th south workings.

From investigation, and the evidence at hand, I believed that the ignition was caused by the short circuiting of the electric feed wires, near the location of the 6th south pump, probably caused by a fall of rock bringing the wires into contact, breaking the insulation and causing an arc sufficient to ignite the accumulation of gas caused by the disarrangement of the ventilation, due to the stoppage of the fan. I also, further find that considerable gas had been encountered by the rooms at the inby of the 6th south, having interseected some of the old workings off the 3rd, dip off the 5th south, and that the Fire Boss, who also acted as Shot Firer, had refused to fire the shots in these rooms for four days previous to the explosion on account of explosive gases, but men had been allowed to work in those places by the Fire Boss and Mine Foreman; and on the morning of the explosion, the Fire Boss testified that he had instructed the three men working in the 6th south to wait on the 5th south parting until the Mine Foreman had examined their working places, but he, the Fire Boss, did not report the conditions found to the Mine Foreman in person, or tell the Mine Foreman that he had instructed these men to wait on the 5th south parting until the Mine Foreman had removed the dangers found; nor had the Fire Boss placed any danger signal at the entrance of the 6th south entry to keep workmen out of this section until the danger could be removed. I find that the Fire Boss, in not reporting conditions in person to Mine Foreman, and in not placing a danger signal at entrance of places where danger existed to keep persons away and warn them of existing danger, is guilty of neglect and violation of the Coal Mining laws, and contributed directly to the death of the 13 persons losing their lives in the Empire Mine by an explosion on March 31st, 1919. I also find that the Mine Foreman, in not meeting the Fire Boss, on the morning of March 31st, 1919, and ascertaining the conditions of the mine before the men entered for work, and not withdrawing the men from the mine when he found that the ventilating apparatus was out of order, was also negligent in his duties as Mine Foreman.

In conclusion I wish to thank the officials and men of the Royal Fuel Co., The Temple Fuel Co., The Victor-American Fuel Co., and The Colorado Fuel & Iron Co., for the able assistance rendered Deputy Inspector Laurie and myself, and the management and men of The Empire Mine in the recovery of the bodies and temporary restoration of the ventilation in the Empire mine.

Yours truly,

A. E. THOMPSON,
Deputy State Coal Mine Inspector,
District Number 2.

An explosion of gas occurred in the Oakdale Mine, operated by the Oakdale Coal Company, about 10:45 a. m., on the morning of August 18th, 1919, in which 18 mine workers lost their lives.

The explosion occurred in what is known as the 6th south entries off the 12th dips in No. 2 mine. The explosion did not extend beyond the 6th south section of the workings.

The point of ignition seems to have been in the workings of the 3rd and 4th cross entries off the 6th south. There were two miners, the fire boss and trackman, working in this section of the mine. Matches were found on the bodies of Frank Pyke, a miner working in No. 2 room off the 3rd cross entry, and William Christopher, the fire boss, whose body was found in the 4th cross entry in front of No. 1 room. His safety lamp was found near his body in a defective condition. The asbestos gasket on top of the glass, between the glass chimney and the gauzes was displaced, leaving an opening between the glass and gauzes. This may have transmitted the burning gases in the lamp to the surrounding accumulation, igniting it, causing the explosion, or it might have been caused by a lighted match by either the fire boss or the miners in No. 2 room of the 3rd cross.

The forces radiated in all directions from the point where the fire boss's body was found, and from No. 2 room off the 3rd cross. This leads me to believe this was the ignitional point of the ignition.

J. R. Frank's death was due to suffocation. He was working in another section of the mine when the explosion occurred. Hearing the report, and thinking it was a fall of roof, he went to ascertain where it occurred, and was caught by the after-damp.

I am unable to fix the blame of the ignition on either Christopher or Pyke, but in my opinion, one or the other caused this disaster through carelessness and in violation of the mining laws, which prohibit the carrying of matches into a mine or section of a mine where electric or safety lamps are used exclusively on account of the presence of explosive gas being generated.

(Signed) A. E. THOMPSON,
Deputy State Inspector of Coal Mines.

A LIST OF THE FATAL ACCIDENTS WHICH OCCURRED
IN THE COAL MINES OF COLORADO DURING THE
YEAR 1919.

January 1—JOSEPH SKOFF, Austrian, pick miner, age 33 years, married, no children, employed by the Littell-Ross Coal Company, at the Horace mine, Gunnison County, was killed by a fall of rock. Accident occurred at the face of a room and deceased was in the act of trimming off the coal from a shot which he fired a few hours before, thereby loosening a piece of rock. When deceased took out the broken coal from the shot, the rock gave way immediately and fell on deceased, killing him instantly. The place was well timbered and deceased was considered a careful miner. The accident was unforeseen and unavoidable.

January 2—ROBERT B. WALLACE, Scotch, hoist man, age 52 years, married, two children, employed by the Fox Coal Mining Company, at the Fox mine, Boulder County, was killed by being caught in shaft by cage. Deceased was employed as underground hoistman and between trips assisted to cage loaded cars. He and the cager had placed a loaded car on the cage and gave the signal to hoist. After a few minutes the top man, R. Shokey, ordered them to take off the car, that some repairs had to be made on the cage. The deceased with the cager proceeded to take the car off and had some trouble doing so. While in the act of pulling the car off, the top man signalled to the engineer to hoist and the cage went up the shaft. Wallace was caught between the cage and the shaft timber, and killed instantly. The cager managed to leap off the cage and so escaped death. The topman, R. Shokey, made a serious mistake in giving a signal to hoist when he knew the men below were taking a loaded ear off the cage without first signalling to the engineer to hold the cage. The accident was caused through carelessness and neglect of deceased's fellow employes.

January 4—HERMAN BUZZ, Austrian, machine miner, age 30 years, married, three children, employed by D. W. Corley at the Klondyke mine, El Paso County, was killed by a fall of rock near an entry face. Deceased was working with Frank Channel and John Cikola in a back entry. Channel notified the mine foreman of bad roof conditions that he had noticed the night before, which both the mine foreman and fireboss had not observed when they examined the place. The fore-

man instructed Channel to timber the place and if necessary to go to the surface for timber. However, Channel started to drill a hole in the entry. Buzz and Cikola loaded a car from the crosscut. Buzz then left the crosscut and went to where Channel was working about 20 feet from the crosscut, when a rock fell from the roof upon Buzz, causing instant death. According to the statements of Cikola and Channel, a temporary prop would have prevented the accident. There was no timber on hand, therefore the mine foreman is to blame for not providing timber at an available place and not seeing that his instructions were carried out. Deceased and his partners are to blame for not obeying orders from the foreman and working under bad roof when they knew it was dangerous.

January 13—GOMER THOMAS, Welsh, pick miner, age 42 years, single, employed by the Rocky Mountain Fuel Company, at the Standard mine, Boulder County, was killed by a fall of rock at a pillar face. The mine foreman had visited the place an hour before, and evidently did not consider the place dangerous, but gave instructions to set two props, which was carried out. Deceased removed some coal from the pillar with a pick, when a mass of rock fell from the roof in between the timber and killed Thomas instantly. The place was well timbered and the accident was due to the danger inherent to the work and is not chargeable to any one.

January 14—TONY EVANOFF, Bulgarian, miner, age 37 years, single, employed by the Cedar Hill Coal and Coke Company, at Greenville mine, Las Animas County. Deceased and partner were working day shift and had checked out at evening. They returned to the mine on the same evening without being rechecked by the checkman, or the knowledge of the mine officials, to prepare coal for the following morning. According to the evidence of his partner, when they got to their working place the roof was working and they set four timbers to support the roof and began to mine coal at the face. The roof began to settle on the timbers, and working close to the face, deceased was advised by his partner to come from under rock, which he refused to do. The result was that the rock came down and killed him instantly. Deceased and his partner violated Section 162 of the Coal Mining Law by returning to work without being rechecked by a checkman. Deceased was responsible for his death.

January 18—JOE GARCIA, Mexican, miner, age 42 years, single, employed by the Colorado Fuel and Iron Company at the Morley Slope mine, Las Animas County, was killed by a fall of top coal in a pillar room. The system of working this particular place is to drive to its destination by taking 6 feet

of coal while driving the room and bring back 2 feet 6 inches of top coal. Deceased was working and apparently drew out some timbers to let the top coal down; no one knew how many timbers he had drawn; however, four were left standing. The accident may be classed as unavoidable.

January 28—HENRY PIQUE, French, pick miner, age 65 years, married, two children, employed by the Victor-American Fuel Company at the Ravenwood mine, Huerfano County, was killed by a fall of rock. Deceased was working in a room taking off a skip from a pillar. At the place where he was working, a bank of draw slate, 14 inches thick, overlies the coal which is taken down with the coal. Deceased had fired a shot the night previous which was standing and there was a slip paralleling the working place for about 8 or 10 feet behind the face of the coal; this had been taken down, except one foot; that remained overhanging the standing shot. The deceased worked out the coal under the draw slate about 3 feet when it broke off, falling on him, injuring him to such an extent that he died shortly afterwards. Deceased must have been in the act of taking the rock down when it fell. As there was no eye witnesses to the accident, no responsibility can be placed.

February 5—RECARDO ORTEGAS, American, pick miner, age 18 years, employed by the Black Diamond Niggerhead Coal Mining Company at the Three Pines mine, Las Animas County, was killed by being crushed by a fall of rock. Deceased was breaking off a new room from an entry having two feet of top brushing, and had taken one cut of four feet out, leaving two feet of rock on top of coal with a face opening. According to evidence, the driver requested deceased to set a prop under the edge of the rock, but he refused to comply until he had finished loading his car. The consequence was that the rock came down burying deceased and killing him. The mine foreman at this mine was also acting as fireboss and he had examined all the workings except this entry because he had not sufficient time to complete the examination. Had a regular fireboss been employed, the rock at the room neck might have been found dangerous and the accident would have been avoided. The company is responsible in not employing sufficient help to properly oversee to the protection of 30 miners.

February 8—JACK BOGAZ, Pole, pick miner, age 50 years, married, two children, employed by the Moffat Coal Company at Moffat No. 2 mine, Routt County, was killed by a fall of rock. Deceased and his partner were working in a room pillar. The mine foreman had visited the place 20 minutes prior to the accident and ordered the men to come back about 40 feet

from the end of pillar and start their drilling there. Deceased's partner started to drill a hole where he had been ordered, but deceased went to the inby end of the pillar and began to drill there, and while thus employed a piece of overhanging coal fell on him causing his death. A water slip running along the line of the coal face meeting a slip at right angles caused the coal to be loosened. Deceased was responsible for his own death.

February 11—MIKE RAICOVICH, Montenegrin, driver, age 21 years, single, employed by W. D. Corley, at the Klondyke mine, El Paso County, came to his death, the cause of which has not been determined. Deceased was driving on night shift and had started out with his loaded trip, using two sprags to regulate the speed of travel. He was serving three miners and as he did not return in due time, one of them went out to see what was wrong. He found deceased's body lying on its side with face partly in the water. Electricity is used as power for cutting coal and pumping water; the voltage being 400 a. c. The mine is very wet. Deceased wore leather boots with hob nails. It is probable that deceased came to his death from an electric shock by coming in contact with power wires while in the act of releasing the sprags from the pit car wheels. The accident is classed as unavoidable.

March 12—JOHN PAOLENI, American, machine runner, age 19 years, single, employed by the Colorado Fuel & Iron Company at the Berwind mine, Las Animas County, was killed by a fall of rock. Deceased was loading coal out of a crosscut at room face when three sets of timbers were thrown out by weight of a rock which gave way from a slip perpendicular to the coal face, and which was invisible. This accident was unforeseen and therefore unavoidable.

March 14—JOHN DICCA, Austrian, pick miner, age 33 years, single, employed by the International Fuel Company at the Wolf Creek mine, Routt County, was injured by a fall of bony coal on the 11th inst., and died three days later. At the point where the accident occurred the coal is 13 feet thick with bony coal running from 6 to 15 inches, six feet from the bottom of the seam. This bony coal is propped up as the rooms are being worked. In this instance a pillar was being extracted and the procedure was that the bony coal and 7 feet of top coal were taken down. The mine foreman had visited the place at 7 a. m., and ordered deceased to shoot down the bony coal, which he did not carry out, but at noon he fired a shot into the top coal causing the bony coal to come loose. At 2:30 p. m., the mine foreman again visited the place and heard the bony coal breaking and ordered deceased to get out of the way, but he was too slow and was caught in the fall. The accident was caused by the negligence of deceased.

March 22—FRANK ROSSMAN, Austrian, rope-rider, age 30 years, married, two children, employed by the Moffat Coal Company at the Oak Hills No. 1 mine, Routt County, was killed by being run over by two loaded cars. The accident took place on the slant road of No. 2 Slope. Deceased started up the slope with a trip of three cars, two loaded with coal and partly loaded with rock. The latter car is known as a "dummy" car and is used for the purpose of dragging the rope off the drum to the point where it is needed to attach to coal cars. Upon reaching the above mentioned point, deceased must have fallen in front of the trip, the rock car passing over his body. He was found by the engineer under the first car, crushed to death. No one saw the accident nor can the cause be ascertained positively. The engineer noticed the engine vibrated when the trip reached the point where the accident occurred; that he continued drawing the trip until it became too heavy, when he stopped the engine and investigated the cause of the trouble. He found the dummy car and one of the coal cars off the track and deceased lying under the coal car crushed to death. Responsibility for the accident cannot be determined.

March 26—DAN GLUMAC, Servian, machine miner, age 38 years, single, employed by the Rapson Coal Mining Company at the Rapson mine, Las Animas County, was killed by a fall of rock. Deceased was working in a crosseut mining off a shot that he had previously fired and which did not knock down the coal. He released the support holding up a large piece of draw slate, which fell, crushing him to death. The fireboss had found the place where deceased was working in an unsafe condition, but failed to report it to either the deceased or the mine foreman, but claims that he marked on the lip of the brushing, to either take down or timber it. There was some rock taken down at the mouth of the crosseut, but considerable loose rock was left hanging and caused the accident. Carelessness on the part of the deceased and the negligence of the fireboss in not reporting to the mine foreman the defect in the roof so that same could have been removed or timbered up are responsible for the accident.

March 29—JOE ROLLETTTO, Italian, company man, employed by the Palisade Coal & Supply Company at the Palisade mine, Mesa County, was killed by a fall of rock. Deceased and his partner were taking out props in an abandoned pillar which had been finished a few days prior. Deceased had carried a prop out of the room and on his return he found his partner using a pick to release a prop at the bottom and had stopped to pick up a cap piece lying at the bottom, when a piece of rock fell on him, killing him almost instantly. Deceased was a careful and practical miner and from the evidence obtained,

the accident was unforeseen and may be classed as unavoidable.

- March 31—CHARLES MILLER, Italian, nipper, age 21 years, married, no children, employed by the Colorado Fuel & Iron Company at the Berwind mine, Las Animas County, was injured on the 29th inst. by dropping mine cars into a parting. Deceased had to drop empty cars by hand on to the empty tracks which had a grade of two per cent. He had started to drop the empty trip on to the track when in some way he was caught between the seventh and eighth cars and dragged to the middle of the parting, receiving such injuries that he died two days later. The accident may be classed as unavoidable.
- March 31—JOHN LUNDQUIST, Swede, pick miner, age 39 years, single;
- March 31—JACOB FATUR, Austrian, pick miner, age not known, single;
- March 31—MIKE KONDIS, Greek, pick miner, age 27 years, single;
- March 31—GEORGE NUROJORGES, Greek, pick miner, age 28 years, single;
- March 31—ALBERT DUHAUT, French, pick miner, age 36 years, widower, one child;
- March 31—ABEL DURAND, Spanish-American, driver, age 43 years, married, six children;
- March 31—F. DUSSART, Belgian, pick miner, age 44 years, married, seven children;
- March 31—GUS BAHANIS, Greek, pick miner, age 46 years, married, three children;
- March 31—GEORGE FILIS, Greek, pick miner, age 33 years, married, one child;
- March 31—HENRY CATON, French, pick miner, age 38 years, married, two children;
- March 31—M. R. ROSSI, Italian, pick miner, age 39 years, married, four children;
- March 31—MIKE COZZETTI, Italian, pick miner, age 33 years, married, four children;
- March 31—JOE STRADJIT, Austrian, pick miner, age 35 years, married, four children; employed by the Empire Coal Company at the Empire mine, Las Animas County, were killed by a gas explosion. Some time between 6:30 and 8:45 a. m., the fan had stopped and disarranged the ventilation, allowing an accumulation of explosive gases. What ignited the gases is unknown. The responsibility of the accident is placed on the fireboss for not reporting the actual condition of the mine to the mine foreman, and to the mine foreman in neglecting to withdraw the men from the mine when he received a report from the men in the mine that the fan had stopped.

April 2—MIKE SELLILICH, Servian, pick miner, age 34 years, single, employed by the Calumet Fuel Company at the Perin's Peak mine, La Plata County, was killed by being run over by mine cars. Deceased was on his way from a pillar entry to the parting with two loaded cars, and he either slipped, or was thrown off the front end of the car he was riding, and run over by same and injured to such an extent that he died shortly after. It is necessary to ride on the front end of the car when driving on this entry in order to manipulate the brake, the grade being between three and four per cent in favor of the load. Deceased was not familiar with this entry and not used to driving. The accident may be classed as unavoidable, although an experienced driver might have avoided the mishap, or if the cars had been so equipped that the brake could have been manipulated from the rear end, the accident might not have occurred.

April 11—TONY MARTINI, Italian, machine runner and miner, age 30 years, single, employed by the Victor-American Fuel Company at the Radiant mine, Fremont County, was killed by a fall of rock. Deceased and his partner, who was slightly injured at the same time, were loading a car and they knew that the rock was loose, but they did not consider it an immediate danger, although they intended to prop it after they had loaded more coal into the car. However, the rock came down suddenly on the deceased from between two slips and killed him almost instantly. The accident was the result of faulty judgment. Had the rock been secured by props, the accident would very likely have been avoided.

April 14—SISITE FLORES, Mexican, pick miner, age 33 years, married, two children, employed by the Rocky Mountain Fuel Company at the Piedmont mine, Las Animas County, was killed by a fall of rock. Deceased was taking a four-foot skip off a chain pillar into which he had fired a shot the night previous to the accident. While he was loading out the coal he released a rock which was embraced by two invisible slips, one paralleling the chain pillar and united with the horizontal slip at rear of shot. The accident was unforeseen and therefore unavoidable.

April 17—JOHN MUIR, Scotch, pick miner, age 42 years, married, one child, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas County, was killed by a fall of rock. Deceased was drawing a pillar and was taking a corner of same for space to lay a track along the face of the pillar. He had finished taking down the top coal when the draw slate gave way from a slip paralleling the face of the coal and burying deceased. The accident was unavoidable.

April 18—QUIMBY WALKER, American, machine helper, age 39 years, married, six children, employed by the Canon Reliance Coal Company at the Canon mine, Fremont County, was killed by an electric shock. Deceased and the machine runner, after cutting, had taken their machine to a slant entry and were preparing to take their lunch. In the act of sitting down, deceased slipped off a smooth rock and fell against the power wires to which were attached the hangers of the machine cable. These power wires carried 440 volts a. c. This was an unforeseen accident and no one could be held responsible.

April 27—JOHN LAVRANCINI, Austrian, timberman, age 48 years, married, four children, employed by the Colorado Fuel & Iron Company at the Tabasco mine, Las Animas County, was killed by a fall of rock. Deceased and three partners were retimbering the mine slope. The place to be timbered was exposed to considerable surface water which had the tendency to loosen the side rock. There was a slip on the rib four feet above the coal which released the rock and fell on deceased, injuring him so seriously that he died shortly after. The accident could not be charged to anyone. It was due to the inherent danger of the work.

May 2—JESUS TORRES, Mexican, pick miner, age 34 years, married, one child, employed by the Colorado Fuel and Iron Company at the Walsen mine, Huerfano County, was killed by coming into contact with an electric trolley wire. The accident was caused by the deceased traveling one of the main haulage ways during working hours of the mine, while the power was on the trolley lines. In trying to pass an empty trip on the side where the power wires were located, one side of his face was struck. There was a manway provided for the safe exit of the employes from their working places, and deceased in disregarding the rules of the mine, was also guilty of violating the Coal Mining Law.

May 8—FRANK PETER JACQUES, French, mule driver, age 22 years, single, employed by the Brooks Fuel Company at the Nonpareil mine, Boulder County, was injured by a kick from a mule on the 7th inst., and died from the injuries sustained on the above date. Deceased was driving from the main parting to the bottom of the shaft. At the time of the accident he had started the mule with a trip of eight loaded cars. The mule lunged forward and then reared backward kicking Jacques on the left side. No one was to blame for the accident and it is charged to the danger inherent to the work he performed.

June 7—LOUIS JIMENEZ, Mexican, pick miner, age 26 years, married, no children, employed by the American Smelting & Refining Company at the Boncarbo mine, Las Animas County, was killed by a fall of rock. Deceased and partners were drawing pillars back about half way from room face where the pillar carries 18 inches of draw slate. They had taken off some coal from a point on the inby when the draw slate gave way, burying deceased under its fall and killing him instantly. The accident might have been avoided had more experienced miners been employed. As it was, the accident is classed as unavoidable.

June 12—ALEX REGINNIS, Pole, driver, single, employed by the Mutual Coal Company at the Mutual mine, Huerfano County, was electrocuted by coming into contact with a live feed wire. Deceased was driving in the east entries and was in the act of taking out sprags from the empty cars that he was delivering to the working places. When he raised himself up he came in contact with the electric feed lines to the east hoist. These lines are double braided number 4, weather-proof copper wire carrying 440 volts alternating current. They have been in service some time and the humidity is considerable at that point of the mine and the insulation is moist. The deceased was also wet with perspiration when he came into contact with the wire. There is a clear space of three feet and six inches on either side of the cars at the point where the accident occurred, and the lower wire is four feet seven inches off the floor. Immediate assistance was rendered him. He was loosened from the wire and artificial respiration applied, but to no avail. The accident was due to defective insulation of the feed lines, the same not being sufficient to properly protect 440 volts. The mining law does not require rubber-covered wires on feed lines on main haulage or traveling ways.

June 19—W. T. DAVIS, American, motorman, age 34 years, married, two children, employed by the Temple Fuel Company at the Brodhead mine, Las Animas County, was injured on the 16th day of June by an electric shock which threw him off his motor and was squeezed between the motor frame and the bottom, which resulted in his death three days later. Deceased was switching some loaded cars that had been loaded by the night shift into the 8th south entry. He evidently was turning the trolley pole and in doing so he took hold of the trolley harp which supports the trolley wheel, on the end of the pole which is an exposed piece of metal connecting the cable leading to the controller from the trolley line. The trolley pole had been broken the day before and a pole 9 inches shorter was put in place of it. This may account for the motorman putting his hand inadvertently on the bare

piece of metal. The shorter pole is not necessarily a defect, some motor runners prefer it to a longer one, especially in low veins of coal and where considerable switching has to be done. This accident would have been avoided had a pole as long as the one previously used been put back. The deceased was not aware that the exposed surface was on the trolley line and his coming into contact with it was unavoidable and unforeseen.

June 19—HENRY SAVAGE, Colored, American, driver, age 50 years, single, employed by the Black Canon Coal & Fuel Company, at the Caddell mine, Huerfano County, was killed by a car running over him. Deceased was found dead under a loaded trip he was hauling to the main slope parting. There was no eyewitness to the accident, and its cause cannot be determined. It might have been that the light of deceased went out and he was caught by the cars and dragged under them, or he was knocked off the trip by coming into contact with the roof or timbers. However, deceased was never known to ride a loaded trip, therefore, the exact cause of the accident can not be determined.

June 24—ANDREW WILSON, Scotch, pick miner, age 29 years, single, employed by the Cokedale Coal Company at the Oakdale mine, Huerfano County, was killed by a fall of top coal. Deceased and his partner had put a shot in the top coal and they were loading it out when the mine foreman visited their place about 9:30 a. m. on the day of the accident. He instructed them to take down some loose coal and set props under the lip of the coal that was to be left. The assistant mine foreman, together with the fireboss, visited their place again at 11:30 a. m., and cautioned the men again as to the top coal for there was a squeeze and to set timbers under the edge of the coal. The deceased and his partner accused the fireboss of telling the mine foreman about the previous order of the mine foreman and they claimed that the top coal was all right and again neglected to comply with the instructions. Deceased was in the act shortly afterwards of loading a car when the top coal fell. This accident would have been avoided had deceased and his partner set props as instructed and both they and the mine foreman can be charged with the responsibility of the accident.

July 6—JOE MARTINEZ, American, driver, age 18 years, single, employed by the Calumet Fuel Company at the Perin's Peak mine, La Plata County, was killed by a fall of coal from the face. Deceased was helping on an electric cutting machine at the time of the accident and was cutting a pillar. The place was well timbered and there was no indication of weight on props or ribs. The line of face was irregular and a slip

ran at right angles with the face. Owing to the noise the machine made, the sound of the coal when it was tearing away from the face was not heard, and deceased was caught by the fall which resulted in instant death. The accident may be classed as unforeseen and unavoidable.

July 16—LOUIS SANDOR, Hungarian, machine miner, age 41 years, married, four children, employed by the Colorado Fuel & Iron Company at the Cameron mine, Huerfano County, was killed by a fall of rock. The day previous to the accident deceased had fired three brushing shots in an entry which had not pulled down all the rock. He began his work by borrowing a wedge to take down the loose rock left hanging from the shots. He was in the act of prying the rock loose when it came down suddenly, covering him and crushing him to death. The rock was five feet long, three feet wide and three inches thick. The accident was unavoidable as deceased had used his best judgment in trying to take down the loose rock before loading the loose rock on the floor.

July 31—RAMON AGUILAR, Mexican, machine miner, age 22 years, single, employed by the Colorado Fuel & Iron Company at the Berwind mine, Las Animas County, was killed by a fall of rock. Deceased and two other men were loading coal at a room and the former was pulling down some coal at a cross entrance which was "holed" at face, when a large rock was released from an invisible slip at the coal face. The place was well timbered and the men tested the roof and considered it safe. The accident is classed as unforeseen and unavoidable.

August 6—GEORGE BURNHAM, English, assistant mine foreman, age 40 years, married, seven children, employed by the Colorado Fuel & Iron Company at the Berwind mine, Las Animas County, was killed by a fall of rock. Deceased had instructed the track layers to draw some timbers so that a pillar could cave. Some time after he returned to see to what extent the pillar had caved and was caught in a fall of rock, causing instant death. Deceased was acting in the performance of his duties and the accident was unavoidable.

August 13—ADAM YOUNG, German, machine miner, age 47 years, married, three children, employed by the Union Coal & Coke Company at the Pryor mine, Huerfano County, was killed by a fall of rock. An hour prior to the accident the mine foreman visited the place where deceased was working and called the latter's attention to some draw slate overhanging as the result of a standing shot, and instructed him to take it down as he worked the coal from under it. The deceased neglected to comply, with the result that as he was loading

his third car, it came down on him killing him instantly. This accident is attributable to disobedience and carelessness on the part of the deceased.

- August 21—SISIVARIA MONDRAGON, Mexican, pick miner, age 22 years, married, one child, employed by the Colorado Fuel & Iron Company at the Starkville mine, Las Animas County, was electrocuted by a live wire. Deceased and a number of miners left the main parting about 200 feet to meet the man trip to board the cars. Deceased boarded an empty car and came in contact with a live wire and was electrocuted before any assistance could reach him. The practice of leaving the proper man trip station should be forbidden to avoid future accidents. This accident is classed as unforeseen and unavoidable.
- August 18—JUAN BALTERIO, Mexican, machine miner, age 34 years, single;
- August 18—TONY BARRELLO, Italian, driver, age 22 years, single;
- August 18—JAMES BLY, Mexican, driver, age 21 years, married, one child;
- August 18—WM. CHRISTOPHER, Welsh, fireboss, age 47 years, single;
- August 18—FRANK DIRCHIO, Italian, trackman, age 32 years, single;
- August 18—JAMES ENGLAND, American, pickman, age 67 years, married, no children;
- August 18—JOHN FARSERO, Italian, pickman, age 27 years, single;
- August 18—J. R. FRANKS, American, driver, age 28 years, single;
- August 18—JACINTO GARCIA, Mexican, machine miner, age 28 years, single;
- August 18—A. GUALINI, Italian, trackman, age 32 years, married, no children;
- August 18—MIKE JOHNSON, Turk, machine miner, age 34 years, single.
- August 18—JOHN MACANIE, Italian, machine miner, age not known, married, no children;
- August 18—CHARLES MONSON, Swede, hoistman, age 41 years, married, no children;
- August 18—JOSEPH MORGUESKI, Pole, driver, age 29 years, married, no children;
- August 18—M. MUZZIES, Mexican, pick miner, age 33 years, single;
- August 18—ALFRED OXFORD, American, pick miner, age 17 years, single;
- August 18—FRANK PYKE, Austrian, pick miner, age 39 years, single;

August 18—JOHN SOLTIS, Slav, pick miner, age 28 years, married, two children, employed by the Oakdale Coal Company at the Oakdale mine, Huerfano County, were killed by a gas explosion. The point of ignition was in the 3rd and 4th cross entries off the 6th south, off the 12th dip, of Number Two mine. Christopher, a trackman, and two miners were working at this point. The safety lamp of Christopher was found near his body in a defective condition. The asbestos gasket on the top of the glass between the glass chimney and the gauzes was displaced, leaving an opening between them. This may have transmitted the burning gases in the lamp to the surrounding accumulation of gas, igniting it and causing the explosion. Matches were also found on the body of Frank Pyke, one of the miners working in No. Two room off the 3rd cross entry. As the forces of the explosion radiated in all directions from the point where the body of Christopher was found, and from room No. Two, where the body of Pyke was found, it seems that here was the initial point of ignition which was caused by either the defective lamp or the lighting of a match by either Christopher or Pyke. In any event, the disaster was caused by carelessness and the violation of the Coal Mining Laws, which prohibit the carrying of matches into a mine or sections of a mine where safety or electric lamps are used exclusively on account of the presence of explosive gas being generated.

August 30—FRANK LENZINI, Italian, driver, age 34 years, single, employed by the Gordon Coal Company at the Gordon mine, Huerfano County, had his back broken on August 26, by being struck by loaded pit cars, and died on the above date. Deceased was riding on the front end of five loaded cars when the tail chain broke and he was thrown into a rib, and losing his balance was caught between the cars. The evidence given showed that there was sufficient clearance on both sides of track and that they were free from debris, excepting slack coal. Responsibility for accident could not be placed.

August 31—FRED SKERBINK, Austrian, driver, age 24 years, married, two children, employed by the Victor-American Fuel Company at the Radiant mine, Fremont County, was injured by a fall of rock on the 30th, and died the following day. Deceased was engaged with three other men putting up three sets of timbers in an entry and they were finishing lagging the last set when a large rock fell without warning on deceased. The timber set up showed good workmanship. The accident was unforeseen and unavoidable.

September 7—DAN SUPIN, Austrian, pick miner, age not given, single, employed by the Calumet Fuel Company at the Perin's

Peak mine, La Plata County, was killed by a fall of coal from the face. Deceased and his partner were mining coal off a pillar which had been prepared the day before and uncovered a slip. The coal which was more or less loose from powder shots, fell over on deceased. Supin's partner had cautioned him to put up a sprag and to be careful, but he gave no heed to the warning and kept on mining. The place was well timbered and plenty of timber was on hand. Deceased came to his death through his own carelessness and lack of experience.

September 15—FRANK SANDOVAL, Spanish-American, machine miner, age 29 years, married, three children, employed by the American Smelting and Refining Company at the Boncarbo mine, Las Animas County, was killed by a fall of rock. Deceased had finished loading a car on an entry and was leaving the face when a rock fell from a pot hole in the roof, burying him. The timber was a considerable distance from the face and the rock contained many slips. The accident might have been avoided had the timbering agreement been fully complied with.

September 15—FRED WOODRUFF, American, fireman, age 52 years, married, children not reported, employed by the Curtis Coal Company at the Routt-Curtis mine, Routt County, was killed by a boiler explosion caused by low water.

September 22—JAMES MELLONS, Greek, pick miner, age 23 years, single, employed by the Temple Fuel Company at the Brodhead No. 9 mine, Las Animas County, came to his death by being electrocuted. Deceased and several miners were coming up the main slope parting, which has three tracks; the middle one being used as a passing track. At the lower end of the parting there is a cut off switch to shut off the current after the landing of a man trip. The parting tender is instructed to land the trip and cut off the power and then notify the men that the trip is ready to ascend as a man trip. The men are instructed to wait at a point on an old parting about 150 feet below the cut off switch until notified that trip is ready and power is cut off. This rule was not rigidly enforced by the mine officials and the men came up while the power was on and the trips were in operation. The motor had just landed a motor trip and was passing down the center track to get ahead of an empty trip when deceased and the other men got in between the loaded and empty trips of cars and in coming out from between them deceased came in contact with a live trolley line, which killed him instantly. Had the rule to turn off the power before the men were allowed to proceed and the men waited until notified to come on, been adhered to, the accident would have been avoided.

Therefore, both the mine officials and deceased with his fellow workers were at fault and responsibility for the accident may be charged to their negligence. The trolley line was properly guarded as required by law.

October 1—A. G. HOLDEN, American, pick miner, age 33 years, employed by the Colorado-Utah Coal Company at the Harris mine, Routt County, was killed by a fall of coal. This accident was due to an outburst of coal from a side of a chain pillar. The coal seam at this mine is inclined to burst out suddenly, when pillar coal is taken out. Deceased had tried to take down a part of the piece of coal that fell, about 40 minutes prior to the accident, and found it firm. The accident was due to the inherent danger of the work.

October 3—JOHN LIKOS, Greek, pick miner, age 32 years, single, employed by the Leyden Coal Company at the Leyden mine, Jefferson County, was killed by a fall of coal from a pillar side. This accident was unavoidable as it was unforeseen. About 800 pounds of coal slid off from a pillar, apparently without giving any warning, covering deceased, who was shovelling close to it.

October 7—JEROME SHOCKEY, American, machine runner, age 26, married, one child, employed by the Marshall Coal Company at the Red Ash mine, Boulder County, was killed by a fall of rock at the working face of a room. From evidence obtained the place was in good condition with a sufficient supply of timber on hand. The roof where the accident occurred has a tendency to scale off the rock, and in this instance the rock gave way between a timber and rib. The fault of the accident can be charged to no one.

October 8—GUST AMOS, Greek, pick miner, age 29 years, single, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas County, was killed by a fall of rock. Deceased was taking a skip off a cross cut to extract the remainder of a pillar stump, when a rock gave way from the coal, burying him. According to the statement of his partner, they had neglected to timber the place, intending to do so when the rock fell. If the timbering agreement had been complied with the accident would have been avoided.

October 9—JOE BEDINI, Italian, machine runner, age 28 years, single, employed by the Gordon Coal Company at the Gordon mine, Huerfano County, was killed by a fall of rock. Deceased was loading out coal shot down from the gob side of the room, when the mine foreman visited the place, instructing him to set up a cross bar on the roadway and a couple of props in the gob side of the room. Deceased started to comply and put up

the cross bar, then instead of setting up the other prop, he began turning the coal back towards the track, as the props would interfere with the shoveling to some extent. While thus engaged a pot rock gave way, striking deceased and killing him instantly. Had deceased obeyed the instructions of the mine foreman, the rock would have been held in place and he would not have lost his life.

October 11—MIKE HUOACK, Austrian, pick mine, age 52 years, widower, one son, employed by the Victor-American Fuel Company at the Radiant mine, Fremont County, was killed by a fall of rock. Deceased was working alone in a room and no one saw the accident. He was found dead under the rock. The place was considered well timbered, but the props were set too far from a slip that ran in an angle across the roadway. No one is held responsible for the accident.

October 20—JOHN PRICE, negro, nipper, age 31 years, single, employed by the Temple Fuel Company at the Brodhead mine No. 9, Las Animas County, was injured on September 17, by being caught between a motor and a derailed loaded trip, from the effects of which he died on the above date. Deceased, with a machine runner, was taking the storage battery motor to the charging station and ran into a haulage road to let a loaded trip pass. He opened the controller on the battery locomotive and ran into the passing trip, derailing it and the motor he was on, causing him to fall. Deceased was not employed to run the motor nor was he told to do so. The accident was caused by his own heedlessness. The attending surgeon stated that the blood poisoning which set in was due to an infection contracted prior to the accident.

October 23—GEORGE A. JULIUS, Greek, loader, age 22 years, single, employed by the Consolidated Coal & Coke Company at the Baum mine, Weld County, was killed by being struck by moving cars. The accident occurred at a switch where deceased was standing. A driver with two empty cars arrived at this point, the front car derailed, striking deceased and causing such injuries that he died the following day. The accident was unavoidable, but had deceased remained at his working place it would not have occurred.

October 26—JOHN O. JONES, Welsh, master mechanic, age 32 years, married, two children, employed by the Oakdale Coal Company at the Oakdale mine, Huerfano County, was injured on the 24th, by being caught in the gears of an electric pump, and died as above stated. Deceased, with an assistant, was called to repair an electric pump furnishing the water to the Oakdale plant. The repairs were finished and the pump started to run. Deceased stooped over to open a drain valve to

ascertain if the pump was working properly. His coat sleeve was caught in one set of the gears, pulling his arm through and severing it. He died from the effects of this injury 48 hours later. Deceased had charge of all the machinery at the plant and as the accident was caused by machinery undergoing repairs and in the testing of same, the accident is classed as unavoidable.

October 29—ISAAC SHARP, American, pick miner, age 40 years, married, two children, employed by Alexander Patterson at the City No. 2 mine, El Paso County, came to his death by suffocation from black damp. Deceased started home at 3:30 p. m. and wandered into the old workings of the Curtis mine, where he was found dead the following morning, after the wife of deceased had informed the company that her husband had not come home. The company was responsible for the accident in not fencing off approaches to dangerous places. In failing to put up signs showing the way to the surface, and also for failure to furnish identification checks, so that employees could be checked off as they came out of the mine. Carbide lamps only are used. Had oil lamps been used, accident might not have happened.

October 30—NEILS KNUDSEN, Dane, pick miner, age 31 years, married, no children; and

October 30—CLAUDE THOMAS, American, pick miner, age 33 years, single, employed by the W. E. Russell Coal Company at the Russell mine, Weld County, were killed by a fall of rock. Deceased were engaged breaking through a pillar and had taken out about two and a half feet of coal and were replacing the timbers to turn the track into the new opening, when the roof gave way, swinging out the timbers and falling on both men, killing Thomas instantly and injuring Knudsen so seriously that he died two days later. Both men were considered practical and careful miners. Evidently the roof was more dangerous than they thought and no blame can be charged to anyone. Therefore, the accident is classed as one inherent to the danger of the work.

No accidents in November.

December 2—ANTONIO SELIA, Italian, miner, age 37 years, married, three children, employed by the Colorado Fuel & Iron Company at the Sopris No. 1 mine, Las Animas County, was killed by a fall of rock. A slip crossed an entry at right angles and continued into a chain pillar, where deceased was cleaning a rail in front of a car he had just loaded. In loading from the rib the slip was released and the outer portion of the rock broke off, striking deceased. The place was well

timbered and deceased was an experienced miner. It was an unforeseen accident and inherent to the danger of the industry.

December 8—STEVE MILLER, Montenegrin, shotfirer, age 33 years, single, employed by the Victor-American Fuel Company at the Pinnacle mine, Routt County, was killed by an outburst of coal from a defective shot. There was no witness to the accident. Deceased was firing shots and whether he was at fault or the fuse that was used, cannot be determined.

December 12—MORRIS WEISER, Austrian, top boss, age 37 years, married, two children, employed by the Champion Fuel Company at the Champion mine, Boulder County, was crushed to death between railroad cars. A trip of cars consisting of several loaded and empty cars, were being switched. The loaded cars were being dropped down to another track to be weighed. Deceased was standing on one side of track and believing it clear started to cross over, when by some mischance one of the loaded cars became detached and dropping back, caught deceased between the bumpers of the cars, killing him instantly. It seems that deceased came to his death through no fault of his own, but rather by the carelessness of those whose duty it was to see that the moving cars were properly coupled.

December 13—ANTEMIO MARTINEZ, Mexican, miner, age 35 years, married, two children, employed by the Brennan Coal Mining Company at the Brennan mine, Huerfano County, was killed by a fall of rock. Deceased came to his death when coming from work on the main slope, where he was caught by a fall of rock. A good manway was provided and had this been used the accident could have been avoided. Therefore, the accident was due to the deceased's disregard of the mining law.

December 17—R. F. LATTI, American, pick miner, age 37 years, married, two children, employed by the Colorado & Utah Coal Company at the Harris mine, Routt County, was killed by a fall of rock in a room off a slope. Deceased and his partner had tested the roof 40 minutes prior to the accident and considered it safe. The place was well timbered. At the point where deceased was working, a bump occurred in the overlying strata and was thrown out with such force that the timbering could not withstand it. The accident was unforeseen and no one can be held responsible for it.

December 23—G. W. BIXLER, American, pick miner, age 27 years, widower, one child, employed by the Hesperus Fuel

Company at the Hesperus mine, La Plata County, was killed by a fall of rock in a room off a cross entry. The roof under which deceased was working was intersected with slips and potholes, and in some places bands of iron stone ran through it. The place was well timbered and it was apparent that deceased had taken all necessary precaution to protect himself. The accident was due to the inherent danger of the work.

December 29—JOE NORIN, Austrian, pick miner, age 37 years, married, two children, employed by the Black Hawk Coal Company at the Primrose mine, Las Animas County, was killed by a fall of rock in a pillar entry. Deceased and his partner were taking out a chain pillar when a large pot rock fell from the roof. From the evidence obtained, neither the mine foreman, deceased, nor his partner, had seen the slip that surrounded the rock and therefore were not aware of the danger. Responsibility for the accident cannot be placed on anyone.

NEW MINES OPENED IN 1919.

One of the most interesting reports of a new mine was handed in by request of this department for the Seventh Annual Report by the Grand Junction Mining & Fuel Company and was made by the well-known mining engineer, Mr. John McNeil.

Acting upon the request of your Secretary, Mrs. Tibbitts, I herewith present to you a synopsis of the salient features relating to the Sterling Shaft Mine of the Grand Junction Mining & Fuel Company, situated one mile in a southerly direction from Frederick.

The shaft is eighteen feet by nine feet and consists of three compartments, two for hoisting and one for ventilation purposes. It is timbered throughout with 8-in. by 8-in square sets and lagged with 2-in. plank.

The depth of the shaft is 343 feet, where it intersects a coal seam 10 feet in thickness, which is entirely free from bone or other impurities, and the following analytical test of the coal shows it to be a superior grade of lignite coal:

THE BIO-PHARM CHEMICAL CO.

Laboratory and Office,
613 Twenty-second Street,
Denver, Colorado

Average sample of Lignite Coal from Sterling Mine, Frederick, Colorado:

ANALYSIS

Moisture	16.4750
Volatile Matter	35.8590
Fixed Carbon	42.1210
Ash	5.5450
	100.0000
British Thermal Units	10.9400

(Signed) C. B. ROGERS,
Analyst.

The reasons geologically, for having a superior Lignite coal are:

First: Owing to the coal seam being at a much greater depth than any of the other mines in that district; and,

Second: The coal area of the property lies in a synclinal basin peculiarly in itself, between two well defined anticlinal "faulted" ridges of the coal measures, and such geological disturbances usually change coal to a more or less degree, to a superior grade by metamorphism of the stratified rocks under pressure, heat and chemical action.

Our land comprises 320 acres in one connected body and is owned by us in fee. We have made six borings over the property and from the favorable results of such drilling we estimate that we have an available tonnage within the property of between 4,000,000 and 5,000,000 tons of coal.

The surface equipment is modern throughout and designed for a daily production of 1,000 tons. The tippie is of massive construction with steel shaking screens, with a weigh basket and automatic scales; there are two sets of railroad scales also installed.

The steam plant consists of two, two hundred and fifty H. P. (each) internal fired Scotch Marine boilers.

The hoisting plant consists of two direct connected first motion Corliss engines with two drums, rated approximately at 200 H. P. The cages are of the latest improved steel self-dumping type.

The ventilation, for the present, is produced by a self-contained fan of steel structure, driven by a small direct connected engine. The fan is located at the immediate top of the air compartment of the main shaft, used now as a "down cast" to ventilate the underground workings until the permanent air shaft is sunk and connection is made with the same.

Trusting you may find in this letter the information you desire. I am, my dear sir,

Sincerely yours,

JOHN McNEIL, M.E.,
Consulting Engineer.

The following well-written report by Mr. Harry M. Jones, mining engineer, was also made at the request of this department. Sincere thanks are hereby tendered to Mr. McNeil and Mr. Jones for their valuable contributions, which will be of great interest to all concerned in coal mining industry:

The Columbine Mine, a new property of The Rocky Mountain Fuel Company, is being opened in Sec. 29, T. 1 N., R. 68 W., about four miles northeast of Lafayette.

The main hoisting shaft has reached the coal at a depth of about 300 feet. It is 9 ft. by 18 ft. in the clear, with an area of 162 sq. ft. and composed of two hoisting compartments and a third compartment for conducting the pipe lines, and power wires and an escapement stairway substantially built on 45 degree pitch. The main shaft is heavy concrete lined for the first 50 feet and substantially timbered for the remainder of the depth. It is the intention of the Company to fire-proof the timbering with concrete by apparatus which has already been acquired for that purpose.

A substantial headframe is being erected of wood and steel, which will also be fire-proofed by a concrete covering as before mentioned. This headframe is a new design in this field, which is of the derrick pattern, the corner posts resting on large concrete piers set out 6 feet from the corner of the main shaft, entirely eliminating all weight of the superstructure from resting on the shaft walls. The tippie, tippie-housing and dumping cages, and an automatic weighing hopper will be installed.

The air shaft is now being sunk which has an area of 112 sq. ft., being 8 ft. by 14 ft. in the clear. The collar is concrete in the same manner as the main shaft, as also will be the fan-housing and conduit from fan to the shaft. A large fan will be to install as soon as the shaft is completed. An emergency hoisting apparatus will be installed at the air shaft, and in addition a compartment with escapement stairs will be provided.

The seam aggregates a thickness of 15 ft. 9 in. over a large acreage. The contemplated development will be on the panel and retreating system.

The railroad facilities are designed for a 2,000-ton per eight hour shift capacity. The equipment and generating plant which will all be electrical, of like capacity, which tonnage is anticipated by the company.

A substantial Power House, Machine and Blacksmith Shop, have been constructed and other plant buildings will be constructed of a substantial modern design.

A number of modern tenant houses and a hotel of ample capacity to meet the requirement for some years, will be constructed.

A townsite has been laid out with a large area reserved for play grounds and a central park. Each dwelling will be located on a lot 100 ft. by 125 ft. A complete water system is to be constructed, which will supply sufficient water for family and irrigating purposes. The town will have an adequate supply of shade and fruit trees.

It appears The Rocky Mountain Fuel Company is striving to make this camp the most modern and attractive in the state, and present plans, when followed out, will no doubt bring about their desires.

HARRY M. JONES.

The Clayton mine is located on Sec. 16, T. No. 1, R. 68 W., about two miles from Erie, Weld County. It is operated by the Clayton Coal Company, of which Mr. George Morrison is president, and who is personally directing the opening and construction of the mine. The property is comprised of 640 acres underlaid with two coal beds, one six feet thick and the other nine feet, six inches. Both beds are free from impurities and have good roof and bottom. At the present writing the plant consists of boiler and engine houses, blacksmith shop, tippie, shaker screens and self-dumping cages. A three-compartment shaft has been sunk to a depth of 325 feet. The coal is of the sub-bituminous variety. It is the intention of the management to equip the mine with the most approved modern mining machinery. The tippie is built to handle a 1,500-ton daily capacity, which will place the mine as one of the large producers of the Northern Field.

The Prairie Canon Coal Company is a new opening situated in Las Animas County, not far from Trinidad. The Postoffice address of the mine is Vallorso and it is operated by the Prairie Canon Coal Company, with Mr. John Allen as general superintendent. The mine is connected with the Colorado & Southern R. R. by a spur and is laid out to produce a daily capacity of 70 tons. It has a drift opening of about 500 feet in length and cuts the Bear Canon coal bed having a thickness of three feet six inches. It is of the bituminous coking variety. The company spent about \$25,000.00 in 1919 to develop this property.

LIST OF SHOTFIRERS HOLDING CERTIFICATES FOR GASEOUS MINES ISSUED DURING THE YEAR 1919.

Cert. No.	Name	Address	Cert. No.	Name	Address
923	Adams, John.....	Solar, Colo.	977	Pachoff, Mike	Ideal, Colo.
929	Archuleta, J. F.....	Farr, Colo.	943	Pascik, John	Palisade, Colo.
913	Balam, Edward.....	Lester, Colo.	940	Peloni, Peret	Baldwin, Colo.
974	Billington, Aaron.....	Lafayette, Colo.	946	Perreto, Adolph	Starkville, Colo.
950	Botandi, Silvio.....	Sopris, Colo.	948	Pitcoff, Perer	Tabasco, Colo.
970	Brukeski, Victor.....	Gray Creek, Colo.	908	Powers, Pat M.	Louisville, Colo.
964	Buffalo, Nick	Tabasco, Colo.	962	Quesney, H.	Aguilar, Colo.
909	Covi, Steve	Farr, Colo.	939	Ray, Joseph	Aguilar, Colo.
956	Delellia, Bernardo	Oakview, Colo.	932	Rebel, Frank	Boncarbo, Colo.
973	Faoro, Tony	Sopris, Colo.	961	Reid, James	Aguilar, Colo.
918	Gimpl, Joe	Fruita, Colo.	963	Ribal, Vick	Tabasco, Colo.
931	Guzdek, Stanley	Sopris, Colo.	942	Rowen, William	Brodhead, Colo.
968	Hardgrave, Oliver.....	Walsenb'g, Colo.	951	Ryan, John	Palisade, Colo.
933	Juge, Rude	Gray Creek, Colo.	945	Salizar, J. B.	Walsenburg, Colo.
925	Link, Harry L.	Lester, Colo.	914	Scarvada, John	Gray Creek, Colo.
941	Lowther, W. A.	Aguilar, Colo.	960	Scarvada, Joe	Gray Creek, Colo.
910	Mataycih, Joe	Farr, Colo.	935	Simpleman, Roy	Tabasco, Colo.
954	Melone, Dan	Farr, Colo.	924	Smith, Geo. A.	Cokedale, Colo.
921	Mullins, W. S.	Mt. Harris, Colo.	969	Thomas, Chas.	Lester, Colo.
927	McIllwee, Wm.	Walsen, Colo.	934	Thomas, Chas.	Ojo, Colo.
952	Nikols, Jeff	Berwind, Colo.	916	Turley, Joe	Tabasco, Colo.
949	Nuoci, Joe	Lafayette, Colo.	958	Vaughn, Thomas	Berwind, Colo.
919	Owen, Thomas	Palisade, Colo.	966	Vincinzi, Tony	Strong, Colo.
			911	Visage, W. T.	Berwind, Colo.
			955	Westbrook, J. T.	Oakview, Colo.
			971	Wilder, M. A.	Rouse, Colo.
			928	Williams, Fred	Berwind, Colo.
			922	Young, Andrew	Walsen, Colo.

LIST OF SHOTFIRERS HOLDING CERTIFICATES FOR NON-GASEOUS MINES ISSUED DURING THE YEAR 1919.

Cert. No.	Name	Address	Cert. No.	Name	Address
975	Anest, James	Vallorso, Colo.	965	Lazaroff, George.....	Tioga, Colo.
937	Belada, Mick	Pallas, Colo.	936	Linn, David	Bear River, Colo.
907	Bottinelli, Baptista.....	Lo'sv'le, Colo.	957	Martin, August.....	Oak Creek, Colo.
938	Caffrey, J. P.	Pallas, Colo.	903	Mestes, Antonio	Trinidad, Colo.
978	Cook, James	Oak Creek, Colo.	915	Melandres, Maxwell	Ideal, Colo.
930	Delmastro, Joe.....	Colo. Spgs., Colo.	959	Miller, Steve	Oak Creek, Colo.
972	Downing, J. M.	Bowie, Colo.	920	Nelson, Green W.....	Mt. Harris, Colo.
883	Evans, Geo.....	Mt. Harris, Colo.	967	Petroff, Anglo.....	Tioga, Colo.
944	Gallegas, Lito	Aguilar, Colo.	905	Robinson, J. F.....	Crested B'te, Colo.
926	Goodfelder, Louis.....	Louisv'le, Colo.	904	Roberts, R. B.....	Crested Bu'te, Colo.
968	Hunter, Joe	Delcarbon, Colo.	906	Ruggera, Felice.....	Crested B'te, Colo.
979	John, Steven L.....	Frederick, Colo.	953	Smith, Alfred L.....	Mt. Harris, Colo.
			917	Valdez, J. D.....	Tollerburg, Colo.
			947	Williams, T. R.	Florence, Colo.
			912	Wirt, V. G.	Ludlow, Colo.

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