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OF THE

STATE INSPECTOR OF COAL MINES

1923



DENVER, COLORADO EAMES BROTHERS, PRINTERS 1924

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ELEVENTH ANNUAL REPORT

OF THE

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PERSONNEL OF COAL MINE INSPECTION DEPARTMENT

JAMES DALRYMPLE, Chief Inspector Denver,	Colo.
W. M. LAURIE, Deputy Inspector Trinidad,	Colo.
HUGO H. MACHIN, Deputy Inspector	Colo.
WILLIAM H. JAMES, Deputy Inspector	Colo.
JAMES W. GRAHAM, Deputy InspectorLafayette,	Colo.
HENRY P. KING, Deputy Inspector	Colo.
ADA R. TIBBITS, Chief Clerk	Colo.
MAX M. GREENWALD, Assistant Clerk	Colo.

FIELD FORCE AND DISTRICTS

- W. M. LAURIE, 512 Ash St., Trinidad, Colo.......District No. 1 Includes the following mines: Primero, Frederick. Sopris, Starkville, Morley, Engleville, Gray Creek, Bonearbo, Piedmont. La Belle, Jeffryes, Santa Fe, Bear Canon, Three Pine, Thor, Macoye, Baldy Mountain, Hines, Keystone, Leone, Henderson, Deep Vein, Liberty, Fisher's Peak, Pickford, Beshoar, Brown, Phillips, Star. Prospect, Toller, Forbes.
- WM. H. JAMES, 216 E. Indiana Ave., Walsenburg, Colo.District No. 3 Includes the following mines: Oakdale, Reliance, Caddell, Cuchara Canon, Toltee, Pictou, Jobal. Maitland, New Maitland, Vesta, Gordon, Turner, Sunnyside, Kebler Nos. 1 and 2, Walsen, Robinson 1 and 2, and all mines in Fremont county.
- HENRY P. KING, 1255 Lafayette St., Denver, Colo..... District No. 5 Includes mines in the following counties: Archuleta, Elbert, Jefferson, La Plata, Moffat, Montezuma, Routt, and Weld.

UNION CARBIDE For Miners Lamps

World's Best Quality----Highest Gas Yield

The product of the originators and developers of the Carbide and Acetylene industry.

Uniform, s u stained quality assured by more than a quarter of a century of experience in selecting raw materials, and in perfecting laborat or y practice and works processes.



The constant, dependable quality compels recognition of the economies which go with it.

Union Carbide will keep for years in the original package without deterioration.

UNION CARBIDE PACKED IN BLUE AND GRAY DRUMS CAPACITY 100 LBS.

Our remarkable nation-wide service and distributing system makes Union Carbide quickly available everywhere.

Miners Lamp Union Carbide is specially prepared for miners' use.

Because of its high gas yield, lamps require less Carbide per charge.

Uniform in size, and carefully screened: this eliminates waste and produces uniform generation of gas.

Due to the great purity of Union Carbide and its gas, the flame is of maximum illuminating power, and constant in size.

Our excellent approved package—the Blue and Gray Drum—is in keeping with our determination to faithfully protect the interests of the operator and the miner in the matter of Carbide quality, from the time the Carbide is packed at the works until it is consumed by the miner.

We have Union Carbide Warehouses in 175 cities.

UNION CARBIDE

Maximum Quality and Exceptional Service

have been developed to maintain the many moneysaving and efficiency producing advantages realized by Operators and Miners through the use of Carbide lamps.

Carbide Lamp Advantages

Low cost of lamp. Remarkably low cost of upkeep.

Long life of lamp.

Light in weight—Does not handicap miner.

Lamp very compact --- No burdensome entanglements. Because of the widely diffused light, miner can easily observe conditions relating to the personal safety of himself and fellow miners. A wonderful aid to mine foremen in getting efficient and economical results.

The Carbide Lamp is easily understood and easily cared for by every miner.

Miner can always assume the posture-standing, bending or kneeling—which will enable him to work with greatest comfort, and light

always directed is iust where he needs it.

Greater volume of light than from any other type of mine lamp.

Minimizes number of accidents resulting from poor lights.

Working places can be more easily and thoroughly inspected, and dangerous roof, wall and floor conditions detected with greater certainty.

No eye strain when Carbide lamps are used. Eye-strain means loss of general efficiency.

Carbide Lamp can always be used as convenient Hand Lamp, or can be hung up. Size of flame and volume of

light easily regulated.

Carbide Lamps, used in and about mines, have accomplished more for the comfort and convenience of miners than any other development, invention or device of the twentieth century. Union Carbide Gas light is more nearly like the natural light of the sun than any other light known to man. The miner can accomplish more and better work, with greater ease, comfort and safety, than would otherwise be possible.

Our Blue and Gray Drum is, throughout the world, recognized as a symbol denoting:

Best Grade Carbide

Best Grade Carbide Highest Gas Value Uniform Dependable Quality Purest Gas

UNION CARBIDE SALES COMPANY

Principal Offices

Peoples Gas Bldg., Carbide and Carbon Bldg., Balfour Bldg., Chicago, Ill. New York, N. Y. San Francisco, Calif. Chicago, Ill.

LETTER OF TRANSMITTAL

Denver, Colorado, April 1, 1924.

To His Excellency,

WILLIAM E. SWEET,

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 Eleventh Annual Report of this department.

The period covered began January 1 and ended December 31, 1923.

Respectfully,

JAMES DALRYMPLE,

State Inspector of Coal Mines.

STATEMENT SHOWING RECEIPTS AND DISBURSEMENTS FROM JANUARY 1, TO DECEMBER 31, 1923

RECEIPTS

Tax collected on coal mined	1 8	\$33,178.34
From sales of copies of the Coal Mining Laws		435.35
Refunds		12.50
Balance brought forward from 1922		4,391.95

Total

\$38.017.58

DISBURSEMENTS

Salary of Chief Inspector	4,399.99	
Salary of five deputy inspectors	14,529.43	
Salaries of chief clerk and assistant clerk.	3.300.00	
Expenses, chief and deputy inspectors	4,829.91	
Fatal accident investigators, per diem and expenses	141.70	
Mileage books (R. R. Transportation)	1,020.00	
Automobile supplies and repairs	951.94	
Board of Examiners, per diem and expenses	737.98	
Printing	2,176.27	
Postage	413.97	
Stationery supplies	236.15	
Telephone service	97.45	
Telegraph service	26.09	
Instruments	79.97	
Express	2.39	
Miscellaneous	113.43	
Total		\$33,056.67
Surplus December 31, 1923		\$ 4,960.91

FIELD EQUIPMENT

One Hupmobile Roads	ter Coupe Five Speedometers
Three Dodge Touring	Cars One Carbon Monoxide Gas Detector
One Ford Touring Ca	Five Marseant Safety Lamps
Seven Anemometers	Ten Koehler Safety Lamps
One Psychrometer	One Anerold Barometer
One Geophone	One Burrell Gas Detector
	One Gas Testing Box

SUMMARY OF THE COAL PRODUCTION OF COLORADG, 1923

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*Number of minor exercised	970
Number of mines operated	270
Number of new and old mines opened	32
Number of mines closed 18; abandoned 2; total	20
Tons of sub-bituminous coal produced	2,787,414
Tons of semi-bituminous coal produced	851,929
Tons of bituminous coal produced	6,569,275
Tons of semi-anthracite coal produced	73,541
Tons of anthracite coal produced	54,576
Total number of tons of coal produced	10,336,735
Increase, 1923	333,125
Tons of run of mine coal produced	3,248,223
Tons of lump coal produced	3,118,073
Tons of nut coal produced	861,490
Tons of pea coal produced	56,126
Tons of slack coal produced	3,052,823
Percentage of slack produced	43+
Tons of coal mined by hand	5,493,066
Tons of coal mined by machine	4,843,669
Kind and number of machines used: Compressed air 169;	
Electric 297; total	466
Tons of coal mined for shipment	8,594,418
Tons of coal shipped out of the state	2,128,594
Tons of coal sold to local trade and used by employees	436,335
Tons of coal used at the mines for steam and heat	237,628
Tons of coal made into coke	1,068,354
Tons of coke made	648,851
Number of days coke ovens were operated	340.5
Number of coke ovens used	545
Number of men employed at coke ovens	246
Number of miners employed: Pick 4,932; Machine 3,499; total	8,431
Number of men employed in and about mines (average)	13,277
Number of employees foreign born	5,401
Number of employees speaking English	12,326
Average number of days worked (man days)	169.9
Daily production per miner	7.2
Annual production per miner	1,226
Number and type of safety lamps used: Flame 854; 8lectric 5,902;	
total	6,766
Number of carbide lamps used	6,824
Number of pounds of carbide used (approximately)	196,985
Number of pounds of permissible powder used	865,633
Number of pounds of black powder used	1,610,164
Number of pounds of dynamite powder used	35,409
Number of men killed: Underground 63: Surface 3: total	66
Number of men injured	1.679
Number of men killed per thousand employed	4.97
Number of men injured per thousand employed	126 46
Number of tons of coal produced for each life lost	156.617
Number of men killed per million tons of coal produced	6.38
Number of men injured per million tons of coal produced	162.43
Number of tons of coal produced for each non-fatal accident	6,156
Number of men employed per fatal accident	201.2
Number of men employed per non-fatal accident	7.9
Number of children left fatherless	45
Cost of development work in mines during 1923 138 mines re-	119
norting	\$1.011.859.00
Number of days lost account of car shortage, 47 mines reporting.	2,153
Number of tons of coal lost through shortage of labor, 10 mines	
reporting	50,173

*NOTE: The yearly reports of eleven of the above 276 mines were filed too late to embody their combined production of 2 947 tons in the tables of this Annual Report. However, they are included in the Mine Directory or Table No. 1.

THE ROYAL FUEL COMPANY

Producers of High Grade BITUMINOUS



Certificate U.S. Bureau of Mines gives B.T.U. 13, 596

Royal Coal has given satisfaction at Fort D.A.Russell, Fort Logan, Fort Bliss, Fort Huachuca and Fort Riley. The ROYAL Mine has two million tons of coal blocked out

GENERAL OFFICE DENVER, COLORADO

Modesty in Claims

is oftentimes commended. It is right that it should be. Frequently, however, we feel that we are not "hitting on all six" when we don't claim more for Hyatt mine car bearings that we usually do.

Recently a certain mining company re-equipped an entire mine with 250 cars having Hyatt bearings in the wheel hubs. As a result, four men (two repair-men and two greasers) have been laid off—saving \$30.00 per day in wages. About 25 gallons of black scrap have been saved every working day, and more coal is produced than ever before.

At this rate, the Hyatt bearings will have saved enough in about twelve to fifteen months to balance their initial cost, and ever after that, during their many years of life, the savings will be clear profit for dividends or other uses.

The bearings will require no attention other than a gun full of grease every three or four months, and "if they are properly greased, why shouldn't they last for from fifteen to twenty years?"

We shall be glad to give you further details if you will let us know you are interested.

HYATT ROLLER BEARING COMPANY

NEWARK, HUNTINGTON, PITTSBURGH, CHICAGO WORCESTER, BUFFALO, PHILADELPHIA, CLEVELAND, INDIANAPOLIS, DETROIT, MILWAUKEE, MINNEAPOLIS, SAN FRANCISCO



Eleventh Annual Report OF THE State Inspector of Coal Mines 1923

INTRODUCTION

The Eleventh Annual Report of the Coal Mine Inspection Department is herewith submitted to those who are interested in the industry.

The total production of Colorado for the calendar year 1923 was 10,336,735 tons, an increase of 333,125 tons as compared with the previous year. The average number of men employed in and about the mines was 13,277, or 159 men less than in 1922, and 169,9 man days were worked, a loss of 26.6 days compared with the former year. In the various tables compiled in this report, the operations of 265 mines are shown, in fact, however, 276 mines tiled their annual reports, but eleven of them were too late to be embodied in the tables outside of "Table No. 1," which is the "Mine Directory."

Out of the 276 mines reported, 141 are mines which have no railroad connections, they are widely scattered over the State and usually in isolated places. They are operated intermittently and mostly in the early winter to supply a small local trade. When this is satisfied, they close and the short time operators generally move to other fields. These mines, sometimes, remain idle for several years and then reopen under other names and it is very difficult to keep track of them, and it is almost impossible to get data from them. When the District Inspector accidentally hears of such a mine, it is usually so far from a railroad and therefore quite an expense to visit it, or, if practicable does visit it, finds it closed and no one on the ground who knows a thing about the mine. These mines are quite a problem to the Department, as they are generally handled by men who are unfamiliar with coal mining and it has happened that accidents occurred that were not reported and information of them reached the Department in a round about way, long after they occurred. When the Inspector went to investigate, found the mine closed, the operator gone, and the only data that could be obtained was that a man was killed.

Fortunately this is not true of all the small mines off the railroads. Many of them are steady producers, comply with the law, employ proper mine officials, and report regularly year in and year out. These mines are necessary in the district in which they operate, serving a utilitarian purpose as well as a commercial end.

There were two mine disasters, the Southwestern mine explosion, in which ten men lost their lives, and the Midwest mine explosion, in which six lives were lost, bringing the total of lives lost to 66, or 4.97 per thousand men employed, a slight decrease compared with 74 lives lost, or 5.5 per thousand employed in 1922. The non-fatal accidents numbered 1,679, or 126.46 per thousand employed, and is a decrease of 45 injured, or 1.9 per thousand employed, than in the preceding year.

There were no labor troubles and, excepting in Routt county, very little car shortage. However, the increase is due less to a brisk demand for the product than to the absence of labor trouble and car shortage. In Routt county the car shortage has become an established institution and is a great loss to the operation of coal there, as the product of this county is in great demand in Nebraska. Considering the number of large properties operating, it cannot be said that business was good. It is true the production was about normal, but with a greater radius for distribution, the result would have been different.

It is astonishing to note that no matter how dull the outlook to sell coal is, the Colorado operator keeps up his courage and invests large sums of money annually to improve his mines. It would take pages to enumerate all the up-to-date machinery that has been installed in the past year and the work done to improve the underground conditions and safeguard life, besides to make living conditions better for the families in the various camps.

The reader will notice an innovation in this report, that is the insertion of advertising matter. This was done to lessen the cost of printing the Annual Report, which is considerable. We hope the advertisers will meet with some returns from their investments, and that the operators, when in need of the wares advertised, give them an opportunity to present to them the qualities and prices of materials before going elsewhere. In short, we bespeak the good will of the operators for the advertisers of the Eleventh Annual Report.

The automobiles used by the Deputy State Inspectors of Coal Mines have been in use nearly four years, are in bad condition and continually needing repairs. We have not the money to buy new ones and unless provisions are made by the next legislature, either by appropriation or increase of coal tax so that new automobiles can be provided, the inspection of mines is going to be seriously handicapped.

I desire to express my appreciation for the co-operation given by the operators in general in trying to make the coal mines more safe, and also to the employes of the Department for their able assistance and loyalty.

Total Inspections made in 1923	801
Total Producing Mines	276
Number of Fatal Accidents Investigated by In-	-
spectors and Special Investigators	50
Number of Inquests Attended by Inspectors and	
Special Investigators	41
Scale Inspections	3
Complaints Investigated	19
Prosecutions	14
Miles Traveled by Auto	,497
Miles Traveled by Railroad	,156

HERCULES POWDER COMPANY WILMINGTON, DELAWARE

Submit us your Blasting Problems; Coal and Metal Mining, Road Building, Quarry or Agricultural Blasting. We have Explosives for economical use in every operation. We carry a complete stock of Dynamite, Black Blasting Powder, Fuse, Caps and Blasting Supplies in our Denver-Littleton Colorado Magazines, insuring prompt shipment of all orders received.

Address

HERCULES POWDER COMPANY GEORGE T. KEARNS, MANAGER

1822 California Street

Denver, Colorado



NEW MINES

Six new mines were opened up during the year. At the request of the department Mr. Nash of the Alamo Coal Co, wrote the following interesting description of this large mine with its upto-date equipment and model camp.

Alamo Mine, Alamo Coal Co. Post Office,

Alamo, Huerfano County.

Drilling was begun late in 1921, resulting in a 6½-foot upper vein and an 11-foot lower vein being encountered. Actual development work was started in the Fall of 1922—a temporary electric and compressor plant, also boarding and bunk houses, were erected—an air course and main slope, each 9x10 in the clear, were each driven 2,000 feet and completely timbered, in ten months' time, which is probably a record for the State. These slopes were driven in the Pierre shales for a distance of about 1,800 feet, then the Trinidad sandstone cut for a distance of 200 feet, at which point the Cameron vein, eleven (11) feet in tickness, was encountered. This Cameron vein is lying immediately over the Trinidad sandstone, and immediately above the vein is a sandstone roof.

During this period, four and one-half $(4\frac{1}{2})$ miles of main railroad and one and one-half $(1\frac{1}{2})$ miles of empty and load tracks were completed. This extension is built from Kebler No. 2, the then end of the Loma Branch, to our camp, Alamo. The extension is laid with 85-pound rail, and storage for fifty (50) empty cars and seventy-five (75) loaded cars has been installed.

A Howe 125-ton Steel Track Scale, set in cement, was installed for weighing the empty railroad cars above the tipple, and a Howe 150-ton Steel Track Scale, set in cement, was installed below the tipple for weighing the loaded railroad cars.

Forty (40) miners' houses, three and four rooms in size, have been constructed of cement brick. These are, without doubt, the most modern and attractive miners' houses crected in this State. The cement brick Office Building has been completed, as is the cement brick Power Plant. The architecture of all of these buildings conforms to the architecture of the famous ALAMO, at San Antonio, Texas.

The Power Plant installed is probably the most up-to-date and efficient machinery in this part of the country, comprising:

Two (2) 250-HP. Marine-Type Boilers.

Combustion Engineering Co.'s Type "E" Stokers.

Paige-Jones Water Softener.

Hot Water Heater.

Westinghouse 1,250-kva Turbine and Generator.

Wheeler Condenser.

A Spray Pond.

A Sturtevant Fan for the boilers.

A Traveling Crane for moving the heavy machinery.

Ash Conveyors.

The largest slope Hoist that has ever been installed in Colorado—built by the Wm. A. Box Iron Works Co., of Denver, and is operated by a 600-HP. Westinghouse Motor. The Hoist is equipped with a 1³/₈-inch Langlay Plow Steel Rope, furnished by the American Steel & Wire Co.

It is expected that this will be a one-man power plant.

The tipple is built of Oregon Fir and the top enclosed in galvanized corrugated iron. In it are housed the screening plant, manufactured by the C. S. Card Iron Works, of Denver, consisting of their most modern. Shaking and Revolving Screens, Rotary Dump, and Loading Booms for both Lump and Nut coal—these being the only Loading Booms installed in southern Colorado. The tipple has more clearance, not only as to height from the top of rail, but as to width between the bents, of any tipple that we know of. The track centers are 20 feet, and the clearance above rail a minimum of 18 feet. The tipple is also equipped with a Jeffrey Car Haul and a Richey Car Retarder and two Manierre Extension Box Car Loaders.

The Pit Cars were built by the C. S. Card Iron Works, and are tight bodies with 42-inch track gauge. These Pit Cars are dumped in a Card Rotary Dump, and all Motors used in the installation are Westinghouse. A large Steel Fan, built by the Vulcan Iron Works, of Denver, has been installed. The Main Slope is laid with 60-pound rail, and the entries with 30-pound rail all of these being furnished by the Colorado Fuel & Iron Company.

A Well, 12 feet in diameter and 75 feet deep, was sunk in a dry arroyo adjacent to the power plant, where an inexhaustible underflow of excellent water was encountered. This water is pumped to a 100,000-gallon concrete reservoir, 6,000 feet from the well, at an elevation of about 500 feet above the well. A 4-inch pipe line was laid.

The main slope and air course are timbered with red spruce furnished by the Trinchera Timber Company.

The screen are so arranged that any size of coal can be made, with a capacity of 2.500 tons per day. Alamo coal is very bright in appearance—hard in texture—leaves very little ash, is practically sootless, and will not clinker. It is undoubtedly a highgrade Bituminous domestic coal.

The property was put into full operation on November 26th, 1923—the first car having been shipped on October 2d, 1923.

The Officers of the Company are as follows:

President, William B. Lewis, 40 Wall St., New York City.

Treasurer, H. H. Bizallion, President Gotham National Bank, New York City.

Vice-President, General Manager Sales, Purchasing Agent, H. F. Nash, 922 Gas & Electric Bldg., Denver, Colo.

Secretary, A. S. Pratt, 61 Broadway, New York City.

Assistant Secretary and Assistant Treasurer and Counsel, Geo. C. Manly, 521 Ernest & Cranmer Bldg., Denver, Colo.

General Manager Operations, E. H. McCleary, Alamo, Colo.

Auditor, A. G. Nelson, 922 Gas & Electric Bldg., Denver, Colo.

ALAMO is the postoffice and shipments can be routed either via the Denver & Rio Grande Western or the Colorado & Southern Railways, as Alamo is located on what is known as the "joint track."

Compensation insurance is carried in the Employers' Mutual Insurance Company, of Denver.

Written by H. F. NASH.

MOHAWK MINE, Black Hawk Coal Co., Post Office, Canon City, Fremont county, with J. J. Wolfersberger as manager with offices in Denver. This property is a slope opening and the coal bed under exploitation is three feet and ten inches thick of the semi-bituminous variety. The mine has been equipped with a fan. tipple, scales, etc., which has cost to date Fifty Thousand Six Hundred Dollars. This mine has no railroad connection.

HAPPY CANON MINE, Happy Canon Coal Co., Post Office, Montrose, Montrose county, William Toniolli, manager. This mine is opened by a slope 165 feet in length and struck a coal bed two feet and six inches thick of the sub-bituminous variety. A Sturdevant Steel Pressure Blower fan, a steam hoist, boiler, and engine have been installed, a road constructed and a tipple built at an outlay of Twenty-six Thousand Six Hundred and Eighty Dollars. This mine has no railroad connection.

OLIVER MINE, Oliver Coal Co., Post Office, Somerset, Gunnison county, Clint L. Oliver, Kansas City, Mo., manager. This mine has a slope opening of 250 feet and a drift opening 400 feet. The coal bed under operation is from 21 to 22 feet thick and of the semi-anthracite variety. So far about Eight Thousand Dollars have been expended for its development and equipment. No railroad connection at this mine.

MASCOT MINE, C. E. Williamson, Post Office, Matheson, Elbert county. This mine has a slope opening about 328 feet in length and the coal to be mined is from 3 to 5 feet thick and of the sub-bituminous variety. This mine is equipped with steam boiler, hoisting engine, engine house, tipple house, scales, etc. The cost to date is Five Thousand Dollars. No railroad connection at this mine.

CRYSTAL MINE, Crystal River Coal & Coke Co., Post Office, Carbondale, Pitkin county, P. C. Coryell, Jr., manager. This mine is opened by a drift 135 feet in length and the coal bed under exploitation belongs to the Mesa Verde Group and is 4 feet thick and of the bituminous variety. A coal chute and blacksmith shop have been erected, a road constructed, and a bridge built across the Crystal River, and a spur to connect with the Crystal River and San Juan R. R. The total expense of this property, so far amounts to Three Thousand Five Hundred and Thirty-nine Dollars.



IMPROVEMENTS

The Colorado Fuel & Iron Company, some time ago, started putting signals on all fans at gaseous mines so that slowing down or stoppage of fans will cause a signal to operate, either by blowing whistle or ringing of bell, thereby informing someone in charge that something is wrong with the ventilating fan. They have also installed automatic releases at some of their mines that cut off the power all over the mine in case of slowing down or stoppage of fan. Both of these devices are operated by the ventilating pressure. The State Inspection Department has approved both of the devices and is recommending them to all gaseous mines. The State is also recommending Permissible Electric Head Lamps to take the place of open lights in all gaseous mines and non-gaseous mines connected with gaseous mines. Some of the mines have already complied with the recommendation, others are waiting upon the manufacturers of the lamps for delivery.

It is the desire of the State Inspection Department to have the mining law so amended by the next legislature that the use of open lights will be prohibited in all mines shipping coal by rail and in all other mines where the Chief Inspector believes the use of open lights a menace to life.

The air-shaft at Toller mine has been enlarged to the extent of doubling the area and retimbered in first class shape. A steam hoist has also been installed to hoist employes in case of necessity. Considerable repairs made to the main hoisting shaft head-frame Transformers and Marine Cable have been installed underground. The above work has been done in first class shape and certainly is a great improvement, especially from a safety standpoint.

HUMIDIFICATION AND SPRINKLING AS PRACTICED BY THE COLORADO FUEL AND IRON COMPANY

Necessity for Humidifying

While the annual rainfall in Las Animas county, which is that part of the State which my paper has to deal with, was 26.85 inches in 1923, the normal average yearly rainfall is only about 17 inches.

The moist warm air which leaves the Pacific Ocean headed in our direction, deposits its vapor in the mountains as rain and snow, and when it reaches us it is descending and its temperature increasing and is prepared to take up moisture rather than deposit it.

We must depend principally on the moisture in the winds from the Atlantic and the Gulf of Mexico.

Temperature and humidity readings taken at the surface at several of the Company's properties last month by Robert Mc-Allister, the Company's Mine Inspector, are as follows:

Jan. 3-Temp. 37° Fah. Relative Humidity 53%.

Jan. 7-Temp. 40° Fah. Relative Humidity 43%.

Jan.	8—Temp.	39°	Fah.	Relative	Humidity	21%.
Jan.	9—Temp.	36°	Fah.	Relative	Humidity	60%.
Jan.	11—Temp.	37°	Fah.	Relative	Humidity	46%.
Jan.	21—Temp.	35°	Fah.	Relative	Humidity	83%.
Jan.	22—Temp.	44°	Fah.	Relative	Humidity	30%.

The average temperature and humidity for the seven days being—Temperature 38° Fahrenheit, Humidity 48%, which contains about Two (2) gallons of water for 100,000 cubic feet of air.

Readings in the return air during the same periods are as follows:

Jan.	3—Temp.	65°	Fah.	Relative	Humidity	100%.
Jan.	7—Temp.	62°	Fah.	Relative	Humidity	100%.
Jan.	8—Temp.	61°	Fah.	Relative	Humidity	100%.
Jan.	9—Temp.	65°	Fah.	Relative	Humidity	100%.
Jan.	11—Temp.	65°	Fah.	Relative	Humidity	100%.
Jan.	21—Temp.	66°	Fah.	Relative	Humidity	100%.
Jan.	22—Temp.	60°	Fah.	Relative	Humidity	100%.

Average Temp. 63° Fah. Relative Humidity 100%.

100,000 Cubic Feet of air at this temperature and humidity contains about Eleven (11) gallons of water.

Figuring on 100,000 Cubic Feet of air, which is about the average quantity at each of our mines, passing per minute, at the above conditions, would mean the extraction of about 13,000 gallons of water each Twenty-four (24) hours from the mine. If no vapor is applied artificially the under-saturated intake air must get its moisture from the dust on the walls, roof and floor of the mine, and the dryer the dust is, the more dangerous it is.

What we try to do is to heat the air to the required temperature at the mouth of the mine and give it all the moisture it can carry, before it proceeds on the way through the mine. In many cases it is raised to a temperature higher than the mean temperature of the mine, as its moisture is deposited on the walls, roof and floor. By the application of plenty of water under a strong pressure, on the roof, sides and roadways, moistening the dust so that it will adhere when pressed in the hand to make a ball, we believe it will not propagate an explosion.

By referring to the sketch you will note the system as practiced by The Colo. Fuel and Iron Company.

First—Preheating the Air to the Mine Temperature and Humidifying It.

Radiators of ONE and TWO inch pipe (FOUR (4) inches are sometimes used), are lined along each side of the intake aircourse. Coils are oftimes placed along the roof also, and are from 75 to 125 feet long, according to the amount of radiation desired, and are usually heated by live steam.

The exhaust steam from the fan is carried into the intake aircourse, preferably a short distance in, by the radiators, which supplies vapor to the air as well as assisting in raising its temperature. This is supplemented by fine sprays placed along the entry at intervals from 25 to 500 feet, as is found necessary.

Loading Up of Fine Slack and Dust Along the Roadways and Sprinkling

Different types of cars distribute more or less fine slack along the roadways, which is ground up by the traffic of men, mules and cars. This coal is loaded out at convenient times and the entire entry sprinkled by hose, with a pressure of 50 to 75 pounds. With valves every 125 feet, one man can sprinkle 4,500 feet of entry in an 8-hour shift.

The string of empty cars is thoroughly sprinkled by a heavy spray on each trip from the tipple, which prevents the dust from the cars being picked up by the air current or sifting out through the cracks onto the roadway. Each trip of loaded cars is likewise sprinkled when leaving the partings.

The average amount of water applied per day at each mine, exclusive of exhaust steam, is as follows:

Our Company installed during 1922 over 72,000 feet of sprinkling lines of One (1), Two (2) and Four (4) inch size, in Seven (7) Coking Coal Mines in Las Animas County.

The extensions for the year 1923 were:

20,980	feet	1-inch	pipe
27,279	feet	2-inch	pipe
120	feet	3-inch	pipe
5.665	feet	4-inch	pipe
0,000		1 111011	1,.1,0

Besides-

1,749	feet ¹	2-inch	pipe
1,444	feet:	4-inch	pipe

Total 57,237 feet

The cost of labor and supplies for Humidification and Sprinkling for the year 1923 at Seven (7) Plants totaled \$34,400.00, or Two (2) Cents One (1) Mill (\$.021) per ton of coal mined.

By R. L. HAIR,

Division Engineer,

Colorado Fuel & Iron Co.

In addition to the above sprinkling lines installed in the mines of the Colorado Fuel & Iron Co. in Las Animas county, a system of sprinkling was also installed in some of the mines in Huerfano county at a cost of \$9,573.94, making a total of \$43,-973.94 expended by the company during the year 1923. Extent of sprinkling lines in Huerfano county is as follows:

One-inch	pipe	3,900	feet
Size not g	given	4,700	feet

VENTILATION AND SAFETY FEATURES PERFECTED BY INSTALLATION OF NEW FAN AND OTHER DEVICES AT THE ROYAL MINE

By H. Van Mater

The Royal coal mine at Aguilar, Colorado, was a great mine in 1921. It is a greater mine today, with ever-increasing reserves and the most advanced engineering features to be found in the West. A measurement of reserves actually blocked out in July, 1921, showed 1,982,268 tons, as then published in the Mineral Age. They now run well above the 2,100,000 ton mark.

In July, 1921, we published the following tabulation of the tonnage in the fifteen blocks of ground then producing as follows:

lock	2	Average	Tons of
No.		Thickness	2,000 lbs.
A		5.7	114,684
В		6.0	49,930
\mathbf{C}^{-}		5.6	97,790
D		5.5	73,410
E		5.9	210,501
\mathbf{F}		5.5	78,319
G		5.9	239,968
Η		6.0	82,129
Ι		5.4	179,329
J		5.8	149,023
Κ		5.8	162,625
\mathbf{L}		5.9	61,232
\mathbf{M}		6.3	187,014
Ν		6.7	251,737
0		5.6	44,577
			'

Total reserve tonnage in July, 1921......1,982,268

Although production has been going on at the rate of some 200,000 tons per year, development work has more than kept pace. The continuous driving of nineteen entries has added new reserves more rapidly than extraction has diminished them. In blocked out tonnage the Royal is now a record breaker.

Development work has been extended to several new blocks of ground since the above table was published, and although about 500,000 tons of coal have been mined in the past two and one-half years, the blocked out reserves are bigger and better than ever.

B

The following tables taken from reports of appraising engineers show the reserves now practically double what they were in 1918, when the Royal Fuel company of Denver undertook its aggressive program of development:

1918	.1,190,113	tons
1919	1,282,205	tons
1920	1,606,399	tons
1921.	1,982,268	tons
1923	.2,100,000	tons

New safety and ventilation equipment provided by the Royal management include air shaft, fan, piping for automatic sprays, rock crusher, boundary airway extensions and other most advanced safety features. We publish here a technical description of the new air shaft and fan installation as given by Mr. Samuel Tescher, general superintendent for the Royal and National Fuel Company, in recent issues of Coal Age and Coal Industry.

Automatic Action Fan System

A new air shaft and fan installation was completed September 1, 1923, by the Royal Fuel Company at its Royal Mine, Aguilar, Colorado. The installation gives this property two ventilating fans, each with its separate intake, separate return and separate mine section, by means of a by-pass entry which allows either of the two returns to go to either fan, and by a system of doors and overeasts either fan can be made to ventilate the entire mine in case of disability, without any serious interruption to the ventilating current.

The new shaft has two compartments, each compartment being 9 ft. 6 in. by 9 ft. $11\frac{1}{4}$ in. inside measurements, and has a depth of 404 ft. The new shaft is located 1,600 ft. west of the present hoisting shaft and is consequently 1,600 ft. closer to the working places.

The shaft is lined with 4x12-in, S4S-T&G Oregon fir, with the exception of a 22-ft. concrete collar at the surface and a 13-ft. concrete base at the bottom. One compartment of this shaft is used as an intake or downeast, while the other is used as a return or upeast. The upcast compartment is connected by a steel housing to a No. 14 double inlet, reversible Siroeco fan; which is driven by a 200-hp. G. E. motor equipped with a semi-automatic controller. The new fan can be started or stopped from the hoisting engine house, where there is an attendant 24 hours per day.



An automatic signal system rings a bell at the hoisting engine house as well as in the mine in case the fan stops or its speed is reduced to any appreciable extent.

The motor driving the fan is of ample size to take care of any overload, and will keep the fan in operation under single phase current.

Prior to the installation of the new fan and air shaft, the old fan, which is operated by either steam or electricity, delivered 96,000 cubic feet of air per minute at a 4.6 in. water gage, at a speed of 300 rpm. and was consuming 107 hp.

Since the installation of the new fan the old fan has delivered 85,000 cu. ft. of air per minute to its section of the mine at a 3.7-in. water gage, it being driven at a speed of 270 rpm., and consuming about 75 hp.

The new fan, running at a speed of 250 rpm. and consuming about 75 hp., is delivering 100,000 cu. ft. of air per minute to its section of the mine at a 3-in. water gage. In other words, the total quantity of air coursing through the mine has been practically doubled, though the power consumption has been increased less than 50 per cent. To have doubled the quantity of air coursing through the mine without some such change in the system as provided, would have been impracticable, as it would have required over 800 hp.

Gas analyses taken at three different points on the return aircourses prior to the new installation gave 0.9, 1 and 1.5 per cent methane respectively. Gas analyses taken after the new installation at these same points gave 0.4, 0 and 0.4 per cent methane respectively. The absence of methane in the second sample is due to its having been taken out of the intake air before that air had entered the mine far enough to be contaminated.

Tests at the mine after the new fan was installed show that if the new fan is stopped the old fan automatically picks up a portion of the load of the new fan. On one occasion the new fan was shut down for 30 minutes. At the end of that time changes were made which allowed the old fan to ventilate the entire mine, and mine officials reported no change in the most gaseous working places. The changes consumed about 15 minutes and were made, as stated, without a stoppage of the ventilating current.

In the planning of this new ventilating system the direction of the air in the mine was in no place changed. This proved to be an important factor, as the air travel is aided by differences in temperature. The two fans are now capable of delivering over 250,000 cu. ft. of air without overloading their present driving equipment.

Four important factors entered into the improvement of the ventilation as above outlined:

First—Shortening the distance of air travel by locating both the new intake and new return closer to the working faces. Second—Reducing the total volume of air passing in the old intake and old return by dividing the mine into two sections.

Third—Placing of two additional splits in the air current. Fourth—The installation of an additional ventilating fan.

Automatic Sprays Provided

An important safety feature added to the Royal equipment has been the installation of 7,700 feet of 2-inch piping and 10,000 feet of 1-inch piping fitted out with sprays so regulated as to automatically humidify the mine air.

All trips are wet down at the partings so as to eliminate the scattering of coal dust on the floor and ribs of the roadways. On this point a recent inspector's report states that "the roadways and tracks are in good condition; the dust is kept wet."

Another important safety unit is the Universal crusher recently installed for supplying rock dust to be placed on the Taffenel barrier shelves throughout such portions of the mine as cannot be properly humidified by spraying.

Boundary Airway System

No pillars are extracted at this property until the entries have, reached the boundary and an air course has been driven along the boundary and completely around the area from which the pillars are to be extracted. Thus is afforded a complete circuit of air around the gob areas eliminating the accumulation of gas in the old workings.

In extracting pillars by this method at the Royal mine it is practically impossible for any employe to encounter an accumulation of gas in the workings when approaching a worked out area.

All stoppings are of concrete and all overcasts of steel and concrete. All doors are operated on a double or air lock system that is, there is a considerable space between the double doors on each entry, allowing the closing of one before the other is opened and assuring a continuous and uninterruped air current.

A great advantage of the new shaft which is the largest ventilating shaft in Colorado, is that it allows an uninterrupted flow of air throughout the mine at all times. Interruptions due to traveling trips and hoisting cages are eliminated. The mine has four main intakes and four main returns of large sectional area.

Safety Engineering

Great credit is given Mr. G. F. Bowen, safety inspector at this mine, for the ingenuity shown in the installation of the doors, making ventilation of all workings entirely automatic, both fans operating jointly, or either one carrying the whole load by itself. This automatic feature largely eliminates the personal element or rather the neglect of the personal element in satisfactory ventilation. The Royal is the only coal mine in Colorado equipped with two fans that operate continuously or separately, and so arranged that either automatically take up the load of the other in case of failure on the part of either one.

The new shaft is equipped with an emergency hoist and provides an additional escapeway, supplementing the manway constructed two years ago near the hoisting shaft. All power wires at the Royal mine are located in the intake, non-haulage airways. All electrical machinery, including pumps and hoists, are located on intake air currents where there can be no possibility of gas accumulations, even in the event of protracted stoppage of the ventilating air currents.

All gob areas are properly ventilated and are accessible so that frequent examinations can be made.

All flame safety lamps used by mine officials are tested in a transparent receptacle containing an explosive mixture of gas and air, located in the lamp house so as to ascertain whether they are in a safe condition before being taken into the mine.

"Safety First" is the watchword at this property. The company has spared no expense in carrying out this comprehensive safety program in which mine officials and employes co-operate.

Coal Mined by Pick Work

All coal at the Royal is mined by pick work. Shooting is done only in places where rolls or faults are encountered. No electric equipment is operated at any of the working faces, so that practically every conceivable safety measure is taken advantage of.

A natural asset of the Royal seam is the fact that it has a good solid sand rock roof, which not only adds materially to mining safety, but also obviates the mixing of impurities with the mine product.

Inspectors who have recently examined the Royal property report that "The roof of the mine is good; all the coal is got by pick work: permissible powder is used: very little firing is done in the mine; a shot firer fires the shots."

This not only reduces the chances of accident from the use and handling of explosives and from timbers being displaced and the roof shattered by powder shock, but it "also insures a cleaner and coarser grade of coal by not molesting the roof or floor—the sources from which most of the impurities come."

A High Grade Bituminous

Coal mined from the Royal seam is a very high grade bituminous, containing about 1½ per cent moisture, has a low ash content and will store indefinitely without deterioration.

	As Mined	Dry Coa
Moisture	1.71	0.0
Volatile Matter		35.26
Fixed Carbon		54.67
Ash		10.07
		100.00
Sulphur		
British Thermal Units		13,596

An analysis of representative samples of Royal coal made by the United States Bureau of Mines gives the following determination:

Regular Royal equipment includes, in addition to the new fan, the $2\frac{1}{2}x8$ Jeffrey fan driven either by a General Electric motor or a McEwan steam engine; two 7x8 Deming pumps and a No. 9 Cameron; a 240 hp. steam hoist for shaft, two main 112 hp. hoists to shaft bottom and three smaller electric hoists; Edison Electric mine lamps are used.

Seam Averages 6 to 81/2 Feet

The Royal seam averages some $6\frac{1}{2}$ feet thick throughout the mine workings and in places as high as $8\frac{1}{2}$ feet, and practically all clean coal from roof to floor.

As for continuity of seam, we are told by engineers who have inspected the property you can start at any given point in the main workings and walk for a mile in a given direction without encountering any noticeable fault. From the point where the main rock tunnel opens to the west, no fault of any significance has been encountered either in actual operations or in prospect drilling.

The slope manway furnishes an outlet airway and furnishes a dependable escapeway for the men in case of fire or other catastrophe. This manway is located near the main shaft opening and measures $6\frac{1}{2}x9$ feet in the clear, equipped with stairs. The total length of the inclined portions being more than 400 feet.

By use of the block system of roof support no less than 90 per cent of Royal coal has been recovered to date. This high ratio is made possible by leaving large blocks, some of them as large as 300x1,800 feet—sufficient to serve as an effective barrier against "squeeze" and "creep" for the rooms standing on each side of the block.

Mr. Samuel Tescher, general superintendent and chief engineer for the company, has supervised the operation and development of the Royal mine since its inception, and is also general superintendent and chief engineer for the properties of the National Fuel company. The highly satisfactory condition of these properties is due to the capable management of Mr. Tescher and his staff who have spared no efforts in bringing up the standards of safety and efficiency.

PURITAN MINE

The National Fuel Company completed a new shaft at this mine, in Section 2, southeast of the present shaft. This shaft is connected with the main mine workings through a concrete rock tunnel, and is located southeast of a fault 900 feet wide which lies between the acreage of this mine in Section 2 and that situated in Sections 34 and 35.

The new shaft will allow the acreage in Section 2 to be properly ventilated and improve the ventilation in Sections 34 and 35, also giving an additional escapeway.

The size of the shaft is eight feet by twelve feet, divided into two equal compartments, and was made by making an upraise from the mine workings to the surface. When the occasion demands the company will install another fan.

Considerable money was spent to insure safety and raise the standard of sanitation for the men employed by the Victor-American Fuel Co. A Jeffrey fan and one 200 KW. convertor and transformer were installed at the Cass mine; one 150-KW. generator set at the Ravenwood mine and five sets of Fluess breathing apparatus at the Chandler mine, also sixteen Burrell gas masks were distributed among the mines and other improvements made, all tending to add to the efficiency and safety of the working conditions of the mines.

Concerning firing of shots in Boulder and Weld counties during working hours. Inspector King reports that four mines in Weld county, namely, the Evans, Sterling, Baum and Boulder Valley do all shot firing at quitting time. Inspector Graham reports that in Boulder county all the mines are still firing shots during working hours, but some of them have reduced the number fired during working hours. his

A Miner Can Rescue Himself!

The M-S-A

Self-Rescuer EXPERIENCED MINING men confirm our belief that only a small proportion of men

lost in mine explosions are kill-

ed by violence. The larger pro-

portion die from breathing the

"after damp" which contains

in the picture, a man may escape

through "after damp" in safety

Weighs only 13 ounces in use,

twenty ounces in the case. Will protect for one hour.

to the surface.

poisonous carbon monoxide. ¶ The M-S-A Self-Rescuer provides a chemical which protects against carbon monoxide poisoning. By wearing one as shown

Self-Rescuer in mouth-Nose clip on nose-Ready to escape through "after damp."

Self- Rescuer carried in container-Always with the man-Sealed containers prevent deterioration.

> Demonstrations on request — Ask for details of plan for installation throughout your mine.

Approved by U.S. Bureau of Mines



"Everything for Mine and Industrial Safety"

With

TABLE No. 2 POWER EQUIPMENT OF COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

		-	Bo	ollers		Powe	r Plant	En	glnes				Pu	mps			н	aulag	ge		A Com	lr pres-
Name of Operator	Name of Mine	Cy	llndrl- cal	Тι	ıbular	S En Cla	team Iglnes (All Isses)	ln Cor Ei (ternal nbust'n ngines Gas)	Ele Dyi (Cla	ectric namos (All isses)		lty	P De Ing to	umps llver- Water o the urface	Mules		vumt ocom	per of otlve	9	80	is .
		Number	Totai Horse Power	Number	Total Horse Power	Number	Total Horse Power	Number	rotal Horse Power	Number	rotal Kilowatts	Vumber	rotal Capac Jallons per finute	Jumber	Cotal Pallons Fer finute	vumber of forses and	asoline	team	compressed	llectric	Vumber	otal Capaci ubic Feet er Minute
Ajax Coal M. Co Alamo Coal Co Alt!tude Coal Co American Smelting & Ref. Co American Smelting & Ref. Co	Capitol Alamo Altitude San Juan Boncarbo	3 Po	300 	2 1 Pu	500 25 rehas	6 6 1 ed	350	· · · · · · · · · · · · · · · · · · ·		2	1350	6 	450	2 	150	5		S.		e tei E	1 1 	750 500
Anchor Coal Co Arnold & Shaklee Axial Basin Dev. Co Aztec Baldwin Fuel Co	Anchor Sharon Collom Toltec Baldwin-Star	M1	ne	Clo 4 1	sed. 360 30	No	геро	3 	80 Sub	mit	ted	2	150 2310	2	160 400	1 1 18 1	****			 1	 2 2	1000 1000
Barker, Wrlght. Baudino & Co Bear Canon Coal Co Bear River Coal Co Bedllen, Geo	Wright Morning Star Bear Canon Nos, 3 and 6 Bear River. White Ash	Str No	lp Equ	Mi 5 1 Ip	ne 560 ment	4	310	1	6	2	175	2 5 10	225	2 	125	$\begin{array}{c} 6\\1\\26\\3\\\ldots\end{array}$	·····			····· 1 ·····	····· 1 ·····	
Bell Mining Co Bell & Stout Berry, Chas. T Big Flve Coal Co Big Four Coal & Coke Co	Eureka Hoye-Superior Berry Blue Goose Centennial	No 1	Equ 40	2 in 4	160 ment 300	1 1 2	75 25 100	·····			· ····	1 	100 200	1 2 1	100 20	5 1 9		·····		·····	2 1 1	1000
Black Canon Coal & Fuel Co Black Hawk Coal Co Black Hawk Coal Co Black Hills Coal Co Bluff Springs Coal Co	Caddell Mohawk. Primrose. Black Hills Bluff Springs	No MI	Equ ne	lp Ab 1	ment and 25	0n 1	ed 25	(······		······	····· 1	 10			3		·····	·····	2 1	·····	
Boaglio Coal Co Book Cilff Coal Co Boulder Coal M. Co Boulder Valley Coal Co Bracken & Cozza	Pickford Book Cliff. Black Diamond. Boulder Valley Harvey Gap.	No	Rep	ort 3	Sub 375	i mit	ted	····	······			2 3	100	 2 1	 90 	1 5 8 1	·····	 	· · · · · · · · · · · · · · · · · · ·	·····	 1	1000
Brennan Coal M. Co Brewster Independent Coal Co Brown Coal Co Caddell & Son Calumet Fuel Co	Brennan Brewster Round Oak Hezron Perins Peak					·····					······	2 1 	125 100	2 1 	75 100 	7 2 1 9 8	·····	·····	····· ·····	1 2	 	
Calumet Fuel Co Canon District Coal Co Canon-Reliance Coal Co Canon-Reliance Coal Co Cedar Hill Coal & Coke Co	Calumet Florence-Canon. Canon. Reliance. Greenville.	No Po Po	Equ wer wer	lp Pu Pu	ment rchas rchas	ed ed		····· ·····				7 2 3 	450 600 250	2 1 1 	280	28 10 5 8		·····	 	1 3 2	····	
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Colorado Fuel & Iron Co	Walsen Ideal Lester Cameron Pictou	····· ·····				· · · · · · · · · · · · · · · · · · ·		·····		1 2 1	$ \begin{array}{r} 100 \\ 240 \\ \overline{500} \end{array} $	2 3 9 9 6	$1000 \\ 100 \\ 2225 \\ 1625 \\ 1850$	1 1 2 3 3	1100 26 700 1400 900	3 52 24 20 22				1 1 1 	1	
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Colorado Fuel & 1ron Co Colorado Lumber & 1nv. Co Colorado Lumber & 1nv. Co Colorado Springs Co Colorado & Utah Coal Co	Engle Nonparell Garfield Clty Harris	EI	ectric	4 2 Po 6	400 260 wer 830	4 Pur 2	650 chase 800			···· 2	320	2 2 4 7	50 200 676 540	1 1 1 1	100 400 300	34459		 1 	····· 1	 1	1	
Consolidated Coal & Coke Co Converse, Frank Co-operative Fuel Co Corley, W. D Corley, W. D	Baum Converse Cambro Patterson Franceville	Clo	sed,	4 No 1 1	500 Rep 120 120	4 ort 2 1	400 65 40	·····		2	160	9 3 1	360 450 50	2 1 1	30 300 50	16 2	·····		·····	2 1		
Pornwell, J. V Porra, John Cortez Coal Co Pottonwood Coal Co Pracker Jack Coal Co	Niggerhead Corra Kelly Cottonwood Cracker Jack	No	Equ	 lp 	ment			••••• ••••		····· ·····		 1	76	·····		1 1 1	·····	 	····· ·····	 	·····	
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Enrietta & Co Estes, Frank Fairfield, E. F Fairview Coal Co Farmer-Mutual Coal Co	McIntosh Estes Fairfield Fairview Farmer-Mutual	No No 	Equ Equ	lp ip 	ment ment	····· ·····		· · · · · · · · · · · · · · · · · · ·	······	····· ····· ·····		····		·····	······································	····· 1 1 1 1	·····	**** **** ****			 	
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Fruth & Stone Galloway, John R. Gilson Asphaltum Co Golden Dawn Coal Co Good Coal Co	Leader No. 3 Galloway Carhonera Golden Dawn Oldland.	No No	Equ Equ	lp 1 lp	ment 100 ment	·····		· · · · · · · · · · · · · · · · · · ·				·····		·····		1	····· ····· ····	·····	· · · · · · · · · · · · · · · · · · ·	·····	·····	
Gordon Coal Co. Grand Junction M. & F. Co Grand Junction M. & F. Co Green Valley Coal Co Griffiths Coal Co	Gordon Cameo Sterling GreenValley. Griffiths	2	200	22	300 300	3	400			2 1	176 100	6 5 2	400 100 262 40	1 2 1 	400 60 100	9 9 2	·····	·····	·····	1 3 1 1	·····	
Hall, A. W. & Son Happy Canon Coal Co Hawkes Garage Hayden Bros. Coal Corp Hayden Valley Mutual Coal Co	Red Mountain Happy Canon Wright Hayden Mutual	No	Equ	$\begin{array}{c}2\\1\\1p\\6\\1\end{array}$	160 38 inent 900 20	1 1	18 4 500	····· ····· ····		 2 	480	1 4 1	100 360 10	1 1 1 1	30 15 175 10	····· ···· ····	·····	1 	••••	6	••••	

International Fuel Corp. International Fuel Corp. Investors Securities Co	Wolf Creek Evans. Security Baldy Jeffryes			2 3 1 	300 350 50	5 6 1	157 243 5	1	1 1/2	1 	50	2 14 1 	800 25	1 3 1 	12 620 16	4 12 1 4	·····	·····	••••	1 1	2 1 	2100 900-
Jewel Collierles Co. Joerger Fuel Co. Juanita Coal & Coke Co July Coal Co.	Jewel Beshoar King Amador Hill			2	500	2	75	1	7 1/2	2	750	3	300	•••• ••••		1 10 1 1	·····	·····	·····	5	••••	
Keystone Mining Co Keystone Mining Co Kotala, Ludvik La Veta Coal Co Leyden Coal Co	Keystone Prospect. Fern. Leyden No. 3.	Clo	sed.	2 No 1 9 No	125 Rep 60 1700 Rep	ort 1 9 ort	35 1452		······································	····· 2	235	2 1 14	300 100 1250	2 1 2	300 100 260	4		····	 	····· ···· 1	····· 2	3200
Liberty Coal & Merc. Co Malone & Dennis Marchetti, J. R. Marsh, R	Nearing Verdun Marlon Fishers Peak			 		2	65 			····· ·····				+ + +		1 1 1 1	1	 	·····			
Mattlvi & Son McGinley, Wm McKee, Robert McLendon, O. K McMillin Bros.	McGinley. McKee. Stove Canyon. Rollins.	No	Ēqu	lip i	ment 44			····		·····						1	·····				1	50
McNally & Thompson McNally & Thompson McNell Coal Co Mesa Fuel Co	Maitland No. 1 Maitland No. 2 MacGregor Winger	 	······	3	750	 3 	4 25	••••• ••••		3	276	2 6 	611 40	1	30	8 1 3 1 2			·····	4		
Midwest Coal Co Mingan, Mike Minnle Coal Co Moffat Coal Co Moffat Coal Co	Minnle	4 See	1000 Above		300	····· 2	450			·	850	 8 1	430	 1 1	131 37	1 1 6 10			·····	 2 2	 1	1000
Mountain View Coal Co Mt. Evans Fuel Co Mutual Coal Co National Fuel Co Vational Fuel Co.	Walden Mt, Evans Mutual Monarch No. 2 Thor	1 1 	75 35	331	450 100	3 1 2	190 160 75	·····	······	·····		1 1 9 9	22 3200 200	1 1 5 2	800 75	2 1 12 24 20				 5 2	2	1000
National Fuel Co Naturita Stores Co New Castle Syndicate Co North Magnet Coal Co.	Allen No. 2	No	Equ sed.	6 ip No	600 ment Rep	6 	340	••••		1	76	14	300	 	200	31				2	2	1800
North Park Coal Co North Park Coal Co Nossaman & Fowler Oakdale Coal Co	Moore No. 1 Moore No. 2 Pagosa Oakdale	2 1 1 6	200 100 10 750			2 3 1 4	120 150 6 450	·····			375	3 3 1 7	193 113 8 650	1 1 	20 26 	4 2 20	••••		····	 3	+ 	1000
Ohlo Creek Coal M. Co Ohkraut Mining Co O. K. Coal Co Oliver Coal Co Ballacia Coal & Supply Co.	Ohlo Creek Ohkraut O. K Oliver	1	45	1	100		60	····· ·····	••••••	1 	75 	2 4	50 250	2	60 15	6 1 1 2 3	•••• •••• ••••	····* ····* ···*	····· ·····		••••	*******
Paonla Farmer Coal Co Peacock Coal Co Pennington, O. W Peoples Finance Coal Co	Paonia Peacock Midway Fox	No 2	Equ 180	ip 	ment	1	6 	••••		·····		1 6	300 	1 3	300 1000	1 1 7		····		····	2	1000
Petry, Samuel Pikes Peak Cons. Coal Co Pine Fuel Co Postal Coal Co Pralrle Canon Coal Co	Jack O'Lantern Pikeview Fawcett Postal Prairle Canon	3 C10	100 sed	1 	250	·····	······	·····		3	380	3	340	2	300	1 16 1 2	····· 1 ·····		·····	6 1		·······
Rankin, Chas. H Rapini & Hughes Rapson Coal M. Co Rasmussen, H. J Rauman Coal Co.	Star Placita Rapson. Clty Rauman	Clo 3	sed. 260 Equ	No 1 	Rep 65 ment	ort 1 4	40 200	 		 1	621/2					1 12 1		 				
Red Ash Coal Co	Red Ash Black Dlamond McLearn Riley	 No	Equ	 Ip	ment	••••		1 			······								·····		1	
Rio Blanco Coal Co Riverside Coal Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co	Rio Bianco Riverside Industrlal Simpson Acme	N0 	кер 600	ort 3	400	6 4 5	560 600 350			322	240 170 150	 6 16 9	340 2300 800	 2 4 4	45 830 500	1 14 8 14		·····		 4 1	 1 2	 1600 1618
Rocky Mountain Fuel Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co	Gorham Vulcan Standard. Alpine	1	125	2 6 3	250 490 330	3 4 2	285 205 310			1	35	1 7 6 3	60 700 244 325	1 3 1 1	60 200 75 150	3 7 8 11		1	2	 1 2	1 1 2	200 926 1050
Rocky Mountain Fuel Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co	Columbine Grant	I 		1 1 	Use 100	1	80	1	60	1 2 	100 78 450 175	4 	600 320		400	15 4 9 34 11	+			1 4 2	·····	
Rocky Mountain Fuel Co Ross Coal Co Routt County Coal Co Routt-Pinnacle Coal Co	Frederick Horace Cozard Routt-Pinnacle	No	Rep	4 3 ort	360 225 309	3 6 	240 200				200	33	625 250 	2 1 	200 50	4 12 2	·····				1 2	1000 725
Royal Fuel Co Royal Gorge Coal Co Rudlslil, O. C Rugby Collieries Co	Royal. Royal Gorge. Butcher Knife	 Po		3 Pu	240 rchas	2 ed	300			1 2 	2 1/2 187	13	800 	2	175	1	·····		····	3 6	••••	
Rush Coal Co	Russell	 	••••••	1 3 2	16 376		16 176	••••• ••••	a ###~~~~# 	·····		7		1 	45	16 3 3	·····	**** ****	••••• •••••		2	1350
Simpson, Joseph Solar Coal Co	Marr Solar South Canon Square Deal	No No	Rep Equ	ort 1 ip	80 ment	2	45	2	12			1	20 150	1 	20	2	1			••••		
Stanley Mine Co	Stanley. States. Old Coalby. Stokes. Sulphur.	No	 Equ	 íp	ment	·····				****		····· ···· 1	300	 1	181	8 1 1 2	·····		·····	····		
Sumner, L	Cowan Sunnyside Sunshine Brodhead No. 9 Thomas	 1	60	"" ""	100	 1	20		••••••	 2 2	175 240	5 14	320 175	 	80 175					2	·····	
Three Pines Coal Co Tipotsch, Frank Triangle Coal Co Trinidad Coal Co	Three Pines Tipotsch Triangle Baldy Mt	N9 Cio	Equ sed.	lp No	ment Rep	ort						1	100	1	20	9		1 			••••	
United Collieries Co United Collieries Co Utah Fuel Co Vesta Mines Inc Vezzettl & Moschetti	Monroe	 		3 7	300 826	57	300 1422			2	375	2 4 2	100 1230 80 400	1 2 1 1	80 520 3000 400	6 23 6 4		1			2	700
Vickers Coal Co Victor-American Fuel Co Victor-American Fuel Co Victor-American Fuel Co	Vlekers Chandler Radlant Ravenwood.			2	500	·····			······	 2 1 1	360 160 100	3 8 5 7	80 700 162 572	1 2 2 2 2	80 75 11	40		2	····	1 2 2	1	100
Victor-American Fuel Co. Victor-American Fuel Co. Victor-American Fuel Co. Victor-American Fuel Co.	Cass Hastings Pinnacle Wadge		200	····	300 250	····· 3 1	480 194	••••		2 1 3 1	300 150 350 150	10 3 4 4	035 60 174 244	2 1 2 2	10 11	15 25 17 6 10	·····	····· 2	••••	1 3 4 2 2	·····	
White River Lumber Co Williamsburg Coal Co Willie Coal Co Wilton Coal Co Winton Coal Co	Lion Canon Willlamshurg Willie Pritchard Winton	Clo	sed.	1 No 	10 Rep	ort				····		·····	·····	·····		1 1 1	·····	1			····	
Wrlght, Claude Wyoming & Colorado Coal ('o Yampa Coal Co Young & Caddell	Fairview. Rainbow Yampa Young	Clo No	sed. Rep	No l ort	Rep 200	ort 1	100	••••		••••			100	1	25	1 1 2		1				•••••

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TABLE No. 4

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED DECEMBER 31, 1923

1, 9, 600 Bowder 1, 33, 600 Dynamite 1, 33, 600 Bermissible 1, 33, 600 Bermissible 33, 464 6, 651	Black Black 9,600 9,600 1,175 21 1,175 21 2,500 3,164 2,5100 2,175 2,475 3,164 2,5100 2,165	Вlack Black 9,600 9,600 9,600 9,600 1,175 1,175 1,000 2,475 2,500 2,475 2,500 2,475 2,475 31,645 1,000 405 1,000 405	Власк Власк 9,600 9,600 9,600 9,600 1,175 1,696 1,600 2,475 1,600 2,475 1,600 2,475 1,600 2,475 1,600 2,475 1,600 2,475 1,600 2,475 1,600 1,616 1,600 1,616 1,500 405 1,5100 15,110 1,500 405 1,5100 15,110
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
24,725 3,341 155,618	24,725 3,341 155,618 909 39,692	24,725 3,341 155,618 909 39,692 7,658 7,658	24,725 3,341 155,618 909 83,697 7,658 36,469 36,469 36,469
25,421 70,863	$\begin{array}{c} 25,421\\ 25,423\\ 70,863\\ 1,150\\ 1,150\\ 1,16\\ 1,138\\ 6,311\\ \end{array}$	$\begin{array}{c} & 25,421\\ & 25,421\\ & 70,863\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,16\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1,150\\ & 1$	$\begin{array}{c} 25,421\\ 25,421\\ 70,863\\ 1,150\\ 1,150\\ 6,311\\ 6,311\\ 6,311\\ 6,311\\ 6,311\\ 1,368\\ 1,368\\ 1,368\\ 1,368\\ 1,368\\ 1,998\\ 1,984\\ 1,965\\ 1,965\\ 1,965\\ 1,965\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\ 1,966\\$
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Capitol	Capitol Altitude San Juan Boncarbo Anchor Sharon Collom Toltec Baldwin-Star	Capitol- Alamo - Altitude- San Juan Boncarbo. Anchor Sharon - Foltec Collom Toltec Baldwin-Star Morning Star Morning Star Wright Bear River White Ash	Capitol Alamo Sal Juda Boncarbo Boncarbo Anchor Anchor Collon Toltec Toltec Baldwin-Star Wright Morning Star Worning Star White Ash Hove-Superior Eureka Hove-Superior Berry Centennial
al M. Co	aal M. Co 20al Co e Coal Co an S. & R. Co an S. & R. Co Coal Co & Shaklee & Shaklee asin Dev. Co act M. Co an Fuel Co	oal M. Co	oal M. Co
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STATE INSPECTOR OF COAL MINES

TABLE No. 4-Continued

32

MINING MACHINES AND ENPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED

	DECI	EMBE	iR 31, ine	1923 C	oa.l Mined b	~	Exnle	sives IIse	
		Mach	nines).	Short Tons		H)	ounds)	5
Name of Operator	Name of Mine	No. Operated by Compressed Air	No. Operated Vo. Operated	busH	əninəsM	IstoT	Black Powder	9jimsny(I	Permissible BayizolqxA
prings Coal Co	Bluff Springs. Pickford Block Cliff Black Diamond Buack Diamond Boulder Valley	* 00	- * 0101	1,895 3,541	11,526 10,098 88,427	$11,526 \\ 1,526 \\ 1,5495 \\ 3,541 \\ 10,098 \\ 88,427 \\ 88,427 \\ 10,098 \\ 10,098 \\ 10,098 \\ 10,098 \\ 10,098 \\ 10,098 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,008 \\ 10,$	250	600 147	460
en & Cozza. an Coal M. Co ter Independent Coal Co Coal Co I & Son	Harvey GapBrennanBrennanBrensterRound OakHezron		4	$\begin{array}{c} 1,184\\ 1,180\\ 4,323\\ 1,910\\ 36,690 \end{array}$	36,377	$\begin{array}{c} 1,184\\ 36,557\\ 4,323\\ 1,910\\ 36,690\end{array}$	6,700 300	350	$\begin{array}{c} 700\\800\\7,000\end{array}$
et Fuel Co	Calumet Perins Peak Prorehee-Canon Canon Reliance	++	o∞⊣++α	52,298 18,856 80,512 26,561	$\begin{array}{c} 149.874\\ 34.914\\ 4,248\\ 3,942\end{array}$	$\begin{array}{c} 202,172\\ 53,770\\ 4,248\\ 80,512\\ 30,503 \end{array}$	7,650	250	$\begin{array}{c} 41,295\\ 6,636\\ 6,650\\ 5,632\end{array}$
Hill Coal & Coke Co ion Coal M. Co J. S. Coal Co n Coal Co	Greenville. Champion. Missouri. Christensen. Clayton.	6		$16,195 \\ 5,599 \\ 168 \\ 11,381$	3,781 182,121	$16.195 \\ 5,599 \\ 168 \\ 3,781 \\ 193,502 \\ 193,502 \\ 192,502 \\ 192,502 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\ 1002 \\$	2,500 51,000	100	5,000 200 300
coal Co. do Canon Coal Co do Fuel Co do Fuel & Iron Co	Congo Newlin Curtis Coal Creek.			$\begin{array}{c} 340\\ 2,469\\ 3,569\\ 87,755\end{array}$		2,469 3,569 87,755	1,150 2,150 4,572		25 5,974

ELEVEN

$\begin{array}{c} 7.215\\ 5.138\\ 5.138\\ 50\\ 11.958\\ 11.958\end{array}$	3,884 34,427 88,991 40,421 15,761	$\begin{array}{c} 7,646\\ 1,671\\ 5,504\\ 41,375\end{array}$	26.721 17,690 58,323 24,496 19,490	8,029 130 255		2,000	
					2,914	150	
6,528 6,528 9,060 7,125 7,125 9,600 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 12,125 1	8,975	2,367 1,7,607		$\frac{500}{11.975}$	119,050 68,000 10,325	625 750 875 800	$\begin{array}{c} 3.750\\ 8.525\\ 8.475\\ 8.475\\ 16.850\\ 9.750\end{array}$
$\begin{array}{c} 75,123\\ 69,371\\ 33,132\\ 18,184\\ 72,541\end{array}$	$\begin{array}{c} 71,393\\ 280,058\\ 232,391\\ 199,997\\ 148,844 \end{array}$	$\begin{array}{c} 76.942\\ 4.749\\ 44.749\\ 36.310\\ 36.310\\ 308.743\end{array}$	262,215 2502,215 231,895 231,895 212,883 183,379	$121,313\\8,410\\15,405\\17,903\\59,634$	$\begin{array}{c} 210,308\\ 131,531\\ 1,339\\ 1,108\\ 19,349\end{array}$	$1,016 \\ 760 \\ 1,706 \\ 1,145$	$\begin{array}{c} 8,810\\ 16,692\\ 23,066\\ 52,051\\ 6,093\end{array}$
21,361 23,380 31,581	$\begin{array}{c} 212,376\\ 41,816\\ 111,654\end{array}$	$\begin{array}{c} 53,250\\ 4,749\\ 19,517\\ 35.670\\ 51,195\end{array}$	46,578 52,855 54,810	$\begin{array}{c} 24,755\\ 9,243\\ 4,713\\ 28,632\end{array}$	$\begin{array}{c} 5 & 114 \\ 131, 531 \\ \hline 6, 390 \end{array}$		5,286 48,168 820
$\begin{array}{c} 53,762\\ 45,991\\ 1,551\\ 18,184\\ 72,541\end{array}$	$\begin{array}{c} 71,393\\ 67,682\\ 232,391\\ 158,181\\ 37,190 \end{array}$	$\begin{array}{c} 23,692\\ 24,884\\ 640\\ 257,548\end{array}$	$\begin{array}{c} 262,215\\ 250,488\\ 185,317\\ 185,317\\ 128,569\\ 128,569\end{array}$	$egin{array}{c} 96.558 \\ 8.410 \\ 6.162 \\ 13.190 \\ 31,002 \end{array}$	$\begin{array}{c} 205,194 \\ 1,339 \\ 1,108 \\ 12,959 \end{array}$	$1.016 \\ 760 \\ 650 \\ 1.706 \\ 1.145$	$ \begin{array}{c} 3,524\\ 16,692\\ 23,066\\ 3,883\\ 5,273 \end{array} $
010100	15	4 ∺ 10 co co	40100	5 H C3	-1- + 01		1
	· • · · · ·						1 10
Rockvale	Crested Butte 4 Robinson-Walsen 4 Ideal	Pietou	Primero	Toller 5 Engle 3 Carparell 3 Carty-ult 3	Harris	Franceville	Cracker Jack 2 Smith-Anthracite 2 Bulkley No. 2 6 Crown 1

TABLE No. 4-Continued

MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED

	q	Permissible BayisofqxA	3,874	100	5,590		1,400
	sives Use ounds)	Dynamite		200	500	$\begin{array}{c} 50\\ 1,050\\ 400\\ 400 \end{array}$	
	Explo (F	Black Powder	2,500 725 250 250	1,000	$\begin{array}{c} 925\\ 50\\ 1,200\\ \end{array}$	625 1,900 500	6,275 200 1,250
		[BJ0T	$\begin{array}{c} 4,305\\ 1,075\\ 2,419\\ 27,680\end{array}$	$\begin{array}{c} 1,499\\7,711\\1,282\\1,282\\1,282\\1,282\\100\end{array}$	73,175 331 325 172 600	$ \begin{array}{c} 980 \\ 5,216 \\ 824 \\ 2,147 \\ \end{array} $	
	oal Mined by Short Tons)	элідэв№	27,680	1,499 7,711		5,216	
1040	ũ~	hand	$\begin{array}{c} 4,305\\ 1,075\\ 2,419\\ 2,419\end{array}$	$\frac{1,282}{1449}$	73,175 331 325 172 600	$\begin{array}{c} 980\\144\\824\\2,147\end{array}$	8,166 1,269 1,269 11,058
TO 11	ing	No Operated Vio Operated		*			
	Min Mach	Vo. Operated by Compressed Air		- *			
NHA .		Name of Mine	Danville Lewis. De Graffenried Red Canon Dix.	Groham No. 2 Double Dick Dreman Liberty Bell Edgell	Empire Melntosh Estes Fairfeld Fairview	Farmer-Mutual Grange- Witherbee Freeman School Sec, Lease	Leader No. 1 Leader No. 3 Galloway Carbonera
		Name of Operator	Danville Coal Co Davies Coal Co De Graffenried, J. R Delta Coal Co Dick Coal Co	Donald Coal Co Double Dick Coal Co Drennan Coal Co Drott, John H Sdgell, T. E	Empire Coal M. Co Enrietta & Co Betes, Frank. Pairfeid, B. F Fairview Coal Co	Farmer-Mutual Coal Co Florida Grange Fort Lupton Coal Co Freeman, J. R. Freenan, J. R.	Fruth & Stone Fruth & Stone Galloway, John R. Jilson Asphaltum Co

1,000 4.620	50	6,000		7.500 40		1,800	150
2,100	2,000	100		C C		240	
$\begin{array}{c} 1,025\\ 21,125\\ 6,500\end{array}$	20,150 1,550 2,350 1,550 1,550 1,500 500	22,950	$\begin{array}{c} 150\\ 18.750\\ 13.750\\ 47.250\\ 1.500\end{array}$	1,500	250 200 375	42,800	1 000
1,980 67,084 98,022	5,038 5,038 5,311 4,9311 600 210	57,417 2.675 1,208 53,030 236	$\begin{array}{c} 733\\ 19,679\\ 17,471\\ 95,550\\ 2,010 \end{array}$	$\begin{array}{c} 2.251 \\ 6.158 \\ 1.794 \\ 1.794 \\ 80.727 \end{array}$	$\begin{array}{c} 361 \\ 15,290 \\ 1,044 \end{array}$	$150,007 \\ 2,039 \\ 1,137 \\ 1,137 \\ 2,856 \\ 2,856 \\ 2,856 \\ 2,856 \\ 392 \\ 2,856 \\ 392 \\ 2,856 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ 392 \\ $	3,000 664 1485
1,980 60,990 69,990	5,000	15,660	95,550	21,000	11,762	94,931	
$ \begin{array}{c} 930 \\ 6,094 \\ 28,032 \\ 940 \\ 032 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ 040 \\ $	5,038 5,038 4,934 600 210	57,417 2,675 1,208 37,370 236	733 17,471 2,010	$\begin{array}{c} 2.251\\ 2.158\\ 19.657\\ 1.794\\ 80,727\end{array}$	$\begin{array}{c} 361\\ 160\\ 33.528\\ 1.044\end{array}$	55,076 2,039 637 2,839 2,856	$\begin{array}{c} 3,000\\ 664\\ 200\\ 1485\end{array}$
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Golden Dawn	Green Valley Griffths Red Mountain Happy Canon Wrights	Hayden No. 2 Mutual Midden Treasure Ludlow Hunter	Independent 6 Champion 6 Wolf Creek 8 Byans 8 Security 8	Baldy	Amador Hill Keystone Prospect.	Leyden No. 3. 11 Liberty	Fishers Peak Bunker Hill McGinley McKee Stove Canyon

STATE INSPECTOR OF COAL MINES

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MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED

	DEU	aawa	Tr of,	0761					
		Min Mach	ung nines	Ŭ,	oal Mined by Short Tons)		Explo (F	sives Use ounds)	
Name of Operator	Name of Mine	No. Operated by Compressed Air	No Operated Vo Operated	basH	9nifasM	InfoT	Black Powder	93imsayU	Permissinle SəvizofqxA
Millin Bros	Rollins. Mattland Nos. 1 and 2 MacGregor. Winger. Midwest.		69 at at	2,813 2,928	$\begin{array}{c} 1.599\\ 40.066\\ 51.316\\ 15,128\end{array}$	$\begin{array}{c} 1,599\\ 40,066\\ 51,316\\ 2,813\\ 18,056\\ \end{array}$	$10,625 \\ 12,120 \\ 750 \\ 750 $	350 200	4,500 2,500
ngan, Mike	Kurtzville. Minnie Oak Hills No. 1 Oak Hills No. 2 Walden.	1	4 00 1	$\begin{array}{c} 1,466\\ 675\\ 675\\ 103,034\\ 109,931\end{array}$	$\begin{array}{c} 37,316\\ 24,002\\ 8,042\end{array}$	$1,466\\140,350\\133,933\\8,042$	$\begin{array}{c} 375\\ 21,000\\ 19,950\\ 3,250\end{array}$	300 250	$15,920 \\ 15,124$
. Evans Fuel Co ttual Coal Co tional Fuel Co tional Fuel Co tional Fuel Co	Mt. Evans	9	10 C1 4	$\begin{array}{c} 57,509\\ 57,958\\ 13,445\\ 22,804\\ 2,218 \end{array}$	$\begin{array}{c} 72,753\\ 118,815\\ 28,760\\ 269,240 \end{array}$	$\begin{array}{c} 2,509\\ 130711\\ 132,260\\ 61,564\\ 271,458\end{array}$	$\begin{array}{c} 3,000\\ 12,000\\ 58,175\\ 109,200\end{array}$	200	10,000 800 4,217
turita Stores Co	Cloverdale Allen No. 2 Moret No. 1 Moore No. 1	*	*	$\begin{array}{c} 888\\ 284\\ 671\\ 671\\ 2,747\\ 2,747\end{array}$		888 884 284 271 777 22,747	800 30,000 2,500	$150 \\ 1,000 \\ 1.25 \\ 125$	
ssaman & Fowler	Pagosa Oakdale Ohio Creek Ohkraut	+	1	135,753 966 463	16,940	$135.753 \\ 17,906 \\ 17,966 \\ 463$	375 1 915 4,125 500	150 200	16,250

100		5,000 100 100	006		669	$\begin{array}{c} 4,891\\ 4,896\\ 1.471\\ 37,800\end{array}$	200 1.297
50 400 150			10	100			200 505
$\begin{array}{c} 1.000\\ 1.625\\ 2.500\\ 1.875\\ 750\end{array}$	75,625 200		250 400 400	$\begin{array}{c}100\\21.010\\17,850\end{array}$	$\begin{array}{c} 14.677\\ 5.979\\ 4.250\\ 6.3590\\ 6.3590\end{array}$	118.775	3.849 28.925 3.750
$\begin{array}{c} 4,081\\ 1,000\\ 5,548\\ 2,403\\ 2,403 \end{array}$	$\begin{array}{c} 1,110\\ 13,975\\ 13,9975\\ 217,734\\ 1,046\end{array}$	$\begin{array}{c} 447 \\ 10,001 \\ 480 \\ 480 \\ 593 \\ 20,285 \end{array}$	1,576 1,4359 1,4222 1,4222 1,379	$\begin{array}{c} 2290\\ 225\\ 3,153\\ 110,430\\ 49,214\end{array}$	$\begin{array}{c} 34.669\\ 33.605\\ 19.712\\ 28.472\\ 28.472\end{array}$	$\begin{array}{c} 56.972\\ 32.831\\ 5.231\\ 372.242\\ 90.465\end{array}$	$12.209 \\ 37.884 \\ 1.694 \\ 9.740 \\ 167.832 \\ 167.832 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 1000 \\ 10$
8,000	3,000	366		73,808	$ \begin{array}{c} 34,669\\ 19,642\\ 18,156\\ 4,612\\ 6,565 \end{array} $	$\begin{array}{c} 7,491\\ 4,556\\ 340,584\\ 88,656\end{array}$	12,209
$\begin{array}{c} 4,081\\ 1,000\\ 10,251\\ 5,548\\ 2,403\end{array}$	$\begin{array}{c} 1,110\\ 10,975\\ 1,099\\ 69,853\\ 1,046\end{array}$	$ \begin{array}{c} 9,635\\ 9,635\\ 480\\ 593\\ 20,285 \end{array} $	$\begin{array}{c} 576\\ 1,539\\ 1,435\\ 1,422\\ 1,379\end{array}$	$\begin{array}{c} 290\\ 225\\ 3,155\\ 36,622\\ 48,863\end{array}$	$\begin{array}{c} 13.963\\1.556\\51\\51,907\end{array}$	$\begin{array}{c} 49,481\\ 28,275\\ 5,231\\ 31,658\\ 1,809\end{array}$	$\begin{array}{c} 37,884\\ 1,694\\ 9,740\\ 167,832\end{array}$
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	10	* * *		12	0.010-00		*
O. K. Dilver Pallsade Paonia Peacock.	Midway Fox Jack O'Lantern Pikeview Fawcett	Postal Prairie Canon Placita Rapson	City. Rauman Red Ash Black Diamond. McLearn	Riley	Acme Gorham Vulean. Standard Alpine	Forbes No. 9	Prederick
K. Coal Co Ver Coal Co lisade Coal & Supply Co onta Farmer Coal Co acoek Coal Co	ungton, O. W. Jess Finance Coal Co. S. Paulel. Fuel Co. Fuel Co.	al Coal Co- rie Canon Coal Co- rie Canon Coal Co- ni & Hughes on Coal M. Co-	nussen, H. J. nan Coal Co	(, J. D	y Mountain Fuel Co	y Mountain Fuel Co	y Mountain Fuel Co Coal Co. Coal Co t County Coal Co J Fuel Co

STATE INSPECTOR OF COAL MINES

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MINING MACHINES AND EXPLOSIVES USED AT COAL MINES IN THE STATE OF COLORADO FOR YEAR ENDED

	sed	Permissible BevisoldxB		150	13,000 4,000	200	$\frac{11,850}{12,450}$
	osives Us Pounds)	Dynamite		2		500	
	Expl (1	Black Powder	875 1,875 300 19,875	300 775 20,125 2,500	725 300	5,000 300 20,800 2,500	3,650
	×0	ІвтоТ	$\begin{array}{c} 2,963\\ 1,222\\ 5,048\\ 1.144\\ 65,090 \end{array}$	$\begin{array}{c} 492\\ 1,400\\ 77,256\\ 1,473\\ 1,630\end{array}$	$\begin{array}{c} 6,914\\ 1,990\\ 24,214\\ 2,174\\ 737\end{array}$	$\begin{array}{c} 4,633\\ 125\\ 733\\ 45,619\\ 11,343\end{array}$	$101,646 \\ 1,750 \\ 56,861 \\ 1.079 $
	oal Mined b (Short Tons)	эпідэвМ	60,000	77,256		43,710	91,481
1340	0-	busH	$\begin{array}{c} 2,963\\ 1,222\\ 5,048\\ 1,144\\ 5,090 \end{array}$	$\begin{array}{c} 492 \\ 1,400 \\ 1,473 \\ 1,630 \end{array}$	$\begin{array}{c} 6,914\\ 1,990\\ 24,214\\ 2,174\\ 2,737\end{array}$	$\begin{array}{c} 4,633\\ 125\\ 733\\ 1,909\\ 11,343\end{array}$	$10,165 \\ 1.750 \\ 56,861 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.079 \\ 1.$
10 11	uing nines	Vo. Operated Vo. Operated		61 *		2	
TOTME	Mir Macl	No. Operated by Compressed Air	6	*			
OFFICE .		Name of Mine	Royal Gorge	Seven Points Crane Shamrock Marr Solar	South Canon Square Deal Stanley States Old Coalby.	Stokes Sulphur Cowan Sunnyside Sunshine	Brodhead No. 9 Thomas Three Pines Tinotsch
		Name of Operator	Royal Gorge Coal Co Rudisil, O. C Rugby Collieries Co. Rush Coal Co. Rush Coal Co. Russell, W. E. Coal Co.	Seven Points Coal Co	South Canon M. L. Co Square Deal Fuel Co Stanley Mine Co Statles Coal Co Stillwagon, J. W	Stokes, W. D	Temple Fuel Co

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[•] No report. † Not in use. ‡ Not given.

ELEVENTH ANNUAL REPORT

TABLE No. 6

PRODUCTION AND DISTRIBUTION OF COAL FROM ALL THE MINES IN THE STATE OF COLORADO FOR THE YEAR ENDING DECEMBER 31, 1923.

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
10,336,735	8,594,418	436,335	237,628	1,068,354	648,851

TABLE No. 5

Table No. 5 omitted. Applies to metal mining.



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			Temnorary	r Disability	
CAUSIES	Permanent Total Disability	Permanent Partial Disability	Time Lost More Than 14 Days	Time Lost Less Than 14 Days	Total Injuries
Underground () work ato)			250	9.03	459
1. Falls of face of pillar coal			67	30	988
3. Mine cars and locomotives	4	H 1	- 00 m 4 3	+ t 	15
5. Coal-dust explosions (including and and compared)		1	11	- O L	21
7. Suffocation from mine gas		1	s eo	ېله د	5 T
9. Animals D. Animals		1	17 31	21	38 61
11. Minug macunes 11. Mines fires (burned, suffocated, etc.)			191	101-01	475
In Shaft—			6		c
 Palling down sharts of stopes. Objects falling down shafts or slopes. 			1 00	. 1	J 4
5. Cages or skips			101	- n co	9 1
Total number injured in mine	c1	22	814	713	1,551
Dn Surface 7 Mine cars and mine locomotives			12	12	25
8. Blectricity			15	1 16	1 21
20. Boiler explosions or bursting steam pipes			211	0 C 1 I	1
21. Railway cars and locomotives	* *		22.0	31	54
Total number injured on the surface		000	56	69	128
GRAND TOTAL	61	25	870	182	1,679
A. PERMANENT TOTAL DISABILITY. Loss of both legs or a condition normanently incanacitating workman from doi	rms, one leg	and one arm, i	total loss of ey	esight, paralys	is or other

PIERMANNENT PARTIALL 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. Ξ.

In this column include only accidents which cause a loss of time more than the balance of the day or shift upon which the acci-dent occurred. U

TABLE No. 8

COAL MINE FATALITIES IN THE STATE OF COLORADO, CLASSIFIED BY CAUSE AND OCCUPATION, FOR YEAR ENDED DECEMBER 31 1993

				MEDU	Nad	er 're	.02											1
					5	NDE	IGRO	QND	AND	SHA	F.T.							
CAUSES	Foreman	Assistant Poreman	Fire Bosses	Pick Miners	sısnim snidssM	Machine Run- ners and Scrapers	Shot Firers	Drivers and Runners	Motormen and startants	and Helpers	Bratticemen	and Rockmen		sud Helpers	All Others	Underground	Surface Fatalities	Total Fatalities
Underground								[
1. Falls of roof (coal, rock, etc.)				20	4	63		1								2		1
2. Falls of face or pillar coal				67	1											: ന		1
3. Mine cars and locomotives		-		1	-			¢1				1	:		67	: ∞	 	1
4. Gas explosions and burning gas				1											;	1		1
5. Coal-dust explosions (including gas and dust combined)	Ч			6	ŗQ		-					1				9		1
6. Explosives				1	-		-									; ??		1
7. Suffocation from mine gases		;																1
8. Electricity (shock or burns)					63				-				:			67 67		÷
9. Animals			1													-	:	1
10. Mining machines		-			1						:					-	-	T
11. Mine fires (burned, suffocated, etc.)								-		-						1		1
12. Uther causes				-								 				-	-	1
Shaft-																		
13. Falling down shafts or slopes														-	:			1
14. Objects falling down shafts or slopes										-					:			1
15. Cages or skips	-		-						-			-			:		-	1
16. Other causes	-	:												-	-			1
Total underground	-	1	1	35	15	67	-	60			i i i	10			2	3		- 11

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	1			1114			12,287	63
_						~	452	5
		1					121	
	*****						120	
	*****		*				388	4
			***				364	
	-		*			* • • •	92	:
							259	
				-			938	0
				:			1	171
1			:				63	512
						****	15	3,499
						*****	35	4,932
					* * * *	:	1	162
		:			0 0 0 0	:	1	63
		:	*		*		1	204
urface	. Mine cars and mine locomouves	Moshinany (Shock of Durns)	Boller explosions or bursting steam	pipes	. Railway cars and locomouves	. Other causes	Grand total	umber employed in each occupation (a).

(a) To be supplied from Table 10.

For 40 years The Colorado Fuel & Iron Company (A Western Industry)

HAS SUPPLIED A LARGE PROPORTION OF THE MINE RAILS TRACK SPIKES TRACK BOLTS MERCHANT BARS STEEL ANGLES and REINFORCING BARS USED BY MINE OPERATORS IN THE ROCKY

MOUNTAIN REGION

OTHER PRODUCTS INCLUDE

CAST IRON PIPE WIRE BARBED WIRE WOVEN WIRE FENCING FIELD FENCING NAILS SPIKES BALE TIES ETC.

General Offices, Denver, Colorado Steel Plant, Pueblo, Colorado

T. AURELIUS

Manager Sales Steel Division, Denver, Colorado

TABLE No. 10

COAL MINE EMPLOYEES CLASSIFIED BY OCCUPATION IN THE STATE OF COLORADO DURING YEAR ENDED DECEMBER 31, 1923.

	UNDERGROUND	Employed in and Around the Mines of Colorado
1	Foremen	204
2.	Assistant foremen	63
3.	Fire bosses	162
4.	Pick miners	4,932
5.	Machine miners	3,499
6.	Machine runners and scrapers	512
7.	Shot firers	171
8.	Drivers and runners	938
9.	Motormen and assistants	259
10.	Doorboys and helpers	92
11.	Trackmen and bratticemen	364
12.	Timbermen and rockmen	388
13.	Pumpmen and pipemen	120
14.	Electricians and helpers	121
15.	All others	452
	Total underground	12,287
	SURFACE	
1.	Superintendents	139
2.	Foremen	64
3.	Blacksmiths and carpenters	236
4.	Engineers and firemen	308
5.	Machinists and helpers	97
6.	Trackmen and helpers	59
7.	All others at mine	1,214
8.	Coke-oven employes	246
9.	Office employees	135
	Total surface	2,498
Tota	al employees	14,785
Nun	nber of days men worked during year	169.9

Table No. 9 omitted, is covered by Table No. 8. Applies to Metal Mining. Above poll taken in December, 1923.

TABLE A—1923

SHOWING BY COMPANIES: TOTAL NUMBER OF TONS PRODUCED AND NUMBER OF MEN EMPLOYED; NUMBER OF FATAL ACCIDENTS; NUMBER OF MEN EMPLOYED PER FATAL ACCIDENT AND NUMBER OF TONS PRODUCED PER FATAL ACCIDENT; NUMBER OF NON-FATAL ACCIDENTS; NUMBER OF MEN EMPLOYED PER NON-FATAL ACCIDENT AND NUMBER OF TONS PRODUCED PER NON-FATAL ACCIDENT; NUMBER NILLED PER 1,000 EMPLOYED AND NUM BER OF MEN INJURED PER 1,000 EMPLOYED.

Injured per 1,000 Employed	27.0 272.7 90.9	46.2	$\begin{array}{c} 200.0\\ 61.0\\ 18.9\\ 153.8\end{array}$	42.0	27.8
Killed per 1,000 Employed	54.5			8.4	
Number of Tons Produced Per Non-Fatal Accident	24,725 223 10,952	13,743	$\begin{array}{c} 4,998\\ 8,838\\ 33,650\\ 9,117\end{array}$	19,669	2,494
No. of Men Em- ployed per Non- Fatal Accident	37.0 3.7 11.0	21.7	$ \begin{array}{c} 5.0 \\ 16.4 \\ 53.0 \\ 6.5 \\ \end{array} $	23.8	36.0
Number of Non- zinsbissA leite	1 15 23	33	1 10 4	ъ.	1
Zumber of Tonz Produced per Tasia Accident	1,114 83,967			98,346	
Number of Men Employed per Fatal Accident	18.3			119.0	
Vumber of Bratal Accidents	6 60			1	
Employed Kumber of Men	20133 20133 2023 2033 2033 2033 2033 203	$\begin{smallmatrix}&11\\65\\65\\2\end{smallmatrix}$	$\begin{smallmatrix}16.5\\53\\53\\26\\2\end{smallmatrix}$	$\begin{smallmatrix}1&2\\1&1\\3&1\\3&1\end{smallmatrix}$	$ \begin{array}{c} 36 \\ 19 \\ 2 \end{array} $
Total Roduction	$\begin{array}{c} 24,725\\ 3,341\\ 7,478\\ 251,902\\ 1,150\end{array}$	$\begin{array}{c} 925\\ 41,230\\ 6,311\\ 991 \end{array}$	$\begin{array}{c} 4,998\\ 88,377\\ 33,650\\ 1,368\\ 36,469\\ 36,469\end{array}$	$\begin{array}{c} 751\\ 565\\ 1,984\\ 98,346\\ 13,360\end{array}$	$2,494 \\ 1,400 \\ 11,526 \\ 1,895$
COMPANIES	Ajax Coal Mining Co Alamo Coal Co Altitude Coal Co American Smelting & Refining Co American Smelting & Refining Co	Arnold & Shaklee Axtal Basin Development Co Bater Coal Mining Co Baldwin Fuel Co Barker, Wright	Baudino & Co	Bell & Stout Berry, Chas. T. Big Five Coal Co Big Four Coal & Coke Co Big Four Coal & Fuel Co	Black Hawk Coal Co Black Hills Coal Co Bluft Springs Coal Co Boaglio Coal Co

Book Cliff Coal Co. Boulder Coal Mining Co. Boulder Valley Coal Co. Bracken & Cozza. Brennan Coal Mining Co.	3,541 10,098 88,427 1,184 36,557	100 133 57				61 51 51 54	12.0 8.3 28.5	$ \begin{array}{c} 1,771\\ 5,049\\ 7,369\\ 18,278\\ 18,278 \end{array} $		222.2 83.3 120.0 35.1
Brewster Independent Coal Co. Brown, Thos. Coal Co Brown, Thos. Coal Co Saddell & Son Calumet Fuel Co Calumet Fuel Co Canon District Coal Co.	$\substack{4,323\\1,910\\255,942\\4,248\end{array}$	$\begin{array}{c}10\\3\\244\\16\end{array}$	î.	18.0	18,345	112	3.3 11.6	12,188	55.6	305.6 86.1
Janon-Reliance Coal Co- celar Hill Coal & Coke Co- blampion Coal Mining Co- Phew, J. S- Zhristensen Coal Co.	$111,015 \\ 16,195 \\ 5,599 \\ 168 \\ 3,781 \\ 3,781$	$\begin{smallmatrix} 190\\32\\9\\10\\10\end{smallmatrix}$	1	190.0	111,015	* L=	5.6	3,265	5.3	178.9 218.8
Jayton Coal Co ollier Coal Co olorado Canon Coal Co olorado Fuel Co olorado Fuel & Iron Co	$193,502 \\ 340 \\ 2,469 \\ 2,469 \\ 3,569 \\ 3,030,517 \\ \end{array}$	$131 \\ 1 \\ 8 \\ 3,754$	14	268.1	216,466	10 513	13.1 15.0 7.3	19,350 3,569 5,907	3.7	76.3 66.7 136.7
Jolorado Lumber & Investment Co Jolorado Springs Co Jolorado & Utah Coal Co. Jonsolidated Coal & Coke Co "onsolidated Coal & Coke Co"	$\begin{array}{c} 33 \ 308 \\ 59.634 \\ 210,308 \\ 131,531 \\ 1,339 \end{array}$	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	53.0 224.0	33,308 210,308	9 18 13 13	5.9 3.1 7.5	$\begin{array}{c} 3,701\\ 3,313\\ 11,684\\ 10,118\end{array}$	18.9	$169.8 \\ 327.3 \\ 80.4 \\ 134.0 \\ 1$
O-operative Fuel Co. Orley, W. D. Jornwell, J. V. Jornwell, G.	$\begin{array}{c} 1.108\\ 20.365\\ 760\\ 650\\ 1.706\end{array}$	0 m 61 m 10 0 m 61 m 10					23.0	20,365		43.5
Sottonwood Coal Co. Pracker Jack Coal Co. Prested Butte Anthracite Mining Co. Prested Butte Coal Co. Srown Fuel Co.	$\begin{array}{c} 1,145\\ 8,810\\ 8,810\\ 16,692\\ 23,066\\ 52,051\end{array}$	010-966 9669 9669	1	36.0	16,692		12.0 14.5 23.0	$ \begin{array}{c} 5.564 \\ 11.533 \\ 17.350 \end{array} $	27.8	83.3 69.0 43.5
Juchara Ganon Coal Co	6,093 4.305 1.075 250	26 1 1 2 6		26.0	6,093	¢1	13.0	3,047	38.5	76.9

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58.3 66.7 1,000 Employed 333.3 3333337.050.0181.8 111.1 166.7 141.4 Injured per Lilled per 1,000 Employed 111.1 9.7 01 ы. . 13,840 3.856 5,2162,1479.435Produced Per Non-Fatal Accident 7,646600 2,196980 11,181Number of Tons No. of Men Em-ployed per Non-Fatal Accident $^{3.0}_{27.0}$ 5.5 7.2 3.0 9.0 0 6.020.0 7.1 9 : രാ :01 27 Fatal Accidents -noN to redmuN 73,175 216 206, 452Fatal Accident Produced per 110 snoT to redmuN 191.0 0 9.0Employed per Fatal Accident 03. Number of Men Fatal Accidents Jo redmuN $\frac{40}{2}$ 03 - 01 വനന⊣റ 012300 90 91 91 -991 Employed uam to radmuy 2,1479,43510911,0585,3114,934600210 $1,980 \\ 930 \\ 67,084 \\ 5,038 \\ 5,038 \\$ 2,41927,6801,4997,7111,282 $\begin{array}{c} 499\\ 100\\ 73,175\\ 331\\ 325\\ 325\end{array}$ $172 \\ 600 \\ 980 \\ 216 \\ 216$ Production 5 Total Co. Fuel COMPANIES Drott, John H.... Edgell, T. E. Empire Coal Mining Co.,.... Estes, Frank Fairfield, E. F. Fairview Coal Co. Farmer-Mutual Coal Co. Florida Grange Fort Lupton Goal Co. Freeman, J. R. French & Fielding..... Fruth & Stone Galloway, John R. Gillson Asphaltum Co.... Griffith Coal Co...... Hall, A. W. & Son..... Happy Canon Coal Co. Hawkes Garage Golden Dawn Coal Co. Good Coal Co..... Donald Coal Co. Double Dick Coal Co. Drennan Coal Co..... Delta Coal Co.... Dick Coal Co....

ELEVENTH ANNUAL REPORT

146.9 146.6	202.4 166.7 62.5	74.1	23.8 95.2	1000.0 500.0 50.0	78.9	171.4 <u>228.6</u>	5.7 116.8
5,220	3,903 2,010 6,158	10,164 8,970	11,322 8,824	569 2,856 3,000	6,678	12,829	6,690
11 9.2	34 4 9 1 6.0 1 1 16.0 1	4 13.5 9 7.2	4 10.5	2 1.0 1 2.0 1 20.0	6 12.7	4 16.5	41 8.6
			45,290			3,009	137,142
			42.0			5.8	175.5
			1			9	¢1
101 6 116 116	$\begin{smallmatrix}&&2\\168\\6\\3\\16\\16\end{smallmatrix}$	0 400000	$\begin{smallmatrix}&&4\\2\\&&5\\1&6\\1&3\end{smallmatrix}$	0 - 01 21 0 0 - 01 21 0	9999999	0 4 10 61 60 0 4 10 61 60	351 14
57,417 27,617 1,208 53,030 53,030	132.700 2.010 6.158	40,657 1,794 80,727 361	45,290 199 199 199 199 199 2,039	1,137 3937 2,856 3,000	664 200 1,485 1,599 40,066	51,316 2.813 18 056 1,466 1,466	274,283 8,042
Bros. Coal Corp. Valley Mutual Coal Co. Treasurer Mining Co. J. B.	ident Coal Co	Sollieries Co Puel Co. Coal & Coice Co Coal Co Coal Co.	ne Mining Co Ludvika Coal Co Coal Co Coal Co	Coal & Mercantile Co & Dennis. ttl, J. R. R. Son.	ey, Wm. Robert Jon, O. K n Bros.	Coal Co Juel Co. , Mile , Mile Coal Co.	Coal Co. In View Coal Co

STATE INSPECTOR OF COAL MINES

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Riley, J. D. Rio Bianco Coal Co. Riverside Coal Co. Rocky Mountain Fuel Co. Ross Coal Co.	290 225 3,153 850,715 37,884	97 68 83 68		88.3 68.0	77.338 37,884	101 c1 c1	5.3 34.0	4,674	11.3	187.4
Routt County Coal Co- Routt-Pinnacle Coal Co- Royal Fuel Coal Co- Royal Gorge Coal Co- Rudisill, C. O-	$1.694 \\ 9.740 \\ 167,832 \\ 2.963 \\ 1.222 \\ 1.222 \\ 1.222 \\ 2.922 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.222 \\ 1.$	$\begin{smallmatrix}&&2\\2&&&6\\&&2&6\\&&4&-4\\&&&4&-4\\&&&&&&&&&&&&&&&&&&&&&&$				103	6 6 6 6 0 7 7 0 6	16,783 2,963		107.1 39.1 142.9
Rugby Collieries Co. Rush Caal Co. Russell, W. B. Coal Co. Seven Points Caal Co. Shamrock Coal Co. (Archuleta County)	$\begin{array}{c} 5.048\\ 1.144\\ 65,090\\ 492\\ 1,400\end{array}$	00 ℃ 4 80 4 H 01	1 	24.0	5,048	10 I I	14.8	13,018	41.7	67.6
Shamrock Coal Co. (Weld Connty) Simpson, Joseph South Canon Mine Leasing Co. South Canon Mine Leasing Co.	$\begin{array}{c} 77,256\\ 1,473\\ 1,630\\ 6,914\\ 1,990\end{array}$	00 4 4 7 4 7 4				10 · · · -	10.0	15,451		100.0 250.0
Stanley Mine Co States Coal Co Stilvagon, J. W Stilphur Coal Co	24.214 2,174 7,174 4,6333 1255	4 001000					9.6	4.633		r.ttt
Summer, L. Sunnyside Coal Mining Co. Sunnshine Coal Co. Temple Freel Co. Thomas Coal Co.	45,619 11,3419 101,646 1,750	6 71 181 33	1	185.0	101,646	1-1+1	71.0	45,619 25,412	5.4	14.1 21.6
Three Pines Coal Co Tipotsch, Prank Triangle Coal Co Union Coal Co Union Coal & Coke Co	56,861 1,079 2,2555 54,727	00 01 00 4 00 00 01 00 4 00				2	22.22	8,123		84.3 44.9
United Collieries Co. Utah Puel Co. Vesta Mines, Inc. Vezzetti & Moschetti	22.144 267.571 13.472 18,808	218 39 11	-01	109.0	133,786	28 10 10 10 10 10 10 10 10 10 10 10 10 10	2.6 7.8 19.5 11.0	$ \begin{array}{c} 2.214 \\ 9.556 \\ 6.736 \\ 18.808 \\ \end{array} $	9.2	384.6 128.4 51.3 90.9
3 T 181										

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lnjured per 1,000,Employed	43.5 213.1		****	****		••••••	***********	*****	********		**********	126.46	
Killed per 1,000 Employed	2.1		*****									4.97	
Number of Tons Produced Per Non-Fatal Accident	$7,162 \\ 2,896$											6,156	and the second s
Vo. of Men Em- ployed per Non- Fatal Accident	$23.0 \\ 4.7$										******	6.7	And a second sec
Number of Non- Fatal Accidents	302										****	1,679	
Number of Tons Produced per Fatal Accident	291,563											156,617	
Number of Men Employed per Fatal Accident	472.3											201.2	
Vumber of Fatal Accidents	3					-	-					66	
Employed Number of Men	1,417	ی لا	, co		40	5	-	36	2	25	-	13,277	
Total Rotion	$\begin{array}{c} 7,162\\ 874,690\\ 1,470\end{array}$	826	1,297		2,739	**	00	8.534	10000	11,755	677.7	10,336,735	
COMPANIES	Vickers Coal Co	Williamsburg Coal Co	Willie Coal Co		Wilton Coal Co	Woodward, John	Wright, Claude M	Wyoming & Colorado Coal Co.		Yampa Coal Co. Young & Caddell		Totals of the State of Colorado	

* No report.

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TABLE B

SHOWING BY COUNTIES, MINES OPERATED, NAME OF OPERATOR AND ADDRESS OF MINE, CHARACTER OF COAL, NUM-BER OF DAYS WORKED, AVERAGE NUMBER OF MEN EMPLOYED, TOTAL NUMBER OF TONS OF COAL PRODUCED IN 1923, AND CAPACITY OF MINE PER DAY IN TONS.

ARCHULETA COUNTY

Capacity of Mine Per Day, Tons	10			800 800 300 300 300 1,000
Total Xum- snot 10 Tota booubord	1,400	1.896		110,430 49,214 34,669 33,605 19,712 132,266 132,266
Average No. of Men Employed	0101	-		1200 111 111 111 111 111 111 111 111 111
Worked of Days Number	210 259	234.5	-	169.8 169.7 169.7 169.7 108.4 108.4 108.4 134.5
 thuracter of Coul	Sub-bituminous Sub-bituminous			Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous
Mine . Post Office	Bayfield		ULDER COUNTY	Superior Lafayette Lafayette Gorham Lafayette Lafayette Broomfield
Name of Company	Shamrock Coal Co. Nossaman & Fowler	of Mines Operated: 2	BC	Rocky Mountain Fuel Co- Rocky Mountain Fuel Co- Bocky Mountain Fuel Co- Rocky Mountain Fuel Co- Rocky Mountain Fuel Co- Rocky Mountain Fuel Co- National Fuel Co- National Fuel Co-
Name of Mine	Crane Pagosa	Totai Number		Industrial Simpson Acme Gorham Vulean Standard Monarch No. 2

400 500 110 10 600 23 24.725 $\begin{array}{c} 1.990\\ 1.499\\ 1.435\\ 1.984\\ 1.984\\ 1.108 \end{array}$ 19,67915,40513,97510,0988,8101,075 636.733 867 1010010010010010 94.8 188 151 147 211 196.5161.7 182 16519850 Sub-bituminous ... Sub-bituminous... Sub-bituminous.... Sub-bituminous.... Sub-bituminous. . Sub-bituminous.... Sub-bituminous.... Sub-bituminous.... Sub-bituminous. Sub-bituminous... Sub-bituminous... Sub-bituminous. Sub-bituminous. Gorham..... Louisville. Gorham..... Louisville. Lafayette. Lafayette. Gorham.... Gorham Bouider.. Bouider. Gorham Gorham. Colorado Lumber & Inv. Co..... Peoples Finance Coai Co. Boulder Coal M. Co. International Fuei Corp... Square Deal Fuel Co. Cracker Jack Coal Co. Co-operative Fuel Co. Donald Coal Co. Mines Operated: Crown Fuel Co.... Red Ash Coal Co Big Five Coal Co. Ajax Coal M. Co. Davies Coal Co. of Total Number Red Ash "racker Jack Black Diamond 10. hum No. 2 Square Deal. Siue Goose. Champion. Nonparell apitol I .ewis F'OX.

STATE INSPECTOR OF COAL MINES

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DELTA COUNTY

	Capacity of Mine Per Day, Tons	1,000 60 40 30	30 30 30	20 20	25	
	Total Num. ber of Tour Produced	80,727 5,548 5,038 4,934 2,419	2,174 1,599 1,466 1,339 1,339 737	250 250 250 250 250 250 250 250 250 250	06	108,785
-	Average No. of Men Employed	0 1001000	ಲ1 ಬ ಲ1 ಲ1 ⊣	10000	1	110
	Number of Days Worked	126 162 252 244 244	253 173 180 185 159	$ \begin{array}{c} 93 \\ 65 \\ 166 \\ 100 \\ \end{array} $	60	145.4
	Character ' of Coal	Bituminous Bituminous Bituminous Semi-bituminous Semi-bituminous	Semi-bituminous Semi-bituminous Semi-bituminous Bituminous Semi-bituminous	Bituminous	Semi-bituminous	
	Mine Post Office	Bowie Paonia Cedaredge Cedaredge Cedaredge	Cedaredge Delta Hotchkiss Paonia Cedaredge	Paonia Cedaredge Paonia Austin Hotchkiss	Delta	
	Name of Company	Juanita Coal & Coke Co. Paonia-Farmer Coal Co. Green Valley Coal Co. A. W. Hall & Son Delta Coal Co.	States Coal Co- McMillin Bros- Mike Mingan - Frank Converse- J. W. Stillwagon	I. Sumner Independent Coal Co. Chas. T. Berry Winton Coal Co. J. R. De Graffenried	Claude M. Wright.	of Mines Operated: 16
	Name of Mine	King Paonia Paonia Reden Valley Red Mountain Red Canon	States	Cowan (North Fork) Independent Berry Winton	Fairview	Total—Number

ELBERT COUNTY

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217.734 45,290 59,634 19,349 1,016	7,478 4,3078 1,980 1,282 1,145 1,144	360,357
174 205 33 33	H 60040300	323
164 199 2335 1252 1255	228 209 201 201 167	190.2
Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous	Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous	
Pikeview Colorado Springs Colorado Springs Colorado Springs Colorado Springs	Colorado Springs Colorado Springs Rush Colorado Springs Rush Rush	
Pikes Peak Cons. Fuel Co- Keystone Minling Co- Colorado Springs Co- W. D. Corley- W. D. Corley-	Altitude Coal Co	of Mines Operated: 11
Pikevlew Keystone City Patterson Patterson	Altitude Danville Golden Dawn Drennan Cottonwood Rush	Total Number

FREMONT COUNTY

800 900 700 300 300	1.000 500 75 50	75 20 20	20		
87.755 75.123 69.371 33.132 18,184	$\begin{array}{c} 122,454\\ 54,104\\ 80.512\\ 18,808\\ 11,526\end{array}$	8.042 7.711 5.311 4.323 4.248	2,963 2,469 1,297 1,099	826 671	612.221
159 181 146 34 42	$\begin{array}{c} 206\\ 108\\ 132\\ 11\\ 19\end{array}$	14 11 10 16	3330 1 1 1 8 4	6	1.137
$\begin{array}{c} 118.5\\ 118.3\\ 99.6\\ 269\\ 106.5\end{array}$	$\begin{array}{c} 185.8 \\ 153.6 \\ 254 \\ 249 \\ 256 \end{array}$	192 237 144.2 283.5 283.5	127 172 238 1328 106	$130 \\ 130$	161.2
Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous	Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous	Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous	Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous Semi-bituminous	Semi-bituminous Semi-bituminous	
Rockvale Rockvale Florence Canon City	Chandler Pyrolite Canon City Canon City Florence	Coal Creek	Canon City Florence Canon City Florence Florence	Canon City Florence	
Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co.	Victor-American Fuel Co Victor-American Fuel Co Canon-Reliance Coal Co Vezzetti & Moschetti Bluff Springs Coal Co	Mountain View Coal Co	Royal Gorge Coal Co Colorado Canon Coal Co Black Hawk Coal Co Willie Coal Co Samuel Petry & Sons	Williamsburg Coal Co North Magnet Coal Co	of Mines Operated: 22
Coal Creek Rockvale Premout Nonac Emerald	Chardler Radiant Canon Brookside Bluff Springs	Walden Double Dick Griffiths Brewster Florence-Canon	Royal Gorge Newlin Mohawk Willie Jack O'Lantern	Willliamsburg Slope Magnet	Total-Number

STATE INSPECTOR OF COAL MINES

1	$\begin{array}{c} 1,800\\ 425\\ 600\\ 300\\ 400\\ \end{array}$	300 300 200 50	
	$\begin{array}{c} 267,571\\ 72,5641\\ 71,393\\ 37,884\\ 23,066\end{array}$	$\begin{array}{c} 76, 692\\ 28, 472\\ 17, 906\\ 6, 311\\ 1, 000\\ 1, 000 \end{array}$	542,836
	$218 \\ 85 \\ 68 \\ 68 \\ 29 \\ 29 \\ 29 \\ 29 \\ 29 \\ 21 \\ 29 \\ 20 \\ 20 \\ 20 \\ 20 \\ 20 \\ 20 \\ 20$	36 29 13 69 13	641
	$\begin{array}{c} 230\\ 191.2\\ 152\\ 203.2\\ 116.5\end{array}$	97 121.9 128 119 120	180.3
	Bituminous Semi-anthracite Bituminous Anthracite Bituminous	Anthracite	
	Somerset Crested Butte Crested Butte Crested Butte	Crested Butte	•
	Utah Fuel Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Ross Coal Co. Ross Coal Co. Crested Butte Coal Co.	Crested Butte Anthracite M. Co Rocky Mountain Fuel Co Ohio Creek Coal M. Co Baldwin Fuel Co Oliver Coal Co	of Mines Operated: 10
	Somerset. Elk Mountain Crested Butte Horace Bulkley No. 2	Smith-Anthracite Alpine Ohio Creek. Baldwin-Star Oliver	Total-Number

GUNNISON COUNTY

TABLE B-Continued

GARFIELD COUNTY

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Robinson-Walsen	Colorado Fuel & Iron Co.	Walsen	Bituminous	1757	309	920 052 1	9 050
Ideal. Lester Cameron Pictou	Colorado Fuel & Iron Co Colorado Fuel & Iron Co Colorado Fuel & Iron Co Colorado Fuel & Iron Co	Ideal Lester Parr Pictou	Bituminous Bituminous Bituminous Bituminous	252.1 255.1 160.7 157	2111 210 174 91	232,391 199,997 148,844 76,942	1,000 1,000 1,000 800
Kebler No. 1 Kebler No. 2 Jobal Calumet Oakdale	Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Calumed Fuel & Iron Co. Calumed Fuel Co. Oakdale Coal Co.	Tioga. Tioga. Pictou Delcarbon. Oakview.	Bituminous Bituminous Bituminous Bituminous Bituminous	$ \begin{array}{c} 20.9 \\ 153.2 \\ 137.4 \\ 220 \\ 229 \\ \end{array} $	16 64 37 176 156	$\begin{array}{c} 4,749\\ 44,401\\ 36,310\\ 202,172\\ 135,753\\ 135,753\\ \end{array}$	$ \begin{array}{c} 225 \\ 600 \\ 300 \\ 1,000 \\ 600 \\ \end{array} $
Mutual Gordon Ravenwood Pryor Sunnyside.	Mutual Coal Co. Gordon Coal Co. Victor-American Puel Co. Union Coal & Coke Co. Sumyside Coal M. Co.	Walsenburg Camp Shunway Ravenwood Pryor Strong	Bituminous Bituminous Bituminous Bituminous Bituminous	237 2222 266.1 140 84	149 149 130 89 71	130,71167,08466,49254,72745,619	700 5000 700
Toltec. Maltiand Nos. 1 and 2. Hezron. Brennan. Rellance.	Aztec Coal M Co	Toltec Maitland Lester Camp Shumway	Bituminous Bituminous Bituminous Bituminous	$\begin{array}{c} 166.8 \\ 155.7 \\ 210 \\ 142.3 \\ 184.5 \\ 184.5 \end{array}$	651 19 19 19 19 19 19 19 19 19 19 19 19 19	41,230 40,066 36,590 36,557 30,503	350 350 350 350 350 300
Vesta. Caddell Leader No 1 Leader No 3 Cuchara Canon.	Vesta Mines Inc. Black Canon Coal & Puel Co. Pruth & Stone Fruth & Stone Cuchara Canon Coal Co.	Camp Shumway Walsenburg Walsenburg Walsenburg Walsenburg	Bituminous Bituminous Bituminous Bituminous Bituminous	93 5 167 5 135.2 124	2 2 2 3 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	13,472 13,360 8,166 1,269	300 150 30 30 30
Rugby Alamo Bunker Hill Round Oak Black Hills Fern	Rugby Collieries Co- Alamo Coal Co. Steve Mattivi & Son Brown Coal Co. Black Hills Coal Co. La Veta Coal Co.	Rugby Alamo Rapson Tagson Tioga La Veta	Bituminous. Bituminous. Bituminous. Bituminous. Bituminous.	94 94 90 117 120 90 90	1 61001 41000000	5.048 3.341 3.341 1.910 1.400 1.044	2,500 2,500 15 20
Total—Number	of Mines Operated: 31			190.3	2,491	1,969,399	
	Υ Γ	CKSON COUNTY					
Moore No. 1 Moore No. 2 Marr	North Park Coal Co. North Park Coal Co. Joseph Simpson.	Coalmont. Coalmont. Walden.	Sub-bituminous Sub-bituminous Sub-bituminous	214.5 93 151	11 43	47.776 2.747 1.473	500 500

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500 40 50

47.776 2.747 1.473 51,996

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214.5 93 151 186.1

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JEFFERSON COUNTY

Capacity of Mine Per Day, Tons	1,000 100 100	
Total Num ber of Total beoubod	150,007 3,781 925	154,713
Average No. of Men Employed	168 10 11	189
Number Vumber Vorked	212.5 157 41	199.6
Character of Coal	Sub-bituminous Sub-bituminous Sub-bituminous	
Mine Post Office	Leyden via Golden Littleton Mt. Morrison	
Name of Company	Leyden Coal Co Christensen Coal Co Arnold & Shaklee	of Mines Operated: 3
Name of Mine	Leyden No. 3 Christensen	Total-Number

LA PLATA COUNTY

300 150 56 50 40	24 50 5	10	
53,770 25,421 11,343 5,599 4,081	4,998 2,403 1,079 576 576	434 144	110,523
88 11 89 89	100010001	1 3	151
222.7 259 192 237 217	207 179 184 134	29 90	218.7
Bituminous Bituminous Bituminous Bituminous Bituminous	Bituminous	Bituminous Bituminous	
Perins Durango Durango Durango Durango	Durango	Durango Griffith	
Calumet Fuel Co. American Smelting & Ref. Co. Sunshine Coal Co. Champion Coal Co.	Baudino & Co Peacock Coal Co Frank Tipotsch Minnie Coal Co H. J. Razmussen	Triangle Coal Co Florida Grange	of Mines Operated: 12
Perins Peak San Juan Sunshine	Morning Star Peacock Tipotsch Minnle	Triangle	Total-Number

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$1.500 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.200 \\ 1.20$	2200 200 1,000	1,500 1,100 900	0000000 0000000 5500000 55000000000000	350 600 2250 2550	2000 2000 2000 2000 2000 2000 2000 200	5120
$\begin{array}{c} 308.743\\ 262.215\\ 250.488\\ 231.895\\ 212,883\end{array}$	$\begin{array}{c} 183.379\\ 121.313\\ 8.410\\ 375.043\\ 135.829\end{array}$	$\begin{array}{c} 7.049\\ 226.481\\ 167,832\\ 101.646\\ 88,377\end{array}$	$\begin{array}{c} 73.175\\ 61.564\\ 56.972\\ 32.831\\ 5.231\end{array}$	$\begin{array}{c} 56.861\\ 53.030\\ 40.657\\ 27.680\\ 24.214\end{array}$	20,285 16,195 10,001 7162 6,158	03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 03951 039510 03051 03050 030500 00000000000000000
344 346 361 371 217	224 157 465 191	123 220 149 164	103 89 54 52	116 54 40 43	1633324 163321 16322	4400-00 1
208.5 206.2 244.9 186.5 212.6	122.2 193 1 10 173.6 163.2	244.5 172 172 196	171.8 172.6 200.9 241.4 21	213 89.7 205 156 141.8	197.3 173.3 145 203.4	261 236 110 89 110
Bituminous Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	Bituminous. Bituminous. Bituminous. Bituminous.	Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous Bituminous
Valdez. Primero. Morley. Supt.s. Berwind.	Berwind Tollerburg Trinidad Delagua	Hastings	Aguilar Bowen Forbes Aguilar Sopris	Vallorso Ludlow Aguilar Boncarbo	Rapson Ludlow Vallorso Rugby Trinidad	Trinidad Trinidad Trinidad Rapson Forbes
Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co.	Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Colorado Fuel & Iron Co. Victor-American Fuel Co. Victor-American Fuel Co.	Victor-American Fuel Co American Smelting & Ref. ('o Royal Puel Co Temple Fuel Co Bear Canon Coal Co	Empire Coal M. Co	Three Pines Coal Co- Huerfano Coal Co- Jewel Collieries Co- Dick Coal Co- Dick Coal Co- Stanley Mine Co-	Rapson Coal M. Co Cedar Hill Coal & Coke Co. Prairie Canon Coal Co Vickers Coal Co Jeffryes Fuel Co	Wilton Coal Co Trinidad Coal Co Wm. Irons, Jr Young & Caddell Liberty Coal Co
Frederict. Primero Morley Sopris. Tabasco	Berwind Toller Denge Defagua	Hastings. Boncarbo. Royal Brodhead No. 9 Bear Canon Nos. 3 and 6	Empire	Three Plnes. Ludiow Jewel. Dix Stanley.	Rapson Greenville Prafrie Canon Vickers	Pritchard Baldy Mountain Baldy Young Liberty

STATE INSPECTOR OF COAL MINES

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Capacity of Mine Per Day, Tons	10	6		
muN lstoT anoT to rod beouborq	$\begin{array}{c} 1,895\\ 1,794\\ 1,046\\ 751\end{array}$	650 650 392 200 398 200 200 200 200 200 200 200 200 200 20	361 340 331 202 199	3,195,434
Average No. of Men Employed	0101090101	122033	0.000	4,457
Number of Days Worked	203.8 252 246 210 184	100 90 52 187	$ \begin{array}{c} 120 \\ 111 \\ 56 \end{array} $	177.6
Character of Coul	Bituminous Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	
Mine Post Office	Trinidad Trinidad Aguilar Trinidad Trinidad	Sopris	Aguilar Aguilar Trinidad Rugby Trinidad	
Name of Company	Boaglio Coal Co Joerger Fuel Co Pine Fuel Co J. V. Cornwell. Bell & Stout	John Corra Fairview Coal Co R. Marsh Chas. Rankin Malone & Dennis	July Coal Co	of Mines Operated: 50
Name of Mine	Pickford Beshoar Fawcett Niggerhead Hoye-Superior	Corra. Pairview. Fishers Peak. Star. Verdun.	Amador	Total-Number

TABLE B-Continued

LAS ANIMAS COUNTY-Continued

		MESA COUNTY					
Caméo Pallsade Midwest Garfield Stokes	Grand Junction M. & F. Co. Pallsade Coal & Supply Co. Midwest Coal Co. Colorado Lumber & Inv. Co. W. D. Stokes.	Cameo	Semi-bituminous. Semi-bituminous. Semi-bituminous. Semi-bituminous. Semi-bituminous.	203 203 159 211 174	000000 000000 000000	$\begin{array}{c} 98.022\\ 18.251\\ 18.056\\ 17.903\\ 4,633\end{array}$	200 200 200 80 80
Book Cliff Blverside Winger Thomas	Book Cliff Coal Co. Riversidie Coal Co. Mesa Fuel Co. Thomas Coal Co. O. K. McLendon	Grand Junction Palisade Palisade Grand Junction Fruita	Semi-bituminous. Semi-bituminous. Semi-bituminous. Semi-bituminous. Semi-bituminous.	$ \begin{array}{c} 64 \\ 257 \\ 199 \\ 264 \\ 141.9 \\ \end{array} $	o©≁nn	3,541 3,153 2,813 1,750 1,485	100 25 30 15
Hidden Treasure	Hidden Treasure M. Co. Anchor Coal Co. Liberty Coal & Merc. Co. W. O. Pennington Farmer-Mutual Coal Co.	Grand Junction Fruita Fruita Grand Junction	Semi-bituminous Semi-bituminous Semi-bituminous. Semi-bituminous. Semi-bituminous.	2220 1955 1187 1299	0101010100	$1,208 \\ 1,150 \\ 1,1137 \\ 1,110 \\ 980$	60 40 10
McGinley	Wm. McGinley. J. B. Hunter	Grand Junction	Semi-bituminous. Semi-bituminous.	$\frac{117}{60}$	¢1 —	664 236	2
Totals-Number	of Mines Operated: 17			190.4	248	176,092	
	W	OFFAT COUNTY					
Mt. Evans. Collom Total—Number	Mt. Evans Fuel Co. Axial Basin Dev. Co	Craig	Bltuminous	212 26 181	1 1 6	2,509 171 2,680	20
	MOM	TFEZUMA COUNT	Y				
School Sec. Lease Kelly. Freeman	French & Fleiding Cortez Coul Co. J. R. Freeman	Mancos Cortez Mancos	Sub-bituminous . Sub-bituminous Sub-bituminous	213 261 225.1	6010.01	2,147 1,706 824	20
Total-Number	of Mines Operated: 3			239.4	10	4,677	

STATE INSPECTOR OF COAL MINES

	Capacity of Mine Per Bay, Tons	122		25		6 1 2500
MONTROSE COUNTY	-muN IstoT anoT to rod boouced	$\begin{array}{c} 888\\ 600\\ 449\\ 168\\ 2,105 \end{array}$		2.856 593 3,449		1,470 1,422 2390 226 226 172 172 4,834
	Average No. of Men Employed	2 6 6 1 1 1 1		61 4 10	-	0121012101 012100 F
	Number of Days Worked	239.1 60 139 33 101		167.6 66 99.9	_	292 292 1334.5 1338 138 138 60 60 50.5 25 121.9
	Character of Coal	Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous		Bituminous. Bituminous.	Y	Bituminous Bituminous Bituminous Bituminous Bituminous Bituminous Bituminous
	Mine Post Office	Naturita Montrose Naturita Nucla	ITKIN COUNTY	Carbondale	BLANCO COUNT	Meeker Meeker Meeker Meeker Meeker Meeker Meeker
	Name of Company	Naturita Stores Co Happy Canon Coal Co John H. Drott. J. Sc Chew of Mines Operated: 4	P	J. R. Marchetti Rapini & Hughes of Mines Operated: 2	RIO	White River Lumber Co- Good Coal Co- T. D. Riley Rio Blanco Coal Co. E. P. Fairfield Sulphur Coal Co. of Mines Operated: 8
	Name of Mine	Cloverdale		Marion Placita Total—Number		Lion Canon Black Diamond Oldland Riley Riley Roco Roce Fairfed Suphur Total—Number

TABLE B—Continued MONTROSE COUNTY

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ROUTT COUNTY

2,000 2,000 2,500 2,000 1,000	$1.500 \\ 1.200 \\ 600 \\ 450 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ $	450	30 50 100	-(10)
$\begin{array}{c} 140,350\\ 133,933\\ 210,308\\ 77,065\\ 36,654 \end{array}$	57,417 51,316 33,651 17,471 11,755	9.740 8.534 3.5534 2.6759 1.694	1.630 1.222 492 447	799,922
173 126 120 120	101 233 257 257 257	0 0 1 0 0 - 0 1 0 0 - 0 0 0	4 4 F 8	1.155
61.8 58.7 85.4 32 32	105.6 33.1 37.5 48.6 56.3	26.5 12.5 36.5 83 83	$\begin{array}{c} 3.9\\1.20\\2.02\\1.4\end{array}$	60.9
Bituminous	Bituminous Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	Bituminous Bituminous Bituminous Bituminous	
Oak Creek. Oak Creek. Mt. Harris. Oak Creek Mt. Harris.	Haybro MacGregor Bear River. Mt. Harris. Milner	Bear River	Milner Steamboat Springs. Oak Creek Oak Creek	
Moffat Coal Co	Hayden Bros. Coal Corp McNeil Coal Co. Bear River Coal Co. International Fuel Corp Yampa Coal Co.	Routt-Pinnacle Coal Co Wyoming-Colorado Coal Co Colorado Fuel Co Hayden Valley Mutual Coal Co. Routt County Coal Co	Solar Coal M. Co C. O. Rudisill Seven Points Coal Co Postal Coal M. Co	of Mines Operated: 19
Oak Hills No. 1 Oak Hills No. 2 Martis Pinnacle Wadge	Hayden MacGregor Bear kliver Wolf Creek Yanpa.	Routt-Pinnacle Rainbow Mutual (Dry Creek). Cozard	Solar Butcher Knife Seven Points Postal	Total—Number

SAN MIGUEL COUNTY

Wrights Galloway Edgell	Hawkes Garage John R. Galloway T. H. Edgell	Norwood	Sub-bituminous Sub-bituminous Sub-bituminous	190 90 85		210 109 100	c1 4
Total-Number	of Mines Operated: 3			121.7	3	419	

STATE INSPECTOR OF COAL MINES

ELEVENTH ANNUAL REPORT

Day, Tons 19d əniM Day, Tons	$ \begin{array}{c c} 2,500\\ 1,000\\ 2,000\\ 2,000\\ 1,600\\ \end{array} $	$1,000 \\ 1,000 \\ 800 \\ 1,000 \\ 1,000 \\ 600 \\ 600 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,000 \\ 1,$	800 350 35 85 85	20		
Total Num- ber of Tons besubord	$\begin{array}{c} 372,242\\ 90,465\\ 12,209\\ 271,458\\ 193,502\end{array}$	$\begin{array}{c} 131,531\\ 108,430\\ 95,550\\ 88,427\\ 77,256\end{array}$	$\begin{array}{c} 65,090\\ 36,469\\ 22,144\\ 5,216\\ 1,368\end{array}$	160	1,571,517	10,336,735
Employed No. of Men Average	$259 \\ 63 \\ 63 \\ 22 \\ 210 \\ 131 $	97 92 100 50	2066 2966 2966	3	1, 346	13,277
Number Wumber Worked	$\begin{array}{c} 253.2\\ 144.4\\ 103.2\\ 204.5\\ 204.5\end{array}$	$\begin{array}{c} 160.5\\ 144.1\\ 177.3\\ 119.8\\ 215.6\end{array}$	127.7 207 146 233 205	39	191.5	169.9
Character of Coa ol	Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous	Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous	Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous Sub-bituminous	Sub-bituminous		
Mine Post Office	Serene Frederick Frederick Dacono Erie	Dacono	Firestone Longmont Frie Ft. Lupton La Salle	Briggsdale		
Name of Company	Rocky Mountain Fuel Co Rocky Mountain Fuel Co Rocky Mountain Fuel Co National Fuel Co. Clayton Coal Co.	Consolidated Coal & Coke Co Grand Junction M. & F. Co International Fivel Corp. Boulder Valley Coal Co Shamrock Coal Co	W. E. Russell Coal Co. Bell Mining Co. United Collectes Co. Fort Lupton Coal Co. George Bedlien.	Keota Coal M. Co.	of Mines Operated: 16.	rado Mines Operated: 265
Name of Mine	Columbine Grant. Frederick Puritan. Clayton	Baum Sterling Evans Boulder Valley Shamrock	Russell Eureka Monroe Witherbee White Ash	Hill	Total-Number	Total-State of Colo

TABLE B-Continued

WELD COUNTY

The O. H. Davidson EQUIPMENT COMPANY

1633 Tremont Street DENVER

Exclusive representatives of Manufacturers, specializing in Coal Mining Equipment, to increase production, reduce costs, prevent accidents and improve preparation.

> ASK AND YOU SHALL RECEIVE Descriptive Matter of

Mancha Storage Battery & Combination Locomotives

Fairmont Steel Ties, Car Retarders, Box Car Loaders, Tipples, Conveyors, and Portable Pumps. Ereco Trolley Line Material Elrico Rail Bonds and Arc Welders Olson Self Dumping Cages Enterprise Roller Bearing Trucks and Mine Cars Fulton Brattice Cloth

THE COAL CUTTING MACHINE THAT INCREASES PRODUC-TION, IMPROVES PREPARATION, REDUCES COSTS, LESSENS POWER USED AND CUTS THE COAL WHERE YOU WANT IT CUT,



TOP CUTS, UNDER CUTS CENTER CUTS SHEARS

Used by

Rocky Mountain Fuel Co. Boulder Valley Coal Co. Moffat Coal Co. St. Louis, Rky. Mtn. & Pacific Utah Fuel Co. Grand Junction M. & F. Co. Temple Fuel Co. Colo. & Utah Coal Co. Alamo Coal Co. Standard Coal Co.

The second second

OLDROYD MACHINE COMPANY

Cincinnati, Ohio.

Represented by THE O. H. DAVIDSON EQUIPMENT CO.

TABLE C

PRODUCTION OF COUNTIES BY MONTHS-1923

Months	Archuleta	Boulder	Delta	Elbert	El Paso	Fremont
January		62.749	10.086	1.045	42.797	55 293
February		76.095	5,969	359	44.807	52,205
March		71.008	5.401	320	41,123	51,561
April		37.760	4.870	182	24,288	46,988
May		25,824	6.227	. 78	20.060	53,563
June		20,134	7.304	51	15.027	40.150
July		23,895	9.032	19	12,975	28,194
August		45,396	9.812	60	17.441	40.046
September		63,588	11.249	78	23.846	59,742
October		75,468	12,018	166	37.627	61.844
November		61,215	14,668	307	34.812	65,129
December	1,896	73,601	12,149	336	45,554	57.506
Totals	1,896	636.733	108,785	3,001	360,357	612,221

	Garfield	Gunnison	Huerfano	Jackson	Jefferson	La Plata
January	2.704	51,626	185.027	7.071	18,779	12,969
February	2.356	38.895	154.638	5,332	18,456	10.430
March	1,438	38,620	153,832	3.599	18.010	7.607
April	1,168	38,721	145,370	3,150	12.557	8 0 2 6
May	1,519	42,299	152,329	2,480	11,122	7,535
June	1,636	48,911	150,972	1,520	8,847	6,603
July	1,643	49,510	161,919	1,966	6,508	8,732
August	1,561	59,137	150,993	2,824	7,864	9,574
September	1,728	52,256	169,275	3,640	10,561	7,263
October	1,961	49,028	188,879	3,992	12,330	10,416
November	2,489	33,231	176,133	7,942	14,007	10,469
December	2,943	40,602	180,032	8,480	15,672	10,899
Totals	23,146	542,836	1,969,399	51,996	154,713	110,523

	Las Animas	Mesa	Moffat	Montezuma	Montrose	Pitkin
January	312,445	17.943	267	577	160	300
February	268,927	11,907	129	297	128	316
March	279,030	10,973	164	177	98	60
April	275.103	7,205	95	124	22	11
May	281,234	8,872	119	194	44	122
June	284,427	10,027	98	188	123	194
July	251,184	15,920	204	174	7	
August	244,897	13,147	163	276	66	206
September	240,726	18,191	231	419	66	269
October	237,526	21,182	312	700	282	448
November	244,627	21,886	460	802	285	794
December	275,308	18,839	438	749	824	729
Totals	3,195.434	176,092	2,680	4,677	2,105	3,449

	Rio Blanco	Routt	San Miguel	Weld	Grand Total
January	661	37.348		172,554	992,401
February	403	57,475		171,287	920,411
March	504	34,940		159,601	878,066
April	262	54,041		87,214	747.157
May	145	55,140		66,591	735,497
June	125	110.230		50,888	757,455
July	99	68,355		50,807	691,143
August	137	68,537		85,084	757,221
September	372	66,476		136,272	866,248
October	396	74,518		190,784	979,877
November	510	85,739		186,162	961,667
December	1,220	87,123	419	214,273	1,049,592
Totals	4,834	799,922	419	1,571,517	10,336,735
TABLE D

SHOWING INCREASE AND DECREASE BY COUNTIES, 1922-1923

Counties	Tons Produced 1922	Tons Produced 1923	Increase	Decrease
Adams Archuleta Boulder Delta Delta Elbert El Paso Fremont Garfield Gunnison Huerfano Jackson Jefferson Las Animas Mesa Mofitat Montezuma Montrose Ouray Pitkin	$\begin{array}{r} 481\\ 248\\ 711,476\\ 108,607\\ 3,039\\ 388,162\\ 482,389\\ 20,725\\ 432,725\\ 439,912\\ 2,091,826\\ 61,308\\ 180,547\\ 84,325\\ 3,369,891\\ 154,652\\ 7,185\\ 4,507\\ 1,517\\ 500\\ 2,589\end{array}$	$\begin{array}{c} \hline \\ \hline \\ 1,896\\ 66,733\\ 108,785\\ 3,001\\ 360,357\\ 612,221\\ 23,146\\ 542,836\\ 1,969,399\\ 51,996\\ 154,713\\ 110,523\\ 3,195,434\\ 176,092\\ 2,680\\ 4,677\\ 2,105\\ \hline \\ \hline \\ 3,449\\ \end{array}$	1.648 178 129.832 2.421 102.924 26.198 21.440 170 588 860	$481 \\ 74,743 \\ 38 \\ 27,805 \\ 122,427 \\ 9.312 \\ 25,834 \\ 174,457 \\ 4,505 \\ 500 \\ \end{array}$
Routt San Miguel Weld	4,127418,0961,467,501	$4,834 \\ 799,922 \\ 419 \\ 1.571,517$	$707 \\ 381,826 \\ 419 \\ 104.016$	••••
Totals	10,003,610	10,336,735		

Increase, 1923

333,125

TABLE E

COKE PRODUCED IN 1923 BY COMPANIES AND COUNTIES

Companies	Total No. of Ovens Used	Total Tonnage	Counties	Total No. of Ovens Used	Total Tonnage
American Smelting and Refining Co Colorado Fuel and	278	106,502	La Plata	26	9.708
11011 CU	207	012,349	Pueblo	399 120	448,243
Totals	545	648,851		545	648.851

REMARKS:

Average	number	of	days worked at the coke ovens	340.5
Average	number	of	men employed at the coke over	246
Number	of tons	of	coal made into coke1,068.	354

TABLE F

SHOWING BY COUNTIES COAL PRODUCTION OF 1923 IN PREPARED SIZES

Counties	Mine Run	Lump	Nut	Pea	Slack	Total
Archuleta Boulder Delta El Paso	$1,896 \\ 184,1444 \\ 39,642 \\ 1,352 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 \\ 122,749 $	$\begin{array}{c} 199,424\\ 38,684\\ 1,357\\ 103,852\end{array}$	29,026 14,121 11,011		$\begin{array}{c} 224,139\\ 16,338\\ 122,745\\ 122,745\end{array}$	$\begin{array}{c} 1,896\\ 636,733\\ 108,785\\ 3,001\\ 360,357\\ \end{array}$
Fremont Earfield Gunnison Huer Jackson Jackson	$\begin{array}{c} 66,151\\ 15,786\\ *389,489\\ 508,910\\ 11,646\end{array}$	$\begin{array}{c} 292,611\\ 4,320\\ 80,222\\ 743,408\\ 18,171 \end{array}$	$\begin{array}{c} 98,366\\ 2,4382\\ 14,931\\ 195,122\\ 8,716\end{array}$	3,538 9,666 17,407	151,55548,555504,552813,463	$\begin{array}{c} 612,221\\ 23,1146\\ 542,836\\ 1,969,399\\ 51,996\end{array}$
Jefferson La Plata Las Animas Mesa Moffat	$\begin{array}{c} 30,349\\ 92,106\\ 1,339,757\\ 2,680\end{array}$	$\begin{array}{c} 34,161\\7,611\\572,043\\49,196\end{array}$	$18,260 \\ 3,038 \\ 145,446 \\ 13,920 \\ \ldots$	7,417 2,011	$\begin{array}{c} 71,943\\ 6,980\\ 1,130,771\\ 33,058\\ \end{array}$	$\begin{array}{c} 154,713\\ 110,523\\ 3,195,434\\ 176,092\\ 2,680\end{array}$
Montezuma Montrose Pitkin Rio Blanco Routt	$\begin{array}{c} 2,335\\ 2,105\\ 3,449\\ 167,594\\ 167,594\end{array}$	$\begin{array}{c} 1,799\\ 2,237\\ 331,823\end{array}$	240 504 110,012	14,985	303 175,508	$\begin{array}{c} 4,677\\ 2,105\\ 3,449\\ 3,449\\ 4,834\\ 799,922\end{array}$
San Miguel	$\frac{419}{185,881}$ $\frac{3,248,223}{$	$\frac{637,154}{3,118,073}$	$\frac{196,295}{861,490}$	56,126	552,187 3,052,823	$\frac{419}{1,571,517}$ $\frac{10,336,735}{10,336,735}$

NOTE-In the Slack, some mines include Pea and others Nut and Pea coal. The Egg coal is included in the Nut and the Grate coal is included in the Slack. (The Egg and Grate coal reported only from Routt County.)

*54,576 tons Arthracite and 73,541 tons Semi-Anthracite included.

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ELEVENTH ANNUAL REPORT

COAL PRODUCTION OF COLORADO FROM 1873 TO 1923, INCLUSIVE

Year	Tons	Year	Tons
1873	69,977	1898	4,174,037
1874	87,372	1899	4,826,939
1875	98,838	1900	5,495,734
1876	117,666	1901	6,021,405
1877.	160,000	1902	7,522,923
1878	200,630	1903	7,775,302
1879	322,732	1904	6,776,551
1880	375,000	1905	8,989,631
1881	706,744	1906	10,308,421
1882	1,161,479	1907	10,965,640
1883	1,220,593	1908	.9,773,007
1884	1,130,024	1909	.10,772,490
1885	1,398,796	1910	.12,104,887
1886	1,436,211	1911	10.197
1887	1,791,735	1912	.11,016.948
1888	2,185,477	1913	. 9,268,939
1889	2,400,629	1914	. 8,201,423
1890	3,075,781	1915	. 8,715,397
1891	3,512,632	1916	.10,522,185
1892	3,771,234	1917	12,515,305
1893	3,947,056	1918	.12,658,055
1894	3,021,028	1919	.10,406,543
1895	3,339.495	1920	.12,514.693
1896	3,371.633	1921	. 9,141,947
1897	3.565,660	1922	10,003,610
		1923	10,336,735

The Very Best Domestic Coal in Colorado

Bright, Hard, Clean, Little Ash, Practically Sootless, No Clinkers.

Lump, Nut, Chestnut, Slack and Mine Run



Billing Point: Alamo, Huerfano County, Colorado. Walsenburg District Freight Rates Apply. Lowest from Colorado on Bituminous Domestic Coal

Revolving and Shaker Screen, Picking Tables, Loading Booms, Conveying Box Car Loader, capacity 2,500 tons per day.

Quality Preparation Service

Exclusive Sales Agents

The OAKDALE COAL COMPANY Denver, Colorado HARRY F. NASH, V-Pres. & Gen'l Mgr. Sales

COALS of QUALITY

Lignite-

Puritan and Shamrock Monarch—Louisville District

Bituminous—

Thor—Trinidad District Royal—Walsenburg District

"A coal mine with a capacity of 1,000 tons per day has a value to a railroad equivalent to a town with a population of 30,000 people."

NATIONAL FUEL COMPANY PRODUCERS AND SHIPPERS

511-520 Colorado Bldg. DENVER, COLO.

MINE DISASTERS AND MISCELLANEOUS FATAL ACCIDENTS, 1923

Aguilar, Colo., June 25, 1923.

Mr. James Dalrymple, State Inspector of Coal Mines, State Office Building, Denver, Cole. Dear Sir:

The following is my report concerning the explosion at the Southwestern mine, which occurred on the 5th of May, 1923, resulting in the death of ten men. I was in the Reliance mine at the time and as soon as informed, left for the Southwestern mine, arriving at the mine office about 6:30 p.m. The U.S. Bureau of Mines car No. 2 had arrived earlier in the day. Three helmet crews, composed of men from the Victor-American Fuel Co., Colorado Fuel & Iron Co., and the U. S. Bureau of Mines Rescue Car, Deputy Inspector W. M. Laurie, The Victor-American Fuel Co., and Colorado Fuel & Iron Co., safety inspectors, the Mutual Insurance Company's Deputy Inspector, Superintendents, Mine Foremen, and other practical men from the surrounding mines were giving their services. On arriving at the mine entrance, I found that the fan house had been repaired and fan running fifteen minutes after the explosion. Two bodies had been recovered from the manway. After ascertaining the whereabouts of the remaining bodies, I entered the mine. The crews advanced as far as the 3rd North parting and with the aid of the helmet crew, four more bodies were recovered in this section. The work of rebuilding temporary stoppings was continued and all the bodies were recovered by 9:00 a.m. May 6th, 1923.

The mine is situated about two miles northwest from the town of Aguilar, Las Animas county, Colorado, on the Colorado & Southern Railway. It is operated by the Rocky Mountain Fuel Co., of Denver, Colo. Mr. George T. Peart is Assistant General Manager, Mr. William Morgan, Division Superintendent, and Mr. Morgan Williams is Superintendent and Mine Foreman. Mr. William Thomas, fire boss.

The seams being operated are the upper and lower Robinsons. The explosion occurred in the lower seam, known as the North and South Slopes. The coal is bituminous, running from three to five feet in thickness. The coal is mined by hand. The ground is faulty. The mine is very dry, water very searce and only available through purchase. The water for domestic use, outside hoist, and sprinkling of mine is pumped from Brodhead mine, a distance of one mile over the hills. Electric hoists were used for haulage purposes on inside slope and dip workings. Ventilation was produced by fan, electrically driven, producing about 40,000 cu. ft. of air per minute. Ordinarily there were between thirty and forty men employed in the mine, but on May 5th, 1923, the mine was idle. A few men were working, some cleaning haulage roads and others making coal for the next working day. As customary the fire boss had fired the shots and examined the mine prior to other employes going to work, and reported the mine in safe condition to the mine foreman, who visited the places where the men were working that morning, between nine and eleven a. m. On the morning of the explosion, fire boss record books showed mine clear of explosive gas from April 16th to May 4th, inclusive. The record book for May 5th had not been signed at this date, but was signed later showing mine clear of gas.

From testimony given at the inquest it was stated that there were only three men at the mine who knew how to start the fan. The superintendent, mine electrician, and the mine blacksmith. According to the daily records of The Trinidad Power and Transmission Company, the power went off at 12:41 p. m., returning two minutes later, but owing to the volt release being thrown out, the fan could not start until the release was thrown in. The superintendent being at dinner, about one-fourth of one mile distant, the electrician being in Denver, and the blacksmith being employed at a point where he could not tell anything about the power, there was no one present who knew how to start the fan. The superintendent upon returning to the mine about 1:20 p. m., being notified that the fan was not running, threw in the release. About three minutes later the explosion occurred.

The Southwestern mine was examined by me on February 7th. 1923. I found numerous faults were being encountered, gas being given off at some of them, and while the mine had always been an open light mine. I believed that on account of the faults, some of which were giving off explosive gas, the over-head cover getting greater, and the mine being dry, that Permissible Electric Head Safety Lamps should take the place of the open lights and so recommended. Mr. George Peart, upon receipt of recommendations advised by letter that electric head lamps would be installed. This recommendation had not been complied with at the time of the explosion, Mr. George T. Peart, Assistant General Manager for the company, produced letters at the inquest stating that electric head lamps had been ordered from the Mine Safety Appliances Co., of Pittsburgh, Pa., and that no assurance could be given as to the date of delivery by the manufacturers. In the meantime the coal company had some electric lamps brought from some of their other properties, but many of the batteries were found defective, and only a few of them in working condition, which were given to the men working in the most dangerous places in the mine. The following is a copy of a letter which the Chief Inspector of Coal Mines received from the Mine Safety Appliances Co., concerning the placing of order for electric head lamps and efforts made to get same.

MINE SAFETY APPLIANCES CO.

908-912 Chamber of Commerce Building

Pittsburgh, Pa., June 6, 1923.

Mr. James Dalrymple, State Inspector of Coal Mines, Denver, Colorado. Dear Sir:

We are in receipt of letters written by you to Mr. T. R. Jones, our representative in Denver, Colorado, relative to orders from the Rocky Mountain Fuel Company for Edison electric safety mine lamps, and at his request we have gone over our records during the interval in question and find Rocky Mountain Fuel Company order No. 28539, dated March 2d, 1923, for 20 M-361-4 Edison electric safety mine lamp headpieces complete with cover. This material was not in stock when this order was received, and it has been almost impossible to get headpieces, even up to the present time, and our records show approximately 1,500 of this particular item on back orders with the Edison Storage Battery factory, from whom all of these parts must come.

On April 3d we received a telegram from T. R. Jones relative to this order, as follows:

"Rocky Mountain Fuel order of March 2nd; when can you ship; need goods badly."

To which we replied by wire in the following manner:

"Rocky Mountain Fuel order for headpieces not in stock. Factory promises stock shipment to us middle of month. Will ship soon as available."

Again on April 9th we received a telegram from T. R. Jones regarding this order, from which we quote:

"Add twenty more headpieces to the order of Rocky Mountain Fuel Co. They are in desperate need of these goods and are very bitter over what they call very poor service. Do the very best you can."

This order was amended to include these additional headpieces, but were not in a position to ship, as these parts had not arrived from the Edison factory. On May 8th we received a further request by wire, to make shipments of these parts, to which we replied:

"Factory promises stock shipment to us this week. Will ship headpieces Rocky Mountain Fuel approximately ten days."

Shipment was then made immediately upon receipt of these parts on May 16th.

> Yours very truly, MINE SAFETY APPLIANCES CO. (Signed) GEO. H. HEIKE, President.

GHD :KSS CC-Mr. T. R. Jones.

INVESTIGATION

On the morning of the 7th, the ventilation had been restored sufficient to permit an examination of the mine. Accompanied by Mr. Joseph Watson, Joseph Cochrane, Insurance Inspectors, James Dalrymple, Jr., Victor-American Fuel Co. Inspector, Harry Jones and Morgan Williams, Chief Engineer and Mine Superintendent respectively for the Rocky Mountain Fuel Co., and James Dalrymple, Chief State Inspector of Coal Mines, I entered and examined the whole mine to determine the initial point and cause of the explosion. The initial point was located opposite last crosscut between main and back slopes about 70 feet in by a gas feeder on the back slope where Rozman was working and his body found. Evidences of extreme heat were plentiful with little or no signs of violence. The forces radiated in all directions from this point, increasing in violence as they traveled. Chief Inspector Dalrymple, in the presence of Insurance Inspector Joseph Cochrane, found a carbide lamp at the point where Rozman was working. Upon further search, a can of carbide and matches were found close by and from the position of the carbide lamp it would appear that it was in use at the time of the explosion.

Mr. Rozman had started to work in the slope section two days before the explosion. He was furnished with an Electric Lamp at that time and his carbide lamp was taken from him and locked in a cupboard outside of mine. He was also advised by Supt. Williams that open lights, matches, etc., were not allowed in that part of the mine.

CAUSE OF EXPLOSION

The explosion was caused: first, by the power being cut off the mines by a flash of lightning. Second, by no one being present that knew how to start the fan immediately upon return of power, thereby allowing fan to remain idle for thirty to forty minutes, sufficient to allow considerable explosive gas to accumulate, that upon starting of fan, gas was carried to and came in contact with an open light, exploding, thereby raising the coal dust in suspension causing a general explosion of gas and dust that traversed the whole mine.

REMARKS

Superintendent Morgan Williams, in starting the fan with the men in the mine violated Section 50 of the Coal Mining Laws. Evidently he did it on the impulse of the moment and without thinking.

Respectfully submitted,

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HUGO H. MACHIN,

Deputy State Inspector of Coal Mines,

STATE INSPECTOR OF COAL MINES

REPORT OF MIDWEST MINE EXPLOSION, OCTOBER 7, 1923

The Midwest mine is situated one and one-half miles east of Palisade, Mesa county, Colorado, on the Denver & Rio Grande Western Railroad and is operated by Robert T. Scott under lease. The mine is a drift mine opening. The main entries are advanced about 1,700 feet in an casterly direction with raise entries running in a southerly direction and called the 3rd and 4th South. Those entries are about 800 feet in length. The mine was ventilated by a small electric exhaust fan located in one of the west openings to surface called room 10 and was installed since July 14th, 1923, the date of the last inspection by Deputy State Inspector of Coal Mines, Jas. W. Graham. The coal was mined by electric entring machines. Robert Scott acted in the capacity of Superintendent, Mine Foreman and Fire Boss.

James Benda, a tracklayer, alone escaped and according to his testimony, Robert T. Scott, accompanied by J. R. Keys, W. B. Keys, Harvey Keys, R. B. Keys, George McKee, and James Benda, entered the mine about 7:15 a. m. to cut some coal and lay some track. They went as far as the entrance of No. 10 room and stopped. Scott started the fan, ran it for fifteen minutes, and then stopped it. Accompanied by one of the Keys, Scott proceeded with a Safety Lamp, his companion having no lamp, to examine the raise workings. Before reaching face, Scott gave orders to one of the men left at room 10 to start the fan and run it for ten minutes. At this moment Benda asked Scott what he should do and was told to go down the raise entry and get ties to lay a switch near face of raise entries. The fan was started and just as Benda started down to get ties one of the Keys sitting at room 10 got up and with an open light started to the face of raise entries. Benda cautioned him, told him he should not go up there with an open light. Keys answered, "I know what I am doing." Benda proceeded down the entry to get the ties, while he was piling them up the explosion occurred. This was about 10:40 a.m. He also testified that the fan was not run continuously and that it was not running when they entered the mine that morning and that up until ten days prior to the explosion the fan had been operated as a force fan.

I arrived in Palisade on the afternoon of October 8th, 1923, and that evening, accompanied by Mr. Munn of the U. S. Bureau of Mines Car, E. R. Davis, Special Investigator of Fatal Accidents for the State Coal Mine Inspection Department, Jas. W. Graham, Deputy State Inspector of Coal Mines, and several others entered the mine and examined all the raise workings. No explosive gas was found on this examination. The following afternoon we again examined this section of the mine and also the main entries in the main back entry from which the air had been cut off since the explosion, and found half inch cap at the face, three feet from the

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roof. The safety Lamp used by Scott was found and upon testing it was found to be in safe condition. We failed to find any of the carbide lamps used by the workmen.

Based upon the testimony of James Benda and personal observations, I am of the opinion that the mine was not examined on the morning of October 7th, 1923, prior to the men entering and that Scott undertook to remove a body of explosive gas while the men were in the mine and in doing so he overlooked or forgot the fact that the fan had been changed from a force to an exhaust, thereby changing room number 10 from the main intake to the main return, and that the deceased came to their death by this gas coming in contact with an open light. Coal dust took some part, therefore the explosion is classed as a gas and dust explosion and that Robert T. Scott is held responsible for the explosion because of violating the State Mining Laws.

LIST OF FATAL ACCIDENTS WHICH OCCURRED IN THE COAL MINES OF COLORADO DURING THE YEAR 1923

- (1)—January 2—RAFAEL MEDINA, Mexican, piek miner, experience four years, age 21 years, married, one child, employed by Caddell & Son at the Hezron mine, Huerfano county, was killed by a fall of rock. Deceased and his partner were mining coal at the face of their room and ran into an invisible slip which released a rock, falling on the former and killing him instantly. The place had been visited by the mine foreman an hour and a half prior to the accident and apparently it was safe, also the place was well timbered. The accident was due to the inherent danger of the work and no one can be charged with its responsibility.
- (2)—January 5—GEORGE EBER, Austrian, driver, experience 18 years, age 34 years, single, employed by the Mutual Coal Company at the Mutual mine, Huerfano county, was killed by a fall of rock. Deceased was gathering coal cars from rooms and bringing them out to an entry. In some inexplicable manner, while riding out on one, a prop was dislodged letting down a cross bar and some rock, which fell on deceased. The ear was not derailed, but the prop that was knocked out showed evidence of having been struck by the burr of a bolt used in fastening the rear end of the ears. How it came into contact with the prop could not be determined. At any rate the accident was a mischance and no one is held responsible for it.
- (3)—January 10—RALPH NEESHAM, English. asst. mine foreman, experience 25 years, age 42 years, married, five children, employed by the Utah Fuel Company at the Somerset mine, Gunnison county, was injured on Nov. 10, 1922, by being struck by a trip of cars, and died on the above date. Deceased was walking up a slope unaware of an approaching trip, which ran against him before he was able to jump aside, where he would have been safe as there was sufficient clearance on each side of the track. From evidence obtained it was one of those unforeseen accidents for which no one could be held responsible.
- (4)—January 12—WALTER SCHENKIER, American, machine miner, experience 5 years, age 27 years, married, one child, employed by the Colorado Fuel & Iron Company at the Lester mine, Huerfano county, was struck by a trip of loaded cars on the 11th of January, which injured him so severely that he died the following day. Deceased was walking on a cross

entry and was overtaken by a trip of cars and squeezed against the rib. The accident was due to a mischance as deceased believed that the road was clear, but a switch had been opened that permitted the on-coming trip to pass over. The driver not knowing that the signal to open the switch had not been given. Neither the driver nor deceased was able to state how the switch was opened. The accident was unforeseen and no blame is attached to any one.

- (5)—January 12—WILLIAM P. LLOYD, Welsh, fireboss, experience 45 years, age 64 years, widower, children not known, employed by the Victor-American Fuel Company at the Chandler mine, Fremont county, was injured on the 8th of January by being dragged by a mule and died on the above date. Deceased was standing by the roadway which was wide enough for him and a trip to pass along side. However, the mule which was pulling a trip swayed towards him and the end of the shafts caught in his clothes and pulled him under the loaded car. The mule became frightened and could not be stopped in time to save deceased from being severely injured. The accident was a mischance and unavoidable.
- (6)—January 23,—PABLO GARCIA, American, pick miner, experience 6 years, age 24 years, single, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas county, was killed by a fall of rock. Deceased and partner were loading coal at face of an entry when a rock gave way from an invisible slip, dislodging two props and burying deceased under the fall. The place was well timbered and the accident was unforeseen and unavoidable.
- (7)-January, date not given-JOHN WOODWARD, American, farmer, age 48 years, married, three children, resident of Kiowa, Elbert county, was killed by a cave-in. The accident occurred at an outcrop of coal about 16 miles east of Kiowa and is not a regular opening. The farmers in the vicinity are in the habit of going to this place and mining their own coal. Sometimes they stripped the cover off the coal and at other times they went under the cover and took the coal out without using timbers to support the cover. Deceased was working under the cover when about five feet of earth and rock fell on him, injuring him so severely that he died a few hours later. He was warned by a man who was with him that the place did not look safe, but deceased thought it was safe at least until he got the coal out. The accident was not reported and came to the notice of this department by an inquiry made concerning it.
- (8)—February 13—JOHN TURLEY, American, pick miner, experience 27 months, age 46 years, single, employed by the Pikes Peak Consolidated Fuel Company at the Pikeview mine,

El Paso county, was killed by a fall of rock while drawing a pillar. In driving rooms in this mine about one foot of top coal is leff for roof, immediately above this there is about a foot of bone coal. When the roof caves in pillars it splinters and causes the coal and bone to fall for a distance of 10 or 12 feet outside of the bone. Deceased was digging this loose coal from under the rock when it fell, killing him instantly. Accident was due to the inherent danger of the work.

- (9)—February 17—POLINIO ROMERO, Mexican, machine miner, experience about a year, age 29 years, single, employed by the Colorado Fuel & Iron Company at the Robinson mine Huerfano county, was killed by a fall of rock. Deceased left his own place which was well timbered to crawl through a small hole into an adjoining entry to get some loose coal which had aceidently been shot and was left. Without examing the roof he began to pull off the loose coal with his pick and also released a loose rock which fell on him with fatal results. Deceased had been warned by his partner not to go into this entry but he disregarded the cantion. Had he remained in his own working place the aceident would have been avoided.
- (10)—February 20—THOS. W. BOOTH, American, machine helper, experience 28 years, age 43 years, married and three children, employed by the Canon-Reliance Coal Company at the Reliance mine, Huerfano county, was killed by a fall of rock. At the time of the accident deceased was brushing up some coal which the machine had left on the bottom at the face of the entry. The nearest prop to the face was about 9 feet. A slip ran across the roadway which released the rock while he was brushing under it. This rock had been supported by one prop at the outer edge. It is claimed that when deceased began his brushing that he removed several props, but they could not be located. The responsibility for the accident is laid to both the mine foreman and deceased. Had the place been properly timbered the accident might have been avoided.
- (11)—February 22—MIKE POTALO, Italian, machine miner, experience 25 years, age 57 years, married, six children, employed by the National Fuel Company at the Monarch No. 2 mine, Boulder county, was killed by a fall of rock. Deceased was going through a cross cut when a piece of rock fell on him, killing him instantly. The roof where the accident occurred is a rolly sandstone and is considered good but has frequent slips which are hard to detect and fall from the roof without making a sound. The roof had been tested in the morning before the accident and found to be safe. It is possible that the accident might have been avoided had a row of props been carried across the cross cut. However, consid-

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ering the condition of the roof in the cross cut where slips are difficult to detect, the accident was unavoidable.

- (12)—March 4—CHAS. MAGNUSON, American, "laborer, experience in coal mines 15 years, age 49 years, married, four children, and
- (13)—GUS MAHAS, Greek, laborer, experience 15 years, age 45 years, married, four children, employed by the Alamo Coal Company at the Alamo mine, Huerfano county, were both killed by a run-a-way car. This mine is being opened up and the driving of the slopes is done by the Colorado Construction Company. Both men were in the slope when the accident occurred. A loaded car had just been pulled up the slope when it rushed back, overtaking them and killing them both almost instantly. It appears that the day before the accident the elevation of the track had been raised in order that the loaded cars could be dumped directly into the road wagon. This elevation gave the loaded car the impetus to run back, which it did in this case, there being no safety device attached to hold the car. The accident is charged to the carelessness of the officials in charge of the mine.
- (14)—March 16—LUIS TONEATTI, Italian, pick miner, experience ten years, age 43 years, married, three children, employed by the Colorado Fuel & Iron Company at the Cameron mine, Huerfano county, was killed by a fall of rock. Deceased was loading pillar coal when a cave occurred, knocking out the props and crushing deceased under the falling rock. The accident was unforeseen and unavoidable.
- (15)—March 20—MARTIN GREGORICH, Austrian, miner, experience 7 years, age 43 years, married, three children, employed by the Utah Fuel Company at the Somerset mine, Gunnison county, was killed by a fall of coal. Deceased had left the face of his room where he had been loading coal and was in the act of passing the corner of a crosscut, when a fall of coal caught him and injured him so severely that he died a few hours later. It appears that an unlooked for bump dislodged the coal. The accident was due to the inherent danger of the work and can be charged to no one.
- (16)—March 25—OSCAR CHESS, Bohemian, machine miner, experience ten years, age not given, married, four children, employed by the Garfield Coal M. & T. Company at the Garfield mine, Mesa county, was injured March 19th by lifting a mining machine, and died from the effects of internal injuries on the above date. The accident was unforeseen and no one can be charged with its responsibility.
- (17)—April 8—S. L. MOORE, American, pick miner, experience
 19 years, age 43 years, married, one child, employed by the
 Moffat Coal Company at the Oak Hills No. 2 mine, Routt

county, was killed by a fall of rock. Deceased was engaged in splitting a pillar. The nearest timber was six feet away and was cross barred and lagged overhead and did not support the rock which fell. The fire boss had examined the place the day before and it being Sunday did not make the usual examination, consequently it is possible that had he done so, he might have discovered the dangerous rock. The accident is charged to the carelessness of the deceased and the mine foreman in not seeing that the place was properly timbered.

- (18)—April 10—OSWALD LENKE, German, rock car runner, no underground experience, age 17 years, employed by the Rocky Mountain Fuel Company at the Columbine mine, Weld county, came to his death from suffocation. Deceased was working night shift loading out the rock that came from the shaft and running it across the trestle to a rock dump. The work was slack that night and for some unknown reason, deceased crawled in under the trestle and sat down close to the rock dump from which considerable smoke and fumes were escaping. He probably fell asleep and was overcome by the fumes, causing his death. Deceased being young and inexperienced and knowing nothing about mine gases or gases given off by burning coal, the accident is classed as a misadventure.
- (19)—April 12—THOMAS THIRLAWAY, American, machine man and driver, experience 20 years, age 39 years, married, no children, employed by the Big Four Coal & Coke Company the Centennial mine, Boulder county, was injured by being crushed between car and rib on April 6th, and died on the above date. Deceased had started with a mule trip of two loaded cars and when he reached the inby end of the parting, found the points of the latches thrown for the empty track. He endeavored to switch the latches for the loaded track, but failed and slipped and fell to one side of the car. The mule pulled the trip onto the empty track where the pillar rib extends to within eight inches of the rail, here deceased was caught and wedged in so tight that the first car had to be lifted before he could be freed. The accident is classed as unforeseen due to the danger of the occupation.
- (20)—April 18—FLAVIANO VALERIO, Mexican, pick miner, experience 12 years, age 32 years, married, two children, employed by the Empire Coal Mining Company at the Empiremine, Las Animas county, was killed by a fall of coal and rock. Deceased was in the act of taking down coal from the face of the room when a bump occurred, throwing out about a ton of coal and rock. The place was well timbered and deceased was a careful workman. It was an unavoidable accident for which no one can be held responsible.

- (21)—April 19—FRANK KERR, American, inside engineer, age 55 years, married, four children, employed by the Ross Coal Company at the Horace mine, Gunnison county, was crushed to death under a snowslide. Deceased had left the mine to go home, at a point about fifty feet from the portal of the mine, he stopped to talk with the mine foreman concerning some work. While thus engaged, the latter noticed a snowslide break over the portal of the mine and gave the warning to run. Deceased did not observe the direction of the slide and was caught by it and covered by approximately six feet of sonw and ice. The snowslide destroyed the snowshed which had been put up at the entrance to the mine for protection. The accident was a misadventure for which no one could be blamed.
- (22)—April 20—CHARLES HANBY, English, miner, experience several years, age 38 years, married, five children, employed by the Grand Junction Mining & Fuel Company at the Cameo mine, Mesa county, came to his death by a premature shot. It appears that the men employed in the narrow workings were permitted to do their own shooting. Deceased and his partner had drilled three holes, tamped and fired them. The last shot was slow in taking and while deceased waited a moment, the first two shots went off and buried him under a fall of coal. The accident happened at the noon hour and the company is responsible for it, as it is a violation of the coal mining law to allow shooting at the noon hour.
- May 5—The following ten men lost their lives in a gas and dust explosion at the Southwestern mine, operated by the Rocky Mountain Fuel Company at Aguilar, Las Animas county:
- (23)-LUKE LUCERO, Mexican, pick miner, experience six years, age 26 years, single.
- (24)—RAY GALLEGOS, Mexican, pick miner, experience two years, age 25 years, married, two children.
- (25)—ALEX JOHNSON, Swede, pick miner, experience 18 years, age 46 years, single.
- (26)—CANDELARIO TRUJILLO, Mexican, pick miner, experience 20 years, age 48 years, married, three children.
- (27)-P. F. McKENNA, American, pick miner, experience 5 months, age 41 years, married, three children.
- (28)—JOHN SOUPAGIANES, Greek, pick miner, experience 15 years, age 36 years, married, no children.
- (29)-CHRIS KATSICIS, Greek, pick miner, experience 20 years, age 36 years, no children.
- (30)—JOHN KONESTRATES, Greek, pick miner, experience 30 years, age 48 years, married, two children.

- (31)-LEON CORDOVA, Mexican, pick miner, experience 30 years, age 42 years, married, seven children.
- (32)—TONY ROZMAN, Austrian, company man, experience 12 years, age 37 years, single.

See report on page 71.

- (33)—May 21—MIKE CHTELOUGU, Rumanian, pick miner, experience ten years, age 45 years, married, two children, employed by the Moffat Coal Company at the Oak Hills No. 2 mine, Routt county, was killed by a fall of top coal. Deceased was working in a pillar room where there was some overhauging top coal which he tried to pull down and failed. He started to load coal under it and while thus engaged, a large piece fell on him, killing him instantly. It is possible that the accident might have been avoided had deceased put up some props before starting to work.
- (34)—May 25—JOHN YAUK, Austrian, pick miner, experience 11 years, age 29 years, married, three children, employed by the Colorado Fuel & Iron Company at the Morley mine, Las Animas county, was killed by a fall of rock. Deceased and four other men were drawing room stumps and had holed through to an entry when a rock was released which struck Yauk. The place was well timbered and the accident was unforeseen and therefore is classed as "unavoidable."
- (35)—June 23—ROGER SMITH, American, pick miner, experience eight years, age 37 years, married, one child, employed by the Rapini Bros. at the Placita mine, Pitkin county, came to his death by a gas explosion. Deceased was driving a cross cut when he encountered a body of gas that put his safety lamp out. Probably not knowing much about gas in a mine, he opened his lamp to relight it and ignited the gas. The accident is charged to the mine management in not furnishing a magnetically locked lamp and failure to provide sufficient ventilation at the face of the workings to remove the accumulation of gas.
- (36)—July 7—DAN PEFFER, Italian, pick miner, experience 17 years, age 44 years, single, employed by the Mutual Coal Company at the Mutual mine, Huerfano county, was killed by a fall or rock. Deceased had been extracting chain pillars and had started to leave the mine. When he reached a point on the entry about 225 feet from his working face, a large rock fell from the roof and caught him. This was a case where, had the roof been supported by cross bars, the accident might have been avoided.
- (37)—July 7—RICHARD E. YOUNG, Colored, pick miner, experience 11 years, age 48 years, married, no children, employed by the Colorado Fuel & Iron Company at the Robinson No. 2

mine, Huerfano county, was killed by a fall of rock. Deceased was engaged drawing a pillar and hauled his own coal. He had loaded a car and went to the entry to get the mule to pull his car. In some way, two props set a foot and one-half from the side of the track, were dislodged and a rock came down on him and the mule, killing both. The accident was a misadventure and is classed "unavoidable."

- (38)—July 10—TONY NERONI, Italian, pick miner, experience nine years, age 38 years, married, no children, employed by the Colorado Fuel & Iron Company at the Frederick mine, Las Animas county, was killed by a fall of coal. Deceased and his partner were engaged grading for a switch at the entrance to a pillar. According to statement of the mine foreman, props had been ordered set at the entrance. The men were doing company work at the time and neglected to set the props. When the grading was finished an empty car was switched into the pillar and a rock gave way, striking deceased. The partner stated that they thought the roof was in good condition. However, had props been set, probably the accident would have been avoided.
- (39)—July 11—JOSE NAVA, Mexican, machine miner, experience 8 years, age 32 years, single, employed by the Victor-American Fuel Company at the Cass mine, Las Animas county, was killed by a fall of rock. Deceased and his partner had finished loading a car, the former began to set a prop under some drawslate off which the coal had been mined. While thus engaged a piece of the drawslate snapped off and fell on deceased. The accident was unforeseen and is classed as "unavoidable."
- (40)—July 12—ANDREW KIREN, Austrian, pick miner, experience 29 years, age 57 years, single, employed by the Colorado Fuel & Iron Company at the Rockvale mine, was killed by a premature shot. The investigation showed that the coal had been shot with giant powder by the use of a short fuse, also the tamping bar found in the hole shot was of iron tipped with copper. The evidence showed that deceased was in the habit of shooting with permissible powder, using a very short fuse. Probably the shot went off before he could get away. The fact that he used a short fuse and also an iron bar would indicate that he was very careless. Therefore, the accident is charged to his own carelessness and to the mine foreman who failed to make him comply with the requirements of the law when tamping and firing his shots.
- (41)—July 12—SAMUEL G. HAIG, English, pick miner, experience 28 years, age 42 years, married, three children, employed by the American Smelting & Refining Company at the Boncarbo mine, Las Animas county, was killed by a fall of

rock. Deceased and son were drawing a pillar when without warning a rock gave way which fell on the former. The place was well timbered and the accident is classed as "unavoidable."

- (42)—July 25—PETER DUHICK, Slavonian, piek miner, experience ten years, age 31 years, single, employed by the Oakdale Coal Company at the Oakdale mine, Huerfano county, was injured on July 23rd, by a fall of rock and died on the above date. Deceased had finished his day's work and was on his way out of the mine. When he arrived at the intersection of the main motor road and the 6th N. entry, he was struck by a large rock which fell from the roof. The accident was unforeseen. It is possible that it might have been avoided had an examination been made of the place shortly before it happened. The accident is classed as "unavoidable."
- (43)—July 31—JIM DISPENZA, Italian, pick miner, experience 20 years, age 42 years, single, employed by Caddell & Son at the Hezron No. 3 mine, Huerfano county, was killed by a fall of rock. Deceased was working single in a pillar and was found dead under a large rock. It appears that invisible slips had formed a pot and as the coal was removed, it gave way and fell on deceased. The place was well timbered and as the accident was unforseen, no one is charged with its responsibility.
- (44)—August 11—ELESEO DALLE NORARE, Italian, piek miner, experience eight months, age 22 years, single, employed by the Rugby Collieries Company at the Rugby mine, Huerfano county, was killed by a fall of rock. Deceased was working alone in a gob entry which was well timbered. Apparently he was taking out coal between the gob corner and the roadway face when he struck an invisible slip which gave way, throwing out the props that were supporting it, and let the rock fall on him. The accident was unforseen and the responsibility for it is not charged to anyone. On the day of the accident flood waters came down the canyon and flooded the mine to such an extent that it was impossible to investigate the above accident until September 28, 1923.
- (45)—August 16—VICTOR BRADY, Hungarian, pick miner, experience 20 years, age 34 years, married, two children, employed by the Keystone mine, El Paso county, was crushed to death between a car and roof. Deceased was taking a loaded ear to the parting and apparently was riding the front end of the car when his head struck against the roof and knocked out his brains. The accident was a mischance and unavoidable.
- (46)—August 21—DOMINGO SANCHEZ, Mexican, machine miner, experience seven years, age 39 years, married, one

child, employed by the Temple Fuel Company at the Brodhead No. 9 mine, Las Animas county, came to his death by electrocution. Deceased was shoveling coal when he lost his footing and fell coming into contact with a live feed wire at a spot where the insulation was worn off. The wire was covered with coal dust and the bare spot was not noticeable. The accident was a misadventure on the part of the deceased, but probably would have been avoided had the wire been examined and properly been taken care of.

- (47)—August 23—SAMUEL MIRANDA, Italian, machine miner, experience 12 years, age 36 years, married, three children, employed by the Colorado Fuel & Iron Company, at the Sopris mine, Las Animas county, came to his death by electrocution. Deceased was drilling holes preparatory to having his place. eut. He was seated directly under the feed lines, his head about eight inches away from the lower wire. In some way he came in contact with it and received a shock which killed him instantly. The feed wire was well insulated but very wet. There was no eye witness to the accident and it is classed as unforeseen and unavoidable.
- (18)-August 25-W. B. HILL, American, shotfirer, experience 25 vears, age 46 years, married, two children, employed by the Colorado & Utah Coal Company at the Harris mine, Routt county, was injured by coal blowing out against him, on April 24th, and died on the above date. Deceased was found nearly dead seven hours after the accident occurred. He was caught by one of three shots that he had fired in the place where he was found. Just what happened is not known. One of the three shots possibly had a defective fuse and hung fire for sometime and he returned thinking that there was a missed shot, or he believed that all shots were fired and he went back for the final examination of the place, and was caught by an outburst of coal from one of the shots. He sustained severe injuries and lingered a long time. Not having seen the place immediately after the accident, it is not possible to place the responsibility for it at this late date. However, the mine officials deserve censure for overlooking the fact that deceased did not come out of the mine at his usual hour, and in consequence the injured man was left lying neglected for seven hours.
- (49)—September 6—JESUS LOPEZ, Mexican, pick miner, experience six years, age 21 years, married, one child, employed by the Colorado Fuel & Iron Company at the Lester mine, Huerfano county, was injured March 31, 1923, by a fall of rock and died six months later. Deceased was setting a prop under a roof which had been discovered unsafe, when a piece of rock gave way from a slip, striking him and injuring his spine so seriously that he died as above stated. He was a dependable worker and the accident was unavoidable.

- (50)—September 7—JOSEPH GRANTHAN, American, pick miner, experience 47 years, age 56 years, married, two children, employed by the American Smelting & Refining Company at the San Juan mine, La Plata county, was killed by a fall or rock in a dip entry. Deceased was building a rock stopping in a cross cut when the accident occurred. He had been advised that the roof was loose and to put up props. He failed to comply and consequently the accident is charged to his own negligence.
- (51)—September 18—OSCAR ROYCE, American, dumper, very little experience, age 17 years, employed by the Crested Butte Anthracite M. Company at the Smith-Anthracite mine, Gunnison eounty, came to his death by falling down the chute. Deceased got into the chute to dislodge some coal that clogged the passage. The coal broke loose and caught him, carrying him down to the bin. His injuries were so severe that death was almost instantaneous. The accident could have been avoided by using precaution, but the youth and inexperience of deceased makes it impossible to place the blame on him.
- (52)—Oetober 5—W. R. BOELZ, American, driller, experience in coal mines a few months, age 23 years, single, employed by the Alamo Coal Company at the Alamo mine, Huerfano county, was killed by being caught between dump car and roof. Deceased had signalled engineer to hoist men on two dump cars. He was on the front end of the second car from which a pin, used to prevent ear from tipping, fell out unnoticed. As there was no counter balance to hold the car down it tipped, lifting deceased up and crushing him between the uplifted end of the car and the cross bars, causing such injuries that he died a few hours later. The aceident was a misadventure and unavoidable.
- (53)—Detober 5—JOE PALLAZZO, Italian, pick miner, experience one year, age 35 years, married, one child, employed by the Colorado Fuel & Iron Company at the Frederiek mine, Las Animas eounty, was killed by a fall of roek. Deeeased and his partner were working in a eross cut on a chain pillar when a rock gave way from an invisible slip, throwing out 16 props and struck the former before he could get away in time. The place was well timbered and the aceident was unforeseen and is elassed as unavoidable.
- (54)—October 7—ROBERT T. SCOTT, American, manager, experience 40 years, age 50, married, five children, part owner of the Midwest Coal Company, and acting also as mine foreman in the Midwest mine, together with
- (55)—J. K. KEYS, American, machine miner, experience 30 years, age 56 years, married, seven children;

- (56)--W. B. KEYS, American, machine miner, experience 18 years, age 31 years, married, three children;
- (57)—ROBERT B. KEYS, American, machine miner, experience 13 years, age 29 years, married, one child;
- (58)—HARVEY KEYS, American, machine miner, experience none, age 16 years, the latter three, sons of J. K. Keys, and
- (59)—GEO. McKEE, American, machine miner, experience 5 years, age 33 years, single; were killed by a gas and dust explosion caused by an open light. See report on page 75.
- (60)—October 8—DANIEL MARTINEZ, Mexican, pick miner, experience 17 years, age 52 years, married, four children, employed by the Cuchara Canon Coal Company at the Cuchara Canon mine, Huerfano county, was killed by a fall of rock. Deceased was drilling a hole to shoot coal off the solid. Between the coal and solid top was a band of drawslate about eight inches thick, which was usually taken down. In this instance a piece was left standing and two props were set under it to hold it up, but were removed when deceased set the machine post to drill the hole. While in the act of taking out the drill post the rock came down, striking deceased. The accident would have been avoided had the rock been taken down, and was the result of an error of judgment on part of the deceased.
- (61)—November 5—MAX J. MARTINEZ, American, pick miner, experience five years, age 21 years, married, two children, employed by the American Smelting & Refining Company at the Boncarbo mine, Las Animas county, was killed by a fall of rock. According to evidence the pillar boss had instructed deceased and his partner to timber the place before starting to work, which order was neglected. While taking loose coal off a pillar a rock gave way from an invisible slip and struck deceased. The pillar boss is responsible for the accident in not seeing that his instructions are carried out.
- (62)—November 15—WALTER ZINKO, Russian, machine contractor, experience ten years, age 39 years, married, three children, employed by the Colorado Fuel & Iron Company at the Robinson No. 2 mine, Huerfano county, was killed by a fall of rock. While setting a jack the cutting machine was accidently moved about ten inches, which stretched the cable and caused the jack pipe to slip, knocking out a cross bar supporting a rock, which fell on deceased and killed him. The accident was a mishap and no one is held accountable for it.
- (63)—November 9—JOHN SOMAK, Austrian, miner, experience 22 years, age 51 years, married, five children, employed by the Colorado Fuel & Iron Company at the Crested Butte mine,

Gunnison county, came to his death by falling off a ladder. Somak and his partner were setting a prop at the working face, the former was at the top of the ladder and in descending made a misstep and lost his balance, falling backwards on his head and breaking his neck. The accident was a misadventure and is classed as "unavoidable."

- (63)—November 17—GEORGE TSAKAS, Greek, machine miner, experience one year, age 32 years, married, no children, employed by the Victor-American Fuel Company at the Cass mine, Las Animas eounty, was injured on October 11th, by a fall of rock from the effects of which he died on the above date. Deceased was in the act of putting up a cross bar when a rock came down and struck him. The place was well timbered and the accident was due to the inherent danger of the work.
- (65)—December 1—J. P. SEBBEN, Italian, machine runner, experience 23 years, age 43 years, married, five children, employed by the Colorado Fuel & Iron Company at the Sopris mine, Las Animas county, was injured August 24, 1923, by a loaded ear and died on the above date. Deceased had been cutting coal and was in the aet of dropping three loaded cars into the entry, when the fourth car started to move before he was ready for it and struck him on his right leg causing a serious injury and resulting in erysipelas, from the effects of which he died four months later. It appears a brake had not been set on the fourth car when the other three were being dropped. Had this been done it is possible the aceident would have been avoided.
- (66)—December 31—LARIMER A. FERRIS, American, mule driver, experience seven years, age 42 years, married, two children, employed by the Fort Lupton Coal Company at the Witherbee mine, Weld county, was crushed to death between a moving car and a prop set against the side of a haulage road. Deceased was driving down a slant entry and in passing under two canvas curtains, his light went out and he lost his balance and fell off his seat sideways. The clearance between the car and the rib was only 11 inches, consequently there was no escape for deceased. The mine management is held responsible for the accident in not complying with the law which requires that a clearance of 2^{4} feet be maintained from side of the car to the rib.

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MINE OFFICIALS' EXAMINATION

On October 31st, November 1st and 2nd, 1923, an examination was held in the House of Representatives, State Capitol Building, Denver, Colorado, for Coal Mine Officials; 254 candidates appeared for the examination, with the following results:

90 or 35% received First Class Mine Foreman's Certificates.

- 27 or 11% received Assistant First Class Mine Foreman's Certificates.
- 33 or 13% received Fire Boss Certificates.
- 49 or 19% received Second Class Mine Foreman's Certificates.
- 10 or 4% failed to receive better certificates than they were holding.
- 46 or 18% failed to pass the examination.

Following is a list of the successful candidates who received Certificates at the above examination:

First Class Mine Foreman

No.		
164	Allen, Lou MDelagua,	Colo.
172	Anslow, B. HawleyBerwind,	Colo.
167	Barclay, Samuel MForbes,	Colo.
204	Bell, R. OStrong,	Colo.
103	Bennett, Harry SBox 115, Colorado Springs,	Colo.
251	Bennett, James	Colo.
76	Biggins, G., JrBox 157, Arvada,	Colo.
24	Binks, Joe	Colo.
18	Bracken, DanNew Castle,	Colo.
210	Bunten, Robert JCanon City,	Colo.
197	Burns, Owen MRouse,	Colo.
45	Calderhead, J. MCameo,	Colo.
179	Carruthers, Thomas	Colo.
61	Coles, W. EGlenwood Springs,	Colo.
195	Cunico, Nello CristSopris,	Colo.
111	Dalrymple, DavidChandler,	Colo.
110	Dalrymple, George CDenver,	Colo.
77	Dalrymple, Henry DDenver,	Colo.
$1951/_{2}$	Davenport, William ASerene,	Colo.
212	Davies, Dan AOak Creek,	Colo.
58	·Dawe, Sidney ESopris,	Colo.
85	Donnell, James OBrodhead,	Colo.
198	Ellington, William	Colo.
139	Evans, Griff IPictou,	Colo.
149	Evans, Wm. BWalsen,	Colo.
120	Fairhurst, Wm	Colo.

Cert.

Cert.			
No.			~ .
9	Fernandez, J. C.	Tollerburg,	Colo.
151	French, A. P	Toltec,	Colo.
178	Friel, Edward	Oakview,	Colo.
155	Gabaldon, Carl E.	Berwind,	Colo.
244	Gay, James Gough	Coal Creek,	Colo.
69	Glover, Arthur	Erie,	Colo.
196	Gray, John	Erie,	Colo.
140	Gravelle, Ivor	Pietou,	Colo.
144	Gregory, George	Walsenburg,	Colo.
36	Gregory, Thomas A.		Colo.
82	Hale, J. R.	Walsen,	Colo.
176	Hamilton, James	Oakview,	Colo.
71	Happs, George	Ravenwood,	Colo.
60	Hicks, C. F.	Mt. Harris,	Colo.
104	Hobbs, Milton	Lester,	Colo.
157	Howells, Edwin	Colorado Springs.	Colo.
202	Jordan, James	Denver.	Colo.
201	Jordan, Patt		Colo.
56	Johnson, Geo, O		Colo
218	Jones, Robert	Superior.	Colo.
225	Karcich, Walter	Segundo.	Colo.
136	Kelly, James B.	Delagua.	Colo.
148	Kerr, John Wm.	Louisville.	Colo.
23	Lamb. Adam	Dacono.	Colo.
17	Lamb. George	Dacono.	Colo.
19	Lindsay, James	Frederick	Colo.
102	Lowe Alex M.	Lester.	Colo.
94	Lloyd, William	Aguilar.	Colo.
63	Machin, Eugene William	Louisville.	Colo.
220	McCune, James A.	Rouse.	Colo.
59	McCune Joseph W.	Mt Harris	Colo.
93	Merritt William A	Walsenburg	Colo
.).)	Morgan John D	Louisville	Colo
189	Morton R S	Denver	Colo.
170	Mosier, MacIntosh Peter	Pyrolite.	Colo.
75	Moxley, George W.	Solar.	Colo.
187	Murphy, Edward K.	Pikeview.	Colo.
234	Neish John G	Farr	Colo.
73	Oakley Edwin	Erie	Colo
123	Pickens Chas	Oakview	Colo
257	Prendergast Richard G	lenwood Springs	Colo
147	Ransone, Foster.	Coal Creek	Colo
181	Rees. G. H.	Lafavette	Colo
96	Reynolds Thos	Aquilar	Colo
231	Richards Evan	Tabaseo	Colo
191	Salvage James M	Louisville	Colo
120	Scott Walter	Palisade	Colo
128	Smith Albert G.	Delagua	Colo.

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Cert.			
No.			
14	Smith,, John	Morley,	Colo.
237	Sutherland, Harold A.	Farr,	Colo.
53	Sneddon, Robert	Canon City,	Colo.
247	Unwin, Henry Ralph	Serene,	Colo.
66	Vahldick, Harold W.	Coal Creek,	Colo.
211	Vickers, James W.	Rugby,	Colo.
222	Voss, Joe P	Valdez,	Colo.
173	Titsworth, Geo. H	Valdez,	Colo.
193	Treasure, Arthur	Morley,	Colo.
112	Twadell, James J	Aguilar,	Colo.
152	Welch, R. H.	Mt. Harris,	Colo.
156	Williams, Ellis H.	Berwind,	Colo.
192	Williams, John T.	Sopris,	Colo.
133	Williams, Richard	Walsen,	Colo.
81	Wilson, James H.	Trinidad,	Colo.
141	Wilson, William	Coal Creek,	Colo.

First Class Assistant Mine Foreman

2	Bludworth, Robinson E	Tabasco,	Colo.
174	Bryan, Thos.	Valdez,	Colo.
95	Chatin, August H.	Walsenburg,	Colo.
15	Clemens, R. C.	Ravenwood,	Colo.
8	Cornali, John	Tollerburg,	Colo.
$\cdot 67$	Cowperthwaite, Ray B.	Coal Creek,	Colo.
42	Davis, William J.	Ideal,	Colo.
185	Daugherty, W. F.	Morley,	Colo.
105	Edwards, Owen	Cokedale,	Colo.
119	Giovanini, Antone B	Mt. Harris,	Colo.
246	Godfrey, Glen Herbert	Florence,	Colo.
127	Halbert, William C	Tioga,	Colo.
221	Herd, James	Valdez,	Colo.
175	Kilpatrick, John	Forbes,	Colo.
107	Laiminger, Korbin E	Sopris,	Colo.
242	Langowski, Alexander	Sopris,	Colo.
232	Langowski, Charles	Sopris,	Colo.
1	Lynch, Hugh B	Walsen,	Colo.
98	Meden, Louis	Lafayette,	Colo.
233	Morgan, A. W	Forbes,	Colo.
74	Ortiz, J. E	Chandler,	Colo.
10	Potter, Parley	Florence,	Colo.
163	Ranson, Raymond C	Pyrolite.	Colo.
84	Regner, Martin J	Walsen,	Colo.
26	Rockley, Newton E.	Louisville,	Colo.
65	Roddy, John J	Palisade,	Colo.
106	Scott, Harold E.	Ludlow,	Colo.

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Fire Boss Certificates

Cert			
No.			
158	Bickerton, Joseph R	Aguilar, Colo	
35	Boyle, Robert J.	Leyden, Colo	
16	Cadez, John	Ravenwood, Colo	
184	Chase, Newton J	Ravenwood, Colo	
200	Chase, W. A.	Rouse, Colo	
54	Dawe, Clifford	Valdez, Colo	
241	Coperthwaite, Leslie W	Coal Creek, Colo	
31	Fennell, Wesley	Colorado Springs, Colo	
114	Garcia, Rudolph	Cokedale, Colo	
20	Gimpel, Joe	South Canon, Colo	
SS	Hartman, Bart	Lafayette, Colo	
43	Hearn, William E	Cameo, Colo	
153	Hunden, Dave	Florence, Colo	
115	McIllwee, James P	Aguilar, Colo	
83	Jacobs, Edward	Aguilar, Colo	
12	Jenkins, Edward H.	Walsen, Colo	
51	Keller, C. J.	Primero, Colo	
32	Kish, Louis D	Primero, Colo	
78	Landen, W. E.	Chandler, Colo	
46	Lloyd, Stanley J	Erie, Colo	
80	Luh, Frank	Camp Shumway, Colo	
41	Miggison, Earl	Berwind, Colo	
64	Neish, Geo.	McGregor, Colo	
87	Neish, W. H.	McGregor, Colo	
243	Penny, Jesse	Rockvale, Colo	
79	Peet, Charles	Walsen, Colo	
146	Renfro, Wm. E	Canon City, Colo	
168	Richards, W. H.	Delagua, Colo	
183	Savio, Gaetano		•
239	Smith, Matthew	Rockvale, Colo	
109	Twadell, Mike D	Aguilar, Colo	
33	Williams, William	Aguilar, Colo	
34	Woodword, Francis S.	Aguilar, Colo	

Second Class Mine Foreman

177	Banecks, Kent N.	Brodhead,	Colo.
137	Barnett, Simon	Denver,	Colo.
213	Bessol, Fred	Boulder,	Colo.
154	Clayton, Robert	Denver,	Colo.
135	Cameron, James R	Delcarbon,	Colo.
206	Caminotti, William J	Rugby,	Colo.
235	Cartwright, Percy	Brodhead,	Colo.
55	Davenport, C. Lynn	Glenwood Springs,	Colo.
150	Easton, William John	Berwind,	Colo.
68	Falgien, Alex	Coal Creek,	Colo.
28	Ferguson, William	Colorado Springs,	Colo.

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Cert.		
No.		
145	Foreman, F. BErie.	Colo.
256	Green, James RDacono,	Colo.
116	Green, Maynard	Colo.
228	Hambly, Edward GOak Creek,	Colo.
131	Hamby, Isaac NPalisade,	Colo.
130	Haynes, Arthur EdwinOak Creek,	Colo.
250	Hicks, Carl	Colo.
21	Hodgson, Lew LFirestone,	Colo.
205	Kerr, James JSuperior,	Colo.
27	La Plante, F. ROak Creek,	Colo.
99	Lemberg, JosephLafayette,	Colo.
143	Lloyd, John GWalsen,	Colo.
30	Lueras, David CSerene,	Colo.
7	Mattew, D. Graham	Colo.
4	Maxwell, J. D	Colo.
254	McCurdy, W. BOak Creek,	Colo.
138	McDowell, John	Colo.
124	McIntyre, William DonaldOak Creek,	Colo.
37	McKeown, JohnBerwind,	Colo.
72	McManus, Thos. FChandler,	Colo.
233	Mishork, Walter	Colo.
40	Mortensen, PeterColorado Springs,	Colo.
209	Moschetti, DanCanon City,	Colo.
219	Olsen, J. JDurango,	Colo.
214	Parkin, Alfred ESuperior,	Colo.
180	Piano, JohnBrodhead,	Colo.
166	Pierce, Robert ADenver,	Colo.
188	Quesnoy, H. JAguilar,	Colo.
86	Sherratt, HarryLafayette,	Colo.
3	Smith, Lee H	Colo.
161	Smith, Reid RBear River,	Colo.
129	Smith, WilliamCokedale,	Colo.
29	Vallely, JohnOak Creek.	Colo.
142	Whalen, James HTrinidad,	Colo.
126	Williams, Harold TOak Creek,	Colo.
117	Williams, JBoulder,	Colo.
199	Williams, LewisRouse,	Colo.
132	Williams, Myron DOak Creek,	Colo.



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