Coal Mines and Plant of Stag Canon Fuel Co.

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Territorial Mine Inspector.

The Dawson coal mines are owned and operated by the Stag Canon Fuel Co., of which Dr. James Douglas is president and E. L. Carpenter, general manager. The property is situated in Colfax county, N. M., and the openings now in operation are shown in Fig. 1. The mines are part of the southern end of the Raton coal field, which extends north into Colorado and embraces many coal camps of the Trinidad section.

Geologically, the coal measures, commonly known as the Laramie series of the Cretaceous system, have a thickness of about 800 ft. in the vicinity of Dawson. The coal makes an excellent coke.

There are two workable seams in the coal measures, and two or three smaller coal seams, ranging from 1 to 2.5 ft. in thickness. The Dawson mines are located upon the lower of the two workable seams, which is known as the Raton or Blossburg coal seam.

The Stag Canon Fuel Co. owns about 38,300 acres of land underlain by this great coal seam. In the Dawson mines the thickness of the developed seam varies from 6 to 11 ft., with an average of at least 7 ft.

MINING IN GENERAL.

At present five openings are in operation, known as mines No. 1, 2, 4, 5 and 6. Mines No. 3 and 5 were connected by entries more than a mile long, between Rail canyon and the Vermejo river. The consolidated mines are now known as mine No. 5. Mines No. 1 and 2, located in Rail canyon, have entries driven into the field for a distance of more than a mile; the coal at the faces shows a thickness of 8 ft. 4 in., and is apparently cleaner than that near the outcrop. All of the mines are opened by drift entries, which are rendered practicable by the continuous outcrop of the coal and the easy and constant dip of the seam.

The system of mining is by triple main entries, double cross entries, room-and-pillar, and robbing on retreat, when the district becomes exhausted. The width of main and cross entries and air courses is 9 ft.; the height of air courses, 6 ft. 6 in.; the height of roads, 6 ft.; room necks, 20 ft.; average width of rooms, 24 ft.; average length of rooms, 350 ft.; distance of room centers, 50 ft. The coal is hauled by mules from the rooms to the partings within the mine, whence it is brought to the outside yards by motors, of which there are 10, of the Jeffrey, Westinghouse and Goodman types. A system of electric signal lights is used, a red light hanging beside the regular mine light. As the motor enters each block a red light is turned on automatically to give warning that a car is com-

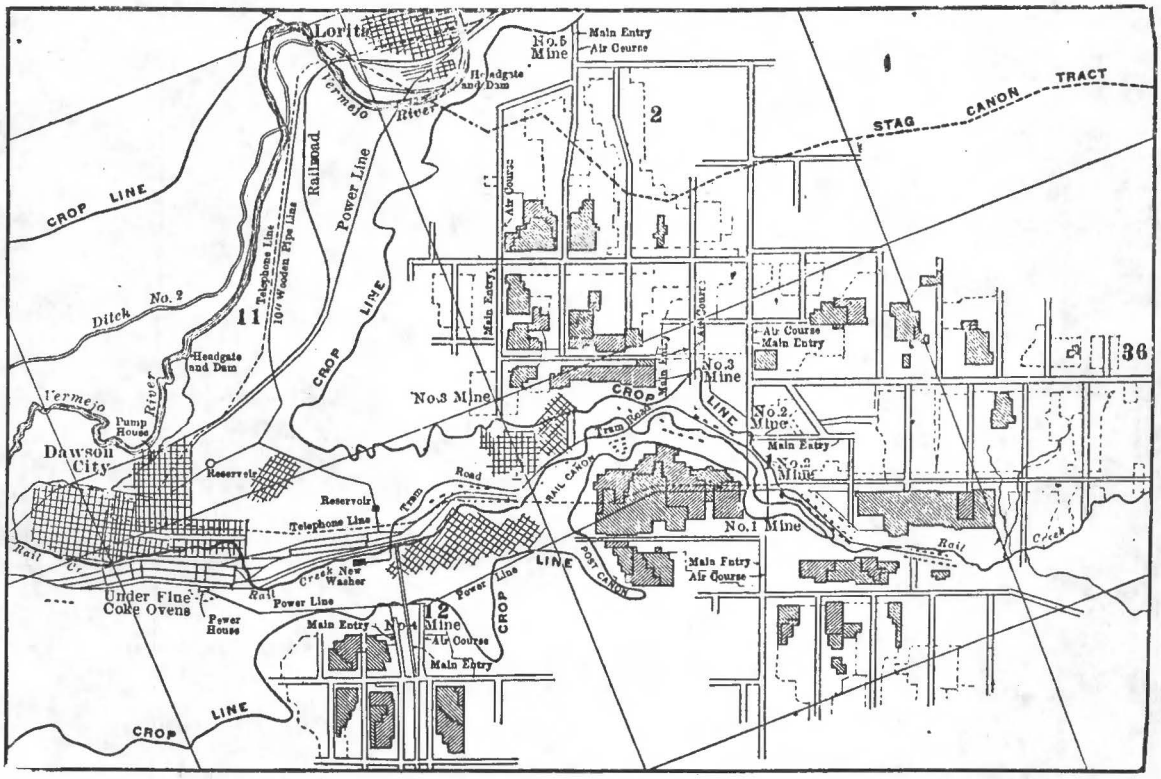


Fig. 1. Working Plant of the Stag Canyon Fuel Co.'s Mines Nos. 1, 2, 3, 4, 5, and 6.

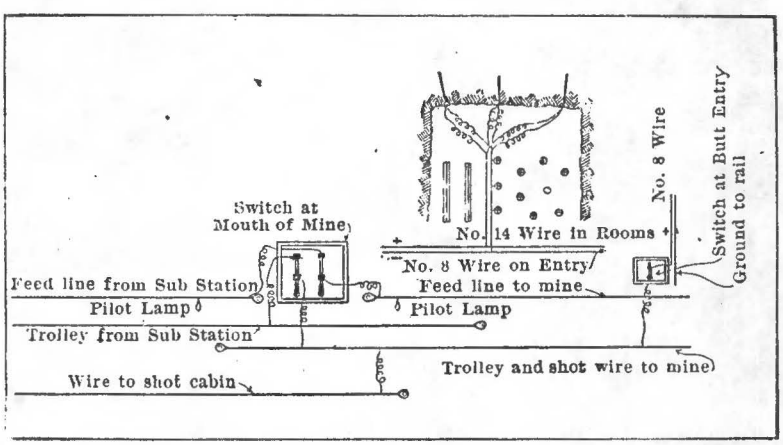


Fig. 2. Diagram of Shot-Firing System in Dawson Mines.

*Abstracted from Transactions of the American Institute of Mining Engineers.

ing on that block. Mines No. 1 and 2 are ventilated by two Vulcan fans, 24 by 8 ft., exhausting, but reversible. These fans are driven by two 50-hp. alternating current induction motors; slip ring, variable speed type. There are also auxiliary, direct current 50-hp. motors, which can be run independently in case of emergency. Each fan, operating at 60 revolutions, and a pressure of 1.2 in. water gauge, produces an intake ventilating current of about 80,000 cu. ft. Mines No. 4 and 5 are ventilated by two Cole 15-ft. diameter straight vane fans.

The following data, pertaining to the operation of mines No. 1, 2, 4 and 5, are of interest: Average number of miners on the pay roll, 700; average number in the mines each day, 620; number of company men underground, including drivers, trappers, timber men, fire bosses, motor men, and pit bosses, 115; the total air intake averages 260,558 cu. ft.; 59 mules are used for gathering the coal from rooms to the partings; and allowing 600 cu. ft. of air for each mule, or 35,400 cu. ft. for 59 mules, there remains for the use of the 735 men underground 225,158 cu. ft., or 306 cu. ft. for each man employed. The water gauge varies from 0.8 in. in No. 4 mine, with the shortest pull, to 1.2 in. at No. 2 mine, the longest pull.

An air shaft will be sunk from the surface at a point one mile north from the mouth of mine No. 2. This shaft will be 12 by 12 ft. in the clear, and 250 ft. in depth to the intersection of the main return air course of mines No. 2 and 5. A fan of large capacity will be installed at the top of the shaft, exhausting through the shaft, the present openings to be used as intakes.

From mines No. 1 and 2 the coal is conveyed to the tipple in cars over a tramway 6600 ft. long, which has a rise of 112 ft. from the tipple to the mines. Six locomotives haul these cars—two 28-ton Porter, one 20-ton Vulcan, one 18-ton Lima, and two 6-ton Porter. The tipple is a double Phillips, with two chutes for loading railroad cars; the tipple equipment also includes stationary and shaking screens, for sizing coal for various purposes, also a moving slate picking table.

The coal from mine No. 4, located immediately opposite the tipple of mines No. 1 and 2, is delivered over a steel Phillips tipple abutting the tipple of mines No. 1 and 2. At mines No. 5 and 6, the coal is screened as it is unloaded onto railroad cars, the slack being hauled to the slack bin, shown on plan of washery, whence it is elevated to a belt traveling to the washery storage bins.

A complete telephone system, having stations at the most convenient points within the mine, affords communication with every important place in the camp.

The mines are sprinkled by water cars to lay the coal dust, which is removed

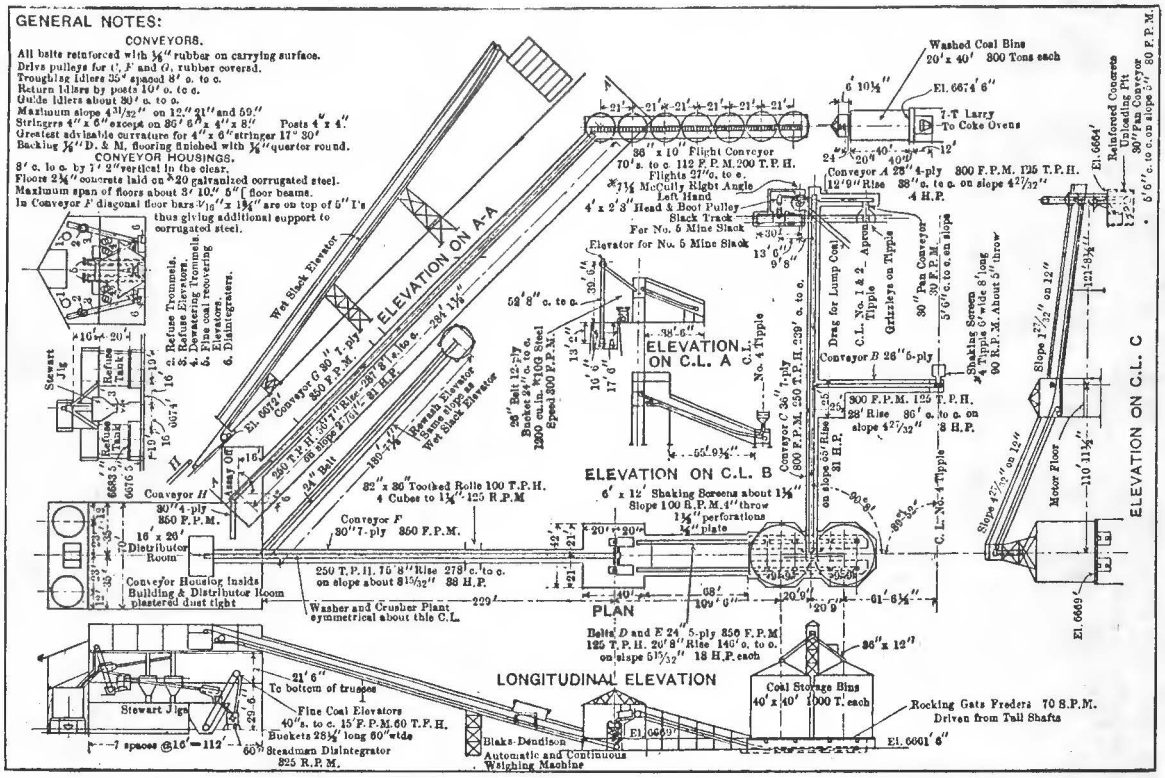


Fig. 3. Plan and Various Elevations of Washery.

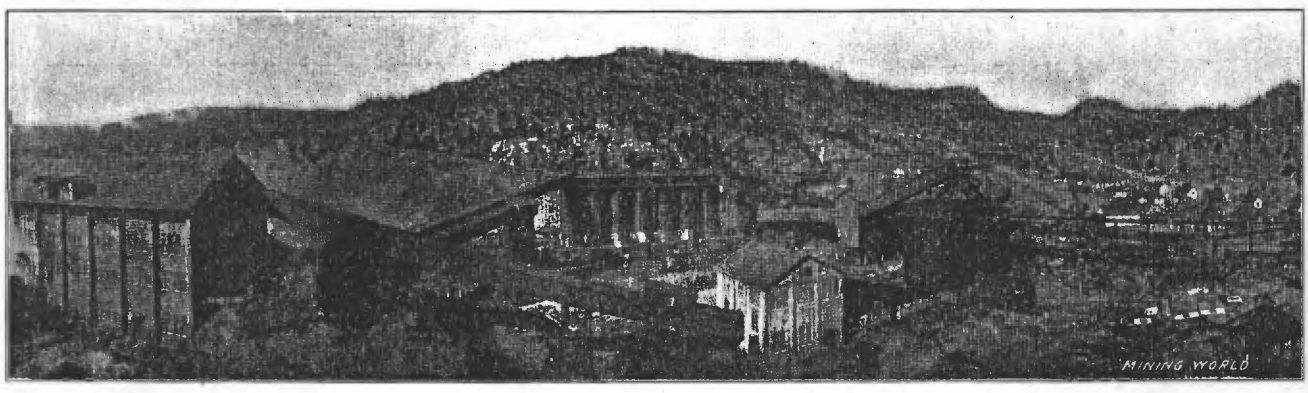


Fig. 4. General View of Washery and Tipples at Stag Canyon Fuel Co.'s Mines.

from the roadways, as far as practicable, and taken out of the mine. Extra fire bosses have recently been employed at each of the mines to instruct the men in regard to timbering and to see that every precaution is taken to guard against accident from careless work by the miners.

ELECTRIC SHOT FIRING.

The shooting is done by electricity after all the men are checked out of the mine. As the men enter the mine they are required to deposit a metal check at the shot firing house outside, near the entrance to the mine. These checks are placed on a check board and returned to the men as they come from the mine. A record of the working place of each check number is kept in the shot firing house, and in case any check is uncalled for, the shot firer makes a search for the man until he is found. No shots are fired until it is known positively that no one is in the mine. The method of placing the shots is shown in Fig. 2.

To insure safety against accidental discharge of the shots by electricity, there are two or more locked switch boxes in each mine, with throw-off switches, one at the mouth of the mine and at one or more stations inside the mine. After inspecting the inside connections with the shots to be fired, the shot firer en route from the mine makes connection at each of the switches mentioned. He then goes to the shot firing cabin to turn on the electric current, but before doing so he turns on an electric signal light in a red globe, to warn all persons to remain away from the vicinity of the mouth of the mine; so that should an explosion occur within the mine, no one outside could be injured by flying debris. The shot firing system has proved a success; the safety of the men from disastrous dust explosions due to blown-out shots is assured; miners make better wages, and the production of coal is proportionately greater per man employed. A record is kept of the number of shots fired, showing less than 2% of missed shots. The missed shots are left for the next day's shooting, and are either reprimed or a new hole drilled to perform the work intended for the original shot. Very little fire damp has been encountered thus far in the mines; but a supply of Wolf safety lamps is kept ready for use.

SAFETY PRECAUTIONS.

A Babcock two-cylinder chemical fire engine is kept on a side track, under cover, ready for instant use; also portable chemical fire extinguishers, and helmets of various types to supply means of respiration in any vitiated atmosphere. Hose reels, each carrying 500 ft. of best grade of fire hose, are kept at stations throughout the camp, and a man is employed to inspect daily the hose and fire fighting appliances.

An organized first-aid corps has had regular practice and competitive drills during the past year, for which the company contributed appropriate prizes and medals for the most efficient team work.

A large building is being erected for a rescue station, in which the first-aid corps and others may practice and exercise while wearing the helmets in a chamber filled with vitiated gases. An instructor watches the men, and on showing any signs of exhaustion they will be quickly removed and the gases dispelled from the chamber by suitable outlets. After sufficient experimental work to demonstrate which type of helmet is best adapted to the needs of the mines, a supply will be purchased for use in cases of emergency.

The rescue station is designed after plans of the one in use at the mine of the Dominion Coal Co. in Nova Scotia, modified to some extent. In the upper story of this building there will be a technical library on coal mining, and a "School of Mines" will be conducted by a competent instructor. The superintendents, pit bosses, fire bosses and others occupying responsible positions in the mines will be required to pass an examination, and if not proficient in the technical and theoretical studies pertaining to their respective positions, as well as in the practical application of these studies, they will be given six months in which to perfect themselves. If, after this time, they are still deficient, they will be reduced in rank or discharged. It is the aim of the company to introduce and maintain such an excellent standard that a certificate to a graduate of the Dawson School of Mines will be recognized as a guarantee of competency.

The powder magazines at the mines,

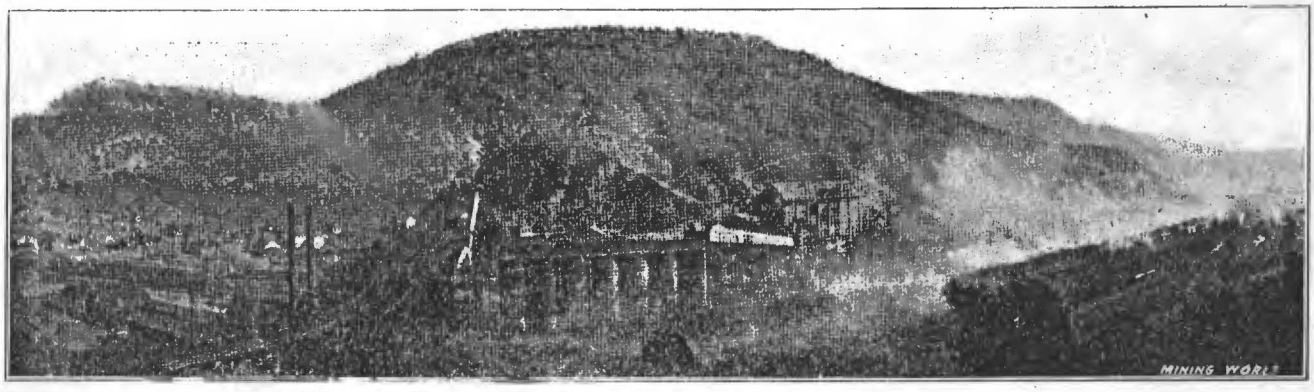


Fig. 5. General View of Washery, Tipples, and Coke Ovens at Stag Canyon Fuel Co.'s Mines.

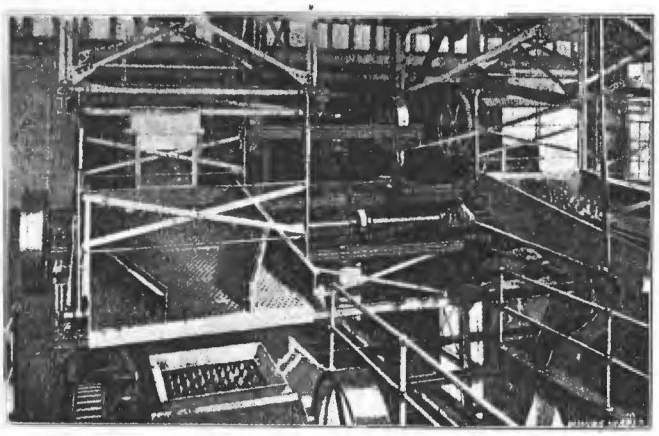


Fig. 6. Interior of Crusher House, Showing Screens and Rolls.

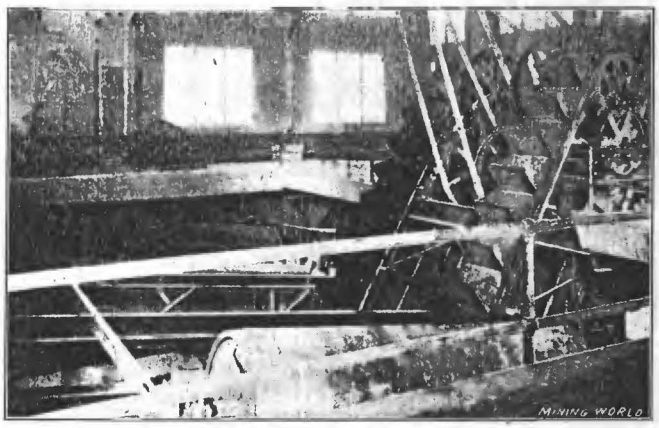


Fig. 8. De-Watering Trommels.

built of stone, iron and cement, are absolutely fireproof. The heat is supplied by electric radiators, which maintain a constant temperature within the magazine; the electric stove or radiator and all wires are at a considerable distance from the stored powder, and out of reach of anything combustible or explosive.

THE COAL WASHING PLANT.

The coal washing plant, designed by Dr. L. D. Ricketts, was erected under the immediate supervision of T. H. O'Brien. The main building, 112 ft. long, 70 ft. wide, and 70 ft. high, and the laboratory and crusher building, are absolutely fireproof, being built throughout of reinforced concrete and structural steel.

Starting at the tipple, the undersize coal from the No. 1 and 2 tipple screens is delivered on a 28-in. cross-belt conveyor, running at right angles to the main belt, and driven by a Western Electric motor, 14 hp., and carried to a 36-in. belt conveyor, which is driven by a General Electric motor, 30 hp. Another 28-in. belt conveyor, driven by a Western Electric 14-hp. motor, delivers the slack from the screens of No. 4 tipple to the same 36-in. belt conveyor, and an elevator carries the slack from mine No. 5 slack bin to join the undersize from the other mines on the 36-in. belt conveyor, which conveys the whole to the two 1000-ton storage tanks, each 40 ft. in diameter and 40 ft high. These storage tanks guarantee a constant supply to the crusher house and washery, so that they are not dependent upon the work of the tipples.

Under the storage tanks are two 28-in. parallel belts, D and E, upon which the slack coal is delivered from the storage tanks, through eight rocker gate, adjustable automatic feeders, and conveyed by these belts to the crusher house, where it drops from the belts upon two 6 by 12-ft. shaking screens, about 1.5-in. slope to the foot, 0.5-in. in plate, with 1.5-in. round perforations. The oversize is delivered to two 32-in. toothed rolls, 125 r. p. m., 100 tons per hour capacity (Fig. 6), which reduce the material to 1.25-in. size to correspond to the sizing of the shaking screen above. The two 28-in. belts and the screens and rolls are driven by an 85-hp. General Electric motor.

The product from the screens and rolls is deposited upon a 30-in. belt conveyor, F, which carries it to the dust-proof room on the third floor of the washery. As this belt with its load of slack leaves the crusher house en route to dust-proof room, each 25-ft. section is automatically weighed and recorded by a Blake-Dennison automatic and continuous weighing machine. Thus the data of results are based upon accurate figures. This belt is 278 ft. long, center to center, 76 ft. 8 in. rise, and has a capacity of 250 tons per hour; it is driven by a 50-hp. Western Electric motor.

In the dust-proof room water is added by two 5-in. centrifugal pumps driven by two 20-hp. induction motors to the crushed coal, and the whole is carried in launders to eight jigs of the Stewart type, two double jigs on each side of jig floor. The jigs and water supply tanks are of steel plate, concrete lined. The pumps which supply water to these jigs are driven by two 50-hp. Western Electric motors.

From the dust-proof room onward the washery plant is built in two units on the east and west sections of the building, and operated independently or together, so that an accident on one side offers no hindrance to the continued operation of the other half of the plant.

The hutches of the jigs (Fig. 7), taper downward, and are connected with two No. 5 Luhrig elevators by 8-in. pipes. These elevators discharge the refuse into launders, which deliver it to two refuse trommels, 4 by 8 ft. All trommels have

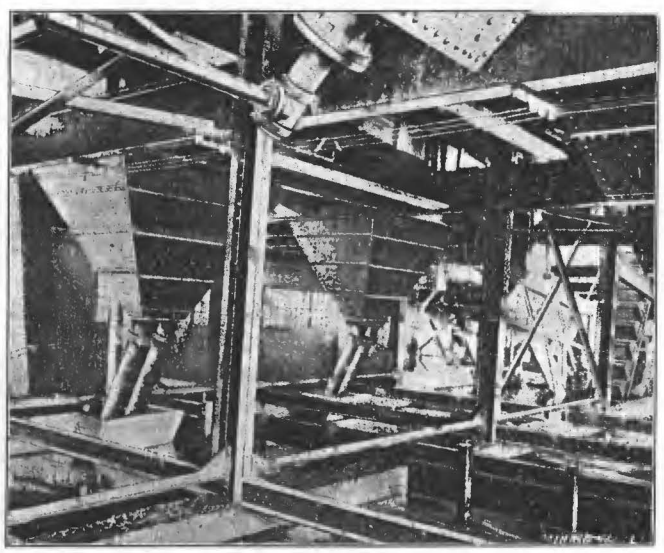


Fig. 7. Hutches from Four Stewart Jigs and Discharge Pipes for Refuse.

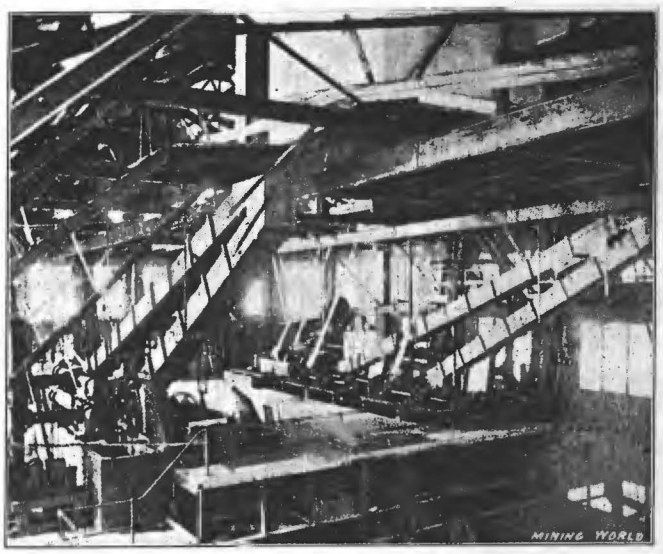


Fig. 9. Section of Jig Floor; Refuse Elevators, From Stewart Jigs, on Right.

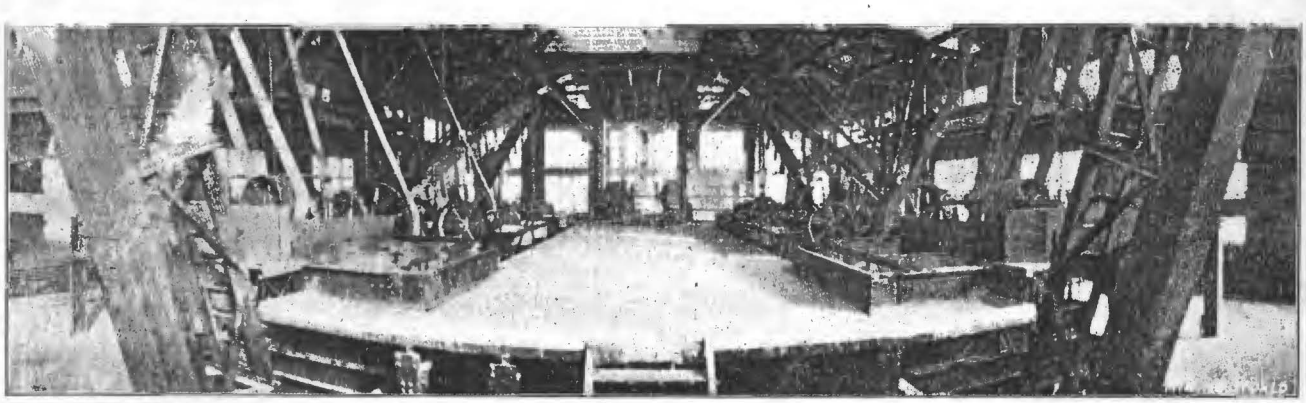


Fig. 10. Jig Floor of Washery; Luhrig Jigs in Foreground; Stewart Jigs in Background.

5-16-in. perforations, 3-16-in. plate, 1.5-in. slope to the foot, and are operated at a speed of 17 r. p. m.

The oversize from the refuse trommels passes re-wash jigs of the Stewart type; the undersize is re-washed in four Luhrig jigs, two on each side; the recovery from these jigs joins the washed coal from the primary Stewart jigs, and is conveyed by launders under the jig floor to four de-watering trommels, two on each side, the oversize from which is spouted into two 60-in. Steadman disintegrators, operated at 325 r. p. m., an aggregate capacity of 1159-hp., are operated in conveying the coal from the tipple and through the crusher house and washery until delivered in washed coal storage bins. All motors on the alternating current are 3-phase, 25 cycle, 220 volts.

An adjunct common to the mine tipple of mines No. 1 and 2 and to the washery is the "run of mine" crusher situated at the tipple. The crusher is a McCully gyratory No. 7, with a capacity of 200 tons per hour. Should there be any temporary cessation of orders for screened coal for commercial purposes, the whole product of these mines could be crushed and conveyed to the storage bins to be washed and made into coke.

The washery has proved an eminent success. Even in the experimental stage the fuel value of the waste was so low as 8%, and the average loss of fuel values in the waste from the washery now and hereafter will probably be below 5%. The capacity of the plant is 2500 tons per day of 10 hours, but as there are not a sufficient number of coke ovens erected to utilize this tonnage, the plant has never exceeded 8 hours in constant operation. The washery is located in Rail canyon, at a common center to the greatest area of the coal lands of the company.

A complete laboratory is located in a two-story concrete and iron fireproof building, 38 by 26 ft. 6 in., opening into the main washery building. The lower story is used for grinding and preparing for analysis samples of coal, coke, bone, and waste; the upper story contains the laboratory proper, which is fully equipped with every modern appliance necessary for the work at hand.

All of the machinery for handling the unwashed coal jigs, and other appliances used in the washing, as well as machinery for handling the washed coal, was manufactured by the Jeffrey Manufacturing Co.

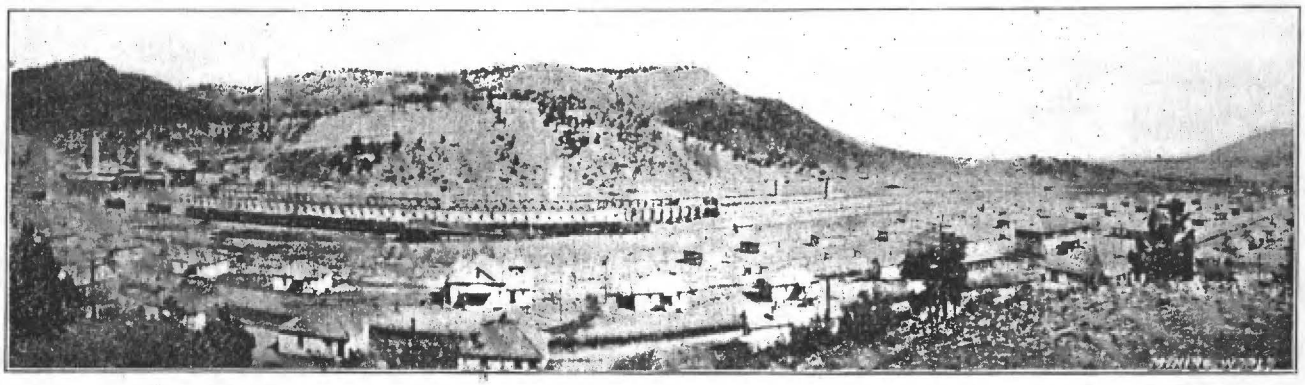


Fig. 11. Two Parallel Strings of Underflue Coke Ovens, Showing Boiler Houses Between Batteries of Each String of Ovens, and Power House in Background.

where it is crushed to desired size for coke ovens. The east and west side sections of the jigs are each driven by an 85-hp. General Electric motor.

The undersize from the trommels is recovered from settling tanks beneath by perforated bucket elevators running 15 ft. per minute; and, together with the washed coal from the Stewart and Luhrig jigs, is delivered upon conveyor belt, which carries it to conveyor belt, the latter traveling a distance of 287 ft. 3 in., to seven 300-ton cylindrical steel storage tanks, each 20 ft. in diameter, 40 ft. high, and distributed by two drag conveyors operating above the bins, whence it is taken by electric larries to the coke ovens. The rejected material from the various washings and re-washings is picked up by elevators and discharged into the waste tank at the south end of the washery building, whence it is taken by electric trolley cars to the waste dump.

The de-watering trommels are driven from the disintegrator line shaft. The disintegrators are driven by two 200-hp. General Electric motors. The belt which conveys the washed coal to the storage bins is driven by a 20-hp. General Electric motor. The two distributing drag conveyors on top of the washed coal bins are driven by two General Electric motors, 30 and 20-hp., respectively. The refuse elevators are driven by two 5-hp. Western Electric motors.

The recovery from the oversize from the refuse trommels carried to Stewart re-wash jigs is a product equal in fuel value to the unwashed mine product, and is used as nut coal for domestic or steam purposes. This material is carried by belt conveyor to a circular steel storage bin.

Twenty-seven electric motors, having

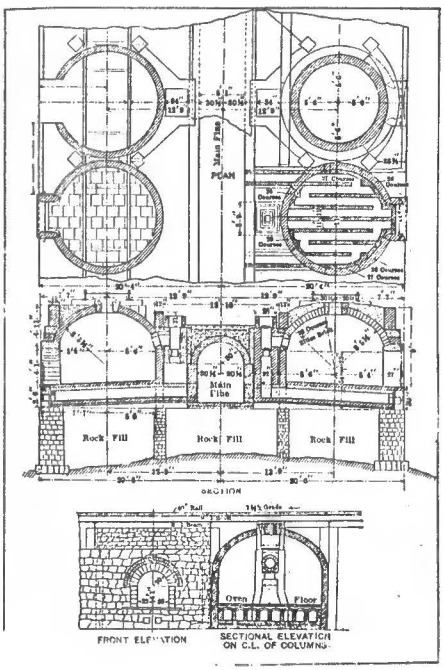


Fig. 12. Plan, Section and Elevations of Main Flue and Underflues of Coke Ovens.

COKE OVENS.

The washed slack is hauled from the storage tanks to the coke ovens by two Scott-Dale electric larries, each pulling one trailer. There are 570 coke ovens in operation: 124 beehive ovens, 13 ft. in diameter, and 446 English underflue ovens, 11 ft. in diameter. Each oven is charged with 6 tons of slack, burns 48 hours, and produces 52% in weight of coke.

The underflue ovens are an innovation along economical lines, due to the activity of Dr. Douglas. These ovens are in batteries of from 54 to 58 ovens each, and arranged in a double row. The flaming gases from the coke oven, passing downward into horizontal flues beneath the oven, serve to coke the slack from the bottom as it is being coked on top, passing thence through an opening in the rear to a main horizontal flue between the two strings of ovens to the boiler houses, where the heat is used for steam purposes. The residual heat and gas pass from the boilers through two brick stacks, 125 ft. in height and 11 ft. in diameter at the top. Details of the construction of these ovens are given in Fig. 12.

A cross section of the central flue which conducts the gases from the ovens to the boiler plant (Fig. 13) has an area of 20.6 sq. ft. at the 27th oven, which

is farthest from the boiler plant or chimney, and increases as other ovens discharge into it, until at the down cast to the boiler plant it has an area of 52.73 sq. ft.

Pyrometer readings, at the boiler houses, show that the gases are delivered under the boilers at temperatures varying from 1800 to 2600 deg. F., and leave the stack at temperatures of from 600 to 1150.

At present the heated gases from only 218 ovens of the 446 underflue ovens are being utilized, the return from the other 228 ovens being allowed to pass off through chimneys. Here are vast reserves of power that can be utilized to increase the capacity of the power plant as the mines increase in extent and production. There is one Covington coke puller in use at the coke ovens, electrically driven by two General Electric motors, one of 20-hp. and the other of 17.5-hp. It is probable that another coke puller will soon be in commission.

A good quality of fire clay has recently been discovered near the coke ovens; bricks made from it have stood severe tests at high temperatures. A brick plant has been ordered which will supply all the fire brick needed for the coke ovens and other purposes.

POWER PLANT.

Boiler Houses.—There are two fireproof boiler houses situated about 50 ft. apart, on parallel batteries of ovens, the ovens abutting each boiler plant on both ends. The boiler houses are identical in construction, having a main room 125 ft. long by 42 ft. wide and 50 ft. high, with brick floors. Everything is clean and quiet, no fuel is in sight, and the temperature is about the same as in an ordinary living room.

In the east boiler house there are four Stirling 300-hp. water tube boilers, and in the west boiler house three boilers of similar make and capacity.

The pointers of the steam gauges on these boilers indicate between 145 and 150-lb. pressure. On opening the front door of the fire box a dark void is presented, and no heat is radiated from the fire box. A vagrant ray of light comes from under a narrow sheet of iron about 5 ft. in length on the floor, and by moving aside the iron leaves only a thin flooring of brick above the incandescent burning gases beneath. Each boiler is equipped with a Knowles outside packed, 7 by 12-in., plunger pump of a capacity of 275 gal. per min.

One man attends to both boiler houses, moving the dampers as necessary to regulate the heat going to the boilers or sending it up the stack as required.

The steam is conveyed from the boiler houses to the power house through 10-in. steam lines, carried 30 ft. above through structural iron pipe galleries.

In addition to furnishing steam for power, the boiler plant furnishes steam for heating the hospital, theater, amusement halls, lodge room, store, office, and other buildings. The steam is taken from the boilers to a sub-station at from 135 to 150-lb. pressure. It is there reduced to from 5 to 20-lb. pressure and distributed as needed to the various buildings.

Power House.—The power house is a fireproof iron, brick, and concrete structure, 100 ft. long, 50 ft. wide, and 50 ft. high. The plant comprises three cross compound Nordberg Corliss engines, long reach, cutoff type, 19 by 36 by 32 in., direct-coupled to General Electric alternating current generators, 2300 volts, 100 amperes, 400 kw. each. The three engines run in parallel. There are two Thompson & Ryan exciters, each 50 kw., 400 amperes, 125 volts, manufactured by Ridgway Dynamo & Engine Co. These exciters magnetize the fields.

The switchboard, of marble, comprises two exciter panels, three generator panels and four feeder panels, and is equipped with a Terrill voltage regulator, which keeps the voltage constant with all loads. All the circuits are 3-phase, 25 cycle on the alternating current side. A record is made every half hour showing conditions at the power plant.

The current from the power house is transmitted by insulated wires at 2300 volts to rotary converters at sub-stations, where it is converted from 2300 volts alternating current to 260 volts direct current.

There are three sub-stations, one at Lorita, near mine No. 5, which is equipped with one 200-kw. General Electric rotary converter, 260 volts, 768 amperes. The sub-station at mine No. 4 is equipped with two 200-kw. General Electric rotary converters, 260 volts, 768 amperes. The sub-station between mines Nos. 1 and 2 has an equipment similar to that of mine No. 4.

The electrical distribution sheet (Fig. 14), shows the motors served by the three generators at the main power house.

The current from each generator is recorded on a watt-meter attached to the switchboard, and from the switchboard six high-tension lines run to various sub-stations, fans, washery, and town light-

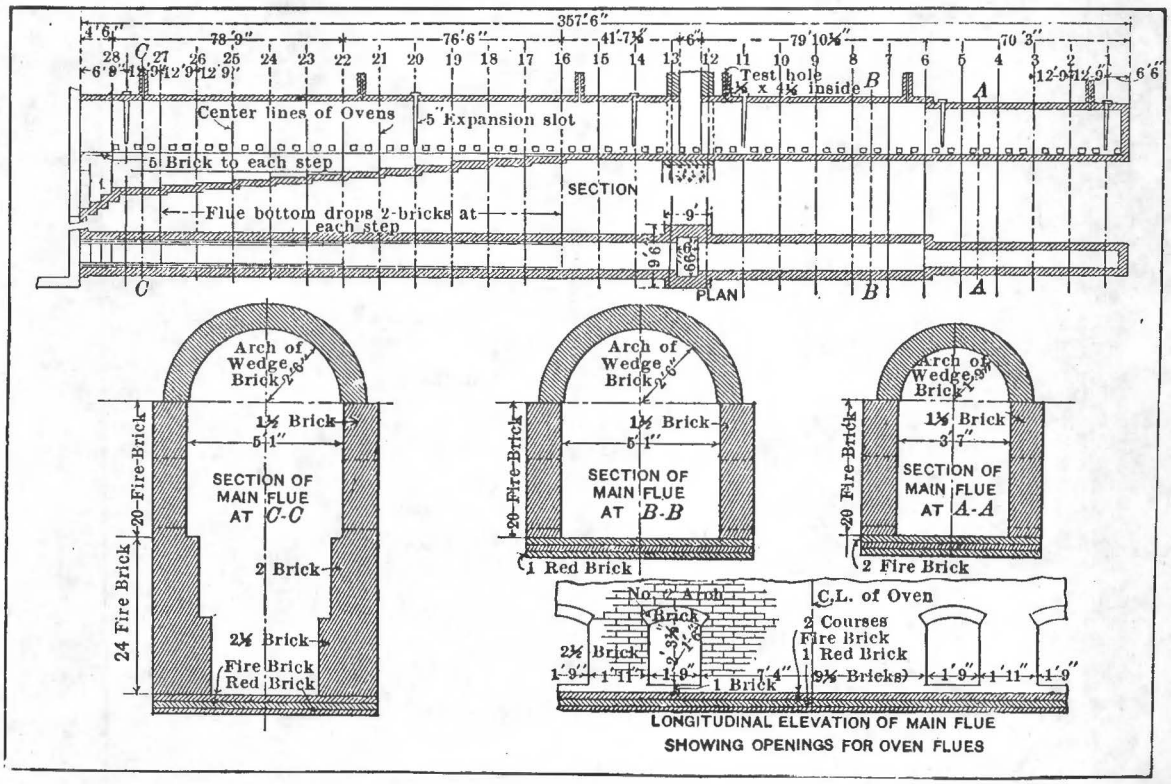


Fig. 13. Elevation, Plan and Sections of Main Flue for Block of 56 Ovens.

ing system, for each line of which a watt-meter is placed at the switchboard. The amount of power used by the various motors is measured by the master mechanic, with a portable watt-meter. The ventilating fans are served by a high-tension line direct from the switchboard, excepting No. 6, which is served from No. 5 sub-station. These fans are also served by an auxiliary line from No. 1 sub-station, to be used during the repairs on the other line, or in other cases of necessity. A reference to the chart shows that the main pumping station is on the high-tension line with No. 5 sub-station.

The power taken by each of the feed lines will be the factor used to apportion the expense of power house and boiler plant, up to and including the switchboard, among the various operating accounts. The application of the power, that is, from that switchboard to and including the sub-stations, will be divided, on the basis of power used, among the various accounts served by this line, as shown in the diagram, Fig. 14.

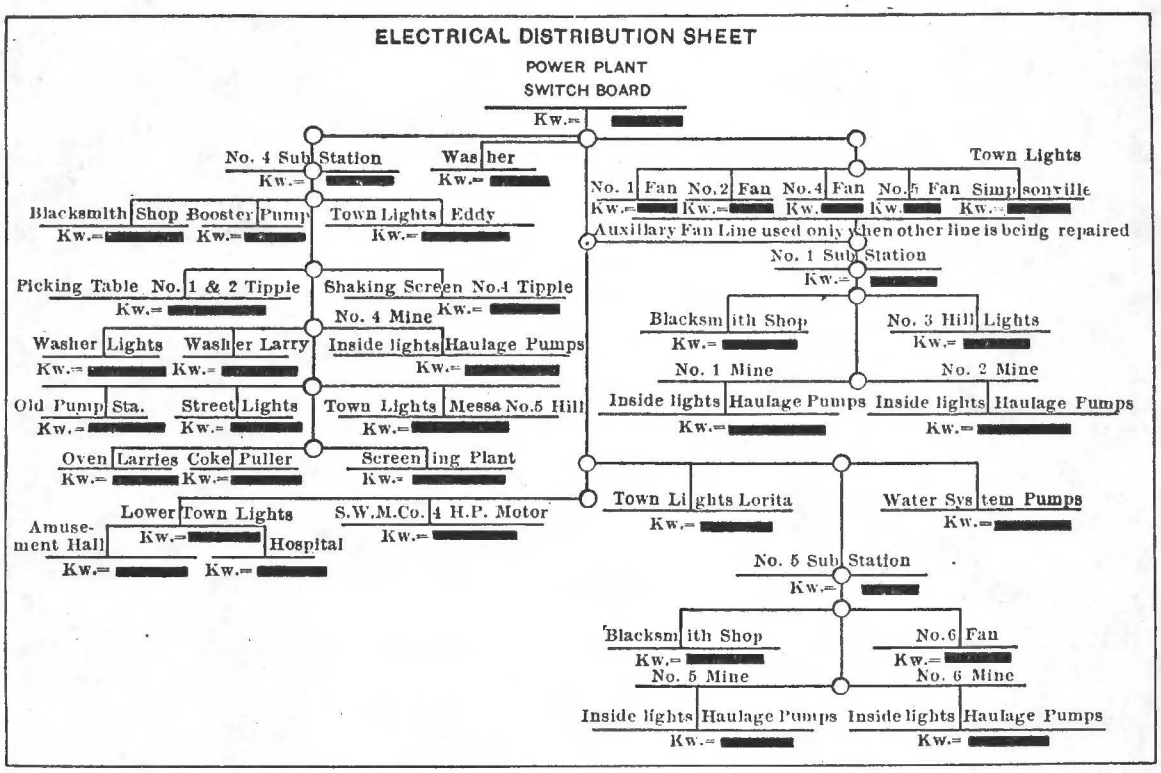


Fig. 14. Electrical Distribution Sheet.

THE WATER WORKS.

The water used for domestic and other purposes is taken from a well sunk in the gravels of the river bottom at a point 3 miles above Dawson, far above any residence, and beyond any opportunity for contamination.

At the main pumping station are two pumps: One Dean triplex, 11 by 12 in., capacity 596 gal. per min., driven by Western Electric motor, 50 hp., alternating current, voltage 220, and one Dean triplex, 9 by 12 in., capacity 300 gal. per min., driven by a 30-hp. General Electric induction motor, alternating current, voltage 220. These motors are of the squirrel cage type.

The water is pumped from the well to two 800,000-gal. reservoirs on the hill above the town, at an elevation of about 140 ft. above the houses in camp, whence it is distributed as required.

An auxiliary station is maintained about a mile above the town, on the Vermejo river. This station is kept as a reserve in case of accident to the upper pumping plant. It is equipped with one Dean triplex, 9 by 12-in. pump, capacity 300 gal. per min., operated by a Westinghouse, 25 hp., direct current motor, 260 volts.

In addition to these pumping stations, there is a "booster" pumping station at tipples Nos. 1 and 2, which helps to force water to the houses at greater elevations up Rail canyon, and on the higher mesas or table lands along the canyon. This station is equipped with a Dean triplex, 9 by 12-in. pump, capacity, 300 gal. per min., driven by a Westinghouse direct-current motor, 25 hp., 220 volts. This pump is automatically controlled by a rheostat, so that, in case of fire, the pump could be speeded up and used as a fire pump, and to keep the water supply replenished.

ADMINISTRATION.

"System" is the watchword and every effort is being made towards perfection in all the departments of the extensive business of the company. The chart, (Fig. 15), shows the various branches of the administration, together with the respective degrees of authority. Thus far and farther the discipline is excellent, but it must be admitted that the discipline within the mines has not been all that could be desired.

THE CIVIC FEATURES OF DAWSON.

The town of Dawson, with its suburbs, has a population of 4000, of which 1600 adults are employed in and about the mines, coke ovens, coal washery, etc., in addition to the men employed on the railroad, in hauling timbers, etc.

There are 594 houses, each containing from four to eight rooms, including some larger domiciles for boarding and lodging houses. The houses are of various designs, situated in valleys and on hillsides, and producing a pleasing scenic effect. They are well supplied with pure water from a clear mountain stream, the Vermejo river, and lighted by a good electric light system. House rent is at the rate of $2 per room, about one-half of the usual rent for similar houses in other towns and cities outside of coal camps.

Electric lights cost 25 cts. per month for each 16-cp. light, and 50 cts. for 32-cp. lights. This also is one-half the price charged in other towns and cities in New Mexico. Water is free.

Each employee pays $1.50 per month for medical attendance for himself and family, if he has a family. This charge covers medicines, admission to the hospital, and surgical operation, when necessary. The hospital is modern in every particular, and its facilities are far superior to those of most towns and cities of similar size. Three first-class physicians and several skilled nurses are employed in the hospital. An ambulance of modern design is always available, and saddle horses are at hand for the use of the physicians in responding to emergency calls.

The company has built a large theater and amusement hall, in the basement of

which are bowling alleys open to ladies and gentlemen. On the first floor is a beautiful theater; on the same floor at the side of the theater is a large billiard parlor. On the second floor are the galleries of the theater, and a large and well-furnished lodge room, where the various societies hold their regular meetings. The theater building cost the company about $35,000. Only a nominal charge is made for the use of the amusement halls and lodge rooms. Generous inducements are offered to theatrical companies to present plays.

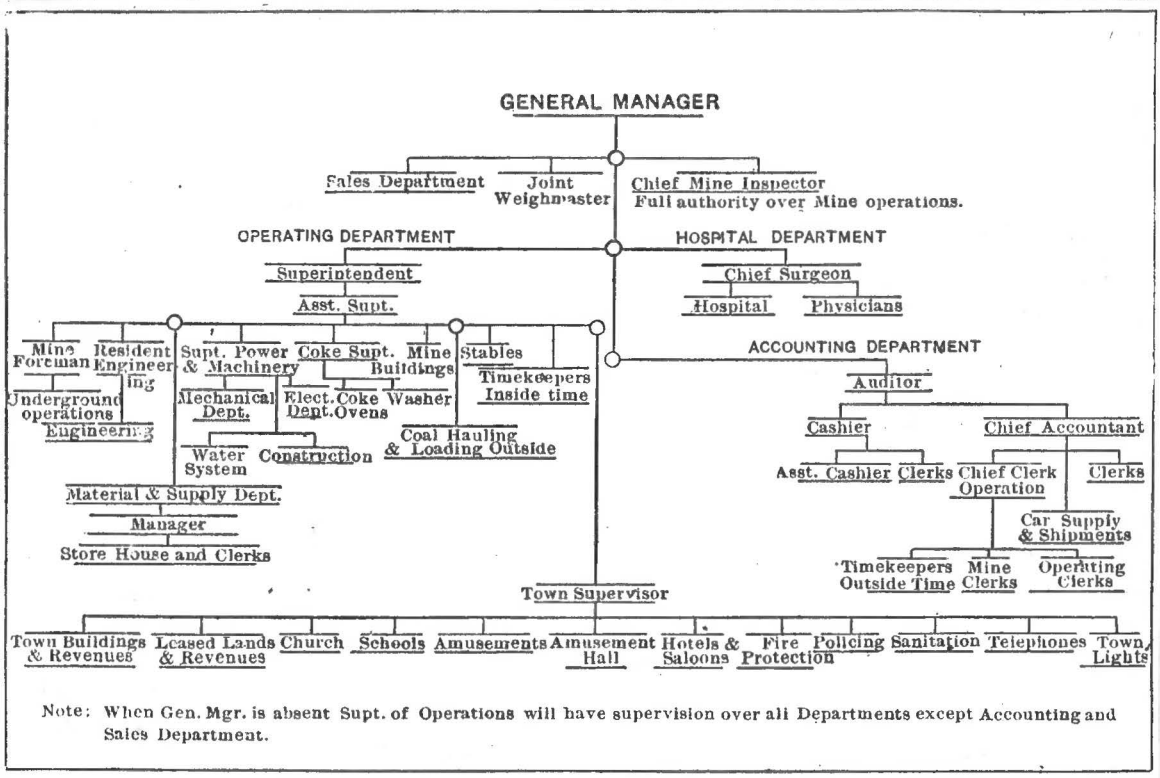
There is a large and commodious church, heated by a furnace, both fuel and light being provided by the company, free of charge. An Episcopal clergyman is in charge of the pastorate, but the church is open to all denominations who wish to hold religious services.

Two large school houses have been built, one at the expense of the school district and one by the company. A smaller building belonging to the company is also used for school purposes at No. 5 mine. The company collects, in accordance with the territorial law, an annual tax of $1 from each employe. The money is given to the county school fund, and the proportion belonging to the Dawson school district is returned to the school trustees of the district. The estimated cost of maintaining the Dawson schools during the ensuing year is $12,000, of which the county school fund will appropriate $5000; the company has already appropriated $6000 to make up the deficiency, and will probably be called upon to appropriate $1000 in addition.

The Dawson schools are the only ones in New Mexico in which a full 10 months' scholastic term is held. Nine teachers and two janitors are employed, and the total enrollment of children of school age is 445, of which the average daily attendance is 338. A high school and a kindergarten will be added within the next year.

The company maintains a store, supplying all the necessities and many of the luxuries of life at prices which compare favorably with those charged in other towns and cities of the territory. The prices of food products are lower than those which prevail outside the coal camps.

The bank is one of the prominent factors in the welfare of the employes, many of whom deposit their earnings, receiving interest thereon at the rate of 3.5% per annum, compounded semi-annually.



Note: When Gen. Mgr. is absent Supt. of Operations will have supervision over all Departments except Accounting and Sales Department.

Fig. 15. Administration Chart.