Construction and Improvements at C. F. & I. Co. Plants

PREPARATIONS FOR GREAT INCREASE IN PRODUCTION OF COAL, COKE, IRON AND STEEL

Prosperous Condition of the Iron and Steel Industry Both Reason for Enlargements and Cause of Delays—Comparison of Tonnages Produced by Old and Those to Be Produced by New Plants—Expenditures Involved and Benefits to Be Derived.

A DISPOSITION on the part of investors and the public in general to become more thoroughly acquainted with the construction and operations of The Colorado Fuel and Iron Company, makes it seem advisable to present through the columns of Camp and Plant as comprehensive a sketch as the limited space will allow. We have therefore endeavored to collect and present some of the most inter-
CAMP AND PLANT.

We wish at the outset to call special attention to the cuts herein contained, as they convey to the mind a more definite and clearly defined idea of the vastness of the enterprise. When it is remembered that every building, engine or piece of machinery must be built in detail on paper before even the ground is broken for the actual construction, some idea will be formed of the magnitude of the engineering work and the usefulness of the engineer. Every part of the United States contributed to the building of the new plant of The Colorado Fuel and Iron Company, and, unfortunately for prompt deliveries of machinery, the orders were

"A" "B" "C" "D" "E" Boiler House for "E" Site for "F"


This line of furnaces and bins is 1,760 feet long or one-third of a mile.
necessarily placed at a time when the iron and steel industry of this country was in a very prosperous condition and machine shops of all descriptions were overwhelmed with orders from all parts of the world. Under such conditions it was, of course, impossible to secure deliveries on contract time. The failures to deliver and to complete contracts that have been experienced by the Company have caused much greater inconvenience and loss than can at first glance be realized by anyone not thoroughly familiar with this class of construction work. The wire mill located at Minnequa, for instance, is at the present time completed and ready for operation, but because of the failure of contractors to deliver machinery for the plants which are to produce the necessary material for making wire and wire products, it cannot be operated. This is touched upon to draw the attention of our readers to the unparalleled activity in the iron and steel trade, and to the loss sustained by builders on account of delays occasioned by the congested condition thereby existing. The original date set for the blowing-in of blast furnace "D," the second large furnace built by the Company, was April 1, 1902. Because of the failure of the builders of the blowing engines to make prompt delivery, in accordance with the terms of the contract, the furnace was compelled to lie idle until the middle of November. The coke and ore bins shown in cut on page 2 were to have been com-

Blowing Engines for Blast Furnace "A."

These engines are of the vertical cross-compound, condensing, quarter-crank, steeple type. The steam cylinders are 44 and 90 inches in diameter, with 60-inch stroke; the two air cylinders are 90 inches in diameter. The total weight of each engine is about 1,000,000 pounds. Each pair of furnaces is provided with five engines, one of which is used as a spare. It is noteworthy that the low-pressure cylinder, 90 inches or 7\(\frac{3}{4}\) feet in diameter, inside measurement, is quite large enough for a boy on a pony to ride through with plenty of room overhead. The horse power of each engine is 2,000.
Minnequa Works, From the South.

More or less confusion is always attendant upon vast construction; especially is this true when old plants are being rebuilt. The above view of a portion of the Minnequa Works Yard, from the south, gives some idea of the great quantity of machinery and material for construction that is constantly pouring into the works, and at the same time shows every completed department in full blast, operations having been successfully carried on at Minnequa during the entire period of construction.
New Bessemer Plant, February, 1902.

Although this photograph was taken as long ago as February 24, it shows the size of this building better than some more recent views.


The two fifteen-ton vessels are shown on the left.
pleted according to contract, December 15,
1901, but will not be completed much before
December 15, 1902, a delay of one year.
When it is remembered that a blast furnace such as
the new ones under construction costs upward of $800,000, it is
not hard to figure the tremendous loss oc-
casioned by such delays. Notwithstanding
this the Company has maintained and kept
in operation every department of its old
plant (with the exception of the plate mill)
and made by the operation larger earnings
than many other companies operating under
more favorable conditions.

The Old Plant.
The so-called original or old plant con-
sisted of two blast furnaces with a com-
bined daily capacity of 375 to 425 gross tons
of pig iron; a Bessemer converting
department with two five gross-ton con-
verters having a combined average daily ca-

comparative production statement.
(last two months of 1902 estimated.)
iron department.

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<tr>
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<th>1902</th>
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<td>Iron Ore</td>
<td>539,715,810</td>
<td>691,702,030</td>
<td>1,029,124,800</td>
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</table>

* “A” Furnace was blown in September 4, 1901, and until that time the deficiency of Pig Iron was shipped in from the East.
** Old plate mill dismantled to make room for improvements. New mill not in op-

pacity of 700 gross tons of ingots;
three pig iron and two spiegel melting
cupolas; four gas-fired soaking pits; two
Siemens bloom heating furnaces; six scrap
heating furnaces; one 2-high 36-inch revers-
ing blooming train; one 3-high 28-inch rough-
ing train; one 30x78 inch plate train; one
d and one 20-inch bar train; one 9-inch
guide train; spike, bolt and nut machines;
iron, steel and brass castings foundry and
a cast-iron pipe foundry.

Blast Furnace “A,” with an annual capac-
ity of 125,000 tons, was blown in
September 4, 1901, and increased the out-
put of pig iron for the year of 1902 (last
two months estimated) to 215,000 gross tons.

We present herewith a comparative state-
ment of the production of the Iron Depart-
ment for the calendar years of 1900, 1901
and 1902.

The New Plant.
Below we show a list of the new furnaces,
mills, etc., the construction of which is be-
ing pushed as rapidly as possible. All
buildings except the wire mill are of steel
fire-proof construction:

Blast Furnace Department.
Furnaces “D,” “E,” and “F,” have each
the same capacity as Furnace “A.”

Furnace “D” was blown in the week
of November 16.

Bessemer Department.
A new converter—yearly capacity 600,000

tons—equipped with two 300-ton hot metal
storage tanks, which are served by two 50-
ton electric traveling cranes; four Aiken pig
casting machines, two 15-ton vessels, three
10-foot iron cupolas, two 7-foot spiegel cu-
polas. The ingot stripping will be performed
by two Aiken duplex hydraulic stripers.
Stock hoists are operated by electricity.
Blast for cupolas is supplied by pressure
blowers driven by directly connected electric
motors. The converter will make its first
blow December 1.
Framework of 40-Inch Blooming Mill Building.
The main building is 54 feet wide by 500 feet long. A fifty-ton electric crane travels the entire length.

A very few of the gas producers are shown in the foreground at the left.
Boilers for New 40-Inch Blooming Mill and Merchant Mill.
This battery of boilers will generate 18,000 horse-power.

Interior of 40-Inch Blooming Mill.
The total length of tables in this building, from ingot tilter to billet shear, is 280 feet. The table, between the ingot tilter and the middle tables, and the shear table, which extends from the mill table to the bar shear, are each driven by fifty-horse power electric motors. The middle tables are each driven by a 12x14 inch Crane engine.
The rail mill, with the exception of the blooming mill and a portion of the mill buildings, will be practically new.

The main building, covering all mills, is 55 feet 6 inches in width, by 580 feet 4 inches in length, and is provided with a crane runway throughout its full length, and two 15-ton and one 25-ton electric traveling cranes which cover all tables and mills.

The building covering the engines for all mills excepting the finishing train, is 40 feet 5 inches wide by 367 feet long, and is equipped with a 40-ton electric traveling crane.

The house for the engine driving the finishing train is 27 feet 8 inches wide by 76 feet 7 inches in length.

The hot bed building is 121 feet 6 inches wide by 174 feet long.

The building covering the finishing department is 60 feet wide by 774 feet long.

The soaking pits are covered by a building 89 feet 4 inches wide by 166 feet 6 inches long, equipped with two electric automatic charging and drawing cranes. The ingots when taken from the pits are deposited in an automatic tilting car which conveys them to the blooming table.

Producer gas is used and is supplied by 12 Duff gas producers. This mill will be completed to capacity (500,000 tons per annum) about March 1, 1903.

Open-Hearth Department.

The new open-hearth plant consists of five stationary basic furnaces and one acid furnace (provision being made for six additional furnaces in the future), in addition to which there is a preparatory furnace. The main building is 131 feet wide by 550 feet long. The charging floor is 10 feet above the pit floor level and is equipped with two low-type Wellman charging machines and two 40-ton Shaw electric traveling cranes.

Electric Power Plant for Minnequa Works.

This building, which is 50 wide by 211 feet long, contains the generators which furnish electricity for the entire steel works and furnaces. There are three 500-kilowatt Westinghouse direct-current generators, directly connected to three cross-compound horizontal Allis-Clarke engines; two 400-kilowatt Westinghouse alternators, directly connected to cross-compound horizontal engines, and also one 18 and 36x30 inch Ingersoll-Sergeant cross-compound horizontal two-stage air compressor which supplies the foundry, boiler shop and the plant generally with compressed air required for pneumatic tools. The steam for the power plant is supplied by an independent boiler plant, consisting of 200 horse-power water-tube boilers.


Sunrise is located 360 miles from the Minnequa Works, and from this mine is drawn large quantities of red hematite ore.
to handle hot metal from the preparatory furnace. With this arrangement, there is a spare crane and charging machine always ready. The furnaces are 60 feet 6 inches long by 17 feet wide, each being of 50 tons capacity, and are equipped for using producer gas. The stripping is done by means of two Aiken duplex hydraulic strippers. The stock yard is 72 feet wide by 550 feet long and is equipped with three 5-ton electric traveling cranes. Gas is furnished by twenty-four large size water seal Duff producers, the building for which is provided with cranes and mechanical coal handling apparatus. This plant will be finished about March 1, 1903.

7½ inches wide running the whole length of the building. The furnace is served by two 5-ton automatic charging and drawing cranes. A roller conveyor about 900 feet long distributes the blooms and billets to the rod and merchant mills. Storage yard for billets, blooms and slabs is 190x340 feet. The billets are handled from the conveyor to this yard by three electric traveling cranes, 60-foot span.

**Bar Mill.**

The 24-inch 2-high reversing bar mill is driven by a double reversing 36x40 inch engine. This mill consists of four stands of 2-high rolls. The furnaces for this mill, of which there are two, are of the automatic,

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**Where Colorado Fuel and Iron Company Ore Comes From, II.—Mine No. 2 and Mines No. 3 Opening, Orient, Colorado.**

Orient is 135 miles from Pueblo and furnishes the Minnequa furnaces with a supply of brown hematite ore.

**Forty-Inch Blooming Mill.**

The 2-high, 40-inch blooming mill is driven by a 55x60 inch double reversing engine coupled direct to the mill. Two shears, one hydraulic and one driven by a vertical engine, cut the product. This mill will be in operation January 1, 1903, and will have a daily capacity of from 1,200 to 2,500 tons.

**Soaking Pits.**

The pit-heating furnaces, five in number, are housed in a building 62 feet 6 inches wide by 220 feet long, and a lean-to 22 feet gravity end discharge type. This mill will have a capacity of 300 gross tons per day and will be completed April 1, 1903.

**Twelve and Fourteen-inch Merchant Mill.**

This mill is in three sections, the first section consisting of four continuous stands of rolls 14 inches in diameter and 30 inches long; the second stand, which is 40 feet from the last stand of the continuous mill, consists of two stands of rolls, the first being 3-high, 14 inches in diameter and 14 inches long; the second being 2-high, 14 inches in
CAMP AND PLANT.

diameter by 30 inches long; the third section of the mill, which is located 50 feet from the second train, contains five looping stands for finishing bars. A 36 and 66x48 inch tandem compound engine is coupled to the 14-inch continuous mill, the second and third sections being driven by the same engine by means of a rope drive. A 20-ton electric crane covers the engine driving the mill and a 15-ton electric crane is used for changing rolls. The daily capacity of this mill is to be 225 net tons. It will be completed July 1, 1903.

Twin Hoop and Cotton Tie Mill.

This mill contains twenty-four stands, or sixteen trains of rolls, located in buildings which are practically continuations of those covering the 24-inch mill and the merchant steel mills. It will have a daily capacity of 125 net tons, and will be completed about October 1, 1903.

Rod Mill.

This mill is a double Garrett mill, practically of the standard type, the only difference being the location of some of the rolls. The 16-inch continuous mill and the 14-inch train are driven by a 40 and 72x60 inch tandem compound engine. The three 10-inch trains of each mill are driven by a 38 and 70x48 inch, and a 27 and 46x42 inch cross compound Porter Allen engine. Four automatic, gravity end discharge Laughlin furnaces will heat the billets in 6-foot lengths. All engines and rolls are covered by electric cranes. The main building is 137 feet 6 inches wide by 534 feet long, and the furnace building is 90 feet wide by 126 feet long. The capacity is 750 tons per day.

Where Colorado Fuel and Iron Company Ore Comes From, III.—(q) Open-Cut Mining, Jim Fair Mine, Fierro, New Mexico.

This mine, together with the one at Union Hill, both located in New Mexico 637 miles from Pueblo, ships to the Steel Works a mixture of magnetic and red hematite ore.
CAMP AND PLANT.

Single mill will be completed about February 1, 1903.

Tin Plate and Sheet Mill Department.

This plant consists of two separate departments—one for the manufacture of all grades of tin plate and the other for all grades of galvanized, corrugated and sheet iron. The space occupied by these departments, including yard and track room, is approximately 1,000 by 1,500 feet. A 6,000 horse-power battery of boilers is arranged to supply steam for both plants. The tin mill buildings are as follows:

- Hot mill building: 105x420 feet
- Black pickling room: 70x100 feet
- Cold roll department: 112x640 feet
- Tin house: 70x240 feet
- Assorting, packing and storage room: 50x480 feet
- House for hot mill engines: 45x62 feet
- House for cold mill engines: 40x165 feet

driven by a 30 and 54x48 inch cross compound Corliss engine. The tin house equipment consists of twenty-one tinning sets. All mills are covered by electric traveling cranes. The hot mill building of the sheet department is 110x420 feet. The house for hot mill engine is 45x62 feet; the pickling building, 70x100 feet; the annealing, cold rolling, galvanizing and corrugating departments—all in one building—75x900 feet, with a lean-to covering the annealing furnaces, 32x275 feet. The house for cold roll engines is 40x62 feet; the producer house for sheet annealing, 35x142 feet; the boiler house, 46x490 feet; the pump house, 46 feet by 67 feet 6 inches; the box factory, 50x250 feet. The hot mill is driven by a 30 and 60x60 inch cross compound Corliss engine. The cold roll equipment consists of five stands of cold rolls driven by a 30x48 inch simple Corliss engine. An improved cor-
Steel Works Office Building.  Colo. Supply Co. Retail

Office Building and Grounds from Viaduct at Main Entrance to the Minne
Furnace "A"  "B"  "C."
Lunch Club.

Furnace "D"

Wholesale Department

EXTREME NORTH END OF MINNEQUA STEEL WORKS OF THE COLORADO

Supplement of Camp and Plant, November 20, 1902.
Furnace "E."  Site for Furnace "F."  Rail Mill.

orado Supply Company.

EL AND IRON COMPANY AT PUEBLO FROM CUPOLA OF OFFICE BUILDING.
capacity of this department is 175 gross tons daily.

Wire Mill.

This plant has an approximate capacity of 700 tons each twenty-four hours; is the largest and most complete wire mill in America, thoroughly equipped in every detail to manufacture all sorts, sizes and shapes of wire and wire product. The nail department consists of 280 machines, with an approximate total capacity of 6,000 kegs in twenty-four hours. The barb wire department, consisting of 81 machines, has an approximate daily capacity of to supply the various plants with kegs, boxes, spools, etc. This has been provided for in the following manner: The Company has erected at Little Rock, Arkansas, a plant for the manufacture of staves and headings. The plant being located right in the timber belt will be able to obtain material without expense of transportation. The finished product will be shipped to Pueblo "knocked down," and the local cooperage department of the works—an extensive affair in itself—will assemble the parts and make ready for packing.

Limestone Quarries.
The quarry from which limestone has

General View of the Limestone Quarry at Lime, Colorado.

These quarries, which are near the D. & R. G. R. R. station of San Carlos, are six miles south of the Minnequa Works and supply the blast furnaces with flux.

150 tons. This mill is equipped with a special machine and smith shop, electric power plant and rumbling department. Steam is furnished by a battery of 4000-horse-power boilers. The wire drawing mill is driven by two 32 and 52×60 inch tandem compound Corliss engines, the nail mill by one 20 and 32×48 inch tandem compound Corliss engine, and the barb wire department by one 14 and 22×36 inch tandem compound Corliss engine.

Cooperage Department.

From the foregoing it will be easily understood that it is necessary to operate an extensive cooperage department in order heretofore been taken for use at the steel works is located about six miles south of the works, at a station known as San Carlos, on the Denver and Rio Grande Railroad. The output of the quarry has been trebled since starting the new improvements and the Company is preparing to open additional quarries at Howard, which will supply the proper grade of limestone and dolomite for the open hearth furnaces.

Manganese Mines.

A recently acquired but valuable property, heretofore undeveloped, is the manganese mine located near Little Grande in Grand County, Utah. A small tipple has been
erected on the property and shipments will be commenced before long. It is estimated that the deposit contains anywhere from 300,000 to 400,000 tons of first-class ore capable of shipment.

General.

The advantageous geographical location of The Colorado Fuel and Iron Company may be fully comprehended from the statement that all necessary raw material can be obtained within an approximate average radius of 350 miles. In actual practice these raw materials must be selected with great care, and their physical character and chemical composition demand close study. The demand for coke, ore and limestone of the Blast Furnace Department when in full blast will amount to approximately 3,000,000 tons per year. All of this will be furnished by the Company's own mines, smelters, is probably one of the most remarkable features of the Company's remarkable growth. In September, 1900, there were in operation approximately 1,050 coke ovens; there are now in operation approximately 2,400, with nearly 700 additional under construction. The following table will give a very clear idea of the growth of the Fuel Department during the last three years:

Tipple at Primero, Colorado.

Primero mine was opened in January, 1901. There are, altogether, eight openings on both sides of the canon, which are connected by an outside tramway. As yet, all of the production is coming from the four openings on the east side, and an average daily production of 2,800 tons run of mine is being maintained. The double tipple arrangement makes it possible to dump the coal from the east side of the canon separate from the coal from the west side. A large electric-power plant has been installed to furnish electricity for a 20-ton motor in the main opening on the east side, and for the screening plant, tipples and box-car loaders. The production is handled from the openings to the tipple by three 35-ton dinkie locomotives. Two hundred and fifty houses have been constructed for employees. The water plant is situated at Segundo, about two miles from the main reservoir, which is located above Primero, giving a sufficient pressure for town use.
COMPARATIVE PRODUCTION STATEMENT.

(Last Two Months of 1902 Estimated.)

Fuel Department.

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<th>1901</th>
<th>1902</th>
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<tbody>
<tr>
<td></td>
<td>Pounds</td>
<td>Pounds</td>
<td>Pounds</td>
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<tr>
<td>Coal</td>
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<td>1,737,568,900</td>
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<td>8,652,985,700</td>
<td>11,357,681,400</td>
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To keep pace with the demand it has been necessary to open new mines at Coalbasin, Hezron, Tabasco, Tercio, Primero and Cuatro, and to build large banks of ovens at Segundo, Tabasco, Tercio, Redstone and Cuatro. This has occasioned a great increase in the average number of employees and in the average amount of the monthly pay roll, as the tables given below will show.

A Comparison.

To illustrate the extent of the coal properties controlled by this Company, let us make the following comparison: The United States Geological Survey report shows that the entire Pennsylvania anthracite fields cover a total area of about 480 square miles.

The Colorado Fuel and Iron Company owns and controls more than 576 square miles of coal lands, or almost 100 square miles more than the entire anthracite fields of Pennsylvania. The shipments of the Pennsylvania anthracite region for the year 1901 amounted to something over 53,000,000 long tons. Had the properties of The Colorado Fuel and Iron Company been opened up and shipping at the same ratio (and this of course is a future possibility), they would have shipped 64,219,808 long tons. The future production of coal is limited only by the population and development of the states west of the Missouri River.

COMPARATIVE STATEMENT

Showing Average Number of Employees of The Colorado Fuel and Iron Company.

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<th>Department</th>
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<td>280</td>
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<td>Hospital and Sociological Departments</td>
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COMPARATIVE STATEMENT


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<th>Department</th>
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<td>$579,032.00</td>
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</table>
Telegraph System.
The demand for a means of prompt and reliable communication between the various properties made it necessary to construct and operate nearly 2,000 miles of telegraph wire, 1,624 miles of which is strung on Western Union poles, the balance on the Company's own poles. This telegraph line reaches every operated property belonging to the Company. The service between Denver and Pueblo is quadruplex.

View of Part of Segundo, Colorado, One of the New Coking Plants of The Colorado Fuel and Iron Company, From Hill Southeast of Town.

Operations were begun at Segundo in March, 1901. Six hundred beehive ovens are now burning and two hundred additional are practically completed. Two large washers, with sufficient capacity to furnish washed slack for all ovens, have been built, one of which is in operation. In addition to this, the Company has built 75 houses for employees.

Work was commenced at this camp in November, 1901. The production at the present time averages about 800 tons of coal per day. Because of the unfinished construction work, which, however, is being rushed as rapidly as possible, this tonnage is as great as can be handled. One sixteen-jig washer is completed and another is being built. The camp also includes 150 dwelling houses for employees.
View of Anthracite Breaker at Floresta, Colorado.

View of Lower Part of Town of Primero, Colorado.
A perfectly reliable water supply is as essential to the operation of an iron and steel plant as is ore or coke. The Colorado Fuel and Iron Company has therefore taken the precaution to fortify itself well against a failure of water. It has completed reservoirs Nos. 1, 2 and 3, having a total storage capacity of 3,000,000,000 gallons, and is now constructing two additional reservoirs, which will bring the total storage capacity up to 10,000,000,000 gallons. The first three reservoirs are filled from the San Carlos River by a feeder canal 22 feet wide, built to carry 6 feet of water. The Company has also erected at the Steel Works a pumping plant consisting of five cross-compound horizontal pumps; two of which are of 5,000,000 gallons capacity each, the other three being of 7,000,000 gallons capacity each. They are connected by duplicate connections to a standpipe 18 feet in diameter by 150 feet high. The standpipe is also connected directly, by means of a 28-inch pipe line, to Reservoir No. 2 (Lake Savard), situated in the foothills several miles from the Steel Works, at an elevation of 140 feet above the yard level. In addition to this, the pumps have direct connection with Reservoir No. 1 (Lake Minnequa), situated about a mile from the Steel Works, at an elevation of 23 feet above the yard level; water can therefore be drawn from either Lake Minnequa or Lake Savard. Reservoirs Nos. 3 and 4 are located above Lake Savard and the water contained in them can be diverted into either of the lower lakes. Before commencing improvements, the Minnequa Works consumed about 2,000,000 gallons of water every twenty-four hours. So as not to increase these figures, as much water as possible was repumped and used over and over again. The economical operation of the new plant makes it necessary to do away with repumping as much as possible and to supply the blast furnaces' condensers, rolls, etc., with water direct from the pipe lines and reservoirs. It is estimated that the new Minnequa plant will consume about 60,000,000 gallons of water every twenty-four hours. In view of this consumption, it will be easily understood why a storage capacity of 10,000,000,000 gallons is absolutely essential.

View From Northeast of New Minnequa Hospital Buildings at Pueblo, Colorado. Occupied August 7, 1902.

Each employee of the Company contributes monthly toward the maintenance of a competent physician and surgeon at each of the Company's mines and mills, and this payment entitles him to admission to the general hospital, at the discretion of the local surgeon. During the year ending June 30, 1902, 73,388 cases were treated—those of a serious nature at the main hospital, the balance at their homes. It was of this hospital that the celebrated Vienna surgeon, Professor Dr. Lorenz, said: "It is the finest hospital I have ever seen and there are none better in Europe."
The COLORADO AND WYOMING RAILWAY

The Colorado and Wyoming Railway consists of three divisions—Northern, Middle and Southern—and the Hezron branch.

Northern Division.

The Northern Division was constructed to tap the iron mines located at Sunrise, Wyoming. The first section of eight miles, from Hartville Junction to Porter, was completed January 17, 1900. The balance of the road, that from Porter to the Sunrise mines, was completed April 25, 1900. The main line, which is laid with 75-pound steel rails, was constructed with a maximum grade of three per cent. and a maximum curvature of twelve degrees. It connects with the Burlington and Missouri River Railroad in Nebraska at Guernsey, Wyoming, and with the Northern Division of the Colorado and Southern at Hartville Junction. The average monthly tonnage of iron ore handled from the Sunrise mines is at present from 20,000 to 25,000 tons, which will be more than doubled as soon as the new furnaces, located at Minnequa, are in blast. The average number of employes is 44.

Middle Division.

The Middle Division handles all of the switching at the Minnequa plant of The Colorado Fuel and Iron Company. The trackage consists of about 110 miles of side tracks. The present capacity of the steel works necessitates the handling of some 12,000 loaded cars every month, in addition to which the Colorado and Wyoming handles all the special equipment, such as ladle cars, ingot cars, etc. It connects with all of the railroads entering Pueblo and employs 225 men.

Southern Division.

The Southern Division was built from Trinidad, up the Purgatoire River, to Tercio, a distance of 31.05 miles, with a branch from Primero Junction to Primero mine, 3.05 miles.

The country on both sides of the Purgatoire Valley being mountainous, compelled the engineers to run the line of road very close to the river and necessitated spanning the river at six points with steel bridges of the character shown in the accompanying cut. Much difficulty was experienced during the construction by cloudbursts in the foothills, the only outlet for the enormous quantity of water falling being the canons and arroyos emptying into the Purgatoire River.

Primero and Tercio, both of which are new properties of The Colorado Fuel and Iron Company, are very large producers of the best quality of coking coal. Primero producing at the present time from 55,000 to 65,000 tons, and Tercio 20,000 tons per month. The production at Primero will be increased in the near future to nearly 100,000 tons, and that of Tercio to about the same. The Company has just commenced to open a new mine at Cuatro, two miles above Tercio, which will, when in full operation, produce practically the same tonnage as Tercio. Coal from Primero is screened, the slack being hauled by the Colorado and Wyoming to the Segundo coke ovens, 13.7 miles west of Trinidad. The tonnage of coke handled from Segundo averages at present 20,000 tons per month; this will shortly be increased to about 30,000. There are 600 coke ovens in course of construction at Tercio, 350 of which are completed and will be fired within the next two or three weeks. These ovens will have an output of about 25,000 tons of coke per month, which will necessarily be handled by the Colorado and Wyoming Railway. The Southern Division employs 448 men.

Hezron Branch.

The Hezron branch of the Colorado and Wyoming was constructed to handle the output of the Hezron mine to Hezron Junction on the Denver and Rio Grande Railroad, a distance of 1.5 miles. Hezron is a very new property, but is at present producing 7,500 tons of coal per month, and this will be increased as fast as the mine can be opened.

Equipment.

The equipment of all divisions totals 20 standard gauge freight and switch engines, 11 narrow gauge switch engines, 450 cars, 300 of which are 100,000 pounds capacity, Ingoldsby patent dump cars, 20 of these being of all-steel construction. In addition to this, five standard gauge switch engines have been ordered, but not yet delivered. This will increase the total engine equipment of the road to thirty-six.
Yards at Jansen, Colorado.

Junction of Southern Division of Colorado and Wyoming Railway and A., T. & S. F. Ry., 2½ miles from Trinidad.

View of a Two-Span Steel Bridge on the Southern Division of the Colorado and Wyoming Railway, East of Segundo, Showing Segundo Washers in Distance.

There are six of these massive bridges on the Southern Division.
NOTICE.

We wish to remind those who receive copies of this special number that Camp and Plant is published every week in the year. The regular edition is of twenty-four pages illustrated by half tone engravings of the same standard as those in this number. A typical issue is made up of a leading article—descriptive of social betterment work, of some property or institution of the Company, or of some branch of the coal, iron or steel industry—news notes from the various camps and plants; a bulletin of the condition of patients in the general hospital at Pueblo, and miscellaneous matter. Articles and stories in Italian and in one of the more widely spoken Slavonic dialects are also published regularly for the benefit of the Italian and so-called "Austrian" employees.

Those who are interested in the steel industry, in the social betterment work of The Colorado Fuel and Iron Company, or in the building up of the Great West, can gain much information by becoming regular subscribers to our weekly. We wish especially to call the attention of employees, officials, and stockholders of The Colorado Fuel and Iron Company to Camp and Plant, which contains from week to week photographs and much valuable information concerning the various properties and the general conduct of the business of the Company.

Our subscription price—including postage to any part of the United States, Mexico or Canada—is one dollar a year, payable in advance. All subscriptions and letters of inquiry should be addressed to Lawrence Lewis, Editor, Minnequa Hospital, Pueblo.

This bridge carries the middle division of the Colorado and Wyoming Railway over the Denver and Rio Grande Railroad tracks. The molten slag from the furnaces will be carried in pot cars on this railway to reservoirs Nos. 2 and 3, along the sides and bottoms of which it will be dumped so as to prevent seepage.


The "Flyer" makes two round trips a day from Sunrise to Hartville Junction.

Quarries on the Southern Division of the Colorado and Wyoming Railway

From which stone is quarried for coke ovens and general building purposes.
The Laramie Iron and Steel Plant

The Laramie Iron and Steel Plant is located at Laramie, Wyoming, on the Union Pacific Railway, 283 miles north of Pueblo. This plant is operated by The Colorado Fuel and Iron Company and produced, in 1900, 12,394,953 pounds of finished product; in 1901, 32,430,261 pounds, and, in 1902, 31,508,953 pounds. The equipment consists of one 19-inch and one 10-inch mill, a bolt and nut factory, spike factory, and a miscellaneous department for making forgings used in the repair of cars and other railroad equipment. In addition to these, there are machine, roll, blacksmith and cooper shops. Waste heat boilers are installed over the heating furnaces. The mill has been generally improved during the past year; new housings, hot beds, hot saws and straightening presses for mine rails have been installed. The number of employes at this point ranges from 250 to 300. A large number of orders from the northern portion of the Rocky Mountain district is filled from the Laramie plant. In addition to this, most of the track fastenings, bar iron, spikes and bolts used on the nearby divisions of the Union Pacific Railway are furnished from this mill.