What a Blast Furnace Is and How It Works


The following article on the construction and operations of blast furnaces was written especially for Camp and Plant by Mr. Harry A. Deuel, of the Engineering Department of the Minnequa Works. It was afterwards carefully revised, and approved in all details by Mr. R. H. Lee, superintendent of the Blast Furnace Department, and may be accepted as an accurate statement of how pig iron is made. The editor wishes to take this opportunity to thank these gentlemen for their painstaking and careful work.

Arrangements have been made for other articles in "popular," though accurate, form, descriptive of other departments of the coal, coke, iron and steel industry.

Blast Furnace "A," Minnequa Steel Works, Pueblo.

This view well illustrates the different external parts of "A" Furnace of which, except for minor modifications, "D," "E" and "F" are duplicates. Each of these furnaces is 20 feet x 95 feet, is fitted with automatic skip hoists and with the very latest and most modern equipment. This view was taken, however, before the ore, coke and limestone bins, from which the skip is now automatically loaded, were installed. There are four stoves to each furnace, 21 feet in diameter by 105 feet high. Each of the tall draft stacks is 12 feet 6 inches in diameter in the clear, by 210 feet high.
The man who is not educated in technical matters, and who makes a tour of inspection of the Minnequa Works of The Colorado Fuel and Iron Company carries away a lasting impression of the magnitude of the blast furnaces, and the complicated and to him incomprehensible nature of their operations. The object of this paper is, accordingly, to try and make clear the various appliances of a blast furnace and their method of operation.

We have excluded technicalities and minor details so that the "layman" may be able to comprehend the workings of one of the "miniature volcanoes," as the daily papers sometimes call them.

Foundations.

Being designed for permanency, a blast furnace has to have a solid foundation, and for this purpose the ground is excavated in this region to a depth of about fifteen feet, where what is practically bed rock is found. The foundation is built of stone, concrete and brick, a cement mortar being used throughout, so that, when finally hardened, the whole has the consistency of solid rock.

The retaining walls that support the cast house and the runways for the molten iron and slag are run up about fifteen feet above the general yard level, and the interior is filled with sand. Sand is used for the reason that it is readily shaped for runways, and any iron which may form along the sides can easily be removed, which is necessary after every "cast," that is, every time the hot metal is withdrawn from the furnace.

Parts of the Blast Furnace Proper.

The furnace proper may be divided into four sections: 1, The "Hearth or Crucible;" 2, the "Bosh;" 3, the "Stack;" and, 4, the "Top" or "Head Frame and Bells."

The Hearth.

The hearth, which is directly above the foundations, is about 8 feet high and 21 feet in diameter, and is lined with 4½ feet of fire brick on each side, making the well 12 feet in diameter. This is where all the molten iron is collected and the refuse slag is drawn off. The construction is so arranged that the hearth is constantly cooled by running water. At the same time every precaution is taken that there may be no possibility of the iron and water getting together. This rarely happens, but when it does it is attended by some loss of life and great damage to property, due to the water being flashed into steam, generating a force as great, if not greater, than that of exploding dynamite.

The bottom of the hearth consists of tile made of the best fire clay, and in a special form. This is several feet in thickness. The bottom extends up in the "Hearth Jacket" a foot or so. The "Hearth Jacket," which is constructed of boiler plate about 1½ inches thick, completely surrounds the hearth. This jacket has holes cut in it on different radii to admit of tapping the slag and iron. The holes are called notches; thus the lower one is called the "Iron Notch," and the upper one is called the "Cinder Notch." The iron notch is at the bottom and is arranged to draw off all the molten iron in the furnace. The cinder notch is three to four feet higher and taps the slag.

The hearth has a concentric area outside of the jacket that is always filled with running water. On the inside of the jacket, pipes extend down seven feet in the brick work, and are capped at the ends. These pipes are connected with others of smaller diameter—open at the ends and nearly the same length—that act as feed pipes. The water, entering through the small pipes, passes up through the large pipe and overflows into the concentric space mentioned; this in turn flows over a dam and thence to the sump. This arrangement keeps the hearth from burning out, which it would otherwise do in a short time.

The Bosh.

The "Bosh" runs from the hearth up to a height of about 25 feet, or as far as the "mantle," which rests on top of the columns, and is attached to and supports the "shell" or "stack" so that the bosh and stack are independent of each other.

The bosh is built of the best quality of fire brick, liberally interspersed with cooling plates. The cooling plates are made of bronze and arranged so water circulating passes through prescribed channels.

Beginning at the hearth there is one row of cooling plates, and directly above come the "tuyeres," ten in number, arranged about the same center, but with different radii. These are the openings where the air blast is introduced into the furnace. They are well protected from the intense
Vertical Cross-Section of Bosh of Blast Furnace.

heat by circular cooling cones, one fitting against another, and the last or smaller one entering the furnace six inches or so, which is the tuyere proper.

Above the tuyeres come alternate courses of cooling plates and brick work. The brick are encircled by iron bands that bind the brick and support the enormous load exerted by the stock or charge. These extend as far as the mantle, and above the mantle are two rows, so constructed that they can remain till the furnace is "re-lined," which in some cases may not be for several years.

The Stack or Shell.
The stack or shell begins at the mantle and extends upward to the top. This is made of riveted boiler plate. Inside the stack a lining is built of first-class fire brick for about two-thirds of the distance up, and the remaining third of second-class fire brick. Common brick is used for the "backing" between the fire brick and the shell. The lining extends to the hopper at the top of the furnace.

The Top or Head Frame and Bells.
The top of the furnace is where the ore, coke and limestone are introduced. On account of a deadly gas, carbon monoxide, which is always present, but in different proportions, it is aimed to make the furnace gas-proof. Another object in having the top of the furnace tight is so that the gases may be utilized as will be explained later.

The Hopper and Bells.
The hopper, or large receptacle, cylindrical in form, receives all substances that are charged into the furnace. The bottom of the hopper is closed by a cone-shaped casting called a bell, from its form. This is the small bell, for directly below is a larger one. The bells are operated by steam cylinders and levers, perfectly independent of each other.

How the Bells Work.
The method of operation is for the small bell to be dropped, when the charge moves down around the large bell. The small bell is then closed and the large bell dropped, when the charge falls into the furnace. This mechanism is all operated from the ground and is supported by a structural steel frame called the head frame, which also supports the bridge on which run the cars carrying the charge. This bridge is called the skip bridge, the cars being called skips. Each car has a separate track, one directly over the other, the lower end of the bridge terminating in a pit—enabling the cars to pass below the ground level and be loaded conveniently.

The cars are operated by an electric hoist, so arranged that one car acts as a counterbalance to the other. The engineer who runs the hoist also operates the bells. By means of an indicator he can tell in exactly what position the bells are and consequently the charge or stock.

The charge is carried to the skip cars by means of an electric scale car, which runs along parallel to the bins. Everything that goes into the furnace being weighed, the product bears a definite relation to the charge.

The Down-Comer and Gas Washer.
Directly below the top of the furnace are two openings that connect with a "Y" shaped pipe called the "Down-Comer." This pipe runs to the dust catcher, a tank-shaped affair, where the dust in the gas is partly removed. The down-comer is connected with the gas washers, one for the boiler plant and one for the "stoves," where the gas is washed and purified.

From the gas washer one gas main leads to the boilers, where the gas is burned and used to generate steam for the blowing engines. The other connects with a gas main that leads to the "stoves."

The Stoves.
The stoves are the four large cylindrical, dome-capped, steel structures shown in the view on page 417. The stoves are completely filled with fire brick with cubical spaces between to allow free passage of the gases and air. This is called "checkered work" and is so arranged that for the gas to pass through the stoves it is necessary for it to travel to the top and then down again, the two passages being entirely separate except at the top.

The passages connect with valves at both ends, so the passage of the gas can be controlled. The valve on one side is called the Chimney Valve, and the valve on the other side is called the Hot Blast Valve. One stove will serve to show the operation of the four.

The gas passes from the gas washer to a burner that can be thrust into the stove.
Section of Blast Furnace A.
Vertical Section of Bosh of Blast Furnace.
or withdrawn. The gas having been ignited and the flame directed into the stove, it passes up to the top and then down and out through the chimney valve, when it continues through a flue that connects with the big chimney which furnishes draft for the stoves.

After this burning gas has been passing through the stove for two or three hours, the brick in the stove becomes highly heated. The gas is then shut off and the stove made air tight. The chimney valve is then dropped and a connection established with the cold blast main. The hot blast valve is then opened and a passage made for the air to carry on the combustion in the furnace.

The passage of the air is as follows: The blowing engines shown in the illustration on page 424 are located conveniently and are connected directly with the cold blast main by a pipe running from the main to the top cylinders, called air tubs. These tubs have a reciprocating piston, actuated by a steam piston directly below, and have mechanically actuated valves. A pressure is produced of fifteen to twenty-five pounds to the square inch, depending on the revolutions, etc. The air is driven into the cold blast main, whence it is carried to the stoves. In its passage through the stoves it becomes heated to nearly the temperature of the heated fire brick. It then passes through the hot blast main to the bustle pipe (which pipe completely surrounds the furnace), from the bustle pipe through the tuyeres and into the furnace.

The air on entering the furnace has a temperature around 1000° Fahrenheit, which temperature is produced entirely by the utilization of the waste gases from the furnace, as described above. As the entering air must be raised to the temperature of the incandescent coke inside the furnace, it is obviously of advantage to raise it as nearly to this temperature as possible by the use of the waste gases, and thus save part of the fuel which would be required to do this.

The chemical action, also, of hot and cold air is different, and without going into technicalities, the effect of using highly heated air is to concentrate the heat around the tuyeres, and in the lower part of the bosh, where it is most needed.

Everything about a furnace except the cold blast main is lined with fire brick to keep it from being "cut out" by the hot gases.

Blowing Engines.

The blowing engines are supplied with steam by the boiler plant, which in turn is supplied with heat from the burning furnace gases, so that practically the furnace not only makes pig iron, but supplies its own motive power. Thus every bit of energy possible is saved.

The furnaces at our Steel Works are also so constructed that the slag is also utilized in lining the large reservoirs in which the water is collected. In fact, to furnish the fiery monster drinking water is one of the serious problems of running a blast furnace on the plains.

One furnace requires in twenty-four hours over eight million gallons of water. When we consider that the city of Pueblo uses on the average less than twenty million gallons and that the capacity of the pumps of both water systems is only forty-three million gallons a day, we realize how much water is used in one blast furnace. Where water is so scarce, it would not do to waste any, so we have "cooling racks," or "cooling sumps," that are like long and wide flights of stairs. The water is introduced, by gravity, in a trough at the top. It then falls over the rack and collects into the sump or basin, where it is pumped to the stand pipe and used over again and again. All the water that gets away is about 10 per cent.

Operation of the Furnace.

The operation of the furnace is substantially as follows: After the ore, flux, and coke are unloaded in the bins assigned to each, the scale car, passing along the bins and operated by electricity, takes alternate charges of each and in definite proportions, determined by the ore to be smelted, and charges the load into the skip car, which is waiting in the skip pit to receive it. When the skip car is loaded, it is hauled up to the furnace top by the electric hoist, and discharged into the hopper, when the bells are
dropped and the charge admitted to the furnace. In blast furnace “A” the average charge is made up as follows: Coke unit, 10,800 pounds, average ore burden, 16,000 to 20,000 pounds; lime burden, 5,000 to 6,000 pounds.

The average analysis of ores used by The Colorado Fuel and Iron Company is as follows:

<table>
<thead>
<tr>
<th>Ore</th>
<th>Analysis</th>
<th>Analysis</th>
</tr>
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<tbody>
<tr>
<td>Orient</td>
<td>48.41</td>
<td>55.12</td>
</tr>
<tr>
<td>Union Hill</td>
<td>56.73</td>
<td>55.12</td>
</tr>
<tr>
<td>Sunrise</td>
<td>55.12</td>
<td></td>
</tr>
</tbody>
</table>

Phosphorus    | .026     | .016     | .045
Silica       | 9.78     | 5.22     | 8.98
Manganese    | 2.00     | .98      | —       
Sulphur      | .038     | .54      | .048    
Alumina      | .87      | 1.67     | 3.61    

Lime          | 3.84     | .50      | 1.86    
Magnesia     | 1.64     | 7.63     | .79     
Moisture     | 12.06    | 2.44     | 3.70    

Average of Cinder Analysis.

<table>
<thead>
<tr>
<th>Furnace</th>
<th>Furnace</th>
<th>Furnace</th>
</tr>
</thead>
<tbody>
<tr>
<td>“A”</td>
<td>“B”</td>
<td>“C”</td>
</tr>
<tr>
<td>Silica</td>
<td>37.60</td>
<td>36.40</td>
</tr>
<tr>
<td>Alumina</td>
<td>12.74</td>
<td>12.74</td>
</tr>
<tr>
<td>Lime</td>
<td>42.57</td>
<td>40.00</td>
</tr>
<tr>
<td>Magnesia</td>
<td>3.93</td>
<td>6.63</td>
</tr>
</tbody>
</table>

The stock in the furnace is in various states of combustion from the top down to the hearth. At the top the charge will not be ignited, but as it gradually descends in the furnace combustion takes place. When at the tuyeres it will have its

Blowing Engines for Blast Furnace “A.”

These engines, except for the fact that they have open frames while those for the other furnaces are of the “tree trunk” or bell frame type, are identical with those of the other three new furnaces. They are of the vertical cross-compound, condensing, quarter crank, steeple type. The steam cylinders are 41 and 90 inches in diameter, with 60-inch stroke; the two air cylinders are 90 inches in diameter with 60-inch stroke. 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 7¼ 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 is 2,000,
maximum temperature, due to the fast rate of combustion at this point. Finally the charge becoming liquid, the iron being the heaviest constituent, will gravitate to the bottom and the slag, consisting of the flux gange in the ore and any other foreign substance, will float on top, like cork on water. This characteristic enables the slag and iron to be easily separated. The slag is drawn off at the cinder notch quite often. The iron is tapped six times every twenty-four hours.

When the iron notch is tapped there is a considerable thickness of fire clay and ganister to drill through before the iron will start. When the iron is once tapped it rapidly enlarges the hole and runs out like a fire dragon, sputtering and sparkling. It is caught in ladle cars, each of about fifteen tons capacity. When the iron is all out, the iron notch is cemented with clay and ganister by the use of a "mud gun," which has a reciprocating piston operated by steam and a plunger that forces the mud into the notch, where it soon bakes.

The ladle cars are hauled around to the pig casting machine, where the iron is cast into molds. In a short time it will be poured into a large vessel called a "mixer," where it will be kept liquid till wanted.

The new mills, when in operation, will be so systematized that from the time when the crude ore goes into the furnace till the finished metal comes out in steel rails, angle bars, etc., it will never be at less than a white heat, the operation being continuous. It is apparent that this is a time-saving arrangement as well as a money saver.

Everything about our plant is designed as strong as consistent with the duty to be performed, so there will be the least possible liability of breakdowns, that interfere with the continuity of the great plant. Output is what is desired and to this end large shops and an electric power station, a pumping station, a railroad system and the multitude of accessories that it takes to keep up improvements and running repairs, are maintained. Everything is of the latest and most approved design, and it is safe to say no steel plant in the world will be better equipped than the Minnequa Works when everything now under way and planned for is finished.

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**Hospital Bulletin**

**Argelo, Joe**, of Tabasco, who was admitted to the hospital October 12 on account of lacerations of his right foot, had three toes amputated and is now doing well.

**Arnijio, B.**, of El Moro, who was admitted to the hospital August 2 with a contused right ankle, is some better.

**Baptiste, John**, of Coalcreek, who was admitted October 16 on account of a contused eye, is doing very well.

**Barteck, Steve**, of Starkville, who was admitted to the hospital September 8 on account of typhoid fever, will soon go home.

**Beloti, Joe**, of Brookside, who came to the hospital September 13 suffering with typhoid fever, is doing well, is up and around, and will go home soon.

**Bible, John**, of Coalbasin, who was admitted to the hospital October 22 on account of a severe laceration of his left hand, is doing well.

**Caiangie, Parie**, of Segundo, who came to the hospital September 6 with a fractured left shoulder blade, is improving.

**Chappetti, Pete**, of Madrid, New Mexico (Los Cerrillos Mines), who was admitted to the hospital July 2 with a hepatic abscess (abscess of the liver), and who was operated upon July 5, went home October 27.

**Conti, Dana**, of Coalbasin, who was admitted to the hospital March 21 with two broken legs, had an operation to wire his right leg, and had erysipelas, but is getting better, and will be up again soon.

**Degarro, Charles**, of Tabasco, who was admitted to the hospital September 25 on account of typhoid fever, went home last week.

**Delmar, Frank**, of Starkville, who was admitted to the hospital September 10 on account of typhoid fever, had a relapse, but is again better and is walking about.

**Dyson, Thomas**, of Sopris, who was admitted to the hospital October 17 on account of a dislocation of the spine, is doing surprisingly well considering the very severe nature of his injuries.

**Fabritzio, Stephen**, of Brookside, who was admitted to the hospital October 24 on account of typhoid fever, is quite ill.
Garaglano, Louis, of Berwind, who came to the hospital September 15, and who was operated upon for tubercular glands on the right side of his neck, is better and is now up and around.

Guiseppe, Antonio, of Primero, who was admitted to the hospital October 26 suffering with typhoid fever, is doing nicely.

Hegedus, Joseph, of Primero, who came to the hospital March 29 for treatment of a compound dislocation of his ankle, is improved and is walking about the yard.

Hillary, Howard, of Segundo, who was admitted to the hospital October 16, on account of typhoid fever, is doing fairly well.

Hunter, Harry, of Brookside, who was sent to the hospital in Pueblo September 13 suffering from typhoid fever, is better than when last reported, and is sitting up.

Innes, C. S., of Segundo, who was admitted to the hospital September 27 on account of a compound fractured leg, is doing very well and is now on crutches.

Jollymore, Archie, of Primero, was admitted to the hospital October 26 suffering from typhoid fever.

Kinney, Fred, of Tercio, who was admitted to the hospital October 11 on account of typhoid pneumonia, is very critically ill.

Klingholz, W. H., a member of the surveying party at work on the reservoir near Leadville, who was admitted to the hospital October 10 on account of bronchitis, is improving, is now walking about, and will go home soon.

Kral, Frank, of Primero, who was admitted to the hospital October 7 on account of paralysis of both arms, is slightly better, as he is now able to move part of his left arm. He is about the same as when last reported.

Lanke, Jacob, of Rouse, who was sent to the hospital October 22 for treatment of an un-united fracture of the lower jaw, is doing well.

Lavas, Peter, of Rockvale, who came to the hospital August 21 on account of a fractured left leg, is walking around now.

Lepper, William H., of Trinidad, an employee of the Mountain Telegraph Company, who was admitted to the hospital October 17 on account of appendicitis, is convalescing.

McDougal, J., of Primero, who was admitted to the hospital October 21 on account of a fracture of the left collar bone and a contusion of the spine, is doing well.

McGann, James, of Tercio, who came to the hospital September 13 for amputation of the second, third and fourth fingers of his right hand, is nearly ready to go home.

Maga, Frank, of Brookside, was admitted to the hospital October 24, suffering from typhoid fever.

Mankalo, Mike, of Berwind, who was admitted to the hospital September 13 on account of a double fracture of the right thigh, is doing well.

Meek, Archibald, of Rockvale, who was admitted to the hospital September 26 with typhoid fever, is considerably better, and is up now.

Morganstein, Tony, of Coal Creek, was admitted to the hospital October 15. It will be remembered that Morganstein was severely injured in November, 1900, sustaining a fracture of the skull. He is now being treated for trouble resulting from this injury, but returned home October 24.

Muschetti, Rocco, of Coal Creek, who came to the hospital September 17 on account of a fracture of the great toe of his right foot, is almost ready to go home.

Mooney, Charles, of Tercio, who came to the hospital September 25 on account of chronic gastritis, is very much better.

Pagnolta, Forte, of Segundo, who was admitted to the hospital June 25 on account of a contused head, is walking around and doing well.

Piseta, Cherilo, of Starkville, who was admitted to the hospital October 14 on account of typhoid fever, is sitting up.

Randle, C. P., of Redstone, who was admitted to the hospital August 4 on account of a lacerated and contused leg, injuries which were sustained by him by being caught under a moving train, was operated for skin grafting October 4, and is now doing well. He will be about on crutches soon.

Reballa, Joseph, of Rockvale, who was admitted to the hospital September 19 on account of an abscess on the right side of the lower jaw, and who was operated upon September 29 and again October 26, is doing well.

Reeves, Edward H., of Sunlight, who was sent to the hospital October 21 on account of a sprained left knee, left the hospital October 27, and is visiting friends.

Reese, David H., of Rockvale, who was ad-
mitted to the hospital October 9 on account of appendicitis, was operated upon October 11, and is doing nicely.

Rozak, Martin, of Rockvale, who was admitted to the hospital October 16 on account of typhoid fever, is much better.

Salvin, Frank, of Primero, who was admitted to the hospital September 3 on account of a fractured right leg, is doing well and is now up.

Shavez, Max, of Orient, who was admitted to the hospital October 22 on account of a double compound fracture of both legs and thighs sustained by falling under a train and having five cars run over him, had his right leg amputated October 25. He is doing fairly well.

Verchell, John, of Segundo, who was admitted to the hospital October 22 on account of typhoid fever, is doing fairly well.

Vitch, Frank, of Segundo, who was sent to the hospital October 22 suffering from typhoid fever, is doing reasonably well.

Wilson, J. J., of Rockvale, who early in this season played with the Colorado Fuel and Iron team in Pueblo, and who was admitted to the hospital September 13 on account of a fractured leg, is doing well. He is now walking around.

Zambrano, Frank, of Tabasco, who was admitted to the hospital July 26 on account of typhoid fever, had a relapse and was very critically ill for some time, went home last week.

Zenoli, Victor, of Brookside, who was admitted to the hospital October 2 with typhoid fever, is now able to walk around a little each day.

Told All Their Friends.

Good evidence of the power of communication among our speechless friends is given in the following very human story told by a writer in the Boston Herald:

The fact that dogs have a way of communicating news to one another was demonstrated to me in a very singular and amusing fashion about four years ago. It was in south Georgia, where as yet little provision is made for the comfort of domestic animals.

One of these bitter nights, such as a cold wave often brings, I heard at our front door the unmistakable sounds of scratching and whining, and found upon opening two of my little neighborhood friends, a pug and a little terrier, asking admission.

In the face of the cruel cold it was granted them, and they were made welcome to share the comfortable quarters of my own two dogs. In the morning they took their departure; but how great was my astonishment to see them return the following cold evening, this time accompanied by a large Irish setter, who likewise wagged admission to the warm quarters of which he seemed to have knowledge.

If there were any doubts as to whether these hospitable night lodgings were discussed among the shelterless dogs of the neighborhood, the doubts were removed on the third night, when my three tramps returned, their number still further increased by another pug and an old pointer. The mute but eloquent language of their wagging tails, the humble appeal in their sincere eyes, were at once amusing and pathetic.

With my own two pets and these five tramps I had now seven dogs stretched out comfortably before my dining-room grate; but their irreproachable behavior and their many ingratiating ways had insured for them a welcome at our house as long as the cold wave lasted, which was nearly a week. As soon as the cold subsided they returned no more.

New Kind of Armor Plate.

A new armor plate, said to be impenetrable, has been recently tested by the United States naval experts at the proving grounds at Bethlehem. This plate is obtained by carbon being driven directly into the surface of the hot plate by a powerful current of electricity. The face is hardened so as to resist perforation or cracking, and it can be hardened to any desired depth. It is also claimed for this new type of plate that with the same resisting power it is one-third lighter than the ordinary plate. It seems that the gun has been overtaken once again in the race for supremacy, until another discovery changes the program. In the science of war there is nothing stationary, adds The Age of Steel, and in the art of man-killing the man in search of a diploma and a fee never dies.

Pertinent.

Muggsy—Me aunt died yesterday.

Swipsey—Wot wuz de score?—Ohio State Journal.
The English Cathedral and
the Byzantine Basilica.

JOHN RUSKIN, in his book, "The Stones of Venice," gives the following remarkable comparative descriptions of the typical English Cathedral and the Basilica, or Church, of Saint Mark, in Venice. As an example of vivid and deeply emotional descriptive writing this has scarcely been surpassed in all literature.

To those also who have made use of the circulating art collection of the Sociological Department, this description, the views of York Minster (which may be taken as a typical English Cathedral) and of the Church of Saint Mark, and the concluding notes, may prove of interest:

AND now I wish that the reader, before I bring him into St. Mark's Place, would imagine himself for a little time in a quiet English cathedral town, and walk with me to the west front of its cathedral. Let us go together up the more retired street, at the end of which we can see the pinnacles of one of the towers, and then through the low, gray gateway with its battlemented top and small latticed window in the center, into the inner private-looking road or close, where nothing goes in but the carts of the tradesmen who supply the bishop and the chapter, and where there are little shaven grassplots, fenced in by neat rails, before old-fashioned groups of somewhat diminutive and exceedingly trim houses, with little oriel and bay windows jutting out here and there and deep wooden cornices and eaves painted cream color and white, and small porches to their doors in the shape of cockleshells, or little, crooked, thick, indescribable wooden gables warped a little on one side; and so forward till we come to larger houses, also old fashioned, but of red brick, and with gardens behind them, and fruit walls, which show here and there, among the nectarines, the vestiges of an old cloister arch or shaft; and looking in front on the cathedral square itself, laid out in rigid divisions of smooth grass and gravel walk, yet not uncheerful, especially on the sunny side, where the canons' children are walking with their nursery maids. And so, taking care not to tread on the grass, we will go along the straight walk to the west front, and there stand for a time, looking up at its deep-pointed porches and the dark places between their pillars where there were statues once, and where the fragments, here and there, of a stately figure are still left, which has in it the likeness of a king, perhaps indeed a king on earth, perhaps a saintly king long ago in heaven; and so higher and higher up to the great mouldering wall of rugged sculpture and confused arcades, shattered, and gray, and grisly with heads of dragons and mocking fiends, worn by the rain and swirling winds into yet unseemlier shape, and colored on their stony scales by the deep russet-orange lichen, melancholy gold; and so, higher still, to the bleak towers, so far above that the eye loses itself among the bosses of their traceries, though they are rude and strong, and only sees, like a drift of eddying black points, now closing, now scattering, and now settling suddenly into invisible places among the bosses and flowers, the crowd of restless birds that fill the whole square with that strange clangor of theirs, so harsh and yet so soothing, like the cries of birds on a solitary coast between the cliffs and sea.

Think for a little while of that scene, and the meaning of all its small formalisms, mixed with its serene sublimity. Estimate its seceded, continuous, drowsy felicities, and its evidence of the sense and steady performance of such kind of duties as can be regulated by the cathedral clock; and weigh the influence of those dark towers on all who have passed through the lonely square at their feet for centuries, and on all who have seen them rising far away over the wooded plain, or catching on their square masses the last rays of the sunset, when the city at their feet was indicated only by the mist at the bend of the river. And then let us quickly recollect that we are in Venice, and land at the extremity of the Calle Lunga San Moisè, which may be considered as there answering to the secluded street that led us to our English cathedral gateway.

We find ourselves in a paved alley, some seven feet wide where it is widest, full of people, and resonant with cries of Itinerant salesmen—a shrill in its beginning, and
West Front of York Minster, a Typical English Cathedral.
dying away into a kind of brazen ringing, all
the worse for its confinement between the
high houses of the passage along which we
have to make our way. Overhead, an in-
extricable confusion of rugged shutters, and
iron balconies, and chimney flues, pushed
out on brackets to save room, and arched
windows with projecting sills of Istrian
stone, and gleams of green leaves here and
there, where a fig-tree branch escapes over
a lower wall from some inner cortile, lead-
ing the eye up to the narrow stream of
blue sky high over all. On each side, a row
of shops, as densely set as may be, occup-
ing, in fact, intervals between the square
stone shafts, about eight feet high, which
carry the first floors; intervals of which
one is narrow and serves as a door; the
other is, in the more respectable shops,
walnscoted to the height of the counter and
glazed above, but in those of the poorer
tradesmen left open to the ground, and
the wares laid on benches and tables in
the open air, the light in all cases entering
at the front only, and fading away in a few
feet from the threshold into a gloom which
the eye from without cannot penetrate, but
which is generally broken by a ray or two
from a feeble lamp at the back of the shop,
suspended before a print of the Virgin. **
(And so, passing on, we) presently emerge
on the bridge and Campo San Moisè, whence
to the entrance into St. Mark's Place, called
the Bocca di Piazza (mouth of the square).
** We will push on fast into the shadow
of the pillars at the end of the "Bocca
di Piazza," and then we forget all else;
for between those pillars there opens a
great light, and in the midst of it, as we
advance slowly, the vast tower of St. Mark
seems to lift itself visibly forth from the
level field of chequered stones; and, on
each side, the countless arches prolong
themselves into ranged symmetry, as if the
rugged and irregular houses that pressed
together above us in the dark alley had
been struck back into sudden obedience
and lovely order, and all their rude case-
ments and broken walls had been trans-
formed into arches charged with goody
sculpture, and fluted shafts of delicate
stone.

And well may they fall back, for beyond
those troops of ordered arches there rises
a vision out of the earth, and all the
great square seems to have opened from
it in a kind of awe, that we may see it far
away; a multitude of pillars and white
domes, clustered into a long low pyramid
of colored light; a treasure-heap it seems,
partly of gold, and partly of opal and moth-
er-of-pearl, hollowed beneath into five
great vaulted porches, ceiled with fair mo-
saic, and beset with sculpture of alabaster,
clear as amber and delicate as ivory,—sculp-
ture fantastic and involved, of palm-leaves
and lilies, and grapes and pomegranates.
and birds clinging and fluttering among the
branches, all twined together into an end-
less network of buds and plumes; and, in
the midst of it, the solemn forms of angels,
sceptered, and robed to the feet, and lean-
ing to each other across the gates, their
figures indistinct among the gleaming of
the golden ground through the leaves be-
tween them, interrupted and dim, like the
morning light as it faded back among the
branches of Eden, when first its gates were
angel-guarded long ago. And round the
walls of the porches there are set pillars of
variegated stones, jasper and porphyry,
and deep green serpentine spotted with
flakes of snow, and marbles, that half re-
fuse and half yield to the sunshine, Cleo-
patra-like, their bluest veils to kiss,—the
shadow, as it steals back from them, re-
vealing line after line of azure undulation,
as a receding tide leaves the waved sand;
their capitals rich with interwoven tracery,
rooted knots of herbage, and drifting leaves
of acanthus and vine, and mystical signs,
all beginning and ending in the Cross; and
above them, in the broad archivolts, a con-
tinuous chain of language and of life—
angels, and the signs of heaven, and the la-
bors of men, each in its appointed season
upon the earth; and above these, another
range of glittering pinnacles, mixed with
white arches edged with scarlet flowers,—
a confusion of delight, amidst which the
breasts of the Greek horses are seen blaz-
ing in their breadth of golden strength, and
the St. Mark's lion, lifted on a blue field
covered with stars, until at last, as if in
ecstacy, the crests of the arches break into
a marble foam, and toss themselves far into
the blue sky in flashes and wreaths of sculp-
tured spray, as if the breakers on the Lido
shore had been frost-bound before they fell,
and the sea-nymphs had inlaid them with
coral and amethyst.

Between that grim cathedral of England
Grand Square and Basilica of Saint Mark in Venice. The Campanile or Bell Tower on the Right Fell July 14, 1902.
The Façade of Saint Mark's, Venice.
and this, what an interval! There is a type of it in the very birds that haunt them; for, instead of the restless crowd, hoarse-voiced and sable-winged, drifting on the bleak upper air, the St. Mark's porches are full of doves, that nestle among the marble foliage, and mingle the soft iridescence of their living plumes, changing at every motion, with the tints, hardly less lovely, that have stood unchangeable for seven hundred years.

York Minster, a view of the west front of which is reproduced on page 429, is in the City of York, which is the capital of Yorkshire, England, and the seat of an archbishopric. This is one of the chief English cathedrals of Norman foundation, but entirely rebuilt in subsequent medieval periods. The dimensions, according to the Century Cyclopedia of Names, are 525 by 110 feet, length of transepts, 222 feet; height of vaulting, 100 feet; height of western towers (shown in our view), 201 feet. The transepts are fine, particularly the south transept, built in the first half of the 13th Century. The square towers of the much-paneled west front are of the 15th Century, as is the massive central tower; the perpendicular choir and Lady Chapel are of the 14th Century. The interior is highly impressive from its size and height. The elaborate vaulting is of wood. A massive sculptured rood-screen separates the nave from the choir. The perpendicular window which fills almost the whole east end measures 78 by 33 feet, being surpassed only by that at Gloucester. This cathedral possesses more old stained glass windows (of the 14th and 15th centuries) than any other in England.

The Basilica, or church of Saint Mark, in Venice, views of which are reproduced on pages 432 and 433, was founded, according to the Century Cyclopedia of Names, in 830 to receive the relics of the evangelist brought from Alexandria. It was rebuilt in 976, and was given its definitive form in 1052. It is the most famous example of Byzantine architecture in Western Europe. It is cruciform in plan, with five great domes or perpectives, and many smaller domes in subordinate positions. The outer aisle or atrium was added later. With its five deep, many columned arches, repeated and fantastically canopied above, its rich mosaics, and the wonderful color of its incrusted marbles, it gives, with the domes and many pinnacles, to the exterior its picturesque and unique character. The four celebrated bronze horses in front of the upper middle arch came from Constantinople, and probably adorned originally a Roman triumphal arch. The interior, though it measures only 205 by 164 feet, is one of the most impressive in the world. Almost the whole surface of walls, domes and arches is covered with magnificent mosaics, representing, on a gold ground, scenes described in the Old and New Testaments. Most of the capitals of the columns are of the finest Byzantine, though some are classical; and the rood-screen, surmounted by its long row of statues, is at once beautiful and valuable. Externally and internally, and despite regrettable restorations, St. Mark's is the most superb piece of architectural coloring in the world.

Sign Painters and Proofreaders.

"I have wondered many times," says a writer in the New York Press, "why some clever compositors or proofreaders do not find lucrative employment with sign painters. I venture the assertion that not one commercial sign in a hundred is correctly punctuated. Firms have made large fortunes in sign painting, and some of their work of recent date is artistic to an extraordinary degree. It is nearly up to the standard of the genre painter and the impressionist, and more than one of the men we see decorating billboards with tobacco, whisky, milk and patent medicine announcements is a reduced artist of the studio and easel. But artists know nothing of punctuation. A student of De Vinne ought to be able to command a handsome salary for teaching our millionaire sign-painting firms the correct use of periods, commas and apostrophes. Unfortunately, our merchants and others who need signs are as ignorant of 'points' as the men who paint them."

Her System.

He—Mrs. Wise seems to understand how to manage her husband pretty well.

She—Yes, she lets him have her own way in everything.
little children have been very seriously ill with diphtheria, and for a time there was grave danger they would not recover. Both are now improving.

The report published by the Denver papers that Frank Shaw had signed with Waterbury, Connecticut, is incorrect. Shaw is the best twirler the Colorado Fuel and Iron Company has had in some time, and is growing better every year he pitches. His ability will no doubt some day land him in a big league should he care to follow ball playing, but at present the chances are he will again be in the box for us all next season.

Harvey Evans and Frank Galusha have taken positions with Anderson and Moore.

John Stockton, timekeeper for the stables, is now in possession of a full grown mustache, which adds another charm to his manly face.

Harry Gambridge, bricklayer, has changed his mind, and will not go to South America. When fully investigated, the offer made to the bricklayers was seen to be not as tempting as it at first appeared.

John Mramor, who was injured in the head some time ago, is back at work. A slight operation was performed, and he is now as well as ever.

William J. Jones, the young son of the converter timekeeper, was a visitor at the office on the 23d.

W. H. Howell, the traveling auditor of The Colorado Supply Company, was at the retail store here for a few days last week auditing the books. Mr. Howell is very well satisfied with everything, and very much delighted with the appearance of the store.

Joe Novark has returned to work. He was absent because of injuries.

William Martin was appointed October 1 general foreman of blast furnaces opposite John C. Percy.

A very great surprise was given the men in the main office building last week when Algernon Sidney Dodge came to work minus that flowing mustache he has been wearing the last ten years. It makes him look considerably younger and several of the latest additions to the office force failed to recognize the "Dolly" of yore.

Still another surprise in the mustache line is being given us by A. S. Bleim. He is now engaged in a very serious attempt to
grow one and we are glad to report that he is already doing very well.

Tony Chiliberto, who was injured by a piece of steel flying into his eye, is fully recovered and again at work.

J. W. White has accepted a position in the carbon room of the laboratory at the converter.

A. H. Young is taking J. T. Marshall's place as recorder at the blooming mill during the latter's absence.

J. T. Marshall has been taken ill and will probably be away some time.

Joe Mahoney, one of our late additions to the order of benefactors, is home again. He is looking very well and of course very happy. Most of the honeymoon was spent in Joliet, Illinois, the old home of Mr. Mahoney.

A brother of Charles Longniper was on his way here to pay the latter a visit when the late accident happened at the open hearth. Mr. Longniper arrived to find one brother dead and the other with two legs broken. His was a decidedly sad arrival, and everything has been done by friends to make his grief as tolerable as possible.

A horse belonging to one of the contracting companies working around the plant went through the small trestle over the Bessemer ditch near the viaduct on the 22d, and so injured itself that a policeman had to shoot the animal.

A. W. Kennedy is now working at the warehouse.

C. T. Mullen has resigned his position at the bolt mill and for the time being has become a gentleman of leisure.

William O'Brien has recovered from his illness and is at work once more.

Henry E. G. Randall has accepted a position under F. A. G. Hammill, the foreman of the floating gang brick contractors.

Frank Stevens has returned from Cleveland, where he spent a very pleasant three weeks.

W. H. Ingersoll, formerly a machinist helper at the rail mill, is again employed at the latter place.

S. Z. Schenck has returned from his hunting trip in the mountains.

John King, who broke his arm at the converter a few weeks ago, is doing very well.

Phelps Hurford will soon publish a story of his hunting trip in the mountains of Colorado that will make Roosevelt's cougar stories sound tame.

L. V. Selleck was a visitor at the warehouse last week.

Phil Hahn is in receipt of a very large bundle of neckties from some fair damsel in the East.

Under the direction of Fred W. Richards all records for getting out the distribution and cost sheets of a month were broken this October. Everything for September in this department was completed by the night of the 3d, something never done before. Heretofore this work has usually consumed from seven to ten days, and the rapidity with which the thing was finished this month has surprised everyone cognizant of the difficulties attendant upon such a feat.

J. A. Writer, auditor for The Colorado Fuel and Iron Company, and Steven Little, expert accountant, were at the plant on the 22d inst.

Harry Conn, a straightener at the rail mill, is the happy father of a very pretty little girl, who came last week.

Robinsonville is at last in its new location, and once more ready for business. Under the able management of D. E. Chesebrough the moving was accomplished without any serious accidents.

The Minnequa Lumber Company has already built up such a business that their building is now too small, and a much larger one is now in course of erection. It will probably be finished in about a month.

Robert Parks, at No. 1 drop, injured his finger last week and has been away from work for several days. During his absence A. C. Wickular is helping out at the drop.

The old slag dump is being slowly removed and very soon will have disappeared entirely. A high board fence has been run east from the old county road around the large piles of stored coke in the east yard. The county road has been closed, and a new one is being built around the new fence. This will no doubt prove to be the advantage of everyone, as there were quite a few accidents at the point where the old road crossed the railroad tracks.

Drop No. 2 is now running two shifts of twelve hours each. The work at the drops is dangerous and very hard, so that attempting to carry it out at night is quite an innovation. The work has, however, been going along very nicely all this month and I. B. Stamm, who is in charge, expects to make October a record month.

C. E. Spencer, timekeeper for The Colo-
rado and Wyoming Railway at this plant, was sick in bed for a few days last week.

Albert Galyean came as near to suffering a fatal accident on the 24th as one well can and survive. He is a water tender at the B and W boilers of the rail mill, and while tinkering with a monkey wrench he shoved one live electric wire over against another. Neither wire was insulated at the point of contact. When Mr. Galyean recovered consciousness he was stone blind and very ill. His sight later returned and he was able to walk home. He is now entirely recovered.

Joe Sides, for some time a blacksmith here, has resigned his place and opened up a business of his own down on the Mesa.

Samuel Painter, bricklayer, has quit work at this plant and is now at the Philadelphia Smelter.

J. B. McKennan has gone away for a few days' rest in the mountains.

Tom Stone, who was in charge of the mechanical part of the power house, has resigned his position and gone to Old Mexico.

Basil Quillam was a visitor at the office on the 24th. He broke his arm a few weeks ago at the machine shop; the arm is now doing very well.

Russel Glover, in the chemical department of the blast furnaces, has returned from a two months' trip East. He visited Boston, New York, Baltimore and Atlanta, and had a very pleasant trip.

Anderson and Moore have given notice of a slight raise in coal prices.

Alex Marks and Felix Murphy went to Denver last Saturday to see the all-star teams play ball there.

The rail mill ran on angle bars two full days last week, filling orders from the Union Pacific Railway Company.

John Farco's foot has entirely recovered and he is again at work in John Freise's gang.

Frank Sackman, an employee at the new converter, was injured in one of his eyes on the 24th by a particle of steel. The injury is very serious, the eye is badly lacerated and there is very much danger that he will lose it.

Bude Markobuch fell through one of the trestles this week and broke his left leg above the ankle. He is now resting easily at the hospital, but will probably be in bed for many weeks.

The American Bridge Company paid its men on the 25th.

John Crossman, a former employe at the converter, has accepted a position in a business house on Northern Avenue.

The following notice, which was received at the Minnequa Works last week, caused much satisfaction among the office employes, among whom the gentlemen affected are well and favorably known:

THE COLORADO FUEL AND IRON COMPANY.
President's Office.

October 21, 1902.

Mr. R. M. Waite is hereby appointed assistant to President, and Mr. L. B. Rogers Chief Clerk President's Office, both with offices at Denver.

J. A. KEBLER,
President.

On the 21st inst. the rail mill made a record run and brought the total output for a day up to 428 tons 1,723 pounds, which amount now stands as the highest ever made at this mill.

A very mysterious shooting affair took place on the night of the 20th by the stand pipe in Minnequa Addition, the new section of Bessemer. W. H. Bailey, a foreman, and J. W. Wilson, a watchman, met there by arrangement, each one attended by three friends. T. W. Persons, W. W. Gooch, J. H. Hose, G. M. Robertson, T. J. Kenney and John Downey, all of them employes at this plant. The only undisputed facts in the case are that the men met there at an appointed time and that Wilson was shot and killed. Bailey gave himself up and claims to have fired in self-defense. The six witnesses of the shooting were arrested a few days later by Sheriff Beaman, charged with murder, and all seven are now in the county jail. Whether, as has been claimed by various parties, Bailey and Wilson met out in the suburbs to settle amicably or by a fist fight some dispute which had arisen between them, or whether, as is also stated to be true, they went there intending to shoot to kill, no one who can be relied upon to know has so far been frank enough to tell. Viewed in any light the entire affair reminds one very much of the days of long ago, and in this age it is at best the trick of boys or fools which was that night in-
dulged in by eight men of supposed sanity. It is nevertheless regrettable that it has all ended so seriously for the unfortunate man who was killed, and that it probably will end in the same way for those who still live. The feeling at the plant has run rather high. With one exception most of the men are the objects of sympathy, and there seems to be little or no doubt that John Downey and perhaps T. J. Kenney went there innocently, and with the best of intentions for preventing anything that might prove at all unlawful or serious. The excellent reputation of these two men will probably stand them in good stead. The other men with one exception are not so well known, although they may have been equally innocent and equally as anxious to preserve the law and public order.

George Klirschman from Centerville, Iowa, has accepted a position in the boiler shops.

Robert Griffith is building a very handsome new residence at the corner of Abriendo and Indiana Avenues.

Miss Martha Enkhart was suddenly taken ill on the 21st, but is now doing very well.

Simon Raven, the young son of Harry Raven, is now entirely recovered and out again.

Fred Roof, cashier of the Minnequa Bank of Pueblo, went to Trinidad for a short stay last week.

George W. Bowen, president of the Minnequa Town Company, is back from a trip to Denver.

W. H. Nettleton, machinist, has resigned his position here and gone back to Derby, Connecticut.

John L. Dyer, who until recently was engaged in the undertaking business at Cripple Creek, has removed to Bessemer and is now an engineer here.

J. C. Beasley, an employee of Riter and Conley, was joined last week by his wife, who came on from St. Louis to be with her husband.

All the day laborers at the plant are now quitting work at half-past five and will continue to do so throughout the cold months. Only a half-hour is taken for lunch, instead of an hour as in the summer.

Mike Roach has again taken the position of a heater at the twenty-inch mill. He is still holding his farm, however, and his wife and children will continue to live down there.

A. L. Drake, a resident of Beulah, and an old employee at the converter, was in Bessemer on a visit last week, visiting his old friends and once fellow-employees.

W. T. H. Baker, M. D., superintendent of the Minnequa Hospital, left Tuesday evening, October 21, for Illinois. He is expected back next week.

W. H. Billington, of The Colorado Supply Company, has gone into the mountains for a few days’ rest.

Charles Ross is the guest of his brother, Oliver M. Ross, who is employed by the American Bridge Company at this plant.

Mrs. Reyman, wife of W. F. Reyman, has gone on an extensive trip through the southern part of Colorado.

Mr. and Mrs. Simon Hopper of Chappell, Nebraska, who have been the guests of Mr. and Mrs. Harry Raven for some time past, have returned to their home.

George Herrington, manager of the Minnequa Town Company, took a short trip to Redstone last week.

Richard V. Utter, night weighmaster at the pig scales, was in Denver on the 20th. “D” furnace is now practically complete, and the process of drying it out has been going on for several days.

J. S. Blair, foreman of a night floating gang, has gone to the Huerfano valley for a week’s fishing trip.

The employes of the American Bridge Company here are getting up a football team. Guy Walker will be captain.

Still more men will be moved down here in November from the Denver offices. All of the voucher clerks, six in number, will come on the 15th, and the rest of the iron department books and the straight iron men, making a dozen clerks altogether. This means that practically all the clerks connected with the plant will be here on the ground.

Three new floating gangs have lately been added to the yard force. E. Ransome, L. P. Nicholson and E. Porter are the respective foremen.

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**BERWIND.**

The new Berwind-Tabasco public school building was formally opened Saturday evening, October 18. School had been in session since early in September, but of course a public building like this is never
really "opened" until it has been the scene of an entertainment or social event of some kind. And from the very first the school board and the people of Berwind and Tabasco were determined that the opening should be accomplished in the regular, way, and should be successful at any cost. The Trinidad orchestra was engaged to furnish music, arrangements were made with The Colorado and Southern Railway to run a special train from Trinidad, via Hastings, and handbills were circulated far and wide announcing the event. Everything that could be done to insure success and a delightful time was done.

The early part of the evening, before the "special" arrived with our out-of-town guests, was spent in "visiting" and social chat. When the guests were all comfortably seated in the large hall, Superintendent Jennings took the chair and introduced H. J. Wilson, Assistant Superintendent of the Sociological Department, who made a brief talk, expressing Dr. Corwin's regret for the unavoidable delays on his Eastern trip, which prevented his being present. Mr. Wilson congratulated the people of both Tabasco and Berwind on their fine new building, named in honor of Dr. Corwin. The remainder of the evening was spent in enjoying music and dancing, and a very happy evening it was.

The hours flew swiftly and not until midnight had passed and the small hours had come did we think of "sleep, gentle sleep."

Then the orchestra broke into the strains of that sweet old tune, "Home, Sweet Home," and the guests departed, wishing all good things for the people of Berwind and Tabasco, admiring their school and prophesying many more such delightful occasions. We were disappointed because Dr. Corwin could not be present and give an address, but we hope to have him with us on a later occasion.

The building is identical in its general

**Dwelling of Thirty Italians and 500 Goats at Berwind, Colo., in September, 1899.**

This view was taken before the work of the present management, in replacing by modern dwellings the squalid houses put up by the men, was commenced.
plan with the other new school buildings put up during the summer just passed, or now in process of construction. The large hall on the second floor affords ample space for dancing or other entertainments. As many as fifty couples were dancing Saturday evening, yet the floor was not crowded. The same system of lighting, ventilation and arrangement of rooms is employed here as in the other schools recently described in the columns of Camp and Plant. To enter further into details is therefore quite unnecessary.

**BROOKSIDE.**

Our camp received its monthly cleaning up last week.

Samuel Ryder returned home on last Thursday from a two weeks' duck hunt in the San Luis valley. He brought back a goodly quantity of game. Mr. Ryder accompanied a party of which the Misses Ball of Canon City were members, and it is reported that the ladies had fine luck.

Frank Maya and Stephano Fabrizio were taken to the hospital last week suffering from typhoid fever.

Henrico Richuti is also suffering with typhoid fever.

Mrs. Julian De Donito was confined to her bed during the past week.

The Whist Club met with Mrs. Elizabeth Gregory on last Saturday evening.

Miss Etta Jones was confined to the house with tonsilitis for a number of days last week.

Mrs. Emanuel Luchini is also suffering with tonsilitis.

Felix Polyono is about again after several days of sore throat.

The mine was shut down for twenty working hours during the past week on account of the scarcity of cars.

**COAL CREEK.**

Miss Mabel Cairns of Florence has been visiting at the home of John Chapman.

Henry Soots has been nursing a very sore hand the past week, caused by an accident at an oil well near Williamsburg.

Born, to Mr. and Mrs. Lewis Smith, a son. Mother and child are doing well.

Mrs. Anthony and Mrs. Harry Snyder were at Canon City visiting friends.

Died, at Coal Creek, Colorado, Sunday morning, October 19, 1902, Bernice, the youngest daughter of Mr. and Mrs. Richard Jones. The funeral, held Tuesday from the family residence, was conducted by the Rev. John of Rockvale.

The Odd Fellows have had their hall papered and everything fixed in the most modern style.

Adolph Donath, Grand Master of the Odd Fellows, made the lodge at this place an official visit Wednesday evening.

D. G. Davis made a business trip to Canon City Wednesday.

Fred B. Putnam of Canon City, who has been acting as supply at the Colorado Supply Company's store, has returned to his home.

Rev. Frazier was called to Colorado Springs to conduct the funeral services of an old friend. From that place he went to Pueblo and attended the annual meeting of the churches of the Congregational order.

One of the happy events that was looked to with pleasure, not only by the participating parties, but by a large number of friends as well, was the marriage of John Young and Miss Dottie Richards. Miss Richards is the oldest daughter of Mr. and Mrs. William Richards, and is well liked by her many friends on account of her quiet and unassuming disposition.

Joseph Ball and John P. Thomas were in town a few days the first of the week.

J. R. King has returned from the hospital
at Pueblo much improved in health, and has resumed his position as night watchman at the mine.

Thomas Jones returned from the hospital at Pueblo to attend the funeral of his sister. He is still obliged to go on crutches as the result of a broken thigh.

Married, in Canon City, Saturday morning, October 25, John Lippis and Miss Duralice Rosetti, both of Coal Creek.

Mrs. E. M. Eddy and Miss Mary Clark of Silver Cliff are visiting at the home of Dr. A. A. Eddy.

The Rebekahs and friends of Miss Fletcher, sister of Mrs. Munger, gave her a pleasant surprise Saturday evening. She has been spending the summer here and expects to return to her home in Michigan in a few days. The evening was spent in playing games and in pleasant conversation. Light refreshments were served, and the surprisers returned to their homes.

The many friends of Idwal Davis gave him a pleasant surprise Thursday evening.

Mr. Fitzpatrick of Pueblo has taken a position with the Supply Company as meat cutter.

Nathaniel Glover returned from Rugby Friday. He was working in the mine at that place.

The choir of the Congregational church expect to give a concert on Wednesday evening, November 24. H. A. B.

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EL MORO.

Mr. and Mrs. Kirschner and daughter Belle expect to leave shortly for Oregon, to visit a married daughter in Portland. Their house will be occupied by the washer boss, Mr. Spencer, and family.

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FIERRO, NEW MEXICO.

A. A. Kellam, wife and little boy have arrived to make their future home in Fierro. Mr. Kellam will take the place as engineer on the local passenger train, which position was recently left vacant by the death of Mr. Rose.

W. H. Newcomb of Silver City was a recent visitor to our camp.

T. H. O'Brien made a flying trip to Cook's Peak this week in the interests of The Colorado Fuel and Iron Company.

A few cases of malaria, whooping cough and chicken pox are reported by the company physician.

Rumor has it that a Spanish class has been organized and is progressing nicely.

F. C. Provot, a mining engineer of Bisbee, Arizona, spent a few days in camp, looking over the Phelps, Dodge and Company properties.

George Kingdom, an old resident of Fierro, but now of Picacho, Mexico, spent a few days last week in camp visiting friends.

Mr. and Mrs. C. E. Cosgrove of Silver City, and Miss Frazer of Nova Scotia, niece of Mrs. Cosgrove, were Sunday visitors of Superintendent and Mrs. O'Brien.

Miss Edith Casey, teacher in the Silver City public schools, was a visitor among her many friends in Fierro on Saturday and Sunday.

F. T. Bulmer, from the auditor's office of the Phelps, Dodge Company in New York City, spent a few days in camp last week.

Hon. Bernard S. Rodey of Albuquerque was a visitor to our camp on Monday of last week, in the interests of politics.

C. P. Cramer made a flying trip to Silver City at 4 A. M. on Monday. We presume it was pressing business. C. F. B.

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GIBSON, NEW MEXICO.

Work on the new tipple for the Gallup mine is progressing rapidly. The new engine for the mine has arrived, and Mr. Bliss of the Sullivan Company came Friday of last week prepared to place it at an early date.

The Weaver mine has worked every day this week, and all are pleased over present indications for a busy winter.

A large number of our young friends attended the dance given at the school house Saturday evening, and all who were there report a pleasant time.

Thomas Bates, representative of A. E. Anderson and Company, the large tailoring establishment in Chicago, spent a few days here the past week. While here he took measures and orders for about forty suits.

A large, healthy son was born to Mrs. "Ike" Souther's last Sunday. Mr. and Mrs. Southers have the congratulations of their many Gibson friends.

Ed Rodey, one of Daniel Southerland's carpenter crew constructing the tipple, will be moved over to our hospital today. J. J. P.