HOW PIPES ARE MADE.

THESE LONG TUBES OF IRON REQUIRE SKILL AND INDUSTRY.

The Process From the Crude Metal to the Finished Article—Difference in Various Kinds of Pipe.

A pipe manufacturer, being asked recently how pipe was made, replied that he took a hole and put some iron around it. This process of making pipe would certainly be an ideal one, but owing to the difficulty of getting the holes it is not ordinarily used at the present time.

A modern pipe mill, where the common sizes of gas-pipe are manufactured, can hardly be considered the pleasantest place in the world to be employed, and to a casual visitor does not appear at all inviting. The heat given off by the furnaces and highly heated iron as it is taken from the furnace, is intense, and the noise coming from a variety of sources makes it utterly useless to attempt a single word of conversation.

As one enters the mill there is seen ranged along the centre of the room several furnaces, usually five or six of them. They are made to burn gas and are about twenty feet long and four or five feet in the other dimensions. The gas is taken into the furnace, where it meets a current of highly heated air which causes it to ignite with a roar, and it makes a very hot fire. Ranged along the side of the wall are seen numerous piles of iron, all cut into strips of different widths, which is waiting to be made into pipe. These strips the pipe-mills usually buy from the rolling-mills and are known in mill terms as "skelp." A few pipe-mills have facilities for making their own "skelp, but it is properly rolling-mill work, where it will be rolled to any specification the pipe-mills may supply. The iron is cut up by the rolling-mills before shipment into strips of different widths suitable for making different sizes of pipe. The length of common sizes of pipe is about eighteen feet and the width of the strip is a little more than three times the diameter of the pipe it is the intention to make. Three grades of pipe are usually made, known as common, extra strong and double-extra strong, all of which are determined by the thickness of the strips of iron.

Two men, wearing leather aprons, approach one of these piles of strips and pick up three or four of them, put their ends in a shearing machine, which cuts off the corners, giving the end of the strip a rounded appearance and at the same time bending the end of the strip up slightly. The strips are then put, one at a time, on an endless link belt chain, which runs up to the door of the furnace. The ends having been bent up there is no danger of the strips catching as they go through the furnace door. As this endless chain deposits the strips one upon another in the furnace it is necessary for a man to stand directly in front of the door, and with a long pair of tongs distribute the strips evenly through the furnace and see that they do not touch one another, as in that case they would soon become firmly stuck together. This man has a very hot berth. The flame often shoots out of the furnace, and to an observer it seems to entirely envelop him. His head and face are protected from the severe heat, and in addition a blast of cold air is thrown directly over him by means of a ventilating pipe, through which air is driven by a pressure fan. The strips are allowed to remain in this furnace until they are brought to a white heat, which requires fifteen or twenty minutes. A man at the opposite end of the furnace then reaches in with a pair of long tongs, and grasps the end of a strip, which has already been rounded, and pulls it out until the end just sticks through a ring three or four times the diameter of the pipe it is the intention to make. The end of the strip is then firmly attached to an endless link belt which runs away from the furnace door, and the strip is pulled rapidly and with considerable force through this ring, with the result that the edges of the strip are turned up until they nearly touch each other, the outside assumes a circular shape and the strip of iron, which before had no resemblance to a pipe, now begins to look like one, with the exception that it is open all the way down one side.

The unfinished tube is now put upon a link belt conveying chain and taken to the next furnace, into which it is put and allowed to remain until the metal is brought to a welding heat. In this furnace there is a small narrow door about one foot from the end, through which a workman thrusts a pair of powerful tongs in the jaws of which is a heavy iron ring of the same inside diameter, as it is the intention to make the outside diameter of the pipe.

This ring by means of the tongs is slipped over the end of the unfinished tube, and a drag at the door of the furnace reaches in with another pair of tongs and grasps the end of the tube and at the same time attaches the tongs to the rapidly moving link belt chain, which runs away from the furnace door. In less time than is required to tell it the unfinished tube is drawn through this ring, and comes out with the edges, which were a short space apart, perfectly welded together, and the workman who held the tongs and ring is soaking them in cold water to cool them off for another operation.

The pipe is now placed on an endless belt chain, which carries it through a pair of wheels, placed one above the other, and having grooves in their rims corresponding to the different sizes of pipe, and just after passing through the wheels a solid block of iron of the correct diameter is passed through the tube to give it the proper inside diameter. During this operation a stream of water is kept running on the tube to wash off the scale and give it a smooth appearance. The pipes are now piled on a truck and allowed to cool, after which they are taken to a machine which cuts the ends off square and puts a thread on each end. This is done in what is called a pipe-threading machine, which holds the pipe in such a position that when it is revolved the ends press against a threaded die, which cuts a corresponding thread on the pipe, oil being used to keep the metal from heating.

The pipe is now ready to have the couplings screwed on, which is done by several boys. These couplings are made from bar-iron, about one-fourth of an inch thick and two and one-half or three inches wide, which is cut into suitable lengths and after being heated in a small furnace is bent into circular form. These forms are then brought to a welding heat and pounded under a small steam-hammer, which has a die in its face of the correct shape. Water is kept running on the hot iron during this operation to give it a smooth finish. The couplings are now taken to a machine to be threaded by regular pipe-machine taps in about the same way that nuts are tapped.

After one of these couplings have been screwed on to the end of each length of pipe it is taken to the testing room, where the pipe is filled with water under a pressure of 600 or 800 pounds. If water escapes at any point throughout the length of pipe it is defective and is thrown out, or, if possible, is cut down to a shorter length.

For a great many purposes it is desirable to galvanize pipe. This not only gives the pipe a smoother and better appearance, but also keeps it from rusting, and effectually stops up any pinholes or pores which may exist in the iron. When a pipe is galvanized, before it is threaded, it is taken to a wooden vat filled with an acid solution, and allowed to remain in the solution five or ten minutes, being constantly moved about and agitated by workmen. This operation removes all dirt, grease and other impurities which may be clinging to the surface of the tubes. They are then taken out of the vat and allowed to dry thoroughly, after which they are immersed in an iron vat filled with molten zinc and which is kept hot. As the zinc melts at a comparatively low temperature, 600 or 700 degrees, this is not a difficult task. Occasionally, if an especially fine job is desired, some tin is put in with the zinc. The tubes are allowed to remain in this zinc bath only a very few minutes, the workmen being able to tell readily by the appearance of the tubes when enough zinc clings to them. The tubes are then lifted out of the bath, and as each is drawn out a man passes a hook, similar to those used by packers in handling boxes, along the under side of the tube to remove any surplus zinc. The tube is now put on a slowly moving endless chain belt, so that the zinc coating dries while the tube slowly revolves, which prevents the zinc being thicker on one part than on another, which would otherwise be the case. The pipes are then taken to the threading machine, and the ends are threaded the same as before. The pipes are usually done up in bundles of from three to six, according to their size, and piled in racks, ready for shipment.

The process of making pipe described above is what is known as the butt-weld process, the name being taken from the manner in which the edges of the strips are butted together and welded. Another method of manufacture, which is known as the lap-weld process, makes a stronger pipe, but for all common uses the butt-weld is considered amply strong. In the lap-weld process, as the name implies, the strips or skelp are taken to a machine which pares both edges down to about one-half their original thickness, and when the tubes are ready for welding these edges are lapped over on each other about half an inch.

Tubes that have to stand great pressures are nearly always made in this way, as for instance, the pipes used in locomotive boilers, which are called boiler tubes or flues. The greatest possible care is exercised in the manufacture of these tubes. The material which goes into the skelp is very carefully selected, being usually made of charcoal iron, which during manufacture is frequently analyzed to see that it is of the required strength. When the tubes are ready for welding an iron ball is made to pass through each tube at the same time it is drawn through the iron welding ring. This has the effect of forcing the heated metal up against the ring with more than ordinary pressure and makes the weld more perfect.

Boiler tubes are being made quite extensively at present from steel, and the numerous discussions that daily take place as to the relative merits of steel and iron boiler tubes would fill a small volume. Up to the present time the trouble with a steel boiler tube has been that the weld was usually imperfect, owing to the fact that steel will not weld as readily as iron. This defect, however, is not as serious at present as it has been, as the peculiarities of steel are becoming better known. The difficulty has been that the manufacturers have been treating steel in the same manner as they were accustomed to treat iron, without stopping to consider that steel is of different structure from iron and must necessarily be treated in a manner peculiar to itself.

A pipe that is known as seamless-drawn tubing is manufactured quite extensively in England and Germany. As its name indicates, it is made without weld of any kind. The process of making this tubing is secret to a certain extent, and few, if any, Americans have attempted its manufacture. In a general way, it is made by heating a solid block of iron or steel through the centre of which a hole of a certain size has been drilled, and then, by the aid of special machinery, drawing out the metal around this hole until a tube of the required length and diameter is obtained.

By this method, it is possible to make a very strong tube, and if its cost were not so great, tubes made in this way would soon displace all others. The tubes used in the framework of bicycles are made from drawn tubing, which is nearly all imported.

For the conveying of water no pipe has yet been found that in any way compares with ordinary cast-iron pipe, and its uniform use all through the civilized world will readily confirm this fact. It is perfectly smooth and uniform in the bore, giving little resistance to the flow of water; the lengths are easily handled and joined together, and in addition to this it will stand an enormous pressure where equally distributed, whether applied externally or internally. This pipe is cast in a mold of sand, having a core of the same material for its centre. Both the mold and core are thoroughly baked before the molten iron is run in, to prevent any mixing of sand or dirt with the iron and greatly decreasing the liability of blow-holes in the finished pipe. The pipe is cast on end in lengths of twelve feet, which makes the mold twelve feet high. Casting in this manner secures a perfectly solid casting, cylindrical in bore and of uniform thickness, which would not be the case were the pipe cast on its side. The casting, after it has been perfectly cleaned and inspected, is placed in an oven and heated until the pores of iron are well opened, when it is immersed in a bath of a patented coal-tar varnish, where it is allowed to remain until a coating is evenly formed, both inside and outside of the casting. This coating prevents corrosion and guards against any foreign matter adhering to the inside of the pipe. It also forms inside of the casting an enamelled surface for the flow of the water, which greatly lessens friction and makes less power necessary to force the water through a given length of pipe.

A projection called a bell is cast on one end of each length of pipe, into which the other end fits, and the joint is made water-tight by packing with lead and oakum. These cast-iron water pipes are made in all sizes from three inches to seventy-two inches in diameter. They are a familiar sight along the street curb of any large city, especially where the streets are torn up as frequently as they are in Chicago.

A Monster Wheel.

The wheel which they are erecting in London in connection with the coming Empire of India exposition will be much larger than the Ferris wheel, and it is now very near completion. The top of the Chicago wheel was 258 feet above the earth. The London wheel will attain to a height of 300 feet, and from its top the passengers in the small carriages which are to be carried around its periphery will secure a magnificent view of London and its environments.

There will be forty of these carriages attached to the wheel, and among these will be five "smoking saloons," five "non-smoking saloons" and thirty ordinary cars. The "non-smoking saloons" will correspond with the first-class carriages found on English railways, and an extra price will be charged for a seat in one of them, so that the socially exclusive may not rub elbows with the common herd, even among the clouds.

Each one of these carriages is designed to carry forty persons, and the wheel, when fully laden, will carry 1,600 passengers. The construction of this enormous wheel was commenced about a year ago and the English engineers have been working at it ever since. The Ferris wheel was completed in a few months without an accident.

The English engineers, however, preferred to go slower, and thus lost the opportunity to make the wheel profitable at the exhibition held at Earl's court, where the fair grounds are situated, during last summer. The enormous size of the parts, however, afforded one reason why the wheel should be carefully and slowly put together.

It is about two-thirds finished at the present time. The work on the wheel has been going on all winter, and about 100 tons or iron per month have been added to the structure. The total weight of steel in the wheel and its supporting columns at the present time is 1,300 tons.

Their Plea.

(For The Times).

Sandy sent a telegram,
And the message it was lost;
Sandy sued the company,
For the trouble it had cost.

The lawyer for the other side,
Quite a wise and witty man;
Produced a printed message blank,
And read the words, which ran:

This company cannot be held
For a loss occasioned by
A storm, or other act of God;
So we on this rely.

God made the boy; therefore, you see,
We are not at all to blame;
For if the boy had not been born,
You'd have had no loss to claim.

F. J. C., Jr.

THE QUERY COLUMN.

SOME OF THE CONTENTS OF THE TIMES' MAIL BAG.

Answers to Inquiries on a Variety of Subjects Received From Our Subscribers.

Please tell me how to play euchre with dominoes? SUBSCRIBER.

The game is played by four persons. The pieces rank thus: The trump suit is determined by that part of the domino turned up which has the highest number of spots. Thus, if six-ace is turned up, six is trump suit. The double is right bower, the next lower double left bower (except when blank is trump, then double-six is left bower). After the bowers, the value of the dominoes is governed by the number of spots following the trump; thus, six being trump, double-six is right bower, double-five left bower, and then come six-five, six-four, six-three, six-two, six-one, six-blank. When blank is trump the sequence is double-blank, double-six, blank-six, etc. When a suit is not trump, the highest domino is the double, and then down. The lowest domino determines the dealer; the pieces being shuffled, each player draws five, and the dealer, from the remainder, turns up the trump. The privilege of turning the trump passes as in whist. Only the player who takes up, orders up, assists, or makes the trump has the right to lead; thus the eldest hand does not always lead. With this exception, domino-euchre is like the card game.

* * *

Was McClellan an Irishman? Against whom and when did he run for the presidency? P. C.

General McClellan was not an Irishman; he was of Scotch descent. He ran for the presidency in 1864, on the Democratic ticket, against Abraham Lincoln.

* * *

Where was Daniel Webster born, where did he die, and where is he buried? TILTON.

Webster was born at Salisbury, New Hampshire, January 18, 1782. He died at Mansfield, Massachusetts, October 24, 1852. He was buried there very quietly October 29th.

* * *

What was Grant's majority over Greeley in 1872, in New York? A. D. R.

Grant's vote was 440,738 in New York State, and Greeley's 387,282; so Grant's plurality was 53,456. The 1,434 votes for O'Conor and the 291 temperance votes reduced Grant's majority to 51,831.

* * *

What were the religious views of the great preacher Spurgeon? Was Abraham Lincoln a member of any Church? O. R. H.

Mr. Spurgeon was a Baptist. President Lincoln was a member of no Church. He attended the Methodist Church as often as any other.

* * *

How are goldfish caught, and where? H. A. S.

The goldfish (carassius auratus) is a species of carp and came originally from China. It is common everywhere now and some open ponds are stocked with the fish. The fish are caught with nets. They can be had from any bird dealer.

* * *

When did the first line of steamers begin running between San Francisco and New Zealand? W. J. H.

In 1869, soon after the Pacific railroad was opened. The Pacific Mail Steamship Company began the line, but gave it up later to the Oriental and Occidental Steamship Company, owned by the Oceanic Steam Navigation Co., limited, a branch of the White Star line.

* * *

When does the United States steamship Constellation sail from Newport and where will she go? A. E. H.

The constellation is still at Newport, though she will soon leave on her regular summer trip. No date has been fixed for her sailing yet, but as a rule she sails early in June, generally crossing the ocean to the Azores.

* * *

How many railroads enter New York city? How many railroads occupy the Grand Central depot there? C. H. T.

The New York Central, the Harlem, and New York and Northern—these last being divisions of the Central—and the New York, New Haven and Hartford railroads enter New York city. The New York Central, the Harlem and the New Haven occupy the Grand Central depot.

* * *

When did street-cars first run in New York and in Philadelphia? When was the first elevated railroad run? F. A. W.

In New York city the first street-cars were run by the New York and Harlem railroad in 1852; the line ran from Prince street to Thirty-fourth. The first elevated railroad was opened in New York in 1868. The first horse-cars in Philadelphia were run in 1858, according to the Cyclopaedia.

* * *

What general officers of the line have retired for age during the last five years? SOPHOMORE.

Major-General Oliver O. Howard, November 8, 1894; Major-General Alexander McD. McCook, April 23, '95; Brigadier-General Benjamin H. Grierson, July 8, 1890; Brigadier-General John Gibbon, April 20, 1891; Brigadier-General August V. Kautz, January 5, 1892; Brigadier-General Davis S. Stanley, June 1, 1892; Brigadier-General Eugene A. Carr, February 15, 1893; Brigadier-General William P. Carlin, November 24, 1893.

* * *

What relation was John Quincy Adams, nominee for Vice-President on the ticket with Charles O'Conor in 1872, to the Adams family of Massachusetts? C. A. B.

He was a member of the Massachusetts family of Adams, being the eldest son of Charles Francis Adams, who was a son of President John Quincy Adams. J. Q. Adams II, never accepted the nomination of the straight-out Democrats. He said he would run if Mr. O'Conor would, but Mr. O'Conor would not.

* * *

What does "S. S." mean? Would a law paper be good without these letters? DIAMOND.

S. S. is the abbreviation of "scilicet," a Latin word meaning "to-wit." The expression is one of limitation and generally, if not always, is used in affidavits along. Those begin "Town of Blank, county of Blank, S. S.," that is, "The people of the town of Blank, in the county of Blank, in the person of John Doe," make the affidavit. A legal paper would be valid without the letters.

* * *

In what foreign countries and in what States of the Union are women fully enfranchised, and in what countries are they partly enfranchised? CITIZEN.

So far as we know, no foreign country has enfranchised women completely. In Colorado and Wyoming they are, and in Kansas and Utah they will be completely enfranchised. In practically all the other States of the Union, and in many, perhaps most, foreign countries, women vote at certain elections—for school officers and for certain local officers.

* * *

Was New York city named after the Duke of York or after the city of York? A. U. R.

It was named in honor of the Duke of York, the brother of the King of England and Scotland. In 1664, the King, Charles II, gave to the Duke all lands and rivers between the west bank of the Connecticut and the east side of the Delaware, and on September 8th, the town of New Amsterdam surrendered to the Duke's deputy-governor, Colonel Nicholls, and became New York. But the Duke's title came from the English city.

* * *

Please name the general officers of the line of our army, and say when each retires for age? SOPHOMORE.

Lieutenant-General John M. Schofield, retires September 29, 1896; Major-General Nelson A. Miles, retires August 8, 1903; Major-General Thomas H. Ruger, retires April 2, 1897; Major-General Wesley Merritt, retires June 16, 1900; Brigadier-General John R. Brooks, retires July 21, 1902; Brigadier-General Frank Wheaton, retires May 8, 1897; Brigadier-General Elwell S. Otis, retires March 25, 1902; Brigadier-General James W. Forsyth, retires August 26, 1898; Brigadier-General Zenas R. Bliss, retires April 17, 1899, and Brigadier-General John J. Coppinger, retires October 11, 1898.

* * *

From the Canadian frontier to the Gulf, from the Atlantic to the Pacific, what is the most central point? E. T. H.

Emporia, Kansas, is almost the central point of the United States, including Alaska. The central point between the most easterly and the most westerly points of the entire United States—that is, between Quoddy Head, Maine, and Attoo Island, Alaska—is about 280 miles west of San Francisco, in the Pacific Ocean. The central point between the most easterly, the most westerly, the most northerly (Point Barrow, Alaska), and the most southerly (Key West, Florida), is about 30 W. longitude and 55 north latitude, or in British Columbia, at some unnamed point.

* * *

Please give me a full description of the four-masted, full-rigged ship Shenandoah? SAILOR.

The Shenandoah was launched at Bath, Maine, in December, 1890, having been built by A. Sewall & Co. She is 296.7 feet long, 40.1 broad, and 29.1 deep, with a corrected tonnage of 3,258. She has a double deck, is built of white oak and yellow pine, and is iron and copper fastened. Her first three masts are 38 inches in diameter at the deck, and are 217 feet high from deck to truck; they are in three pieces, of which the lower is 98 feet long; the top-mast 56 and top-gallant, 68 feet long. We do not know the dimensions of the spanker mast. The Shenandoah can spread 11,000 yards of canvass; she carries a crew of twenty-two men, and sets her sails by steam.

SLANDERS ON BIRDS REFUTED.

Popular Idea of Their Destructiveness Disproved.

WASHINGTON, May 6.—Dr. C. Hart Merriam, chief of the division of ornithology of the Agricultural Department, has been for several years engaged in examining and analyzing the contents of the stomachs of hawks, owls, crows, blackbirds, meadow larks and other birds of North America which are supposed to be strikingly beneficial or injurious to the crops of farmers.

The stomachs of over 7,000 birds, taken at different seasons of the year, have been already analyzed and the contents determined, while some 12,000 are still unexamined. The results in some cases have been remarkable, showing in several notable instances that popular ideas regarding the injurious effects of certain birds were wholly mistaken, and that they have been the victims of unjust prosecution. This had been found to be especially the case with hawks and owls, for the slaughter of which many States give bounties. Pennsylvania in two years gave over $100,000 in hawk and owl bounties. Examinations of the stomachs of these birds proved conclusively that 95 per cent. of their food was field mice, grasshoppers, crickets, etc., which were infinitely more injurious to farm crops than they. It was found that only five kinds of hawks and owls ever touched poultry, and then only to a very limited extent. A bulletin now about going to press on the crow also shows that bird is not so black as he is painted by the farmer. The charges against the crow were that he ate corn and destroyed the eggs and poultry and wild birds. Examination of their stomachs showed that they eat noxious insects and other animals, and that although 25 per cent. of their food is corn, it is mostly waste corn picked up in the fall and winter. With regard to eggs, it was found that the shells were eaten to a very limited extent for the lime. They eat ants, beetles, caterpillars, bugs, flies, grubs, etc., which do much damage. Bulletins are also being prepared on the cuckoo and other black birds, king birds, meadow larks, cedar birds, thrushes, catbirds, sparrows, etc. In many cases popular ideas are found to be untrue. In the case of the king bird, killed by the farmer under the impression that he eats bees, it was found that he ate only drones and robber flies, which themselves feed on bees, and which destroy more bees in a day than the king bird does in a year. The king bird, therefore, is to be encouraged rather than slaughtered. The cuckoos are also found to be very useful birds in this country. Because the European cuckoo robbed nests and laid therein its own eggs, popular fancy attributed the same vicious habit to our own cuckoo. He is, however, not depraved like his European namesake, but a very decent fellow, who does much good in the destruction of insects. The result of this work, Dr. Merriam says, will enure to the protection of beneficial birds and the destruction of injurious. It will also, he says, go missionary work in the matter of State bounties, most of which are ill-directed, and none of which, he thinks, have good results. The crusade, for instance, against the English sparrow he said resulted in the destruction of many of our native sparrows. Bounties on panthers, wolves, etc., had in the past resulted in the manufacture of bogus scalps.

Dr. Merriam is also preparing a map showing the life zones of the United States for birds, mammals, reptiles and plants, a work on which he has been engaged for sixteen years.

Carriage Shafts of Pulp

New uses are being constantly found for wood pulp, says an exchange. One of the latest devices is the manufacture of carriage shafts, wood pulp in conjunction with iron being the chief material, with a covering of leather. Patents for the invention have been taken out in France, England and Belgium, and it is claimed that the shafts are very strong and unbreakable, a point regarded as important, so far as safety of passengers is concerned. These shafts are already in use in Paris and they are appreciated by cab owners, not only for their strength, but for their comparative cheapness.—Paper Mill.

Dr. Hubbard, who is an authority on arboriculture, says that the cutting down of forest trees in the Mississippi Valley has resulted, as it will result everywhere, in making it hotter in summer and colder in winter.

BEFORE trying various remedies and physicians. My finger nails came off, and my hair came out, leaving me perfectly bald. I then went to I could get relief from a most horrible blood disease, I had spent hundreds of dollars

HOT SPRINGS

but very soon became disgusted, and decided to try S.S.S. The effect was truly wonderful. I commenced to recover after taking the first bottle, and by the time I had taken twelve bottles, I was entirely cured—cured by S.S.S. when the world-renowned Hot Springs had failed. WM. S. LOOMIS, Shreveport, La.

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Is a necessity because the tonic of winter air is gone, and milder weather, increased moisture, accumulated impurities in the blood and debilitated condition of the body, open the way for that tired feeling, nervous troubles, and other ills. The skin, mucous membrane and the various organs strive in vain to relieve the impure current of life. They all welcome

Hood's Sarsaparilla

to assist Nature at this time when she most needs help, to purify the blood, tone and strengthen the laboring organs and build up the nerves.

"I was in a run down condition. I was weak and nervous and could not eat anything. I began taking Hood's Sarsaparilla and before I had finished the first bottle I could see a change for the better. I kept on taking it and I am now so that I can eat heartily and can do my work." MRS. JOHN W. PEACHEY, Alloway, N. J.

Purifies The Blood

"I have found Hood's Sarsaparilla a good spring medicine and it relieves that tired feeling." BURDETTE YOUNG, West Oneonta, New York. Get only HOOD'S.

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Too much cannot be said of the WORKMANSHIP and TIME-KEEPING QUALITIES of these Watches, and I would be pleased to show them to any desiring to purchase a fine time-piece.

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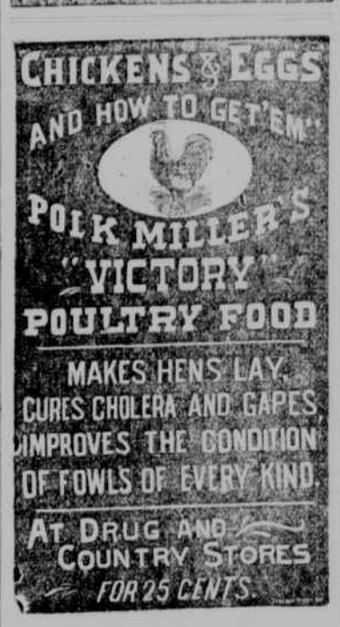

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de29

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SCHEDULE IN EFFECT SUNDAY, MAY 5, 1895.

S. A. L.	No. 403. Daily.	No. 23. Daily.
Lv. Richmond	12:03 A. M.	9:10 A. M.
Lv. Petersb'g—Union Station	1:05 A. M.	9:52 A. M.
Lv. Petersb'g—Washington street	1:13 A. M.	10:02 A. M.
Ar. Weldon	2:48 A. M.	11:48 A. M.
Ar. Henderson	4:14 A. M.	1:45 P. M.
Ar. Durham	5:20 A. M.	4:09 P. M.
Ar. Raleigh	6:17 A. M.	5:34 P. M.
Lv. Raleigh	6:22 A. M.	5:40 P. M.
Ar. Southern Pines	7:10 A. M.	6:04 P. M.
Ar. Hamlet	7:54 A. M.	7:00 P. M.
Ar. Wadesboro	8:26 A. M.	7:35 P. M.
Ar. Monroe	9:22 A. M.	8:55 P. M.
Ar. Charlotte	10:25 A. M.	10:10 P. M.
Lv. Monroe	9:37 A. M.	9:15 P. M.
Ar. Chester	10:51 A. M.	10:42 P. M.
Ar. Clinton	12:04 P. M.	12:13 A. M.
Ar. Greenwood	12:48 P. M.	1:09 A. M.
Ar. Augusta	5:20 P. M.	9:35 A. M.
Ar. Abbeville	1:12 P. M.	1:40 A. M.
Ar. Elberton	2:04 P. M.	2:52 A. M.
Ar. Athens	3:03 P. M.	4:03 A. M.
Ar. Macon	7:00 P. M.	.....
Ar. Atlanta	4:00 P. M.	5:20 A. M.

No. 23—Daily, for Atlanta and points beyond, with through Pullman service.

No. 403—"Vestibuled Limited Train," Buffet Sleepers Richmond to Atlanta. Close connections at Atlanta for New Orleans and all points South and Southwest, and at New Orleans with the Southern Pacific and Texas and Pacific railroads to all Texas points. No extra charge on "Vestibuled Trains."

ARRIVE RICHMOND.

No. 402—"Atlanta Special, "Vestibuled Limited Train"—6:40 A. M. daily.

No. 78—Mail and Express, 6:35 P. M. daily.

For tickets, Pullman reservations, &c., apply to H. D. Owen, ticket agent, Byrd-Street Station; Richmond Transfer Company, 901 east Main street, and company's office, 836 east Main street.

E. ST. JOHN, Vice-President.
T. J. ANDERSON, Gen'l Pass. Agent.
JOHN H. WINDER, General Manager.
H. M. BOYKIN, City Passenger Agt., 836 east Main street.

ATLANTIC COAST LINE.

SCHEDULE EFFECTIVE SUNDAY, MAY 12, 1895.

TRAINS LEAVE RICHMOND—UNION DEPOT.

9:00 A. M., Arrive Petersburg 9:51 A. M., Norfolk 11:35 A. M. Stops only at Petersburg, Waverly and Suffolk. Va.

9:05 A. M., Arrives Petersburg 9:55 A. M., Weldon 11:48 A. M., Fayetteville 4:20 P. M., Charleston, 11:34 P. M., Savannah 1:19 A. M., Jacksonville 7:00 A. M. Connects at Wilson with No. 41, arriving Goldsboro 2:00 P. M., Wilmington 5:45 P. M. Pullman Sleeper New York to Port Tampa.

2:55 P. M., Local, arrives Petersburg 3:42 P. M. Makes all stops.

6:20 P. M., Arrives Petersburg 7:15 P. M., Norfolk 10:25 P. M. Makes all stops.

7:13 P. M., Arrives Petersburg 7:46 P. M., Weldon 9:27 P. M., Fayetteville 12:33 A. M., Charleston 6:10 A. M., Savannah 7:55 A. M., Jacksonville 12:40 P. M.

NEW LINE TO MIDDLE GEORGIA POINTS.—Arriving Aiken 1:22 A. M., Augusta 3 A. M., Macon 11 A. M., Atlanta 12:15 P. M. Pullman Sleepers New York to Charleston, Jacksonville, Port Tampa, Aiken, Augusta and Macon.

11:40 P. M., Arrive Petersburg 12:25 A. M., Burkeville 2:11 A. M., Lynchburg 4:55 A. M., Roanoke 6:55 A. M., Bristol 11:50 A. M. Pullman Sleeper Richmond to Lynchburg.

12:32 A. M., Arrives Petersburg 1:05 A. M., Weldon 3:30 A. M., Henderson 4:04 A. M., Raleigh 5:17 A. M., Elberton 2:04 P. M., Atlanta 3:00 P. M. Pullman Sleeper Washington to Atlanta.

7:25 A. M., SUNDAY ACCOMMODATION, arrives Petersburg 8:18 A. M. Makes all stops.

4:40 P. M., SUNDAY ACCOMMODATION, arrives Petersburg 5:28 P. M. Makes all stops.

TRAINS ARRIVE RICHMOND.

3:40 A. M., From Jacksonville, Savannah, Charleston, Atlanta, Macon, Augusta and Weldon.

6:40 A. M., Atlanta, Athens and Raleigh.
8:25 A. M., Lynchburg and the West.
11:05 A. M., Norfolk, Suffolk and Petersburg.

6:15 P. M., Jacksonville, Savannah, Charleston, Wilmington, Goldsboro and Weldon.

7:00 P. M., Norfolk, Suffolk, Waverly and Petersburg.

8:35 P. M., Lynchburg and the West.
9:40 A. M., Petersburg Sunday Accommodation.

7:35 P. M., Petersburg Sunday Accommodation.

T. M. EMERSON, Traffic Manager.
J. R. KENLY, General Manager.
C. S. CAMPBELL, D. P. A.

N. & W. R.R. Norfolk & Western R.R.

SCHEDULE IN EFFECT MAY 12, 1895.

LEAVE RICHMOND (DAILY), BYRD-STREET STATION.

9:00 A. M., RICHMOND AND NORFOLK VESTIBULE LIMITED. Arrive Norfolk 11:20 A. M. Stops only at Petersburg, Waverly, and Suffolk. Second-class tickets not accepted for passage on this train.

9:05 A. M., THE CHICAGO EXPRESS, for Lynchburg, Roanoke, Bluefield, Pocahontas, Kenova, Columbus and Chicago. Pullman Buffet Sleeper Roanoke to Columbus without change. Also, for Pulaski, Bristol, Knoxville, Chattanooga, and intermediate points.

7:02 P.M., For Suffolk, Norfolk, and intermediate stations; arrives at Norfolk at 10:25 P. M.

11:40 P. M., For Roanoke, Radford, Pulaski and Bristol. Connects at Roanoke with Washington and Chattanooga Limited. Pullman Sleepers Roanoke to Memphis and New Orleans. Dining Car attached. Also, for Bluefield and Pocahontas. Also, for Rocky Mount and all stations on Winston-Salem division. Pullman Palace Sleeper between Richmond and Lynchburg. Berths ready for occupancy at 9:00 P. M. Also, Pullman Sleeper Petersburg to Roanoke.

Trains arrive Richmond from Lynchburg and the West daily at 6:40 A. M. and 8:20 P. M.; from Norfolk and the East at 11:05 A. M. and VESTIBULED LIMITED 7:00 P. M.

R. W. COURTNEY, District Passenger Agent.
W. B. BEVILL, General Passenger Agent.
General Offices—Roanoke, Va.

STEAMBOATS.

VIRGINIA NAVIGATION COMPANY'S JAMES RIVER LINE for the seasons, cheapest and most pleasant route to Norfolk, Portsmouth, Old Point, Newport News, Claremont and James River landings. Connections—At Old Point and Norfolk for Hampton and Smithfield, Va., Washington, D. C., Baltimore, Philadelphia and New York. James river by daylight. Great tourist line. Jamestown, Dutch Gap and war scenery. Rates less than half charged by rail. Fare to Portsmouth, Old Point and Norfolk, $1.50 and $1. Steamer Ariel leaves Richmond every MONDAY, WEDNESDAY and FRIDAY at 7 A. M. (STREET CARS GO DIRECTLY TO STEAMER'S WHARF) for above named places. Tickets on sale on steamer and at Garber's Agency, No. 901 Main street. Staterooms engaged for day or night. Music by a grand orchestrion.

FREIGHT.—Freight received daily for above-named places and Eastern North Carolina; also for Eastern Shore of Virginia and all regular landings on the James river, at LOWEST RATES, and through bills issued.

IRVIN WEISIGER, Superintendent.
EDWARD E. BARNEY, President.
General Offices—Planters Bank Building.

PHILADELPHIA, RICHMOND AND NORFOLK STEAMSHIP COMPANY.

Appointed sailing days: Every TUESDAY and FRIDAY at 1 P. M., and every SUNDAY at 5 A. M.

Freight for Tuesday's and Friday's steamers received until sailing hour; for Sunday's steamer till 5 P. M. Saturday. Freight received daily until 5 P. M.

Fare, $6.

For further information apply to J. W. McCARRICK, General Southern Agent, office Rocketts.

W. P. CLYDE & CO., General Agents, Philadelphia.

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RAILROADS.

R., F. & P. R. R.

SCHEDULE IN EFFECT APRIL 24, 1895.

LEAVE BYRD STREET STATION

7:00 A. M., Daily for Washington and points North. Stops at Elba and local stations. Pullman Car.

12:00 noon, Daily except Sunday for Washington and points North. Stops at Elba, Ashland, Doswell, Milford, Fredericksburg, Brooke and Widewater. Parlor Car. Also connects with Congressional Limited at Washington.

7:10 P. M., Daily for Washington and points North. Stops at Elba, Ashland, Doswell, Milford, Fredericksburg, Brooke and Widewater and other stations Sundays. Sleeper Richmond to New York.

ARRIVE BYRD STREET STATION

8:40 A. M., Daily. Stops at Widewater, Brooke, Fredericksburg, Milford, Doswell and Ashland, and other stations Sundays. Sleeper New York to Richmond.

2:45 P. M., Daily except Sunday. Stops at local stations and Elba. Parlor Car from Washington.

6:53 P. M., Daily. Stops only at Fredericksburg, Doswell and Ashland. Pullman cars from New York and Washington.

12:25 A. M., Daily. Stops at principal local stations and Elba. Sleeping Car. Connects with Congressional Limited between New York and Washington.

FREDERICKSBURG ACCOMMODATION.
DAILY EXCEPT SUNDAY.

4:00 P. M., Leaves Byrd