PART ONE. **The Wheeling Daily Intelligencer.** Pages 1 to 8.

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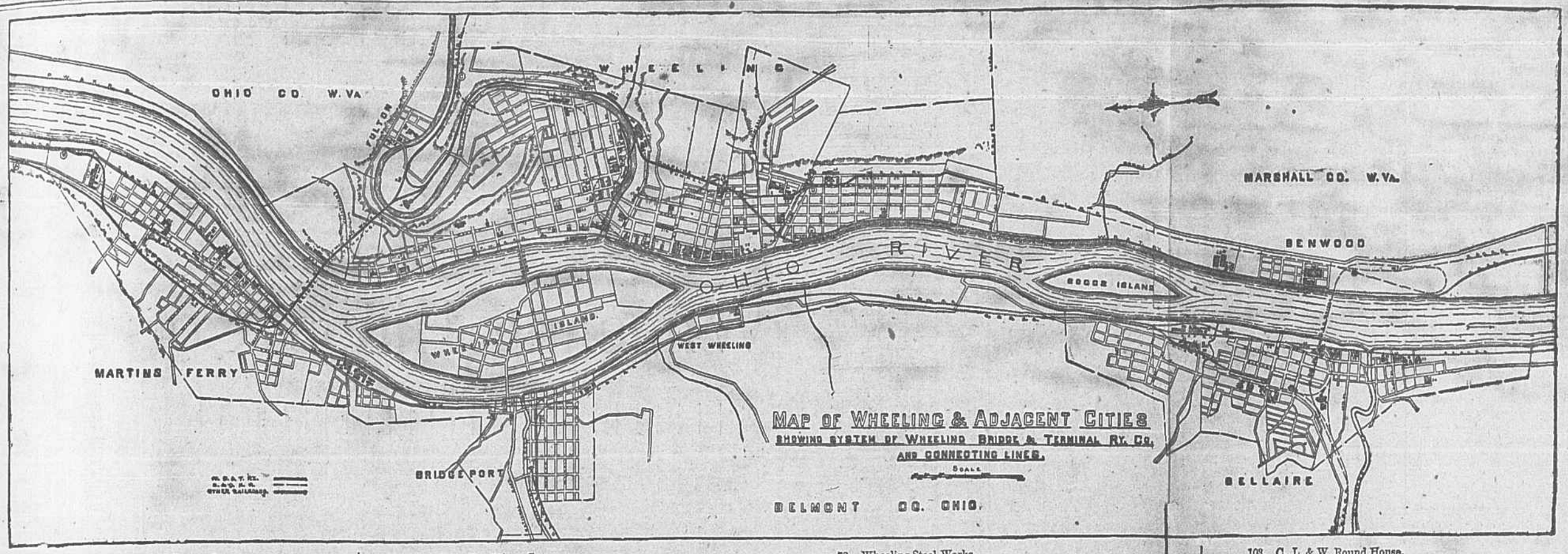


Wheeling, Fulton and Benwood.

1. Wheeling, Iron & Nail Co.
2. North Wheeling Glass Co.
3. Jos. Bell Stove Foundry.
4. Ohio Valley China Co.
5. Wilson Planing Mill.
6. Reservoir.
7. City Water Works.
8. Smith Brewery.
9. Stifel Calico Print Works.
10. Engine House, W., B. & T. Ry. Co.
11. Freight House, W., B. & T. Ry. Co.
12-14. F. Schenk & Sons' Pork Packing Works.
13. Hanna & Clemmans' Paper Mill.
15. Market House.
16. P., W. & Ky. Passenger Station.
17. Windsor Hotel.
18. Stamm House.
19. P., C. & St. L. and O. R. Freight Station.
20. B. & O. Freight Station.
21. B. & O. Passenger Station.
22. McLure House.
23. Pollock Flour Mill.
24. Postoffice.
25. B. Fisher Iron Foundry.
26. Court House and City Hall.
27. Whg. & Elm Grove Station and Shops.
28. Flaccus Bros', Fruit Packing Works.
29-30. West Virginia Tobacco Co.
31. Union Passenger Station, W., B. & T. Ry.
32. Union Freight Depot.
33. Beltz & Fluding Planing Mill.
34-36. City Gas Works.
35. Camden Oil Co.
37. Wheeling Hinge Co.
38. McMechen & Sons, Fruit Packers.
39. Engine House, W., B. & T. Ry. Co.
40-41. Central Glass Works.
42-44-45. Reymann Brewing Co.
43. Reilly's Pork House.
45 "a" Wheeling Corrugating Co.
46. Whitaker Iron & Steel Works.
47. Arbenz Furniture Co.
48. Holliday's Planing Mill.
49. Centre foundry.
49 a. Wheeling Lamp & Stamping Co.
50. Warwick Pottery.
50 a. J. Voeckler Tannery.
51. Wheeling Ice & Storage Co.
51 a. Market House.
52. Klieves, Kraft & Co., Planing Mill.
53. Schmulbach Brewing Co.
54. J. G. Hoffman Tannery.
55. Riverside Nail Mill.
56. Belmont Furnace & Nail Mill.
57. Spears Axle Co.
58. B. & O. R. R. Shops.
59. A. J. Sweeney & Son's Foundry.
60. Wheeling Pottery.
61. Riverside Iron Works.
62. LaBelle Iron Works.
63. LaBelle Pottery.
64. Schmulbach Brewing Co.
65-66. Hobbs Glass Co.
67. Round House O. R. R. R.
68. Bloch Bros. Tobacco Co.
69. Riverside Furnaces & Tube Works.
70-71. Benwood Iron Works.
72. Wheeling Steel Works.
73. B. & O. Station.

Bellaire.

74. Bellaire Goblet Co.
75. Enterprise Glass Co.
76. Bellaire Window Glass Co.
77. Ohio Valley Foundry Co.
78. National Glass Works.
79. Ætna Glass and Manufacturing Co.
80. Buckeye Lantern Co.
81. Globe Flour Mill.
82. B., Z. & C. R. R. Passenger Station.
83. Bellaire City Mills.
84. B. & O. Passenger Depot.
85. C. & P. Freight Depot.
86. B. & O. Round House.
87. B. & O. Freight Station.
88-89. Belmont Glass Works.
Bellaire Stamping Co.
90. Planing Mill.
91. C., L. & W. Passenger Station.
92. Bellaire Bottle Co.
93. Lantern Globe Co.
94. C. & P. Passenger Station.
95. C. & P. Shops.
96-97. Bellaire Nail Works.
98. Union Glass Co.
99. Crystal Window Glass Co.

West Wheeling.

100. Paper Mill.

Bridgeport.

101. Crystal Glass Works.
102. C., L. & W. Freight Station.
103. C., L. & W. Round House.
104. Rhodes Flour Mill.
105. C., L. & W. Passenger Station.
106. C. & P. Passenger Station.
107. C. & P. Freight Station.
108. Baggs & Sons' Lumber Co.
109. Koehnline Bros'. Ice Houses.
110. Bridgeport Glass Co.
111. Ætna Iron and Nail Works.
112. Standard Iron Co.

Martin's Ferry.

113. Martin's Ferry Keg & Barrel Co.
114. Spence Machine Co.
115. Union Flint Glass Works.
116. Ohio City Foundry.
117. Ohio Valley Agricultural Works.
118. Buckeye Glass Co.
119. Benwood Iron Works—Furnace.
120. C., L. & W. Depot.
121. C. & P. Freight Depot.
122. Martin's Ferry Stove Works.
123. Laughlin Nail Co.
124. W. B. & T. Passenger Station.
125. Elson Glass Co.
126. Kerr & Son's Planing Mill.
127. Exley Planing Mill.

"A." Junction of the W. B. & T. Ry. with the Cleveland & Canton and Cleveland & Pittsburgh Railroads.
"B." Junction of the W. B. & T. Ry. with the Wheeling & Lake Erie and Cleveland, Loraine & Wheeling Railroads.
"C. & D." Junction of the W. B. & T. Ry. with the B. & O. Railroad.
"E." Junction of the W. B. & T. Ry. with the Ohio River and Pittsburgh, Wheeling & Kentucky Railroads.

FIVE MILLION

DOLLARS TO BE EXPENDED HERE

By the Wheeling Bridge and Terminal Company.

THE GREATEST ENTERPRISE

In the History of Wheeling Nearing Consummation.

THE GIGANTIC PROPORTIONS

Of an Undertaking Giving the City Access to the Entire World.

THE GOOD ALREADY DONE

Not So Great as that Which will be Accomplished.

The Details of Wheeling's Great Railroad Development, and the Promise in Her Fine Union Bridge and Complete Railway Terminal System. The Men to Whom the Honor of the Great Achievement is Due---What it Signifies for the Future of the City.

FAR the largest and most important single enterprise in or about Wheeling, is the Wheeling Bridge & Terminal Railway Company, which has completed a bridge across the Ohio river and is rapidly completing an extensive terminal system of railroad on both sides of the river. Its first corporate name was the Wheeling & Harrisburg Railway Company with charter right to construct a railroad from the west shore of the Ohio river up Wheeling creek in the direction of Connellsville, Pa., with fifty miles of lateral and branch lines. Without any change or diminution of corporate rights, the name has been changed to "Wheeling Bridge & Terminal Company." For years the live and progressive business men and manufacturers of Wheeling made efforts to secure a belt railroad connecting the leading concerns which were large shippers of freight with the several railroads; for years it was the desire to bring into the city the railroads on the Ohio side, which while nominally having their termini at Wheeling, really ended outside the city limits. A union railroad bridge and a thorough terminal system meant so much for the city that several times organized efforts were made to secure them, but it required vastly more capital to carry out the scheme than the local organizers could command.

At length Judge R. H. Cochran, who, while a resident of Wheeling and afterwards, had seen enough of the possibilities of such a system to have confidence in its profitableness, enlisted with him a number of eastern capitalists, and the work was begun which is now approaching completion.

WHAT THE SYSTEM ACCOMPLISHED.

Without discussing the possibilities of the local bridge and tracks as a connecting link in a great trunk line, it is difficult to overestimate the value to the community of the Terminal system as a local terminal system only. It gives several new railroads equal facilities with the most favorably situated old ones, and it places every large manufacturing establishment practically on every line of road that enters the city. It gives Wheeling railroad facilities surpassed in no city, and which she could not obtain in any other way than by such a system of tracks, owing to her hemmed-in position.

The system connects all the railroads on both sides of the river, furnishes switching and terminal facilities for them, and enables them to reach all the more important manufacturing and shipping points in Wheeling, Fulton and Benwood, W. Va., and Martin's Ferry, Bridgeport and Bellaire, Ohio, and it reaches out to and commands all the available railroad approaches to the city of Wheeling. It is also designed and constructed to form a connecting link between the proposed South Pennsylvania railroad and the various roads in Ohio terminating opposite Wheeling and leading to Fairport, Cleveland, Lorain, Huron and Toledo, and puts the city of Wheeling on a line from New York to Chicago about 100 miles shorter than the Pennsylvania railroad, and 130 miles shorter than the Lake Shore & Michigan Southern railroad. The company is incorporated under the laws of West Virginia, is independent of and not allied with any other company, and the use of its system is open to all railroads upon equal terms.

THE GREAT UNION BRIDGE.

The channel span of this massive, but graceful structure, is near the Wheeling shore, and is 525 feet long between the centre piers, the top plate or sky lines being 175 feet above the river, and the lower chord line being 92 feet above low water mark. Next it on the Ohio side are three spans of 250 feet each, over the river, and a trestle viaduct of 353 feet in 30 to 70 feet spans, on the Ohio side, and on the West Virginia side there is one 152 feet river span and four land spans of 74 to 108 feet lengths, making a continuous steel structure 2,100 feet long.

A novel form of viaduct is built on the Ohio side to pass over two streets and two railways at right angles, and over the street in line with and directly under the viaduct, the viaduct forming an arch over the latter street, and many novel features are involved in carrying the structures over the railway, street and mill on the Wheeling side.

The upper chord or sky line of the channel span is in the form of a parabolic arc springing from the piers to a height of 85 feet above. The total weight of this span is 4,000,000 pounds or 2,000 tons, and it is the heaviest double track span in America. Of the weight above named, no less than 93,000 pounds are steel rivets.

DETAILS OF CONSTRUCTION.

The main top chords and inclines and posts are in box form, 36 by 33 inches, and the inclined end parts, which are the heaviest single pieces in the structure, are 40 feet long and weigh each 21½ tons. Along the center of each side of the span is a line of heavy stiffening chords for additional safety, so that in case of derailment of a train in ordinary motion, the structure would not be appreciably affected.

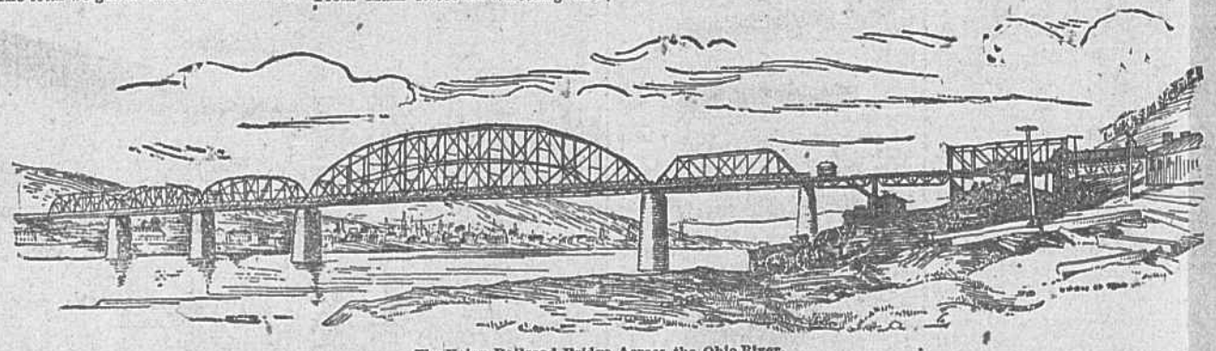
A unique feature of the channel span, also of the 250 feet spans, is the separation of the bottom chord bars into two lines, one above the other and six feet apart.

The transverse beams of the floor system are riveted into hangers, which connect the two lines of the chords, and these, with the diagonal wind rods, make a sure and direct horizontal truss for transmitting the wind pressure to the piers.

The total weight of steel in the entire structure, including stairways and footwalk, but excluding tracks, is 8,700,000 pounds, or 4,400 tons. The bridge is double track and in every part proportioned to withstand the stresses due to a load of two consolidated engines weighing 104 tons each, followed by a train load of 3,000 pounds per lineal foot, on each track, without straining the metal beyond the limits of safe engineering practice. This is practically equivalent to a train of locomotives on each track for the whole length of the bridge.

ITS GREAT STRENGTH.

The entire structure is of a mild quality of steel, nearly twice as ductile as iron and 20 per cent stronger. It was required to stand a tensile stress of at least 50,000 pounds per square inch without breaking, and 50 per cent of all the steel used was between 59,000 and 61,000 pounds strength per square inch of section, elongation being not less than 25 per cent in eight inches. In testing the workmanship on the metal work, forty eye-bars of sizes varying from five to fourteen square inches cross-section and lengths varying from eighteen to thirty-three feet, were broken by pulling in testing machines, and showed an average elastic strength of 34,800 pounds, and breaking strength of 57,350 pounds per square inch, with an average elongation of 16 per cent in their full length, and reduction of 47 per cent at place of breaking. The channel span was the last one erected, and was within five days of completion when, on the 25th of May, 1890, a sudden rise in the river lodged several acres of drift against the false work and carried it down with a tremendous crash, carrying with it 600 tons of the metal work resting thereon. To tear away the debris, fish out the metal from the river and return it to the Edge Moor shops for remodeling was a big task, but it was accomplished; new false work was constructed and the span was swung in place in just two months thereafter, all the metal in the span being erected in seventy actual working hours. The great ductility and toughness of the steel in this span was proven by breaking tests made on eight eye-bars of about eleven inches cross-section and 33 feet lengths, which were pulled in badly bent shape from the wreck in the river, straightened out, annealed and tested for comparison with the original bars, showing an average elastic strength of 34,020 pounds and breaking strength of 56,070 pounds per square inch, with an average elongation of 16 per cent in their full length, and 46 per cent reduction at place of fracture.



The Union Railroad Bridge Across the Ohio River.

From Main street in Wheeling and First street in Martin's Ferry, fine iron stairways rise to a foot walk on the bridge.

The bridge is now completed and stands a splendid monument to pluck and skill, and is the pride of the county and city, which by an almost unanimous popular vote subscribed $300,000 in aid of its erection and of the terminals.

THE TERMINAL RAILWAY.

More interesting, if possible, than the great bridge, is the company's terminal railroad. On the Wheeling side, immediately at the east end of the bridge, a double track tunnel, 557 feet long, pierces a hill to an open cut 250 feet long in Jonathan's Run, and then another double track tunnel 1,203 feet long passes under Mount Wood to the beautiful valley of Wheeling Creek, which is crossed by a double track steel deck bridge 300 feet long and 62 feet high, taking the line of the Peninsula to the east part of the city, where the company owns seventy acres of land and has its round house, shops and cattle yards. From this point, a track runs east up the valley along the creek about a mile to a connection with the Pittsburgh division of the B. & O. R. R. The down town line follows the east bank of the creek over a girder span over the Fulton road and under a girder span on the B. & O. R. R., under a steel bridge on Seventeenth street, to the Whitaker Iron Works, where it pierces Chapline hill by a double track tunnel 2,466 feet long, and emerges south of Twenty-seventh street into an open cut under Twenty-eighth street, where it divides, one spur running from the south portal of the tunnel to a connection with the Ohio River R. R. and the P., W. & Ky. R. R. at the river at Thirty-fourth street, and the other spur running along the east side of Woods street, past the LaBelle Iron Works to a connection with the main B. & O. R. R. line near Thirty-third and McColloch streets. These three tunnels have novel and finely constructed timber linings of sufficient size to take in stone and brick lining hereafter, and the last described tunnel passes directly under the bar mill of the Riverside Iron Works. The city has granted the right, and the plans contemplate extending both of the last named tracks, one along Water street, the other along McColloch and Wetzel streets, to the lower end of the city, to Benwood, where there are immense steel works, pipe works, furnaces and nail mills. Woods and Twenty-eighth streets are carried over the railway lines by wide girder spans, and Caldwell's run has been straightened and bridged three times for the different lines of the system.

THE UNION STATION.

Returning to Whitaker's, the company is constructing a double track steel bridge 270 feet long in three skew spans, with plate girders 9 feet deep, weighing 30 to 60 tons each, across Wheeling creek to the north bank of the creek, where the company is building a large Union Station, freight depot and train yard in the heart of the city, three squares below the McLure House and one square from the Custom House, Postoffice, City Hall and court house, where the company has about ten acres of ground for these purposes, acquired largely by donation from the city.

On the Martin's Ferry, Ohio, side of the river, after leaving the main bridge, Jefferson street is crossed by a double-track steel bridge, 112 feet long, 29 feet above the street, and Fourth and Fayette streets are crossed diagonally by a double-track steel bridge, 197 feet long, with four spans, and a novel arrangement of supporting column piers. One and a half miles above this, near the north limits of Martin's Ferry, the track reaches a connection with the Cleveland & Pittsburgh Railroad, and the proposed Wheeling & Cleveland Railroad. At a point about half a mile south of this connection a steel viaduct, 1,500 feet long, leaves the main track, crossing the C. & P. and several streets twenty to thirty feet above, and curves around the Laughlin nail works to a connection at grade with the Cleveland, Lorain & Wheeling Railroad, and with the almost completed Wheeling & Lake Erie Railroad.

This system contemplates the accommodation of all railroads now in, or which may come to Wheeling, and access to all the important manufacturing and shipping points. The whole line is laid with seventy-pound steel rails, heavy angle splices and stone ballast, and bridge and culvert masonry of first class character. Besides the grounds mentioned, the company at Twenty-eighth and Twenty-ninth and Woods, Jacob, Eoff and Chapline streets, and at Thirty-second, Thirty-third and Thirty-fourth streets, west of Market, owns several blocks of lands for yards, freight houses and connecting facilities with other railroads.

PERSONNEL OF THE GREAT WORKS.

Judge R. H. Cochran, of Toledo, Ohio, (formerly of Wheeling) is the organizer and President of the company. N. E. Whitaker, W. F. Peterson and W. A. Wilson, of Wheeling, R. B. Ferris and R. H. Rochester, of New York, W. B. Thomas, of Boston, and A. H. Almstead, of Hartford, are the directors.

Job Abbott, Consulting Engineer, of New York City, is the Chief Engineer of the Company and designer of the bridges and structures on the system. His assistants were H. F. Dunham, of Cleveland, Ohio, and Gil. Brown, W. F. Yoder, Robert Hazlett, of Wheeling, and J. Vander Hoek, of Batavia, N. Y.

The Wheeling & Eastern Improvement Company, of Hartford, Conn., (of which the late Col. George P. Bissell, a banker of that city, was President) is the general contractor. Paige, Care & Co., of New York City, are the subcontractors for all the work, except the bridge superstructures, and they have won a high reputation for promptness and good work.

The Edge Moor Bridge Works, of Wilmington, Del., were the contractors for the Ohio River bridge superstructure, and in the work they sustained their national name as among the best bridge builders in the world. It was erected by Baird Brothers, of Pittsburgh, Pa., and the Edge Moor works also built the trestle viaduct at Martin's Ferry, and the Union Station bridge over Wheeling creek. The Wrought Iron Bridge Company of Canton, Ohio, were the contractors and builders of the Peninsula and Seventeenth Street bridges over Wheeling creek, and of all other small spans and turn-tables on the system. Rotch & Tildeh, of Boston, are the architects for the Union Station.

In the two cities, the company owns about one hundred and fifty acres for terminal facilities, and for a distance of nearly five miles within the corporate limits, a train may move at full speed without crossing a street or railroad at grade. Wheeling may certainly boast a model bridge and terminal system, both in design and first-class workmanship.

It is estimated that the entire cost of the whole system, including buildings and motive power, will amount to over five million dollars.

PRINCIPAL STRUCTURES, W. B. & T. RY. CO.

Ohio river bridge—Double track. Length 2,097 feet. Approaches 317 and 353 feet. Channel span 525 feet. Three spans 250 feet each. One span 152 feet—pier centers. Channel span 90 feet above low water.

Wheeling creek Peninsula bridge—Double track. Total length 300 feet. Two spans 125 feet each. One span 50 feet. Road level 62 feet above creek level.

Union station bridge—Double track. Total length 293.5 feet. Two spans 109 feet each. One span 75.5 feet. Girders 9 feet deep.

Fourth street bridge, Martin's Ferry—Double track. Total length 197 feet. Four spans of 47 to 51 feet.

Jefferson street bridge, Martin's Ferry—Double track. Total length 112 feet. Three spans, 29 feet above street.

North terminal viaduct, Martin's Ferry—Single track. Total length 1,472 feet. Forty-two spans from 30 to 88 feet long.

Tunnels—All double track.

Top mill tunnel—Total length 557 feet.

Mount Wood tunnel—Total length 1,203 feet.

Chapline hill tunnel—Total length 2,466 feet.

Wheeling Creek Retaining Wall—1,050 feet long, 40 feet high, 20 feet thick at base.

Length of Lines—10 miles.
Single Track—5½ miles.
Double Track—4½ miles.
Length of Sidings—3 miles.
Total Length of Tracks—17½ miles.
Maximum Grade—47.5-10 feet to a mile.
Maximum Curvature—10 degrees on maximum grade; 14 degrees on level grade.

DOUBLE TRACK STEEL BRIDGE OF W., B. & T. RAILWAY COMPANY OVER OHIO RIVER.

Length of Bridge—2,097 feet.
Length of Channel Span—525 feet.
Weight of Channel Span—2,000 tons.
Depth of Truss Channel Span—85 feet.
Height above Low Water—90 feet.

ITS FIRST FRUITS.

The Significance of the Terminal System Begins to be Apparent to All.

WHEN the Wheeling Union Bridge & Terminal Railway Company began the work of constructing its bridge and the tunnels leading from the eastern approach into the valley of Wheeling creek, nobody believed that so great a project and one requiring the expenditure of so vast a sum was to be carried out simply for the local business it could command, important as that was. The projectors kept their own counsel, but it was conjectured that this scheme was but the entering wedge to greater projects, to railroad lines that would connect the Eastern seaboard with the great West. The fact that a line via this city from New York to Chicago would be shorter than any other practical route has long been established by the testimony of competent engineers, and the community hoped that at last the idea that had long been entertained, that some day Wheeling would be on the leading East and West trunk line, was about to be realized.

The first step toward the realization of these hopes has already been taken. On April 16, 1891, the first formal step was taken to incorporate the Wheeling & Connellsville Railroad Company, to build a railroad commencing at or near the city of Wheeling; thence by a practicable route to the Pennsylvania and West Virginia line at or near where it is crossed by Wheeling creek, in Marshall county, on its way to the coke fields. The capital stock of the company is to be $1,000,000, to be divided into shares of $100 each. With two exceptions the incorporators are active business men of Wheeling. The exceptions are W. A. Lynch, of Canton, and Judge R. H. Cochran, both of whom are closely identified with the Terminal system, the latter being almost a Wheeling man and deeply interested in Wheeling's advancement. The corporators are: W. A. Lynch, of Canton, Ohio; F. J. Hearne, R. H. Cochran, W. A. Isett, J. N. Vance, George Wise, A. J. Clarke, C. A. Robinson, John G. Hoffmann, Henry K. List, Joseph Speidel, Anton Reymann, James B. Taney, E. W. Oglebay, John Frew, W. P. Hubbard.

The object of this road is to get to the coke fields and ultimately to make this line an essential connecting link between the East and the West, the Terminal system being an important part of the work.

In addition to the direct connection with the Connellsville coke fields, it is proposed to extend the road by another branch to connect in the valley of the Cheat or Monongahela river with one of the systems now being extended from the West Virginia coke and coal regions toward Pittsburgh. Such a connection will at least put Wheeling on an even footing with Pittsburgh as to access to the mineral, timber and agricultural wealth of the great interior of West Virginia—an achievement which the most thoughtful manufacturers of Wheeling have long regarded as of vital importance that Wheeling may hold her own in the march of progress.

These incorporators on May 19 elected directors as follows: W. A. Lynch, of Canton, Ohio; Judge R. H. Cochran, of Toledo, Ohio; Joseph Speidell, F. J. Hearne, George Wise, W. A. Isett, W. P. Hubbard, Cecil A. Robinson and Anton Reymann, of Wheeling. The energy and business standing of these gentlemen bode well for the success of the project.

WEST VIRGINIA as a grazing State is unsurpassed.

WEST VIRGINIA is well supplied with churches.

IF your name is not on the INTELLIGENCER'S Subscription Books make haste to get it on the list. Notwithstanding increased size and general improvements there is no increase in price. Still better things are to come.