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New Jersey ship canal and waterways.

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NEW JERSEY SHIP CANAL AND WATERWAYS.



BY
NEW JERSEY SHIP CANAL COMMISSION
1912

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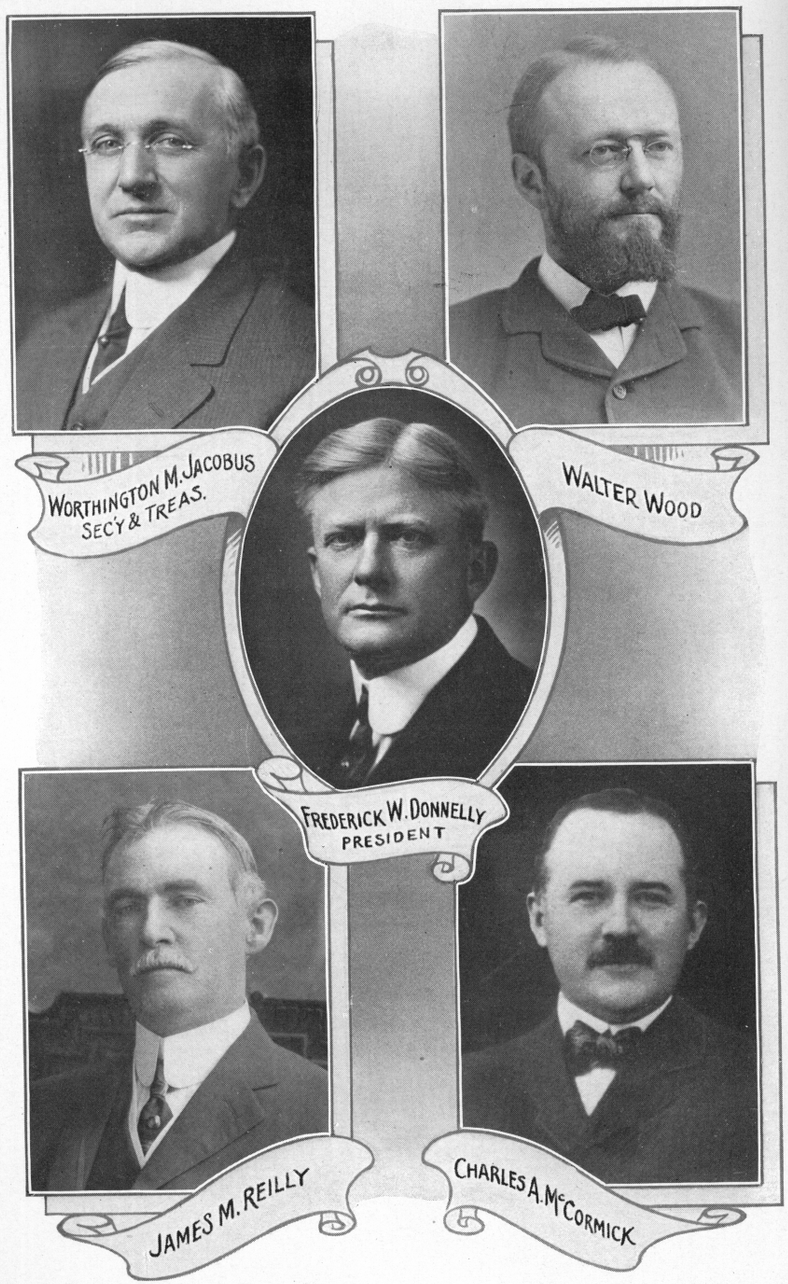


New Jersey Ship Canal Commission

Reports

It is the opinion of the Commission that a sea-level canal connecting Delaware and New York Bays, and capable of accommodating barges of 1000 to 3000 tons burden, would be actively used by companies now operating barges by the outside route between Philadelphia and New England points. An ideal route for such barges between Chesapeake Bay and Boston would be afforded by an enlarged Chesapeake and Delaware Canal, the proposed waterway between the Delaware and New York Bays, and canals connecting Long Island Sound with the port of Boston. An inside waterway between North Carolina and New England would increase the volume of coastwise commerce, and, what is hardly less important, would minimize the losses of property and human lives caused by shipwrecks. This safe inside route would be used by a type of craft that can be operated with economy and with certain profit to the owners. One of the strongest arguments in favor of an inside route is the fact that in the single decade from 1900 to 1909 there were over 5700 disasters to shipping on our Atlantic seaboard. Not all losses are reported, but these accidents are known to have destroyed $40,500,000 worth of vessels and cargo, and to have caused the loss of over 2200 human lives.

Army Engineers estimate that the cost of a sea-level canal between New York and Philadelphia, with a bottom width of 125 feet and a depth of 25 feet, will be $45,000,000. This is but little more than the value of the property lost along the Atlantic seaboard by shipwrecks during the last ten years. This annual toll of lives and property still continues to be levied. Within a few months past three barges laden with coal and seventeen men were lost in a storm off the coast of Massachusetts.

A canal connecting the New York and Delaware Bays is a most important part of the intracoastal waterway. The New Jersey Ship Canal, Philadelphia to New York, will benefit the eastern part of the United States. The project has been recommended by the U. S. Government engineers, and should receive the support of the States and municipalities most directly interested.

FREDK. W. DONNELLY, *President.*
WALTER WOOD.
JAMES M. REILLY.
CHAS. A. McCORMICK.
WORTHINGTON M. JACOBUS, *Secretary.*

Proposed Intra Coastal Waterway Project Across New Jersey

Compiled by W. F. R. Griffith, Consulting Engineer.

Distance from deep water in Delaware River to deep water in New York Bay, 75.7 miles.

Distance from deep water in Delaware River to Bordentown, N. J., 26 miles.

Distance from Bordentown to Lalor Street, Trenton, N. J., 3.9 miles.

Distance from Bordentown to Morgan, N. J., across New Jersey, 33.7 miles.

Distance from Morgan to deep water in New York Bay, 12.1 miles.

Distance from wharves in Philadelphia to the Battery in New York City (via canal), about 87 miles.

Distance from wharves in Philadelphia to the Battery in New York City (via outside route), about 274 miles.

Speed in the canal, 8 miles per hour.

Speed in Delaware River and New York Bay for largest ships, about 20 per cent. less than in open sea.

Assuming that the speed of the largest boat using the canal would be about 15 miles per hour in the open sea, the time of transit from the wharves at Philadelphia to the Battery in New York City (via canal) would be about 8 hours and 40 minutes; between the same points (via outside route), about 20 hours, or over twice as long as it would take via canal.

Size of canal section: Bottom width, 125 feet; depth, 25 feet at lowest low water. Size of Delaware River and New York Bay section: 100 feet bottom width; depth, 25 feet at lowest low water, and 300 feet bottom width; depth, 18 feet at lowest low water.

Maximum deflection in any single intersection angle on canal section, 36 degrees, 51 minutes, 15.3 seconds.

Total deflection on canal section, 246 degrees, 26 minutes, 58.4 seconds. Resultant deflection to the east, 13 degrees, 39 minutes, 49.4 seconds.

Number of locks, 1.

Number of movable dams, 1.

Usable length of lock, 600 feet.

Usable width of lock, 75 feet.

Depth on miter sill at lowest low water, 25 feet.

Number of railroad draw spans, 3.

Number of combination trolley and highway, 3.

Number of highway draw spans, 15.

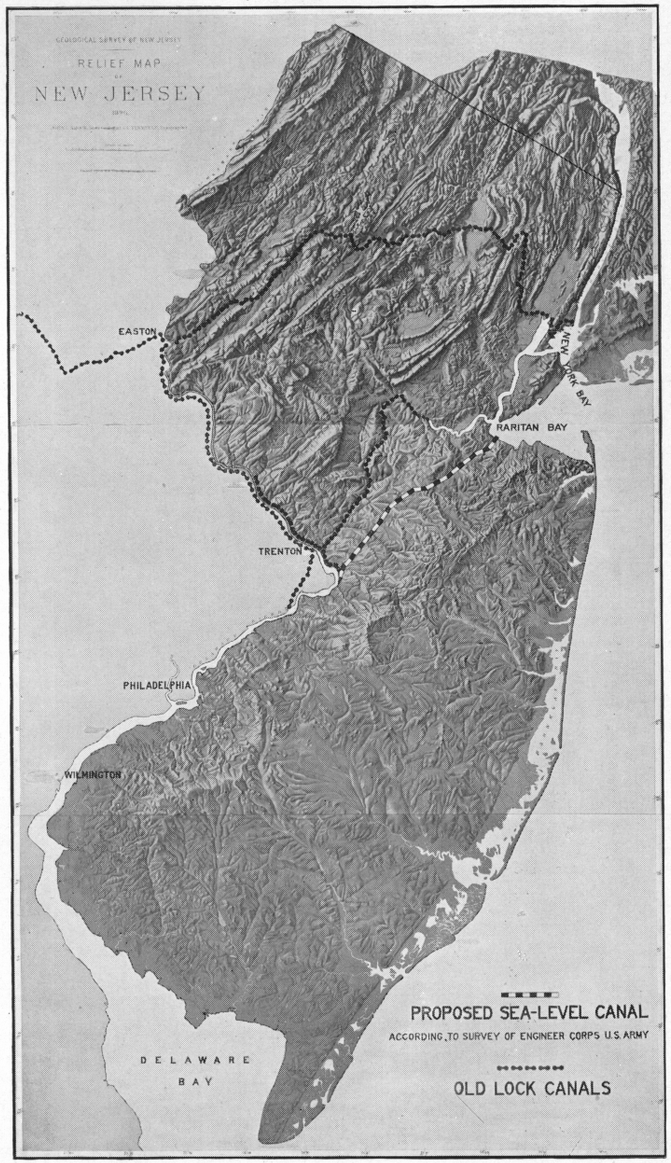
Number of syphons, 6.

Number of miles of double-track railroad to be reconstructed, 7.52.

Number of miles of single-track railroad to be reconstructed, 1.6.

Number of miles of trolley to be reconstructed, .63.

Number of miles of highway to be reconstructed, 10.8.



THE NEW JERSEY SEA-LEVEL CANAL AND ITS RELATION TO EXISTING WATERWAYS.

New Jersey



THE first sight of land to greet the ocean voyager from the old world upon the broad Atlantic when approaching the gateway of the new world, is the lofty summit of the Highlands of Navesink on the New Jersey shore.

The State of New Jersey is noted for its magnificent stretch of ocean coast, its rich and fertile farming lands, its immensely valuable clay deposits, its beautiful lakes and magnificent mountain scenery.

It takes rank in the states of the Union as the sixth in the number of its industrial establishments, as well as in the number of operatives employed, and for the diversity of the products of its workshops. It ranks sixth in the annual value of the product turned out by its factories and workshops. It has an area of 7,514 square miles; it is forty-fifth in area. It ranks eleventh in population, third in density of population, and eleventh in the total number of inhabitants.

In historical annals it is noted as one of the great fighting grounds during the Revolutionary War, the battles of Monmouth, Trenton, Morristown, Bergen Hook, Springfield and other points materially helping on to final victory, which resulted in independence being established.

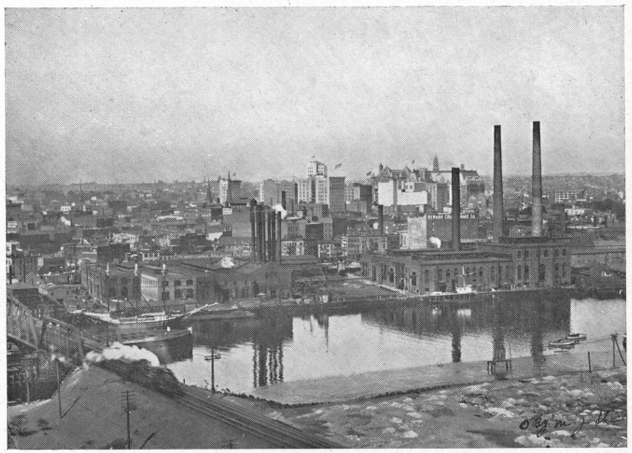
New Jersey is rich in resources, in agricultural wealth, fruit growing, oyster cultivation, mineral deposits, clay products; it is noted also for its manufacturing and shipbuilding, and as the Garden State, where men of wealth are creating beautiful park lands and erecting magnificent mansions on its sloping hills and in its verdant valleys.

Leading Cities of New Jersey

It may be of interest to note the particular leading features of the principal cities in New Jersey according to their rank in population and wealth.

Newark

The chief city of the State in industry, population, taxable wealth, banking capital, railway and river tonnage, and in all lines of material and municipal public works.



BIRD'S-EYE VIEW OF NEWARK

Newark is noted as having the largest park area per square mile of any city in the United States.

Newark is located on Newark Bay eight miles west of New York.

Newark ranks eleventh in manufactures, fourteenth in population, and third as a centre for insurance among the cities of the United States.

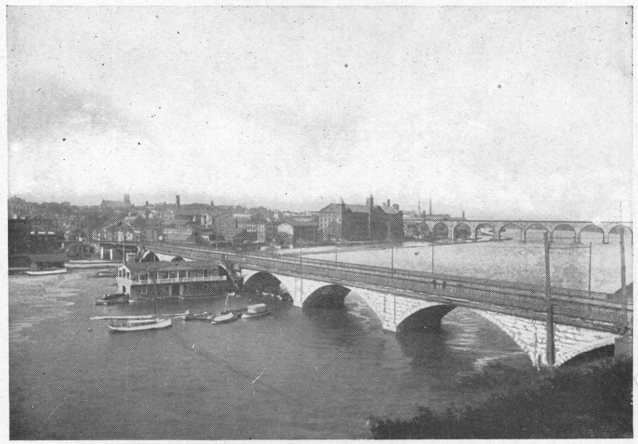
Newark is equipped with the most scientific fire alarm system in the country.

Newark has 252 distinct lines of industry, fifty or more turning out values annually from $1,000,000 to $30,000,000.

Newark, per capita to its population, leads all other cities of the United States in the variety of its manufactures.

Agricultural Statistics

Total population of the State, urban and suburban, 1910	2,537,167
Increase between 1900 and 1910, 34 per cent	653,498
Total rural population, 1910	629,957
Per cent. of increase in rural population, 1900-1910	21%
Total number of farms	33,487
Total land area in acres	4,808,960
Area of land under cultivation	2,573,857
Total value of all farm property in New Jersey, 1910	$254,832,665
Farm value increase in decade from 1900, 34½%	65,299,005
Value of live stock on New Jersey farms	24,588,639
Increase in value during decade from 1900, 39½%	6,976,019
Average number of acres per farm in New Jersey	76.9
Average value per farm	$7 610



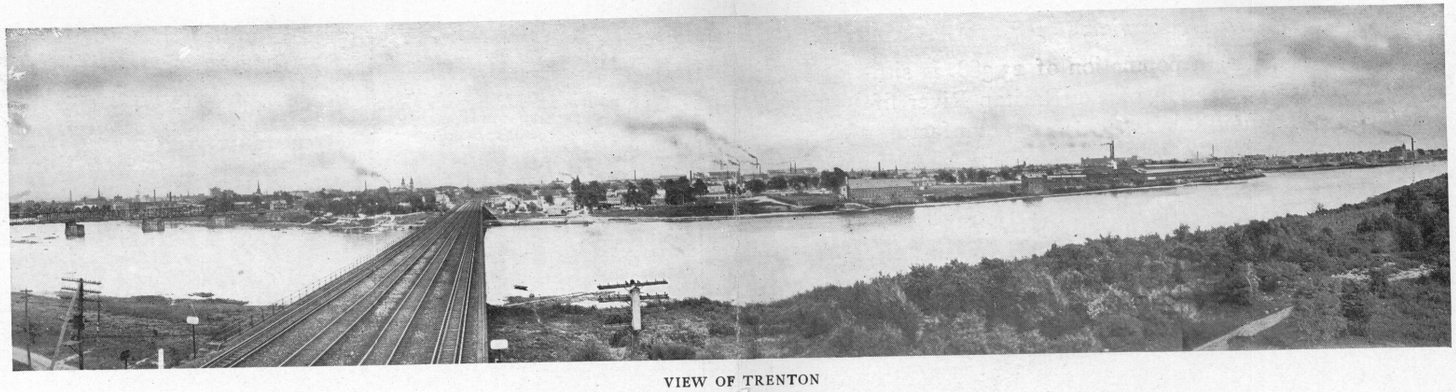
BIRD'S-EYE VIEW OF NEW BRUNSWICK

Manufacturing Statistics

For variety of manufacture the State is noted throughout the industrial world by reason of the contributions made to the world of commerce through the many inventions perfected by its mechanics, scientists and artisans.

Statement Showing Totals of Manufactures of New Jersey 1900-1910

INDUSTRIES	1910	1900	Increase
Number of establishments	8,817	6,415	2,402
Wage earners employed	326,223	213,975	112,248
Salaried employees	36,838	15,361	21,477
Capital invested	$977,172,000	$477,302,000	$499,870,000
Salaries	48,366,000	19,058,000	29,308,000
Wages	169,710,000	95,165,000	74,545,000
Cost of material	720,033,000	334,726,000	385,307,000
Value of product	1,145,529,000	553,006,000	592,523,000
Value added by manufacture	425,496,000	218,280,000	207,216,000



VIEW OF TRENTON

Newark—The Record of a Decade in Figures and Percentage

	1900	1910	Per Cent. of Increase
Population	246,070	347,469	41
Taxable Valuations	$148,834,805	$344,821,700	131
Bank and Trust Co. Resources	29,322,562	103,779,521	253
Savings Bank Resources	15,467,213	40,396,313	161
Building and Loan Resources	8,025,138	29,244,196	264
Aggregate Resources Banks and Buildiug and Loan Associations	52,814,915	173,420,020	228
Capital invested in Manufacturing	103,191,403	149,691,105	45
Value of Raw Materials	67,105,944	120,907,766	80
Value of Manufactured Product	129,954,049	271,970,342	71
Life Insurance Companys' Assets	95,983,799	365,696,799	280
Fire Insurance Companys' Assets	7,794,503	365,696,796	82
Pieces of Mail Handled	59,523,900	151,902,549	155
Passenger Movement by Trolley	69,282.832	137,066,415	97
Freights Received and Shipped by Rail	1,957,005	4,718,229	141
Freights Received and Shipped by Water	1,370,724	2,778,962	102

Manufactures

Capital invested in manufacturing	$154,233,000
Number of operatives employed	59,995
Annual wages paid	$44,853,000
Value of raw material	120,907,766
Establishments usiug power employing over ten hands	1,858
Value of finished product, 1910	$202,512,000

Jersey City

Directly opposite New York on the west bank of the Hudson River, it is noted as the great terminal city of the Atlantic seaboard, and its progress depends upon its railways and industrial establishments. Noted among its principal industries are tobacco, sugar refining, graphite products, soap, and foundry and machine shop products.

Manufactures in Jersey City in 1910

Number of establishments	745
Capital iuvested	$79,794,000
Cost of materials used	89,317,000
Salaries and wages	18,263,000
Value of products	128,775,000
Value added by manufacture	39,458,000
Number of salaried officials and clerks	4,785
Average number of wage earners	25,454

Trenton

Trenton is the seat of the State Government, and one of its oldest settled cities. It is particularly noted for the production of fine pottery ware which in technique, design and workmanship rivals the best product of the famous workshops of Europe. It is also noted for its steel wire products, rubber goods, terra cotta and fire clay products.

Manufactures of Trenton in 1909

Number of establishments	340
Capital invested	$46,639,000
Cost of materials used	27,673,000
Salaries and wages	11,958,000
Value of all products	49,009,000
Value of fire clay products	6,996,000
Total population	96,815

Paterson

Paterson is located in a natural valley, surrounded on all sides by sloping hills of extraordinary beauty, and is especially noted for the Passaic Falls, which on being viewed by Alexander Hamilton caused him to prophesy that it would be one of the great centers of manufacture on account of the value of the water power. It holds the first rank among American cities for the amount of capital invested and the amount of product in the manufacture of silk and silk goods.

New Brunswick

New Brunswick, with a population of 23,388, is situated at the head of navigation on the Raritan River fifteen miles from its mouth. Its principal manufactures are hosiery, wall paper, rubber goods, chemicals and foundry products. It has many important institutions, including Rutgers College, the State Agricultural College, the Chemical College and State Model Farms. Its output of surgical appliances is greater than that of any other city in the United States. Ninety-three manufacturing establishments produce products annually valued at $10,005,000.

Atlantic Coast Cities

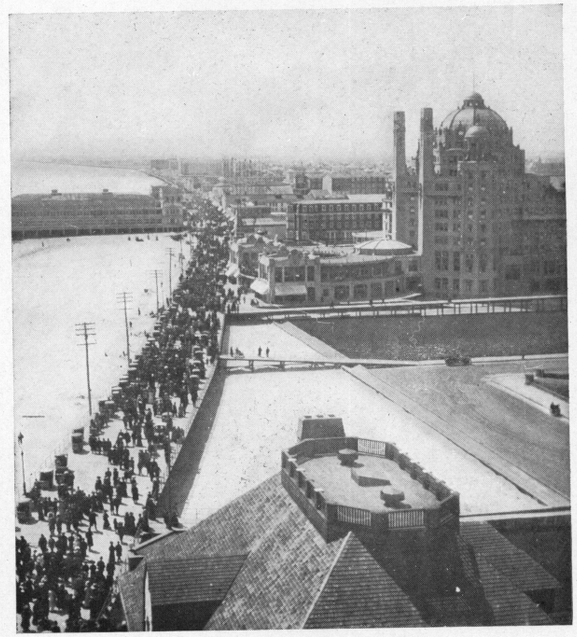
Nature has endowed the State with a diversity of scenery, and a coast-line with long reaches of sandy and picturesque beach. The commercial interests creating a zone of dense population on the New Jersey and New York shores where the Metropolitan District is located, has caused this territory to be utilized for summer resort purposes. From Sandy Hook to Cape May almost every foot of shore line has been developed.

Atlantic City, which was organized sixty-two years ago, has become the most conspicuous example of municipal sea shore development in the world. It is the social centre in summer of the whole of the United States; a gathering place for conventions and the home of the busy urbanite during the warm summer months. Although chiefly a resort there are ninety-four industrial enterprises producing $2,260,000 worth of goods annually.

Asbury Park, Ocean Grove, Long Branch, Cape May, Spring Lake and Sea Girt are also in high stages of development as summer resorts, and to these places are drawn thousands who commute from the commercial centres.

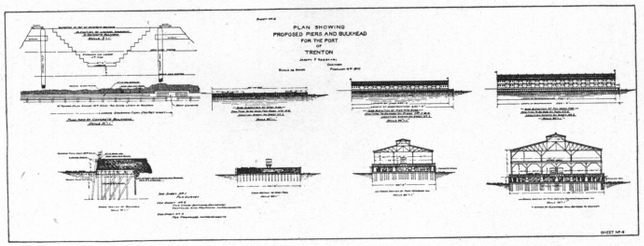
Perth Amboy

This was the seat of the early Colonial Government of the provinces of East Jersey and the place of record of the Lord Proprietors. It is beautifully located on Raritan Bay, and the progress being made in its commercial and industrial life gives promise that it will become a city of great importance as a seaport and as a land terminal. It is the natural shipping point, and the



BOARDWALK IN ATLANTIC CITY

centre of the great pottery and clay product industry, the clay obtained there being used for fire clay, potteries, terra cotta brick, and also in the manufacture of paper. It is also a port of entry, and one of the largest smelting plants in the United States is located within its borders. It has eighty manufacturing plants turning out annually products valued at $73,093,000. The population numbers 32,121.



PROPOSED PIERS AND BULKHEADS FOR THE PORT OF TRENTON

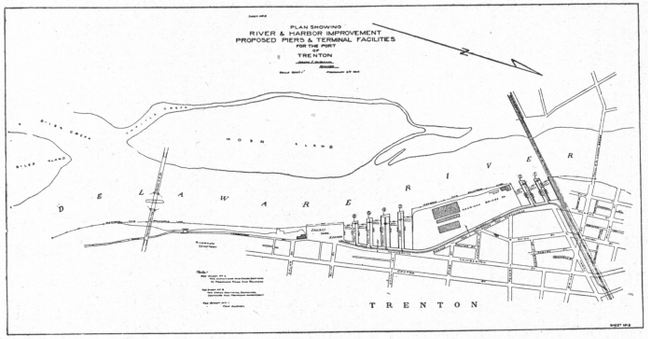
Elizabeth

Elizabeth is one of the ancient settlements of New Jersey, and from 1755 to 1757 was the capital of East Jersey. It is situated on Newark Bay and the Arthur Kill, fourteen miles southwest of New York. It is one of the principal points of shipment in this state for anthracite coal, and has an extensive shipyard where naval vessels have been built.

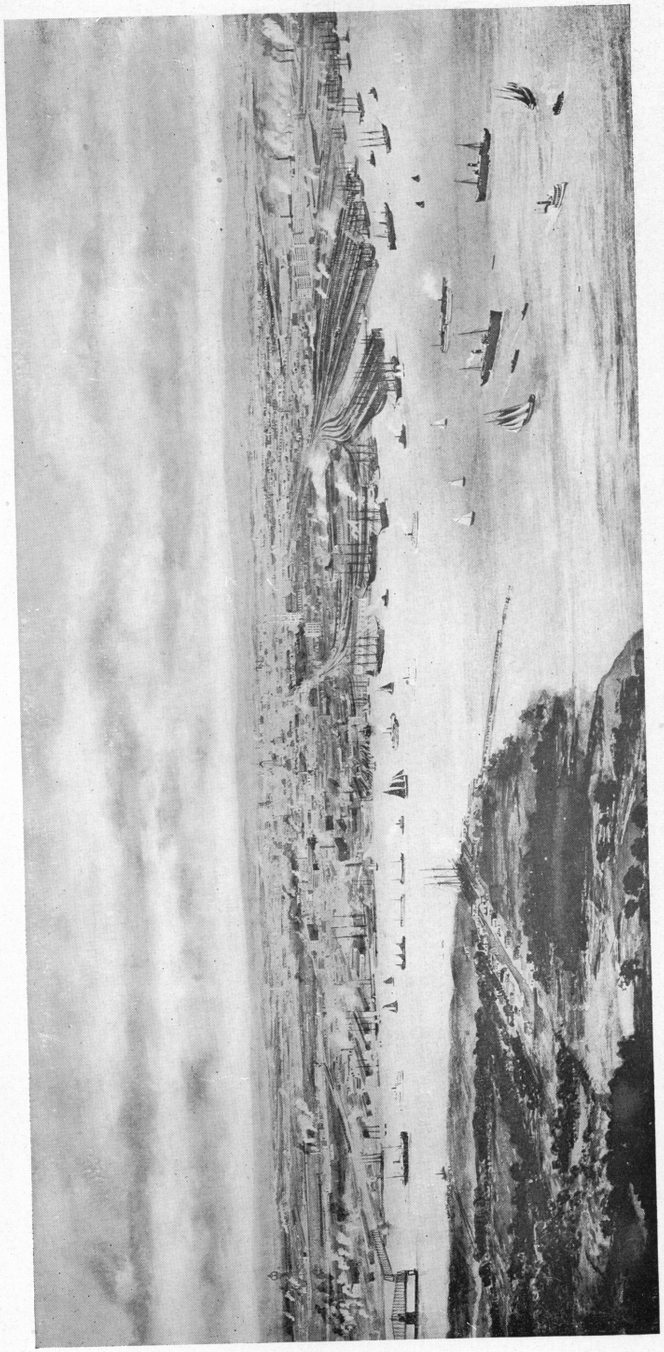
Its principal manufactures include sewing machines, oil cloth, hardware and machine shop products. It has a population of 73,409.

Manufactures of Elizabeth in 1909

Number of establishments	163
Capital invested	$26,774,000
Cost of material used	16,429,000
Salaries and wages	8,565,000
Value of all products	29,147,000
Value of machine shop products	1,877,000



PROPOSED PIER AND TERMINAL FACILITIES FOR THE PORT OF TRENTON



VIEW OF ELIZABETH

Statement Showing Leading Industries, Number of Establishments, Capital Invested, Number of Wage Earners, Wages Paid Annually, Aggregate Value of Product

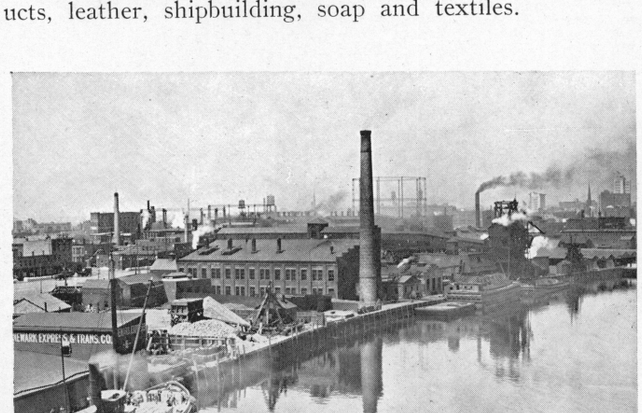
INDUSTRIES	Number of Establishments.	Capital Invested	Number of Wage Earners.	Wages Paid Annually.	Aggregate Value of Product.
Brick and Tile	76	$ 7,355,000	3,405	$ 1,625,000	$ 4,073,000
Car Construction	38	5,452,000	10,916	4,175,000	9,818,000
Cement	3	10,881,000	7,314	845,000	3,725,000
Chemicals	50	24,355,000	5,046	2,895,000	22,894,000
Copper, Tin and Iron Product	175	8,514,000	5,092	2,780,000	11,114,000
Cordage, Jute, Linen Goods	12	6,398,000	3,025	954,000	5,527,000
Cotton Goods	26	17,824,000	6,638	2,577,000	13,729,000
Cutlery and Tools	70	3,003,000	2,208	1,009,000	2,735,000
Electrical Supplies	69	30,209,000	11,099	5,615,000	28,365,000
Foundry and Machine establishments	591	87,023,000	27,815	16,922,000	65,398,000
Gas Products	47	15,667,000	1,917	853,000	9,887,000
Glass Products	23	7,415,000	5,651	3,340,000	6,961,000
Hats and Fur Felt	58	5,335,000	4,657	2,969,000	8,825,000
Hosiery and Knit Goods	37	3,889,000	2,506	903,000	3,310,000
Iron and Steel	16	28,212,000	4,671	2,823,000	12,014,000
Jewelry	156	11,998,000	4,008	2,537,000	13,272,000
Leather and Leather Goods	185	21,602,000	7,373	4,393,000	32,436,000
Liquors, Malt	33	40,535,000	2,125	1,846,000	20,184,000
Linoleum and Oilcloth	10	8,110,000	2,123	1,887,000	10,143,000
Paint and Varnish	63	11,372,000	1,493	844,000	12,767,000
Paper and Wood Pulp	37	10,742,000	2,223	1,181,000	7,554,000
Pottery and Fire Clay Products	88	22,349,000	9,815	5,661,000	13,139,000
Rubber Goods	36	15,766,000	4,255	2,300,000	19,543,000
Rubber Hose	12	9,385,000	2,295	1,150,000	9,793,000
Soap	21	8,366,000	1,599	796,000	13,675,000
Ship-building	97	19,176,000	4,169	3,300,000	8,841,000
Silk Goods	348	43,615,000	30,285	13,917,000	65,430,000
Smelting and Refining	4	29,078,000	2,322	1,335,000	125,651,000
Tobacco	462	21,164,000	9,466	3,356,000	24,177,000
Wire and Wire Goods	7	21,829,000	5,646	2,767,000	28,858,000
Woolen and Felt Goods	83	36,391,000	12,625	4,964,000	33,939,000

Manufactures of Paterson in 1909

Number of establishments	702
Capital invested	$66,402,000
Cost of materials used	34,728.000
Salaries and wages	18,186,000
Value of all products	69,584,000
Value of silk products	40,358,000
Total population	125,600

Camden

The splendid wharf and shipping facilities enjoyed by Camden make it a natural centre for the ship-building industry, and it gives promise of becoming one of the great manufacturing and shipping points in the State. Included in its principal manufactures are foundry products, leather, shipbuilding, soap and textiles.



VIEW OF PASSAIC RIVER, NEWARK

Manufactures of Camden in 1909

Number of establishments	365
Capital invested	$49,158,000
Cost of materials used	27,384.000
Salaries and wages	11,013.000
Value of all products	49,138,000
Value of ships built	5,626.000
Total population	94,538

Total Receipts and Shipments of Domestic Commerce as Reported by United States Engineers

Ports	Tons in 1909	Tons in 1906
Anacostia River	450,213	335,000
Arthur Kill	9,504,090	16,574,840
Baltimore	8,415,220	8,277,098
Beverly	196,203	138,862
Boston Harbor	24,478,668	18,549,230
Beaufort	52,396	10,465
Bridgeport	1,117,131	951,244
Cape Charles City, Va.	2,355,984	1,723,635
Conn. River (below Hartford)	614,780	440,024
Elizabeth River, Va.	1,861,402	4,225,179
Greenwich Harbor	79,727	108,348
Gloucester	218,165	275,888
Havre De Grace	"Asked for but not obtained."	73,815
Housatonic River	81,485	54,496
Hyannis	8,832	20,100
Lynn	359,195	343,784
Mispillion River, Del.	187,356	258,704
Nansemond River, Va.	96,251	91,063
Nantucket	28,550	20,100
New Bedford	1,392,802	899,632
New Haven	2,019,198	1,847,633
Newburyport	212,029	169,975
New London	707,768	697,139
Newport News	7,268,585	5,564,086
Newport Harbor	239,923	1,920,380
Newtown Creek	5,113,628	2,803,380
New York	25,509,733	16,921,976
Norfolk	10,972,999	15,600,000
Norwalk Harbor	222,787	251,759
Passaic River	2,650,809	2,577,188
Pawtucket River	475,255	287,739
Philadelphia	19,402,199	20,577,117
Portland, Me.	2,956,011	2,546,625
Providence	3,814,982	3,086,003
Raritan Bay	5,333,676	6,432,245
Rappahannock River	397,210	364,000
Richmond & James River Point	476,465	527,818
Roanoke River, N. C.	68,113	88,508
Sakonnet Harbor	7,385	not available
Stamford Harbor	264,615	249,175
St. Jones River, Del.	113,550	55,196
Smyrna River	203,580	207,021
Taunton River	126,509	193,100
Thames River	497,725	427,503
Woods Hole, Mass.	43,032	27,875
Washington	1,430,788	907,000
Wilmington, Del.	805,447	1,016,696
Wilmington, N. C.	872,426	814,291
Total	143,704,877	139,532,935

New Jersey Intracoastal Waterway Link.

The Legislature of New Jersey has enacted and the Governor has approved the legislation providing for a Ship Canal across New Jersey.

On April 24, 1911, Joint Resolution Number 5 appropriated $500,000 for purchase of right of way. On April 24, 1911, Joint Resolution Number 6, providing for a Ship Canal Commission, was approved, and on July 2, 1911, Governor Woodrow Wilson appointed Messrs. Frederick W. Donnelly, of Trenton; Walter Wood, of Camden; James M. Reilly, of Newark; Charles A. McCormick, of New Brunswick; and Worthington M. Jacobus, of Rutherford, as said Commissioners.

The Commission organized and elected Honorable Frederick W. Donnelly as President and Worthington M. Jacobus, Esq., as Secretary. The Commission held several sessions and attended a number of waterway conventions during 1911. On February 13, 1912, the Commission made a report to the Legislature asking that an appropriation of $25,000 be made for the Commission to extend the United States Government survey and erect monuments for the permanent location thereof, to ascertain a description of the lands and their owners, and for such other necessary expenses which the Commission may order to be incurred.

Mr. William F. R. Griffith, formerly connected with the United States Government survey, has been engaged, and he now has the survey and map work well under way. To complete this work it will be necessary to ask for a further appropriation of $55,000. This will place in the hands of the Commission a complete survey from South Amboy to Bordentown, total length 33.7 miles, and 1,000 feet in width, comprising approximately four thousand acres of land.

Respectfully submitted,

W. M. JACOBUS,

Secretary.

C. P. GRAY
MAP MAKER AND
PUBLISHER.

NEW YORK.