TUNNEL DAY

JERSEY CITY, JULY 19th, 1909

A Souvenir Prepared

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THIRD EDITION

FROM CANOE TO TUNNEL

A Sketch of the History of Transportation between Jersey City and New York, 1661-1909

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Press of A. J. Doan

FROM CANOE TO TUNNEL.

A Sketch of the History of Transportation between Jersey City and New York.

1661-1909.

Now that "Three Minutes from Broadway" has become an assured fact, and the traveller to New York may take his choice between the luxurious coaches of the Hudson Tunnel system or the palatial steamboats of the various ferry lines, it is difficult to appreciate the discomforts and dangers of the trip in former times. The history of the transportation facilities between Jersey City and New York shows a steady but slow improvement. The canoes of the Indians and the rowboats of the first settlers were followed by the queer sailing boats of the early Dutch inhabitants, called "periaugers." These were used until the early part of the nineteenth century, when they were superseded by the steam ferry boats introduced by Fulton. For years, however, these were little better than the old sail boats, but they gradually improved, changing to the side wheel steamers and these again to the magnificent screw propelled vessels which now ply the waters of the Hudson and are probably the finest river ferry boats in the world. These had scarcely become familiar objects when the long dreamed of tunnel beneath the Hudson became a reality.

The first ferry between the present cities of Jersey City and New York, of which there is any record, was established near what is now the foot of Communipaw avenue, in 1661, and William Jansen was licensed to take charge of it. The boats used in these early ferries were rowboats, and small decked sailboats, known as "periaugers." These were pointed at both ends and carried two masts and boom sails. When horses and carriages were to be taken across they were detached and lifted into the boat. Jansen was the ferryman for eight years, but there seems to have been considerable trouble between him and the inhabitants. He claimed the exclusive right to ferry people over the river and insisted that they had no legal right even to use their own boats to cross over in. The settlers resisted this claim and also complained that the ferryman did not do his duty. Jansen on the other hand claimed that the people refused to pay. The matter was laid before the authorities at New Amsterdam, and judgment was rendered "that the Sheriff must assist the ferryman in getting his pay and that he must do his duty or be dismissed."

What became of Jansen is not known, but in June, 1669, Governor Carteret appointed Pieter Hetfelsen to succeed him. This license gave Hetfelsen the exclusive privilege to transport passengers and goods, but permitted the inhabitants to use their own boats for ferrying their families or their own possessions. The ferryman was required to attend the ferry on Mondays, Wednesdays and Fridays; so that it was only on three days in the week that the settlers were sure of means of transportation across the river. This document also fixed the rates to be charged. The fare for passengers was six stuivers; for a horse four guilders; for a cow three guilders, and so on. The Governor and his family and "any person, letter or packet, or message of public business" were to be carried free. The fares were to be paid in "Wampum." This was the Indian name for the beads made by the Indians from shells. These were highly prized by the Indians and were used by them, and consequently by the Colonists, as a medium of exchange.

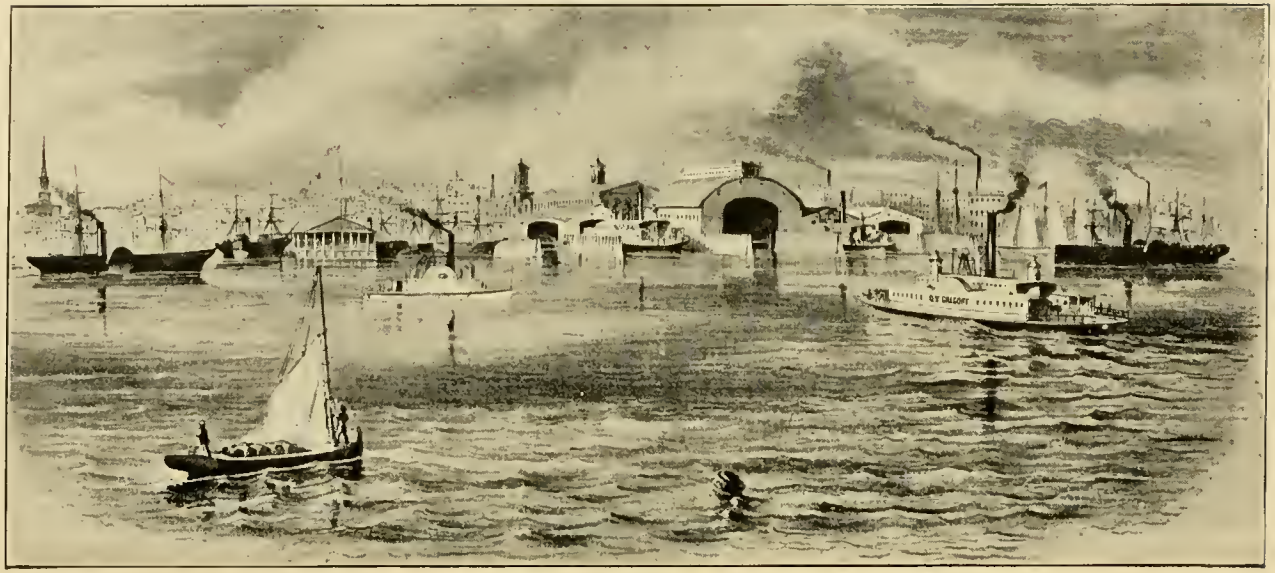
Hetfelsen acted as ferryman until 1672, when John Tymensen was commissioned to take his place. It is probable that this ferry continued in operation until the opening of the Paulus Hook ferry drove it out of business, but there is no mention of it until 1783, in which year an advertisement appeared stating that "Aaron Longstreet would take passengers to Communipaw to connect with the stage running to Newark and Philadelphia." Soon after the British evacuated Paulus Hook in 1783 the Communipaw ferry seems to have fallen into disuse until the Central Railroad of New Jersey was extended to Jersey City, about 1864, when the ferry was revived and has been running ever since.

The Jersey City ferry was established June 18, 1764, and was part of a new route to Philadelphia by way of Bergen Point and Staten Island. It was founded by Abraham Mesier and Michael Cornelissen. The landing place at New York was at Mesier's Dock at the foot of Cortlandt street. By arrangement with Cornelius Van Vorst the landing on the Jersey side was at Paulus Hook at the foot of Grand street. Passengers en route to Philadelphia stopped at Major Hunt's tavern at the landing place and took the stage the next morning. The trip between New York and Philadelphia took three days. It will be noted that these early ferries were principally for the convenience of persons travelling between New York and Philadelphia and other points. It is evident that Jersey City was considered in those days, as unfortunately it was for long afterward, not as a place to go to, but only as a place to pass through when going somewhere else.

From the very first the owners of the ferry found it difficult to make it pay. The ferry changed hands several times and was leased to different persons, and the amount of rent to be paid was readjusted again and again.

In March, 1799, the Common Council of New York established the rates of ferriage, which in view of the present fares seem

FIRST STEAM FERRY BOAT—1813. (After Drawings and Description by Robert Fulton.)



VIEW OF JERSEY CITY FERRY, ABOUT 1857. (From an Old Print.)

decidedly high. For example an ordinary foot passenger was charged 9 pence; a coach or covered wagon 8 shillings; a horse 1 shilling 9 pence. Almost everything that can be thought of is specified; thus a feather bed is rated at 6 pence; a common chair 1 penny; a mahogany chair 2 pence; a chest of tea two shillings.

Until 1804 the ferry and the adjoining land was owned by Cornelius Van Vorst. In 1804 the "Associates of the Jersey Company" were incorporated and the ferry conveyed to them. In the same year Joseph Lyon of Elizabethport leased the ferry, and the landing place was moved to a point lying between York and Grand streets.

Up to this time the ferry accommodations consisted of a few rowboats with two oarsmen to each and a few extra oars which the passengers were expected to use if they were in a hurry to cross. There were also two periaugers which were used when the wind was good, or when it was necessary to take a horse and carriage. With a favorable wind the passage could be made in half an hour, but sometimes it took three hours to cross.

The success of Fulton's "Clermont" in 1807, however, suggested the use of steam for ferry boats; and in 1809 Elisha Boudinot, General Cummings and a number of other Newark men subscribed $50,000 to start a steam ferry, and Fulton was asked to construct a boat suitable for such a purpose. In March, 1811, they obtained a lease of the ferry and the privilege of landing on the New York side.

In the meantime John Stevens of Hoboken commenced the construction of a steam ferry boat for the Hoboken ferry and succeeded in completing it by October, 1811, nearly a year before Fulton's boat was used on the Paulus Hook Ferry. The honor of putting in operation the first steam ferry boat therefore belongs to John Stevens; but having won the credit he seems to have abandoned the use of steam after a short period and gone back to the old fashioned horse boat.

Fulton had ordered two boats to be built by Charles Brown, who had constructed the Clermont, and on July 2, 1812, one of them, named the "Jersey," was completed and put in operation. Some alterations were found to be necessary, however, and it was not until July 17 that the regular trips were begun. To celebrate the event an entertainment was given at Lyon's tavern in Jersey City to the Mayor and Common Council of New York City and a number of other prominent guests. A passenger who made the trip on the first day writes as follows: "I crossed the North River yesterday in the Steam Boat with my family in my carriage, without alighting therefrom, in fourteen minutes with an immense crowd of passengers. I cannot express to you how much the public mind appeared to be gratified at finding so large and so safe a machine going so well. On both shores were thousands of people viewing the pleasing object."

Fulton's description of the boat is as follows: "She is built of two boats, each ten feet beam, eighty feet long, and five feet deep

vived by the Erie Railroad Company, who have run the ferry ever since. The Twenty-third street branch of this ferry was established in May, 1868.

In 1822 a Brooklyn ferry boat was run between Jersey City and Long Island City. This boat, however, was only used for the accommodation of people attending the races which were being held at the Union Race Course at Long Island. It only made four trips a day and was discontinued when the races were over. The first permanent ferry between Jersey City and Brooklyn was started when the Brooklyn Annex was put in operation on August 12th, 1877. On December 7, 1897, this ferry was purchased by the Pennsylvania Railroad, by whom it has been operated ever since.

On December 1, 1891, the Pennsylvania Railroad opened a ferry from the foot of Morgan street, Jersey City to Thirteenth street, New York. This was used principally for wagon traffic, and was discontinued May 1, 1900.

Considering the long time the Jersey City ferries have been in operation and the enormous number of passengers that have been carried during that period there have been remarkably few accidents. Soon after the steam ferry was started, the boiler of one of the boats, the "New Jersey" exploded while she was lying in the slip. This occurred shortly after the boat was built, and two of the persons who happened to be on board were killed.

On October 31, 1899, the ferry boat "Chicago," of the Cortlandt street line, was run into by the steamer "City of Augusta" and sunk. The accident occurred about one o'clock in the morning. There were over one hundred passengers on board, but only two lives were lost.

At the present time there are eight ferry lines connecting Jersey City with New York. These are the Erie Railroad ferries, running from the foot of Pavonia avenue and landing at Chambers street and West 23rd street, New York City; the Pennsylvania system, leaving from Exchange Place and landing at Cortlandt street, Desbrosses street, and West 23rd street, New York, and the Annex to the foot of Fulton street, Brooklyn; the New Jersey Central ferries, running from the railroad terminal at Communipaw, with landings at Liberty street and West 23rd street. All these lines are equipped with first class boats and maintain excellent service day and night.

On the 25th of February, 1908, the first tunnel under the Hudson was completed and opened to the public. This was the consummation of one of the greatest engineering feats of modern times and marked the beginning of a new era in the history of transportation between Jersey City and New York.

The art of tunnelling has been known to man from the earliest times and doubtless originated from the caves and other natural underground passages which were used for shelter by prehistoric man. In Egypt long tunnels have been found which were cut through solid rock thousands of years ago, serving as passages to the tombs of

ancient kings. Similar rock cut tunnels were made by the early inhabitants of India in building their temples and by many other ancient races. The tunnels constructed by the Assyrians are probably the earliest examples of built up tunnels. The vaulted drain under the palace of Nimrud, built about 860 B. C., may be considered a genuine soft ground tunnel. A similar example and what might quite properly be considered as the first subaqueous tunnel on record was under the Euphrates River. This was built of brick masonry and was 12 feet wide and 15 feet high. When this was being constructed, however, it was not strictly speaking, a subaqueous tunnel for it was built under the dry bed of the river, the waters of which were turned aside until the tunnel was completed.

Of course among the ancient peoples such work was all done by hand, the tools being pick and shovel for the soft ground; and hammer, and chisel and wedges for rock tunnelling.

The Romans were the greatest tunnel builders of ancient times and devised many ingenious methods for the work. Their tunnels were constructed principally for acqueducts and roads, and some of them are wonderful examples of engineering when the absence of modern facilities for such work is considered.

During the middle ages tunnels were only built for military purposes and little progress was made in the methods of work until the introduction of gunpowder. Up to the beginning of the 19th century most all the tunnels were built through rock or hard ground, the soft ground tunnel being scarcely ever attempted.

In 1803 a tunnel 24 feet wide was cut through soft soil for the St. Augustine Canal in France. Timbering was used to support the roof and sides while the earth was being removed, and was followed by a lining of masonry.

One of the greatest factors in bringing the art of tunnelling to its present importance was the development of the steam railway. Almost immediately tunnel building increased. About 1820 two tunnels were constructed on the Liverpool and Manchester Railway in England. In the United States the first railway tunnel was built on the Allegheny Portage Railroad in Pennsylvania, in 1831-33. This increase in tunnel building was accompanied by corresponding progress in methods of construction and the introduction of improved machinery and special devices.

One of the greatest of these improvements was the invention and development of the shield system without which the construction of the present great submarine tunnels would have been impossible. In the construction of mountain tunnels such as those under the Alps and other rock tunnels, the principal difficulties encountered were the hardness of the rocks, the great length of tunnel, the lack of ventilation, etc. Tunnelling under water, however, is radically different. The mere excavation presents little trouble ; but flooding has constantly to be guarded against, and as the work is usually through

soft soils, mud, gravel or clay, the engineering problems are very different and exceedingly difficult.

By the use of the shield and compressed air most of these difficulties have been overcome. The shield was invented by Sir Marc Brunel in 1825; and has been steadily improved and has changed so greatly that little remains of the original device except the idea. One of the first great improvements in connection with the shield method was the use of cast iron lining by Peter Barlow in 1869 in the tunnel under the Thames, England. Lord Cochrane first suggested the use of compressed air and in 1830 took out a patent for air locks and other appliances to be used in tunnelling. Compressed air without a shield was used in the old Hudson River tunnel in the seventies. The next great step in the art of tunnel building was made in 1887, when a greatly improved shield was devised by J. H. Greathead. This is the one which is now generally used, but in minor details the construction and use of the shield varies considerably. The shield used in the construction of the Hudson tunnels is thus described in a recent number of the "Review of Reviews":—

"This shield, which is one of the greatest inventions in construction machinery of the past half century, resembles in appearance a great drum built of heavy steel plates. In the head of the drum, which is known as the diaphragm, there are doors for the passage of the workmen and the withdrawal of the clay and other excavated material. The upper edge of the drum is a cutting knife which goes through the hardest material when the shield is driven forward by the pressure from hydraulic jacks, holding up the river as it goes with compressed air while the waste material is removed. The upper portion of the drum which extends backward over that portion of the tunnel tube which has been completed, known as the 'tail of the shield,' forms the protection for the men who are setting up the iron castings, ring by ring, and making the tunnel proper. Immediately back of the head is the great crane, or 'erector,' which picks up the castings and holds them in place while they are bolted together. The entire work is carried on under air pressure which is made possible by placing in the mouth of the completed tunnel some distance in the rear of the shield a solid bulkhead in which are fitted and placed air-locks through which workmen and materials pass to the work at the shield. Thus the completed tunnel advances. The tunnels themselves are made up of iron castings bolted together and set in place consecutively as the boring shield opens the way for them."

Many important tunnels were constructed after the introduction of the improvements referred to, but none that equalled the Hudson tunnels in magnitude or in the difficulties encountered.

In 1874 a civil engineer by the name of D. C. Haskins, conceived the idea and organized a company to construct two tunnels from a point near the Palisades, in Jersey City, to a terminus at or near Washington Square, New York. At that time it was his purpose to

build, if possible, a union railroad station at Washington Square, and induce trunk line railroads in New Jersey to make joint use of it. Haskins began the construction of one of these tunnels in 1879, and built about 1800 feet of one tunnel. In 1882 his company failed. In 1890 the company was reorganized and the English contracting firm of S. Pearson & Sons undertook to build the tunnel to the foot of Morton street. After building 1800 feet additional the company again failed in 1892, leaving, at that time, 3600 feet of single tunnel constructed from the waterfront of Jersey City towards New York. This tunnel was eighteen feet in diameter, one-half brick and one-half iron.

At the time the work was commenced there had been little experience in the construction of such a tunnel and with the difficult conditions that existed the work was necessarily dangerous and costly. It is said that over $4,000,000 was expended by these early companies in the prosecution of the work.

At first the shield was not used, the excavation being made under pneumatic pressure. It was extremely difficult to keep up this pressure as the earth was too loose to retain the air, and as soon as it escaped the water would rush in.

On July 21, 1880, a serious leak occurred which resulted in the loss of twenty lives ; and brought out one of those instances of heroism which have so often been displayed during the progress of great engineering works. One of the workmen, named Peter Woodland, a resident of Jersey City, was the first to discover the leak. He was at the door of the air-lock and giving warning to the men hurried them through the exit. After eight of the men had gotten through Woodland saw that if the door were not quickly closed from the inside all would be drowned. So to save the lives of those who had already passed he at once closed the door, and the water soon filling the chamber, drowned him and the others who had been unable to pass. Woodland could have saved his own life when he discovered the accident, but instead he kept to his post to save his comrades. A monument commemorating the event has been erected over his grave in the New York Bay Cemetery, in Jersey City.

The tunnel proposition lay dormant for about nine years, until in 1901, Mr. William G. McAdoo became interested in the idea and entered into negotiations with the Bondholders Re-Organization Committee, of which Mr. F. B. Jennings, of the firm of Stetson, Jennings & Russell, was Chairman. Mr. McAdoo presented a plan for the completion of the single eighteen foot tunnel, which was to contain two tracks and be operated with narrow-gauge cars of special design, and was to run from the Lackawanna station in Hoboken, to a terminal at Ninth avenue and Christopher street, New York, and the New York and New Jersey Railroad Company was organized by him for this purpose in the early part of 1902, and he was elected President. A short time after, Mr. McAdoo became convinced that the operation

of the single tunnel with narrow-gauge cars would not be satisfactory, and a second tunnel, parallel to the first, was undertaken. He also became convinced that no tunnels under the Hudson river would be satisfactory unless a system was provided by which the people could be landed into the downtown district of New York as well as the uptown district. With this in mind, a new tunnel system was planned to extend from Hoboken, through the Erie and Pennsylvania railroad stations in Jersey City, thence crossing the Hudson river to a terminal station at Cortlandt and Church streets, New York, and it was also planned to extend the uptown tunnels from Ninth avenue and Christopher street to Sixth avenue and Thirty-third street, also from Ninth street and Sixth avenue to a connection with the Subway at Fourth avenue. In 1903 Mr. McAdoo organized a company to build the downtown tunnels, and entered into an arrangement with the Pennsylvania Railroad Company, negotiations having been conducted with Mr. A. J. Cassatt, for terminal facilities in Jersey City and for the Pennsylvania Railroad Company's co-operation; without which the downtown section could not have been constructed. Since that time an extension from Thirty-third street and Sixth avenue to the Grand Central station has been planned and a franchise therefor has been obtained.

Upon the organization of the first company in 1902, W. G. McAdoo was elected President, Walter G. Oakman, then President of the Guaranty Trust Company, was elected Vice-President, and Charles M. Jacobs was elected as Chief Engineer. In 1905 the firm of Harvey Fisk & Sons became interested in the project through the instrumentality of Mr. Walter G. Oakman. The uptown and downtown tunnel companies as well as those incorporated in New Jersey, as required by law, were consolidated into the present Hudson and Manhattan Railroad Company on December 1, 1906, Mr. McAdoo having been President of all the tunnel companies from the beginning.

Mr. Charles M. Jacobs has been chief engineer of construction from the beginning, and Mr. J. V. Davies, his partner, has been deputy chief engineer.

The men upon whom has chiefly rested the responsibility for the enterprise are Pliny Fisk and Wilbur C. Fisk (now Vice-President of the Hudson & Manhattan Railroad Company) both members of the firm of Harvey Fisk & Sons, bankers; Mr. Walter G. Oakman, President of the Hudson Companies, which constructed a portion of the tunnels but is now more of a holding and financing company; Mr. William M. Barnum, until recently a member of the firm of Harvey Fisk & Sons, and William G. McAdoo, President of the Hudson & Manhattan Railroad Company.

On the engineering staff Mr. Charles M. Jacobs is Chief Engineer, Mr. J. V. Davies, Deputy Chief Engineer, Mr. L. B. Stillwell, Consulting Electrical Engineer; Mr. Hugh Hazelton, Electrical Engineer, and Mr. John Van Vleck, Mechanical Engineer.

It is almost impossible to conceive of the difficulties of this

WILLIAM GIBBS McADOO

is of Scotch descent and was born near Marietta, Georgia, in 1863. Graduated from the University of Tennessee. Removed to New York in 1892 and practiced law. In 1901 became interested in the construction of the Hudson Tunnels, and has been identified with that enterprise ever since.

undertaking and it is only due to the untiring energy and patience of Mr. McAdoo and his assistants that the task has been achieved.

Mr. McAdoo in a speech delivered February 25, 1908, gives the following description of some of the obstacles met with:

"At the deepest part of the river near the New York side a ledge of rock was encountered at the bottom of the river. This ledge was only twelve feet high while the tunnel was eighteen feet. The problem that was presented was having to build the bottom of the tunnel through rock and the top through silt and at the same time support a river more than one mile wide and sixty-two feet deep, with a cover of only fifteen feet of silt between the top of the tunnel and the bottom of the river. It was necessary to blast the rock in the bottom and hold the silt at the top. This problem was considered so serious that for many years doubts have been entertained by eminent engineers as to whether or not it was possible of solution. This was, however, solved by the chief engineer, Mr. Charles M. Jacobs, and inside of a year the eight hundred feet of rock had been blasted out and the successful construction of the tunnels under the Hudson River was assured."

The physical difficulties were not the only ones that had to be met and overcome. The financing of such a gigantic scheme was not an easy matter, and the enterprise had just gotten fairly under way when the panic of 1903 struck the business world with disastrous effect, and it seemed for a time as though the undertaking would have to be temporarily abandoned. This crisis, however, was weathered successfully, but in the meantime other difficulties presented themselves. Various railroad and street traction interests, fearing the competition of the tunnel system, contested the right of way of the tunnel companies and endeavored to prevent their obtaining the necessary permits for extending the lines under the Jersey shore and in New York. All these attempts to defeat the enterprise were finally overcome, largely through Mr. McAdoo and his powerful arguments before the New York Rapid Transit Commission. In spite of all these obstacles the tunnels were finally completed, the first section running from Hoboken to New York being opened to the public February 25, 1908, that from Jersey City to New York on July 19, 1909.

The tunnels consist of two tubes entirely separate from each other about fifteen feet in diameter inside. The tubes are made of iron rings securely bolted together. These rings measure sixteen feet in diameter and weigh five tons each. In most places they are covered with a coating of concrete, so the interior of the tube is smooth. The tunnel tubes are from sixty to ninety feet below the surface of the Hudson, and the distance between the roof of the tunnel and the bed of the river is from fifteen to forty feet. The tubes are about thirty feet apart.

The tunnel as originally planned was to have been a single tube from Hoboken to Christopher street and Ninth avenue, New York, a

distance of two miles. The present system when finished will comprise about twenty miles of single track or ten miles of double track tunnels.

All the latest devices in the construction and operation of the system are used. The trains are run on the third rail system and the cars are made entirely of steel and are absolutely fire-proof. The doors of the cars are operated by compressed air, and are automatically adjusted so that the electric signal to start the train cannot be given until every door is closed. There are also automatic devices for stopping the train in emergencies.

The great terminal building at Cortlandt street, New York, is almost as great an engineering triumph as the tunnels. The combination of office buildings and railroad terminal was an idea original with the tunnel company and has been worked out on a gigantic scale, with many unique and remarkable features. It really consists of two buildings, each covering an entire block, and connected by a bridge over the intervening street. The building is twenty-two stories above the street and four stories below, and is probably the largest office building in the world. It will accommodate 10,000 persons. The construction is of solid steel, 28,000 tons being used, and the total cost was over $13,000,000. Its erection was a remarkable feat of engineering. Soon after starting to dig for the foundation a bed of quicksand was encountered. Before the foundation could be laid it was found necessary to sink an immense cofferdam inclosing the entire space for two square blocks. The space inside of this was excavated to a depth of nearly one hundred feet to the bed rock on which the caisons and concrete foundations of the building were placed. The terminal station for the tunnels is in this building about thirty feet below the street level, and connections can be made here with the subway and elevated roads and there is also a passage leading to Broadway. The ticket offices, baggage and similar rooms are on the next floor; and on the street level the office floors of the building commence.

The thanks of the Trustees of the Free Public Library are due to Mr. William G. McAdoo of the Hudson and Manhattan Railroad Company and to Mr. F. L. Sheppard of the Pennsylvania Railroad Company for information furnished; and to Edmund W. Miller, Secretary of the Public Library, for the compilation of the foregoing paper.

JERSEY CITY.

First settled at Paulus Hook	1633
Town of Bergen settled	1660
Jersey City incorporated	1820
Van Vorst township consolidated with Jersey City	1851
Bergen and Hudson City consolidated with Jersey City	1870
Greenville annexed to Jersey City	1873
Population of Jersey City, 1802	13
" " " " 1829	1,025
" " " " 1870	82,545
" " " " 1900 (United States Census)	206,443
" " " " 1905 (State Census)	232,699
" " " " 1909 (Estimated)	253,711
Area of city (square miles)	19.2
Assessed valuation	$232,769,781
Tax rate	$1.92
Number of manufactories in city	1,090
Number of employees	25,958
Capital invested in manufactures	$190,376,596
Value of products	$110,431,915
Number of public schools	34
Number of pupils	32,371
Number of city parks	10
Area of city parks, (acres)	40.36
County park, (area, acres)	208
Total value of public property	$7,654,451
Principal public buildings:—	
New County Court House, cost	$900,000
City Hall, cost	$750,000
New City Hospital, cost	$316,000
New High School, cost	$521,000
Public Library, cost	$268,000

HUDSON COUNTY.

Hudson County was incorporated in 1840, before that date being a part of Bergen County.

Area of Hudson County, (square miles)	43
Population, 1840	9,483
" 1900	386,048
" 1905 (State Census)	449,879
" 1909 (Estimated by Board of Health)	500,695

Hudson County has the smallest area and the largest population of any county in New Jersey.

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The Free Public Library of Jersey City was incorporated in 1889, and was opened to the public July 6, 1891, in temporary quarters in the basements of the buildings of the Hudson County National and Provident Savings Banks on Washington street. On May 24, 1899, the contract was awarded for the erection of the present building on Jersey avenue, the site of which had been purchased a few years before. On January 16, 1901, the new building was completed and opened to the public.

The Library is a plain, substantial fireproof building of Colonial design, built of granite and buff brick. It is four stories high, with a steel book stack in the rear. The building is 190 feet front, and 46 feet in depth; and the stack extension is 34 x 38 feet.

When first opened, the Library contained 15,000 volumes; it now has 116,800 volumes upon its shelves. The total number of books used during 1908 numbered 711,964. The Library has two branches and maintains nineteen delivery stations, at which books are collected and delivered daily.

In addition to a large circulating department, the Library contains a very complete collection of books of reference, including a Law Library of 5,000 volumes; a Medical Library of 2,500 volumes, and forty-two medical periodicals regularly kept on file; and a large collection of books especially selected for the use of teachers and pupils of the schools. There are kept on file, in the reading rooms, nearly 400 periodicals and newspapers.

The Children's Department contains 5,000 volumes of books for home reading and a reading room for the special use of the children.