THE LONG ISLAND RAIL ROAD

A COMPREHENSIVE HISTORY

by

Vincent F. Seyfried

Part Seven

The Age of Electrification

1901–1916

Published by
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Preface

The "Age of Electrification" might, with no less accuracy, have been titled the "Age of Transition". Although the time span chronicled here is a brief one of only sixteen years (1901–1916), certainly no comparably brief span of years witnessed such extensive and far-reaching changes touching every aspect of the railroad's activity. In this brief period the Long Island Rail Road acquired its present physical appearance and made the leap from a summer excursion line to the busy commuter road that it is today.

It has been necessary to include much material involving the Pennsylvania Railroad—the East River tunnels, Penn Station, the Sunnyside Yards, the Long Island City power house, etc. Purists may object that this material is not properly part of Long Island Rail Road history, yet the average commuter of today certainly considers the tunnels and Penn Station integral parts of the Long Island system and would regard their exclusion as altogether too narrow a point of view.

I am under lasting obligations to many persons and institutions for help during the writing of this volume: the Long Island Historical Society for the fullest access to files of the "Brooklyn Daily Eagle", the Long Island City "Weekly Star" and the Huntington "Long Islander"; to Evert Volkersz, Head of Special Collections, Stony Brook University, for making available to me many timetables from the Emory Collection; to Robert Emory himself for the dispositions of the wooden cars and his late father's tower lists; to Harold Goldsmith for the labor and effort of compiling for me the entire locomotive roster for this period as well as the 1898 renumbering; to Ron Ziel for some of the pictures; to Harold Fagerberg for photos of rolling stock and passenger cars; to Jeffrey Winslow for photos from the Holman Collection; to Arthur Huneke for photos and Xeroxes; and above all, to Felix Reifschneider for a critical reading of the entire manuscript. Finally, I owe a lasting debt of gratitude to Walter Fuller who guided this seventh volume through the difficulties and perils of publication in these inflation-ridden days.

Garden City
December 1981

Vincent F. Seyfried

Contents

Some Important Dates

1901:	
May	New station at Auburndale
1902:	
Dec. 18	Long Island City station destroyed by fire
1903:	
Feb. 25	Start of the Penn tunnels; first two houses demolished for tunnel
Apr. 27	New Long Island City station opens for use after fire
May 27	Six new tracks opened through Jamaica village
May 28	East New York elevated opened to eastbound trains-Snediker to Atkins
Jun. 13	Work begun on Weehawken shaft for Penn tunnels
Jun. 25	Work begun on Manhattan shaft
Jul. 30	East New York elevated opened to westbound trains-Snediker to Atkins
Aug.	Double track Far Rockaway Branch- Valley Stream to Far Rockaway
Fall	Four-track Rockaway line- Woodhaven Jct. to bay trestle
Nov. 23	Atlantic Ave. elevated through Bedford put into use
Dec. 11	Work finished on Manhattan shaft of Penn tunnels
1904:	
Apr. 18	Work begun on New York side of North River tunnel
May	Start of digging out Flatbush Avenue site for new station
May 17	First work begun on 11th Street shaft for Penn tunnel in Long Isl. City
Jun. 29	Third track on Rockaway peninsula opened
Sept. 1	Work completed on Weehawken shaft of Penn tunnels
Sept. 1	Work begun on Jersey side of North River tunnel
Sept. 16	Subway section, Howard Ave. to Stone Ave. opened to eastbound trains
Oct. 1	Subway section, Howard Ave. to Stone Ave. opened to westbound trains
1905:	
Apr. 8	Brooklyn Bridge-Jamaica service discontinued
Apr. 25	Four-track section opened- Woodhaven Jct. to Autumn Ave. on Atlantic Ave.
May 25–Jun. 1	Old Flatbush Avenue station demolished

Jun.	Open temporary ticket office shack at Flatbush & Atlantic Avenues
July	LIRR purchase of Wading River experimental farm site
Jul. 26	Opening of electric service-Flatbush Ave. to Rockaway Park
Jul. 26	First passenger train uses Flatbush-Nostrand Ave. tunnel
Jul. 26	First passenger train uses underground Flatbush Ave. station
Summer	Holban Yards laid out
Aug. 29	Electric service opens- Flatbush Avenue to Jamaica
Aug. 29	New stations at Nostrand Ave. and Warwick St. opened to use
Oct. 2	First electric service to Belmont Park Race Track
Nov. 1	First electric service to Queens Village
Nov. 4	End of steam passenger service into Flatbush Ave. station
Nov. 4	Bedford station at Franklin Avenue abandoned
Nov. 5	Underground station at Flatbush Ave. opened for regular full service
Dec. 1	Electric service extended on peninsula-Hammels to Far Rockaway
Dec. 11	Electric service extended- Jamaica to Valley Stream
1906:	
Jan.	Double track opened- Babylon to Oakdale
Spring	Site for Medford demonstration farm purchased
Sept. 12	North River tube bored through & group make tour through it on foot
1907:	
Feb.	Work begun on laying out the Sunnyside Yards
Apr. 1	New Flatbush Avenue station opens for use
Apr.	Third & Fourth tracks open- Jamaica to Woodside
Oct. 1	James slip ferry service abandoned
1908:	
Feb. 21	Tube D (southernmost) of East River tunnels holed through
Mar. 5	Tube C of East River tunnels holed through
Mar. 18	Tube A holed through
May 1	IRT opens service to LIRR station at Flatbush & Atlantic Avenues
May 26	Electric service extended through to Hempstead
May 30	LIRR service extended over Williamsburgh Bridge to Delancey Street
Sept. 12	LIRR trains begin running on new embankment through Sunnyside Yards
Sept.–Nov.	Pennsylvania R.R. tests electrical equipment on Central Extension

Aug. 22	Work begun on the Glendale Cut-off
Sept. 30	Annex ferry to Wall Street abandoned
1909:	
March	Work begun on Maple Grove realignment & four-tracking Main Line
Mar. 1	Glendale Cut-off completed
May 12	Double track between Roslyn and Glen Cove opened
Sept. 4	New Main Line thru Forest Hills & Maple Grove (Kew Gdns.) opens
Sept. 21	First test train runs from L.I. City to Penn Sta. thru East River tubes
Oct.	Long Beach gets first year-round service
Oct. 30	New Hicksville station opens
1910:	
Apr. 13	Electric loco. & 6 cars make trial run from L.I. City to Penn Sta.
Jun. 16	Electric service extended: L.I. City to Far Rock. via Main Line & cutoff
Jun. 16	First trains over the Glendale Cut-off
July	New station at Malba added to timetables
Jun. 23	Electric service opens: Woodside-Jamaica & Woodhaven Jct.
Jul. 26	Work begun on Jamaica station elevation
Aug.	Harold Tower activated
Sept. 8	Electric service extended to Long Beach
Sept. 8	LIRR trains begin service to & from Penn Station
Nov.	Bridge for westbound tracks over Van Wyck Blvd. Jamaica opened
Nov. 27	Pennsylvania R.R. trains use North River tubes for first time
1911:	
Mar.	Plandome station becomes a regular stop on timetables
Mar.17	Double track between Hicksville and Syosset opens
Apr. 1	LIRR begins operation of its first battery car on Bushwick Branch
May 14	Double track between Broadway and Great Neck opened
June	Nassau station changes name to Glen Cove
Aug.	New station at Forest Hills added to timetables
1912:	
Spring	Double track between Glen Cove & Locust Valley opens
July	New Bay Shore station building opens

Sept. 10	Trains begin using new depressed right of way through Flushing village
Oct. 22	Electric service extended: Woodside to Whitestone Landing
Oct. 15	Old Murray Hill station demolished
Nov. 11	Old Flushing-Main Street station demolished
Dec.	Old single-track tunnel east of Main St. Flushing demolished
1913:	
Feb.	Norwood station changes name to Malverne
Mar. 9	New Jamaica Station opened; old station & Beaver St. station abandoned
Spring	LIRR begins battery car operation on West Hempstead Branch
July 1	All five platforms of new Jamaica Station opened to use
Aug. 4	LIRR service extended from Delancey St. to Chambers St. on BRT
Oct. 21	Electric service extended on North Shore Br. to Port Washington
1914:	
May 27	Double track at Cold Spring Harbor opened from Syosset
June	Old South Ferry station of 1836 demolished
Jul. 1	Hunter's Point Avenue station opened
Dec. 17	Use of wooden center door cars ends in local service
1915:	
Summer	Shuttle trolley begins service at Clinton Road station, Garden City
Oct. 6	Westbound track at Woodside opened to traffic on Winfield Realignment
Nov. 1–6	Old Woodside station demolished
Nov. 9	All traffic uses new route through Woodside on Winfield Realignment
1916:	
Sept. 2	Adamson Eight-hour Law passed by Congress
1917:	
Jun. 12–15	Federal Government announces that camp site will be established on Long Island
Jul. 7	First train runs into Camp Upton
August	Camp Mills in Garden City established
Dec. 26	Federal Government takes over the railroads of the country

1918:

Jun. 7	Double track opened between Hicksville and Central Park
Aug. 30	Double track opened between Central Park and Farmingdale

CHAPTER I

The Long Island R.R. as a Corporation

OF all the changes that have affected the Long Island R.R. in its 150 year history, few have been as profound and as far-reaching as the purchase of the road by the Pennsylvania Railroad. By 1900 the Pennsylvania had already amply made good its boast of being the standard railroad of the world, and its enormous wealth, executive talent and geographical extent assured it of certain success in any project it wished to undertake. As befits so large a corporate giant, the Pennsylvania in all its decisions moved with calculation, deliberation and a careful assessment of the risks. In New York, the greatest city and largest market in the East, the Pennsylvania in 1900 enjoyed no special advantage. Like its half dozen competitors it had a waterside terminal on the Jersey side of the Hudson and that was all. Its chief rival, the New York Central, alone could boast of a terminal on Manhattan Island. The Pennsylvania, well aware of this disadvantage, had been considering an improvement in its position in the New York area since 1890 and had laid its plans accordingly.

The first step in this calculated campaign was the acquisition of the Long Island R.R. Although the Long Island in 1900 was primarily a rural rail line with a mostly seasonal traffic and its earnings were negligible alongside those of the Pennsylvania, yet its potentials were great if it were to become the property of a bigger road. The Long Island had two deep-water terminals in the New York Harbor at Long Island City and Bay Ridge; it had a network of tracks in Brooklyn at that time the fourth largest city in the United States after New York, Chicago and Philadelphia and which originated an immense commercial traffic; the Long Island controlled access to an immense resort area stretching from Coney Island and Manhattan Beach to Long Beach and the Hamptons. Perhaps the most attractive feature of the Long Island R.R. was that, if it could be physically linked up with the Pennsylvania Rail Road by a bridge or tunnel, it could open up an immense new traffic opportunity and might even serve as a gateway to the New England market. What the Long Island R.R. had always lacked was capital to develop itself

and to realize its potentials; the Pennsylvania was in position to supply this lack in abundance. The Brooklyn Bridge had proved that the East River could be bridged; the half completed Hudson Tunnel had proved the Hudson River could be tunneled as well. Why not repeat one or both attempts for the aggrandizement of the Pennsylvania Railroad?

With its thinking running along these lines, the Pennsylvania began acquiring slowly all the loose shares of Long Island R.R. stock that came onto the market. Majority control of the Long Island R.R. was in the hands of the Pratt syndicate, composed of August Belmont, the banker and president of the Interborough Rapid Transit Co., Theodore A. Havemeyer, vice-president of the American Sugar Refining Co.; George W. Young, president of the United States Mortgage & Trust Co. and Charles M. Pratt himself, president of the Pratt Refining Co., formerly vice-president under the Corbin regime and owner in his own right of a quarter of Long Island R.R. stock.

During late 1899 and early 1900 the Pennsylvania Rail Road negotiated with the Pratt syndicate for purchase of their controlling majority of the securities. The syndicate was in no hurry to sell and when it did, it reaped a handsome profit. The Pennsylvania had to buy at 97 or $48.50 a share. By its purchase the Pennsylvania Railroad acquired 6,030,000 of the twelve million shares of capital stock outstanding. The news of the sale was confirmed to the newspapers on May 5, 1900. In June President Baldwin of the Long Island R.R. went to Philadelphia to confer with President Cassatt of the Pennsylvania Railroad and within two weeks the board of directors held a new meeting to seat four Pennsylvania appointees, among them Samuel Rea, its 4th vice president. Surprisingly, the Pennsylvania did not absorb the Long Island and convert it into a component of the bigger road so as to blot out its separate identity; rather, the Pennsylvania contented itself with majority control of the board and the finances of the road, but left the operating officials and the day-to-day running of the road untouched. William H. Baldwin was left as president and William F. Potter as general superintendent while Charles M. Pratt and a number of other local directors retained their seats as directors.

The officers of the road for the next dozen years were as follows:

President:	William Henry Baldwin 1900–1905; William Frederick Potter 1905 Ralph Peters, pres. & gen. mgr. to his death on Oct. 9, 1923 at 70

Vice-president:	David C. Green 1905–1906; Henry Tatnall 1907–
Secretary:	Frank Haff 1901–
Treasurer:	R. W. Smith 1901–1903; Henry Tatnall 1905–1907; James F. Fahnestock 1908–
Ass't Treasurer:	John M. Wood 1901–
Comptroller:	R. W. Downing 1901–1904; M. Riebenach 1905–1910; C. M. Buntine 1911–
Auditor:	Albert B. Bierck 1901–
General Superintendent:	James A. McCrea 1907–

The Pennsylvania Railroad owners toured the Long Island R.R. in June 1900 noting the physical condition of the road and what had to be done to bring the road up to Pennsylvania standards. It was felt that track and roadbed and rolling stock had come a long way under the Pratt management but that there was still a long way to go. The Pennsylvania officials promised much upgrading and faster trains; best of all, they backed in full President Baldwin's ambitious program presented to the Long Island directors at their June 1899 meeting:

1. Completion of the Atlantic Avenue Improvement to eliminate all grade crossings inside the Borough of Brooklyn
2. Electrification of the western end of the road
3. Constant elimination of grade crossings everywhere on the Island
4. Building of feeder trolley lines at Rockaway, Huntington, Northport, Sea Cliff and Glen Cove
5. Upgrading of Jamaica station and the Long Island City terminal

At the time of the Pennsylvania take-over, some of this program was far advanced in respect to planning and legislation (Atlantic Avenue Improvement); other parts had been accomplished such as the purchase and electrification of the feeder trolleys at Rockaway and Huntington. By wisely retaining the same management team, the Pennsylvania Railroad insured continuity of planning and supervision, while at the same time giving these men greater resources to work with.

A few small changes were introduced immediately by the Pennsylvania. Some of the offices were transferred to New York from Long Island City; the public noticed that the highway crossing gates, the signal posts, mile posts, etc. were now painted black and white instead of dark red. Car signs began for the first time to be placed at the forward end of each passenger coach announcing the destination. These were

black on red background. Other than these minor changes the Pennsylvania attempted no further changes for eleven years. Not till March 1911 did the Pennsylvania impose any additional visible signs of its ownership. Then an order went out that all the employees of the Long Island would wear uniforms conforming in color and style to those worn by train men of the Pennsylvania. The new uniforms were to be blue of about the same shade as then currently worn, but instead of the decorations being in gold braid, silver would be substituted. A slight difference in the cut of the new garments was also introduced. Summer uniforms would consist of blue cloth coat and white caps and vest, with "Pennsylvania Railroad" buttons and lettering on the coat. The regulations called for conductors to wear frock coats and the brakemen sack coats with different ornaments. When cars were to be painted henceforth, the dark maroon of the Pennsylvania would be used, but the name "Long Island" would continue to be lettered on the cars. The Pennsylvania was cautious to stop short of anything that would invalidate the charter of the Long Island since that charter had now come to be one of the most valuable instruments in the state, being perpetual and giving the Long Island nearly unlimited powers.

During these first years of the 20th century, the chief operating officials were as follows:

William F. Potter:	general superintendent 1901–1903; general manager and vice president in 1904; member board of directors president Jan. 1905
Charles L. Addison:	first came on the road as an electrical engineer; then became supt. of transportation; advanced to roadmaster; then in 1904 became general superintendent. Assistant to president 1908–1917
F. Hartenstein:	originally conductor on the Pere Marquette in Michigan; brought by Potter to LIRR and made freight trainmaster; in 1904 made superintendent of transportation; superintendent 1907–1910
William Lewis Jarvis:	entered LIRR service 1875; passenger trainmaster Sept. 1891; trainmaster 1904–1913; directed troop movements during WWI 1917–1918; assistant trainmaster when retired in 1925.

W. E. Canning:	began on LIRR as messenger boy and worked his way up; in 1904 assistant trainmaster, in charge of freight.
James McCrae Jr.:	became general superintendent in January 1906. Son of the president of the Pennsylvania Rail Road; had formerly been superintendent of the PRR west of Pittsburgh and in Cincinnati; general manager until 1918.

The Long Island R.R. in the course of the one year 1905 experienced three changes of presidents and the loss of two of its best men. In the spring of 1904 President William H. Baldwin became seriously sick and was taken to the German Hospital on 77th St. N.Y. He underwent an exploratory operation in June and a second in July revealed that he had a cancerous growth on the intestines. In September 1904 the patient was moved by special train from the hospital to his estate "Standish Farm" in Locust Valley. X-Ray machinery, then very new in this country, was set up in his home to treat him. In the succeeding months, despite this treatment and fresh air sorties in his wheelchair, Baldwin slowly sank. Ironically, as his condition grew worse, the bulletins issued by the doctors grew increasingly optimistic. As late as a week before his death, Christmas greetings full of hope were sent to all LIRR officials and the family characterized all alarming reports as exaggerations. The president died on the morning of Jan. 3, 1905, a month short of his 42nd birthday. The news of his death created a profound sensation on the LIRR and occasioned lengthy obituaries in the newspapers. It was revealed that he held directorships in 26 business corporations and life insurance companies. One of his main charitable preoccupations was the higher education of blacks; he was a large contributor to the Tuskegee Institute in Alabama and a co-worker with Booker T. Washington. After a private funeral service a special train, including his private car #2000, conveyed the body to Boston and Forest Hills Cemetery, where, after a Unitarian service was said, the body was cremated. On Jan. 11, 1905 during a memorial service at which Booker T. Washington spoke, all trains on the Long Island R.R. and all ferryboats of the company stopped wherever they happened to be from 4 P.M. to 4:02 P.M. out of respect for the late president. This was a rare honor, duplicated only once before in September 1901 during the funeral of President McKinley.

Baldwin left behind a widow, a son and daughter. In his memory Presidents Roosevelt and Cleveland organized a memorial association to raise an endowment fund for the Tuskegee Institute and Andrew Carnegie led off the subscription list with $12,500. By Jan. 1, 1906, $150,000 was turned over to Baldwin's favorite charity, the funds having come from over 600 individuals. Baldwin's estate was settled in June 1907 with the estate inventoried at $275,509.

On January 13, 1905 the board of directors of the Long Island R.R. met and unanimously elected William F. Potter, vice president and general manager, to the presidency. Potter was at this time 49 years old and had been brought to the Long Island R.R. by Baldwin from the Pere Marquette where he had been general superintendent. He had become general superintendent of the Long Island R.R. on Jan. 1, 1897 and in 1904 vice president and general manager. Potter's specialty was labor relations; he knew large numbers of the operating personnel of the road by name, and in disciplining, always gave full hearings and took into account all extenuating circumstances. He knew the physical conditions on the road better than any man and had gone over every part of it in times of flood and storm as well as under ordinary conditions.

Potter had scarcely entered upon his duties as president when he became ill on returning from Philadelphia on Mar. 3. He developed a high fever at first, but when he became helpless and unconscious the next morning and remained so, doctors were summoned and diagnosed cerebro-spinal meningitis. So sudden had the attack been that he was forced to remain at a New York hotel rather than journey home to Flushing; here he remained unconscious six days, during which time Samuel Rea, fourth vice-president of the Pennsylvania, carried on his duties. On Apr. 2, 1905 President Potter passed away and his body was conveyed to his home at 112 Sanford Ave. Flushing. The second death of a Long Island R.R. president in three months profoundly affected the road and drew many emotional expressions of loyalty and grief from engine men, conductors, brakemen and many humble employees who deeply respected their chief. The funeral was conspicuous for the large floral tributes sent by trainmen of every rank numbering over 1000 individual pieces. At the home the Episcopal service was read and in the late afternoon the body was cremated at Fresh Pond. On the following day, a special New York Central train bore the ashes and the family to Saginaw, Michigan, the old home of the deceased. Some measure of the enormous personal popularity of Potter was shown in October 1905 when a committee of 14 heads of department called on Mrs. Potter in

her Flushing home and presented her with a large and life-like oil painting of her late husband to which 8000 employees of the road had contributed.

After a meeting of the directors of the road held on Apr. 5, 1905, Ralph Peters was elected president of the Long Island R.R. Mr. Peters, then 51 years old, was a resident of Ohio and since 1901 had been general superintendent of the southwest system of the Pennsylvania Railroad west of Pittsburgh and the subsidiaries around Cincinnati. He had entered the railroad business in 1874 and had been promoted from one railroad to another and had accumulated a broad experience. The position of president of the Long Island R.R. was regarded as one of the most challenging in the field and a measure of the high regard in which the Pennsylvania Railroad held him. His personality was described as very striking and as a genial and agreeable official. At Peter's election President Cassatt of the Pennsylvania Railroad and Samuel Rea, fourth vice president and in charge of the Penn Station, the Penn tunnels and the New York Connecting Rail Road were also elected directors of the Long Island Rail Road. Mr. Peters, in contrast to William Potter's taste for simplicity, espoused the grand style as befitting his exalted rank by moving into a large new house in Garden City and buying a summer home in no less exclusive Belle Terre on the Sound. Mr. Peters, also in contrast to his predecessor, was destined to remain as head of the Long Island Rail Road down to his 70th birthday in 1923, the age of mandatory retirement on the Pennsylvania system.

Financing of the Long Island Rail Road corporation during the first decade of this century changed relatively little. In November 1903 at a special meeting of the stockholders of the road the board of directors was authorized to change one provision in the $45,000,000 unified 50 year 4% bonds issued Mar. 1, 1899. This was to strike out the restriction allowing the sale of $400,000 per year in any one year for improvements and instead put no limit on the amount that could be expended at one time. This change was designed to give the railroad $15,000,000 at once, or as soon as needed, for the extensive improvements necessitated by the Penn tunnels; also the Bay Ridge yards, Holban yards, Flatbush Avenue station and association with the New York Connecting Rail Road, new rolling stock and electrification.

In January 1904 the road applied for and received the approbation of the State Board of Railroad Commissioners for this change. The Equitable Trust Company of New York was the holder of this huge mortgage, at that time the largest ever filed in Queens County, and had its man on

the Long Island's board of directors— vice president James Hazen Hyde. In March 1905 Kuhn Loeb & Co. bought $6,000,000 of these 4% bonds guaranteed by the Pennsylvania Railroad. The money was to be used for immediate improvements and raised to $17,000,000 the amount issued so far under provisions of the $45,000,000 mortgage.

The palmy days of expansion continued on the Long Island Rail Road until the Panic of 1907. In the third week of October, a panic on the New York Stock Exchange spread consternation through the New York money markets. The failure of the Knickerbocker Trust Co., second largest in the country, triggered the panic and all stocks and securities took a tumble. The crisis was compounded in October and November when alarmed citizens withdrew millions in savings from the local banks.

The full effect of this on the railroad began to be felt in January and February 1908; suddenly, retrenchment became the order of the day. The road laid off 20 of its civil engineers, surveyors and draughtsmen employed in the offices of the chief engineer, since no further improvements could be financed during 1908. More serious was the postponement of double-tracking from Flushing to Great Neck and Roslyn to Glen Cove, electrification to Mineola, Great Neck and Long Beach and the postponement of building the cross-island trolley line. For the first time in its history, the Long Island sent its own coal cars to the Pennsylvania coal fields and 150 gondolas were on their way to the mines for the company's own supply of fuel.

The railroad next felt the pinch of a money shortage. At least eight million was needed to complete the four-tracking of the Main Line between Sunnyside Yard and Jamaica and terminal changes at Jamaica; also the double tracking of the North Shore Div. and the electrification in Queens and Nassau. The railroad had by this time issued all it could of its $45,000,000 mortgage bonds, the remainder being held by trustees for the redemption of bonds previously issued and to fall due in the next few years. Unhappily, the railroad in 1907–08 was running at a loss because of wage increases, use of hard coal, an over-liberal timetable and the purchase of two new ferry boats. The high operating costs were the real reason behind the severe retrenchment— a necessity to make the road live within its income. By watching every penny the road was able to effect some substantial reductions:

	1907	1908
operating expenses	$8,500,000	7,300,000
maintenance of equipment	1,500,000	1,300,000
deficit	858,829	276,088

The company since 1903 had spent $28,000,000 on permanent improvements and this huge investment could only be recouped over a long period of years.

In September 1909 the railroad again applied to the Public Service Commission for authorization of an issue of 10-year debenture bonds amounting to $16,500,000 to be used for completing the electrification of the Main Line, some essential double-tracking, and finally, the electrification of the North Shore Division. This money, along with a rapid recovery of the country generally, enabled the railroad to get back into the black.

The Long Island Rail Road's close financial relationship with the Pennsylvania Railroad came under attack in March 1915 when a minority group of stockholders holding about 30% of the stock and represented by Dick Bros., Wall Street brokers, sued to recover Long Island funds allegedly misappropriated and to cancel contracts allegedly made for the benefit of the Pennsylvania Railroad. Dick Bros. charged that Long Island Rail Road moneys had been misappropriated, that the Pennsylvania put nine of its own men into the Board of Directors out of the 13 composing the full board, and that $7,000,000 had been expended on the East New York and Bay Ridge Improvements for the benefit of the New York Connecting Railroad, owned jointly by the Pennsylvania and the New Haven, and that the railroad was taxed for the Penn Station.

The contest between the Pennsylvania who owned 56% of the stock and the minority with about 30% caused a scramble to buy up the floating supply of shares on the open market and the price of Long Island Rail Road stock shot up 14 points (35 to 49). The suit reached the Supreme Court in January 1916. The Pennsylvania claimed it had advanced the Long Island Rail Road fifty million for improvements but the minority claimed that 27 million had been spent unnecessarily and more to the advantage of the Pennsylvania than to the Long Island. Also attacked was the $600,000 annual rental paid by the Long Island Rail Road for the use of the Penn tunnels and station.

Although the suit eventually failed, it did impel the Public Service Commission to make an elaborate study of the finances and physical

improvements of the Long Island Rail Road and its relations with the Pennsylvania Railroad back to 1907. The PSC directed the Long Island Rail Road to issue $13,000,000 of its 4% ten-year gold debenture bonds for the purpose of repaying the Pennsylvania Railroad for advances made for improvements since 1909. Either the proceeds of the debentures sold at par or the debentures themselves could be turned over to the Pennsylvania Railroad in liquidation of the advances.

The year 1910 was a special one for the Long Island Rail Road; April marked the 75th anniversary of the road. To mark the diamond jubilee, President Peters gathered the members of the board of directors and the staff officers at Long Island City. At 9:45 A.M. a special train pulled out, first going to Bay Ridge to pick up a car that had come from Philadelphia with some of the Pennsylvania directors and officials and which had been floated over from Jersey City. The train with 38 aboard then went to East New York, the Rockaways, Long Beach and then Garden City where President Peters served luncheon to the party in his own home. In the late afternoon the special train returned to Long Island City. Unique invitations had been sent for the excursion; the card displayed two seals, one showing the primitive train of 1836 and the other the entrance to the Penn Tunnels with an electric locomotive. Between the seals was a photo of one of the new locomotives of the company.

It was a fitting if quiet celebration for the Long Island Rail Road was not only one of the oldest roads in the country but one of the very few railroad corporations, if not the only one in the country, which had operated continuously under its original charter and name. Two permanent mementoes eventually appeared as lasting tributes to the anniversary. The first was a 24-page program booklet with historical statistics, facsimiles of old timetables and a folding diagram of the corporate setup. The other was a complete set of portraits of all 19 presidents since 1836. Secretary Frank Haff undertook to collect these likenesses and the effort involved a correspondence of more than a thousand letters directed to addresses in all parts of the United States. The portraits were enlarged from collodion prints, bromide and gelatine prints, daguerreotypes, crayon portraits and tintypes. The excellent results of this monumental effort were presented to the first meeting of the board in January 1911. Later, the 19 pictures were hung in the company's offices at Penn Station.

The corporate structure of the Long Island Rail Road which had grown complicated in the 80's and 90's because of the legal penchant for incorporating every extension, was somewhat simplified and brought up

to date in the first decade of the century. On Aug. 29, 1902, the New York Bay Extension Railroad and the Great Neck and Port Washington Railroad were merged into the Long Island Rail Road.

On Dec. 22, 1902 the road incorporated with the State the Jamaica and South Shore Railroad. This was done in preparation for the foreclosure on May 27, 1903 of the New York & Rockaway Railroad, the old railroad from Hillside to Springfield and across the meadows to Cedarhurst. After the foreclosure, property and assets of the old road were turned over to the newly organized Jamaica and South Shore on Dec. 19, 1903. Finally, the Jamaica and South Shore was itself merged into the parent Long Island Rail Road on Dec. 5, 1912.

One of the most curious corporate maneuvers was effected in June 1903 for the benefit of the Pennsylvania-sponsored New York Connecting Railroad. One track of the Montauk Branch from Glendale station at 73rd Place to Fresh Pond Road was sold to the New York Connecting Railroad to make it legally eligible for a franchise from the Board of Rapid Transit Commissioners. In order to continue operating the track, the Long Island Rail Road leased the track back on May 31, 1904.

On July 1, 1904 the railroad renewed its lease of "The Long Island Railroad—North Shore Branch", the stretch from Port Jefferson to Wading River. This 11-mile road was eventually merged into the parent road on June 23, 1921. In July 1904 the Long Island Rail Road renewed for 50 years the lease of the New York & Rockaway Beach Railroad, operating from Glendale Junction to Rockaway Beach. This too was eventually merged into the parent road on July 1, 1922. On June 28, 1907 the New York & Long Beach Railroad was merged into the Long Island Rail Road and the Oyster Bay Extension Railroad followed a similar path into oblivion on April 24, 1913.

The Penn Tunnels occasioned the conclusion of some important operating agreements between the Long Island Rail Road on the one hand and its owner, the Pennsylvania Railroad on the other. These covered trackage rights for the Long Island to run trains into Penn Station and agreements to share the expenses of maintenance. On Sept. 14, 1910 an agreement covering trackage rights was signed and on June 24, 1912 a new agreement requiring the Long Island to pay a rental of $13,000 a month and "a ratable proportion of the expense of maintenance of trackage and facilities."

Beside the readjustment of relations with its own railroad subsidiaries, the Long Island Rail Road similarly overhauled its relationship with its five trolley subsidiaries, and in so doing, became involved with the

Interborough Rapid Transit. In March 1905 the Long Island Consolidated Electrical Companies was incorporated with a nominal capital of $25,000 and was authorized to "build, operate or furnish power for railroads and to buy and hold the stocks of electrical or railway corporations." Several officials of the Pennsylvania Railroad were named as directors and financial circles correctly surmised that the company's main purpose was to serve as a holding company for Long Island Rail Road traction interests.

Immediately after, on June 20, 1905, the Long Island Rail Road bought out, together with the Interborough Rapid Transit, ownership of the New York & Long Island Traction Company, a trolley line that closely paralleled the Long Island Rail Road routes in Queens and Nassau Counties. In the last week of November 1905 both companies bought out the Long Island Electric Railway, another trolley road in Central Queens with a branch to Far Rockaway. The Long Island and the Interborough each took a half interest in the two lines acquired. August Belmont, president of the Interborough Rapid Transit and a director of the Long Island Rail Road as well, was the main force behind both purchases. Since Belmont and the IRT had already bought out in 1903 the largest trolley network of all, the New York & Queens County Railway, he now shared with the Long Island Rail Road a monopoly of all competing rail transportation in Queens and Nassau Counties.

On Jan. 11, 1906 the news about the Long Island Consolidated Electrical Companies was made public. Some time in 1905 the Long Island Rail Road conveyed to the Consolidated Electrical Companies the entire capital stock of its five trolley subsidiaries, namely, the Ocean Electric Railway, the Huntington Railroad, the Northport Traction Company, the Nassau County Railway, the Glen Cove Railroad and the non-operated and non-trolley railroad line, the Jamaica and South Shore Railroad Co. (the Cedarhurst Cut-off) The Consolidated Electrical Companies thus fulfilled its intended function as a holding company and was never again active in any way as a corporation.

The Long Island Rail Road, like almost every other railroad in the country, maintained somewhat of a reluctant relationship with the Federal government because of the contract to carry the mails. President Austin Corbin had complained of inadequate compensation for carrying the mails in the 1890's but President Baldwin in 1901 took the highly unusual step of bringing an action for relief before the State Board of Railroad Commissioners. Section 56 of the Railroad Law provided that

a fair and remunerative return should be allowed in New York State for carrying the mails, and if a road felt aggrieved in the matter, it might complain to the State Railroad Commission to fix a new rate. However— and this made the action interesting— the railroad could not legally refuse to carry the mails and the Federal government was free to refuse to pay the rate fixed by the State Commission. President Baldwin in his action maintained that the Long Island Rail Road was getting not much more than a quarter of what it justly deserved. The matter was a complicated one because the rate of compensation varied with the 25 different mail routes on the road and the rate took into consideration varying factors like weight, mileage, car space and others.

The Post Office, for its part, claimed that it was paying the highest rate allowed by law and that no other road was receiving more. The rate of compensation had first been fixed in 1873 and amended in 1878; in 1900, a joint committee of the Senate and House after two years spent in investigating the question, reported back that there seemed no reason to alter the prevailing rates paid. The rate was adjusted every four years and was determined by weighing the amount of mail carried for 30 days and then striking a yearly average. President Baldwin complained that the weighing of the mails on the Long Island had been done in the early spring when the traffic was light. To be perfectly just, the Post Office then weighed the mails over a period of six months from Feb. 20 to Aug. 20 so as to include the heavy summer travel. On this basis the Post Office made a new contract with the Long Island Rail Road for another four years. No railroad had ever before refused to carry the mails and if President Baldwin were to refuse, there was no competing carrier on the island to whom the mails could be entrusted.

In December 1901 President Baldwin withdrew his threat to stop carrying the mails but said that he would continue agitation in Washington to get the method of computation changed. As he saw it, the fault lay in that the government fixed the rate on the average weight per mile and not on the amount of car space occupied and train service rendered. The Long Island tended to have a relatively light weight of mail handled per car and short runs as opposed to the average mail car operated in the United States, yet it cost just as much to haul a light car as a heavy one. He concluded with an estimate that the Long Island was getting for mail only one third what express matter, baggage or freight would bring.

Eight years later in 1909 President Peters went before a committee of the House of Representatives to ask for additional compensation for

carrying the mails on Long Island. He again estimated that the mails earned only about a third of what similar space devoted to express and freight would bring in. The company in 1909 was receiving only $3000 more for carrying the mails than it had received in 1894. The company had streamlined the service from 25 mail routes to 13 and the actual cost of this service provided by the railroad was $122,169.90. As a result of the hearing, a bill was introduced in Congress to remedy the inequity and President Peters had the satisfaction of seeing it passed.

The question of just compensation arose once again in December 1912 when a committee representing 268 railroad companies from all over the country made a report to Congress. It concluded, as did President Peters in 1909, that railway mail pay did not equal operating expenses and that the situation was about to get worse beginning January 1, 1913, when the parcel post system went into effect. The government and the postmaster general considered only operating expenses and taxes in computing the rates, but made no allowance for the value of the railway property employed: new steel cars that had to be substituted, expensively built, well-lighted and heated; station services including driveways, tracks and other conveniences; expense of transfer at intermediate points, delivery to post offices; free carrying of mail clerks and postal inspectors. The average yearly compensation to the Long Island Rail Road for carrying the mails had been for 14 years past only about $38,000 a year; the average mail earnings per car mile was only 13.4¢ whereas the freight earnings were 26.5¢, meaning that the road was being compelled to haul in expensive passenger car trains high class mail matter at half the rate received for average class freight in slow moving trains.

In March 1915, President Peters, as national chairman of the Railway Mail Pay Committee, in a railroad publication charged that the postmaster general was permitting the Federal government to rob the railroads of at least half what was due them for carrying parcel post. The postmaster general, in an angry response, stated that the railroads, since Jan. 1, 1913 when the parcel post system had started, had received nearly $4,500,000 in extra compensation in addition to their regular pay and that he had recommended to Congress legislation which would allow still another $1,000,000 in pay. This was based on the actual weight of the parcels carried. Because this problem was a national one, no solution fully satisfactory to the railroads was forthcoming from Washington and the carrying of the mails remained a sore point on the Long Island Rail Road.

One interesting aspect of the feverish railroad activity of the early years of this century, and one little known and largely forgotten today, is the intensive real estate speculation carried on by the Pennsylvania, and to a lesser extent, by the Long Island Rail Road. The necessity to buy extensive tracts of land arose in 1902 when the Penn Tunnels were started and continued during the development of the Sunnyside Yards and the widening of the main line to and through Jamaica. The railroads used individual agents at times but sometimes worked through real estate companies. These, in turn, transferred their purchases to the company's own real estate subsidiary, the Stuyvesant Real Estate Company. As a subsidiary, Stuyvesant held title to land bought for railroad use only, whether for the Pennsylvania or the New York Connecting and ownership was vested in the Pennsylvania Railroad corporation. However, some of the directors and officers of the Pennsylvania Railroad, all wealthy men in their own right, wished to make a profit from the sale of suburban land newly benefited either by the coming of the railroad or by the electrification of older existing lines. Queens County in 1900 was a completely rural area beyond Long Island City and only a few villages of consequence, notably Flushing and Jamaica, interrupted the miles of farmland. These wealthy men enjoyed the advantage of knowing in advance precisely what areas were going to be benefited and having the capital to buy up tracts and develop them profitably. This was not a new thing in Long Island real estate. Governors Roswell P. Flower (1892–1894) and Frank S. Black (1897–1898) had bought up sizeable tracts of Queens land for speculative purposes, using dummy agents as the nominal purchasers of the farms.

In 1903 chief Long Island Rail Road counsel, William J. Kelly, at the bidding of the directors, incorporated the Matawok Land Company and hired the Manhattan real estate firm of Smith & Steward to manage the company. The country that most attracted the Matawok Company was the Forest Hills area and the hill country above Jamaica as far east as Floral Park. The first purchase embraced 600 acres north of Hillside Avenue, developed later as Jamaica Estates. The extensive railroad improvements of this period were too widespread and too public to hide and of course the Matawok Company was not the only one to sense a profit to be made. Wealthy people like William K. Vanderbilt, Mrs. Mackey and lesser-known millionaires all triggered a land boom that raised the humblest farm acreage to grossly inflated figures. Prices rose 1000% particularly in the former Towns of Newtown and Flushing and to a lesser figure farther east. Parcels of an acre or better, particularly if

well situated, brought unprecedented prices and changed hands freely. New streets were opened particularly near the established villages and the urban sprawl so familiar to post-World War II America began in Elmhurst, Corona, Jamaica, Ingleside, Richmond Hill and Woodside especially.

In July 1905, thirteen conveyances were registered in the Queens County clerk's office in the name of the Matawok Co. covering 233 acres in the Forest Hills section. The parcels consisted of 17 farms bought through dummies at from $2000 to $3000 per acre, making a total cost some $600,000. These fronted on Queens Blvd., Woodhaven Blvd. and Yellowstone Blvd. The Matawok Company already had acquired other farms totalling 500 acres in this area and 500 to 600 acres worth $1,500,000 in a block north of Jamaica village. In the Forest Hills section the Matawok Company cooperated with Cord Meyer, a Maspeth man who had amassed a fortune in fertilizers and who had invested heavily in what came to be known as Forest Hills. The Cord Meyer Development Co., along with Mrs. Russell Sage, widow of the railroad financier, became the founders of today's Forest Hills. (Railroad station built May 1911).

By 1907 the Metawok Company seems to decline as a potent factor in Queens real estate, very possibly because the farm acreage that was available at a reasonable price had all been snapped up by other speculators. There is no evidence that the Matawok investors ever developed or built on any of their tracts, but sold off their holdings piece-meal to others when the price proved attractive.

Still another project undertaken by the Long Island Rail Road corporation in these busy years was the organization of a police force to control losses and pilferage on the vastly expended freight yards of the road. The Long Island Rail Road for many years had maintained a small force of private detectives which investigated particular thefts from freight cars but was too small to patrol the freight yards. Two things probably precipitated the decision of President Peters to organize a modern, large-scale police force; the enormous growth in the physical plant of the Long Island Rail Road and the numerous new freight yards to be policed, and the death on June 3, 1905 of James Sarvis, chief of the old detective bureau. Sarvis had entered the service of the railroad as a detective in 1890 after a stint as a policeman in Long Island City. He was extremely successful in detecting and prosecuting thieves and soon

was advanced to head of the force. His death at the age of 61 gave president Peters the opportunity to abolish the old detective bureau and to organize a modern police force.

The new force was set up on military lines and took over the duties formerly exercised by the track watchmen, crossing watchmen, night watchmen and freight damage & lost freight tracers. It was frankly designed along the lines of what President Peters had worked with on the Pennsylvania Railroad lines west of Pittsburgh. Peters appointed to head this bureau his own private secretary, Robert E. Kerkam, on the basis of Kerkam's experiences as an Army man with U.S. forces fighting the Indians in the West and his later service with the Weather Bureau. A regular school of instruction for railroad policemen was set up in which 200 men could be selected and trained with strict discipline enforced.

On August 1, 1905 the special police force went on duty for the first time. We hear that the whole railroad had been divided into four sections with two lieutenants in immediate control and in touch with the numerous policemen and crossing watchmen on day and night duty in each section.

I. The North Shore Div. from Long Island City to Whitestone Landing and to Port Washington.
II. Main Line and Montauk Divisions between Long Island City and Jamaica.
III. The Atlantic, Manhattan Beach and Rockaway Beach Divisions.
IV. Everything east of Jamaica.

Headquarters at Long Island City included Superintendent Kerkam, one inspector, one captain, four lieutenants and two freight & express investigators. At East New York were one captain, two lieutenants and at Jamaica, two lieutenants reporting to the captain at East New York. The uniformed men, including those given special authority as special patrolmen from the Commissioner of Police, numbered about 50 men. These men were detailed along the electric lines to insure that none of the copper wire was stolen; others patrolled the freight yards to watch loaded cars and platforms and still others kept a sharp eye on cases and packages broken in handling to insure that no goods were stolen from the barrels, boxes and packages. Other men, acting in the capacity of special deputy sheriffs and crossing watchmen at the more important crossings, also received police authority. A small force of men in uniform patrolled the beach excursion trains to suppress rowdyism and

keep order on the crowded Rockaway platforms. These men wore a badge consisting of a five-pointed star with the words "Police Service— LIRR".

Everyone on the force was required to submit regular reports of all happenings of note in their vicinity. The physical requirements for the force were an age limitation of 21 to 35, a height between 5 ft. 8 in. and 6 ft. 2 in. and a weight between 160 and 200 lbs. Everyone had to pass the medical exam and had to be able to read and write the English language. Supt. Kerkam reported directly to General Superintendent Charles L. Addison.

The police were kept more than usually busy as an aftermath of the Panic of 1907; hard times set in after October and unemployment was heavy well into the summer and fall of 1908. Hundreds of men applied daily to the Long Island Rail Road for menial jobs paying $35 to $40 a month while desperate men for the first time in their lives were driven to steal or pilfer merchandise from freight cars.

In an interview given to the press in January 1909, Supt. Kerkam said that the force consisted of 350 men which number included the depot, terminal and yard patrolmen and the watchmen at crossings. There was a day and night captain, a captain in charge of the fire service, two day and two night lieutenants, four day and four night roundsmen and as many patrolmen and watchmen as needed. The main stress was on protection and prevention; the great handicap at that time, in Kerkam's eyes, was that New York State had no trespass law. In court, Kerkam's record was excellent: 90% convictions for felonies and over 85% for misdemeanors.

President Peters was perhaps the first Long Island Rail Road president to realize the value of public relations and of projecting a positive and favorable image of the railroad to the public. The Brooklyn League, an organization of about 1000 members prominent in business and industry and politically influential, was given guided tours of the new tunnels, yards, substations etc. on several occasions in 1906 & 1907. Peters courted the attention and good will of the Manhattan and Brooklyn press with elaborate tours of the Rockaways by train, trolley and carriage and climaxed by dinners at the Arverne Hotel. (1906) The other railroads in the metropolitan area—Erie, Lackawanna, Jersey Central, etc.— got the chance to view the extensive electrification on the Long Island Rail Road in tours conducted for the officers and operating personnel in the comfort of the private car "2000" during the spring of 1907.

One of the sorest problems in operation that had first raised its head in the 90's and had been recurrent almost every year thereafter was the use of soft coal on the engines in long-haul service ending their runs in Long Island City. The former city of Long Island City under its formidable mayor Patrick J. Gleason, used to conduct sudden and well-publicized raids on the terminal yards to harass the Long Island Rail Road officials and demonstrate to the electorate that their health and welfare was paramount in the hearts of the politicians. When the City of New York was formed in 1898, the soft coal problem again became a sore one. All the railroads entering New York City were gradually moving toward the abolition of soft coal but because the change in locomotives was an expensive one, the change had to be slow. The difference in the cost of fuel was a large item. In 1904 the greatly increased use of hard coal on the Long Island Rail Road caused an increase of $181,055 in locomotive fuel bills over 1903. How anthracite increased the coal bills of a railroad is shown by the fact that in 1901 the Long Island paid $403,000 for fuel and in 1904 $838,000. In 1905 the road was using slightly over half anthracite and was fitting out its engines with the smoke-consuming brick hollow arch. But even the best technology was no substitute for electrification as the ultimate solution to the smoke and cinders problem. Some soft coal was still being used as late as 1908, for in February, a justice of the Supreme Court granted an injunction perpetually restraining the Long Island Rail Road from using soft coal in its freight operations in the Holban Yards in Hollis. Ozone Park residents also threatened action and in June another justice sitting in Supreme Court granted an injunction to aggrieved residents in Queens Village. These injunctions must have been effective, for after this date there is no further record of soft coal cases filed against the Long Island Rail Road.

The Morris Park shops were another source of community resentment. In the open yard at the east end dozens of locomotives were fueled and watered and those that were scheduled for runs lined up for an hour and more, smoking and steaming until departure time. When the wind blew from the north and west— and this was the prevailing wind— the smoke drifted into the residential section of Dunton and Morris Park, blackening house paint and depositing soot on wash lines and on the clothes of passers-by. In March 1913 the railroad was haled into court on two occasions and two of its shop employees were convicted. Again in August 1914, over 200 separate complaints were lodged

against the Long Island Rail Road as a corporation and several fines were imposed.

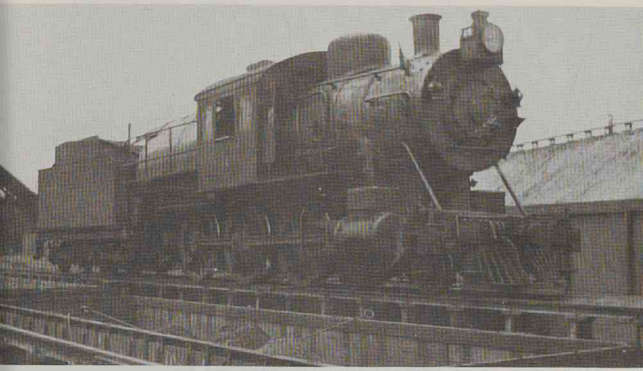
By far the most constant and overriding concern on the Long Island Rail Road during these first years of the century was the matter of grade crossings. A serious accident in May 1897 resulting in the death of five well-connected persons and the expensive lawsuits that followed focused the attention of the railroad on the necessity of eliminating wherever possible the more than 900 grade crossings on the road. The same accident had been instrumental in having the Legislature appropriate one million dollars annually for the elimination of grade crossings throughout New York State. Expenses would be met by a one-quarter contribution by the State, one quarter by the community and one-half by the railroad. The Long Island Rail Road lost no time in taking advantage of this legislation to get rid of a few crossings every year. The usual procedure was for the State Board of Railroad Commissioners to hold hearings in the village affected and to take testimony from local residents on whether the elimination was desired at all, whether it was necessary, and finally what damages would have to be paid for condemnation of property or changes in grade.

In 1902 the engineering department of the railroad began surveying through Jamaica, the Rockaways, Lynbrook, Rockville Centre, Freeport, Babylon and Patchogue with the idea of formulating a general plan for abolishing grade crossings. The idea was to get the local authorities interested first and then the property owners; if the Town boards and trustees could come to some agreement, then the railroad could approach the State commission. By planning future eliminations years in advance, the railroad could forestall public and private improvements to be made in villages on the line of the proposed elevation or depression of the tracks. This would put Town and village authorities and private developers on notice to adapt their improvements to the proposed change of grade and so save later expense.

Obviously, the most extensive grade crossing elimination project of all was the Atlantic Avenue Improvement completed in 1905; at one stroke 52 street crossings protected by gates, 36 crossings for pedestrians and 8 street car crossings were eliminated. The other massive grade crossing elimination was the Bay Ridge Improvement of 1905–06, when 186 crossings, both real and on the map to be opened later, were eliminated. The building of the Penn Tunnels and the laying-out of the Sunnyside Yards permitted the mass elimination of all the crossings in Long Island City and as far east as Woodside station between 1905 and 1910.

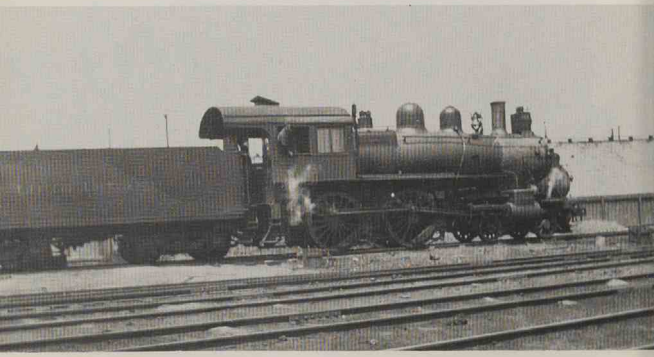
4-4-0 passenger engine, #54, Baldwin 1889, in Long Island City terminal. (Ziel photo)

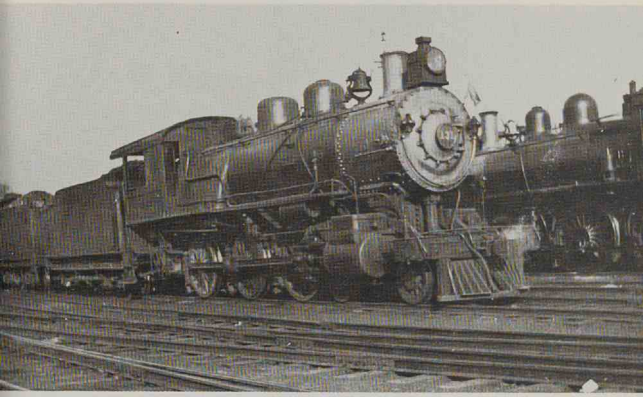
4-4-0 passenger engine #58, Cooke 1890, at Morris Park in April 1899. (Ziel photo)



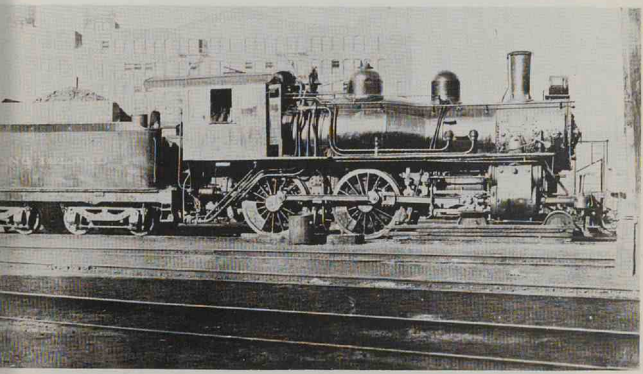
#14, a 4-6-0 dual service Camelback, Baldwin 1902, series G-54B. (Holman Collection) (Top)
#6, a 4-6-0 dual service Camelback, Baldwin 1901, series G-54B. (Bottom)

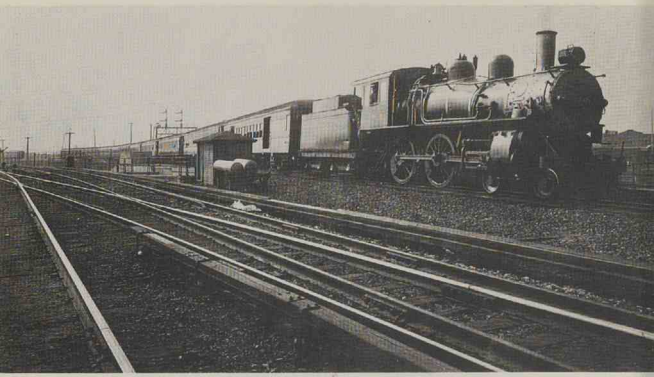
#97, a 4-4-0 passenger engine, Baldwin 1904 (Holman Collection) (Top)
#214, a 4-4-0 passenger engine, Juniata 1906 (Holman Collection) (Bottom)



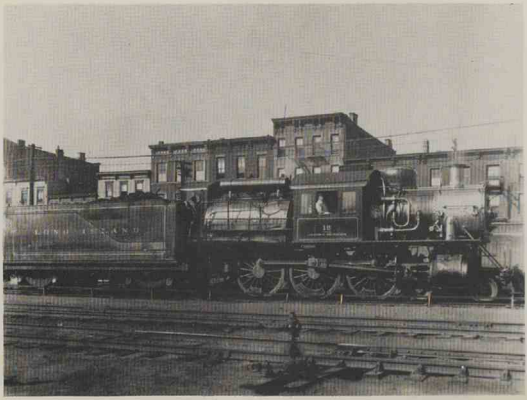


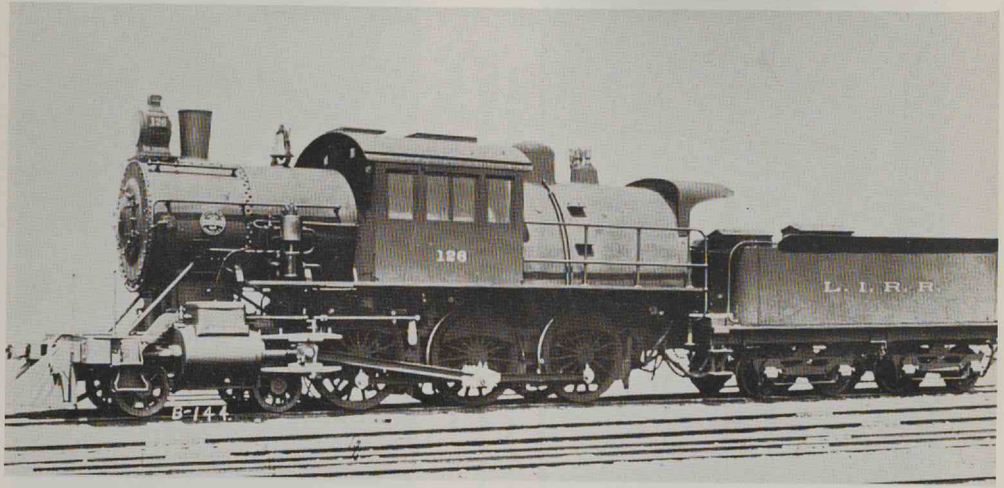
#131, a 4-6-0 ten wheeler, dual service engine, Brooks 1907 (Holman Collection) (Top)
#95, a 4-4-0 passenger locomotive, Baldwin 1904 (Holman collection) (Bottom)



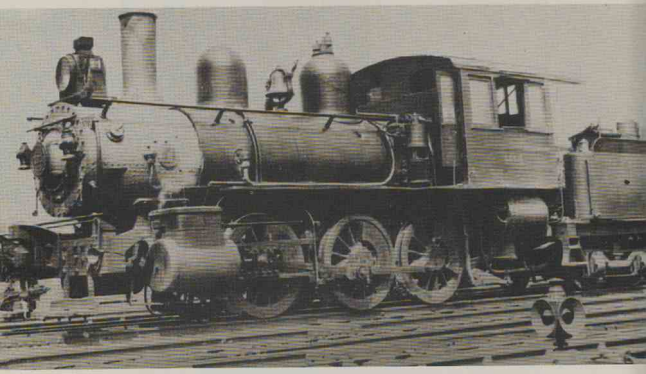


#95, a 4-4-0 passenger locomotive at Jamaica. Baldwin 1904, class D-56S. (Fagerberg photo) (Top)
#18, a 4-6-0 dual service engine, Baldwin 1903, series G-54A, later "James Eichorn." (Goldsmith photo) (Bottom)

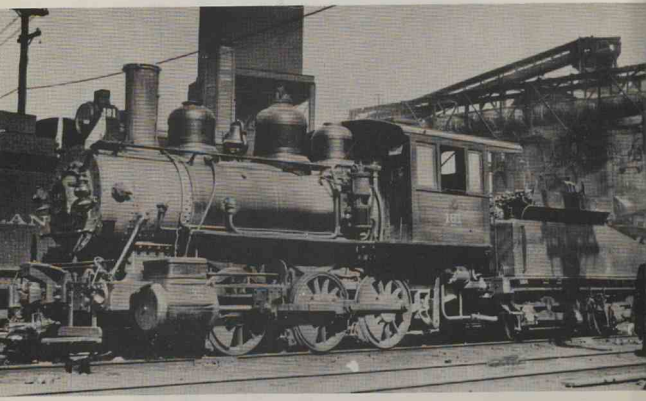


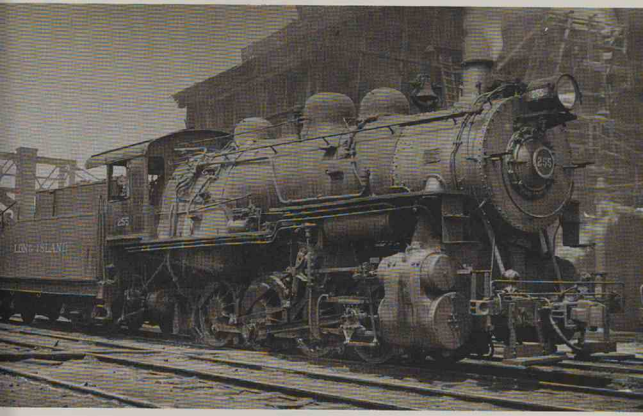


#126, a dual service ten wheeler, Brooks 1899



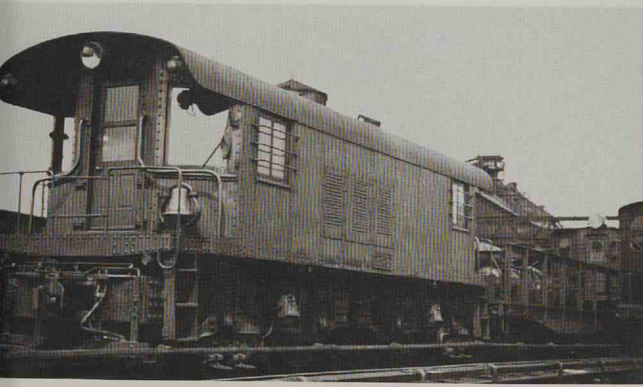
#184, an 0-6-0 type switcher, Baldwin 1893, at Richmond Hill (Fagerberg photo) (Top)
#81, an 0-6-0 switcher, Schenectady 1891, at Morris Park. (Fagerberg photo) (Bottom)

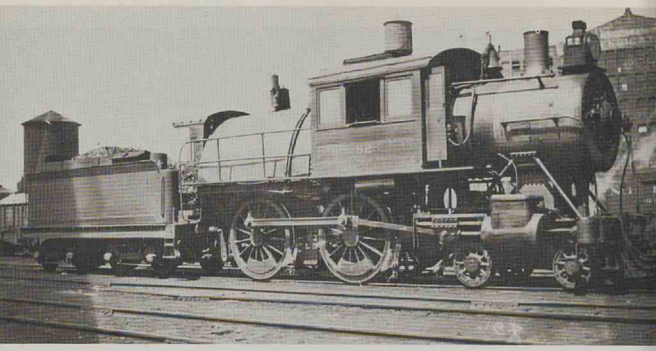




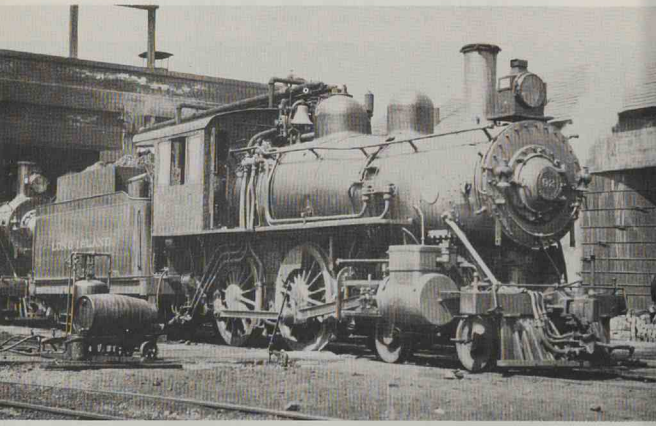
#255, an 0-8-0 switcher, Pittsburgh 1918, at Morris Park (Fagerberg photo) (Top)

#323, B-B type electric, built by Altoona 1905, at Morris Park in 1932 (Fagerberg photo) (Bottom)

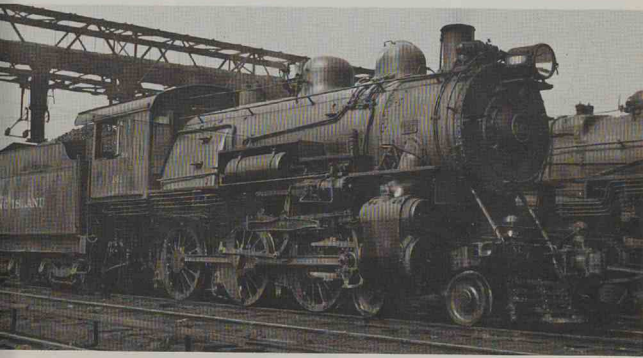


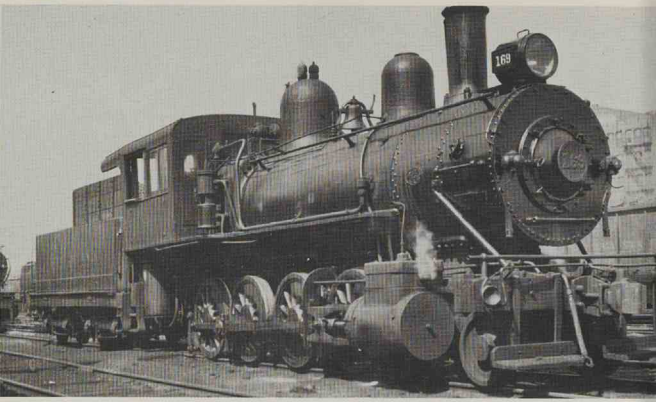


#52, a 4-4-0 passenger engine, Rogers 1889. Rebuilt by LIRR (Fagerberg photo) (Top)
#92, a 4-4-0 passenger type engine, Baldwin 1904 (Fagerberg photo) (Bottom)

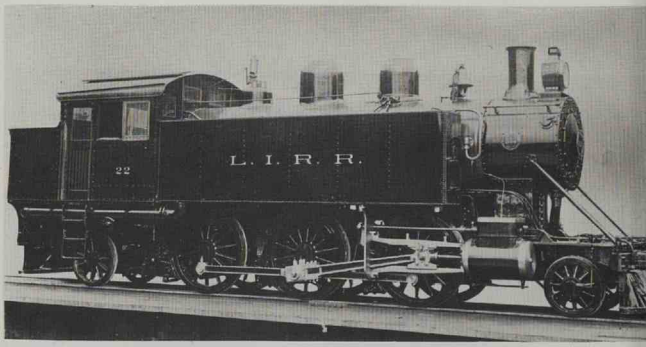


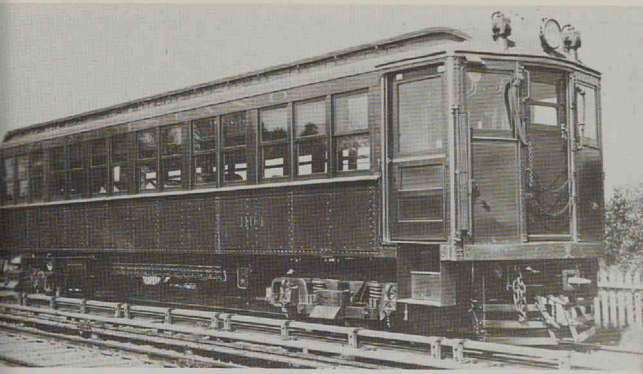
#19, a 4-6-0 type dual service engine, Baldwin 1903, type G-54SA (Fagerberg photo) (Top)
#141, a 4-6-0 dual service engine, Brooks 1917. (Fagerberg photo) (Bottom)



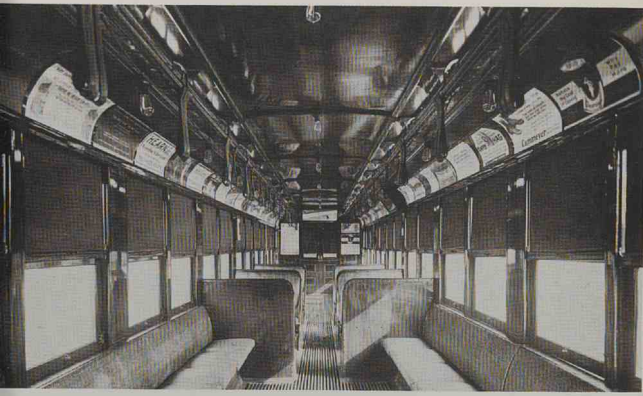


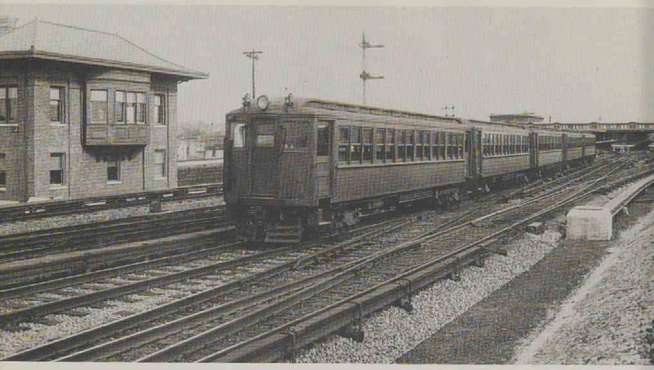
#169, a 2-8-0 Consolidation engine, Juniata 1894, at Long Island City in 1924. Class H-3 (Fagerberg photo) (Top)
#22, a 2-6-2T suburban passenger tank engine, Baldwin 1904 (Fagerberg photo) (Bottom)





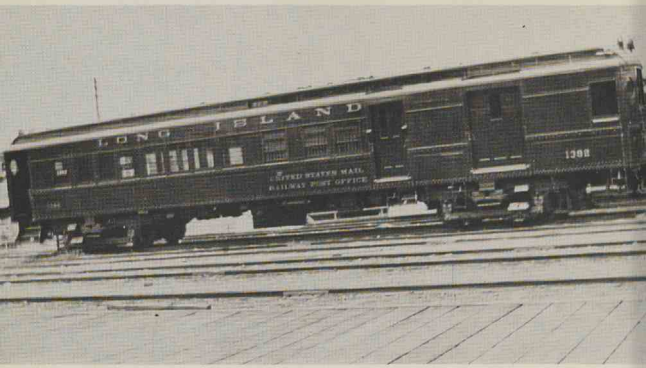
#1104, first electric car type, MP-41, 1905. (Seyfried photo) (Top)
Interior of an MP-41 showing seat arrangement. (Seyfried) (Bottom)



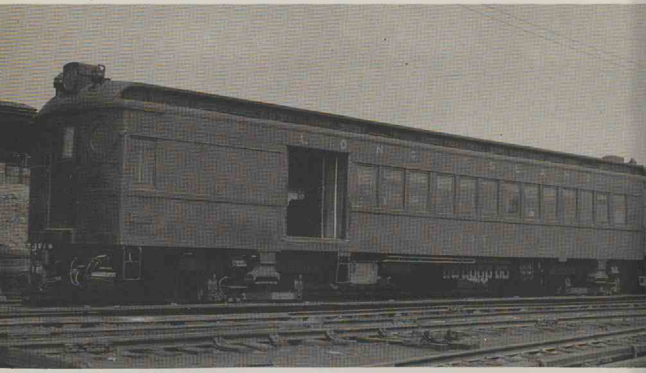


A train of MP-41's at Jamaica Tower. (Seyfried) (Top)
#1209, a MU Baggage-Mail car, ACF 1910. (Bottom)

#1378, steel combination car, ACF 1913, Series 1370–1381 (Top)
#1579, type MP-54A, series 1552–1601, ACF 1911. (Bottom)



#1382, passenger-baggage-mail car, type MPBM-54. Group #1382–1384, ACF 1914. (Holman Collection) (Top)
#1356, MU Combination car, type MPB-54, Standard Steel 1910. (Bottom)



The large scale elevations at Jamaica and Richmond Hill eliminated 15 more crossings in a densely populated area; the Holban Yard elevation added three more; the extensive relocation of the Main Line through Forest Hills and Kew Gardens added many more eliminations, some of them over streets still unopened at that time. The last major accomplishment in this period was the very extensive elimination of all grade crossings on the North Shore Division from Woodside through to Douglaston. The final difficult and costly elimination project was completed in 1915 in the Woodside-Winfield area involving not only elimination of crossings but an actual relocation of the right of way to get rid of two dangerous reverse curves.

By the end of World War I just about all the grade crossings in the populous west end of the island had been eliminated with the one conspicuous exception of the Rockaways. This was a particularly difficult area with unique problems. Because of the dense resort population in the summer months, it was necessary to maintain crossings at every second or third street on the peninsula. The problem was further compounded by the fact that steam locomotives, electric trains, trolleys and Brooklyn Rapid Transit trains all operated on the same three tracks at very frequent intervals. The only reason that no serious accidents occurred despite these dangerous conditions was the fact that the stations were very close to each other, averaging only 6 to 8 blocks apart so that train operation was of necessity slow.

The elimination of the grade crossings in Rockaway faced unique difficulties. The right of way was too narrow for the usual sloping embankment and the residents opposed a Chinese wall in any case. The railroad could not buy property to widen the right of way because it was too costly in a resort area where the peninsula itself was hardly four blocks wide. A depressed roadway was out of the question because the salt water table was only 10 ft. below the surface. The only other alternative left, an elevated structure, was unsightly and cut off the ocean or bay view for someone no matter where it was located.

The elimination question first came up in September and October 1901 for the village of Far Rockaway alone but no decision could be reached; agitation to eliminate crossings on the whole peninsula was renewed in February 1913 and February 1916 but costs had risen in the meantime. The problem remained insoluble for another quarter century until the elevated structure was finally and reluctantly accepted in 1940–41.

In the early years of the century several men once prominent in the history of the Long Island Rail Road passed on:

Walter Horman: died Feb. 10, 1902. He built many of the small wooden stations with their Victorian gingerbread scrollsaw decorations during Oliver Charlick's regime. Died in Bayport at 83.

Everett R. Reynolds: Died Dec. 26, 1905 in Manhattan. He was vice president and general manager of the LIRR during Austin Corbin's regime from 1892–1896.

John Rogers Maxwell: died Dec. 11, 1910 in Manhattan. For many years he was president of the Central Railroad of New Jersey and was vice-president of the LIRR and a financial backer of the road with Austin Corbin.

Jacob R. Shipherd: died in Richmond Hill May 8, 1905. Early in life a financier and later a lawyer, Shipherd in 1873 bought control of the South Side R.R. and made himself president. Within months he was destroyed in the Panic of 1873 and lost his railroad to foreclosure proceedings.

William Cassidy: died July 1903; entered LIRR service 1868; section foreman under H.C. Moore, then roadmaster. Supervised laying of the tracks on the Central Railroad of L.I.

Isaac D. Barton: died Aug. 21, 1914 at 84 at his home in Flushing. The most prominent and probably the best operating manager the Long Island Rail Road ever had. Superintendent of LIRR Oct. 1867–1872; railway supplies 1872–1876; superintendent New York & Manhattan Beach Ry. 1877–1881; again superintendent LIRR 1881–1892. Later, he served as supt. of the Brooklyn trolley system and retired in 1900.

No history of this era of the Long Island Rail Road would be complete without a brief mention of Roxy, the LIRR dog. Perhaps the very fact that the Long Island Rail Road had a mascot at all is proof of what kind of railroad the Long Island was in these days— a road of small

towns essentially and run by men of sentiment and heart. On a dreary day in December 1901, Roxy, a dilapidated specimen of dog, drifted into the Long Island City yards. He was no particular breed— "an ornery yeller dog." The railroad agent at Garden City took him home and in no time at all, Roxy developed a liking for railroad men, baggage cars, cabooses and engines. He became a great pet of the train crews and became an inveterate wanderer. He favored spending his nights at Garden City and was said to be infallible in always making the right change at Jamaica; his days were spent in all the yards and terminals on the Island. The railroad crews had a solid silver collar made for him inscribed, "I am Roxy, the Long Island dog— whose dog are you ?" When Roxy broke his shoulder in an escapade and had to be hospitalized, it was reported in the press as fully as was the extension of electrification to a new branch. President Peters had a pass added to his collar allowing him free passage for life on LIRR trains. Roxy developed dropsy in 1913 and spent his last six months in the care of a Jamaica veterinarian. He died in June 1914 and was buried at Merrick station. His tombstone survived at the edge of the parking lot till the grade crossing elimination of 1976 destroyed it.

CHAPTER II

The Atlantic Avenue Improvement

THE Long Island Rail Road, after a lapse of 16 years, returned to downtown Brooklyn in 1877. The old objections of the residents to steam operation—noise, smoke, accidents and dangers to life and limb—were all re-awakened by the appearance of locomotives in the street and it took seven or eight years of expensive litigation to establish beyond challenge the right of the railroad to run trains in Atlantic Avenue on its own private right-of-way. As the 1880's and 90's passed and Brooklyn rapidly increased in population, the residents became aware of a new objection. As railroad traffic steadily increased, the movement of trains became more and more frequent and the interruption to traffic across Atlantic Avenue became more and more constant and the waits of longer duration. Complaints began to be voiced in the press about the Chinese wall of the railroad, not to mention the frequent accidents to vehicles and the deaths of pedestrians trying to "beat" the crossing gates.

Finally, on May 28, 1896, Mayor Wurster of Brooklyn, acting under Chap. 394 of the Laws of 1896, appointed a commission of five men to "examine into and report a plan for the relief and improvement of Atlantic Avenue." Eight months later the commission reported back to the mayor, recommending legislation looking to the removal of the tracks from the surface of Atlantic Avenue. A bill was then introduced in the Legislature, approved by the mayors of New York and Brooklyn, and became law on May 18, 1897 as Chap. 449 of the Laws of 1897. The law provided for a commission of seven members to be known as the Board of Atlantic Avenue Improvement. Mayor Wurster reappointed his former five appointees and added the names of President Baldwin of the Long Island R.R. and Charles M. Pratt, vice president. The bill provided for the removal of steam from Atlantic Avenue by means of tunnel and elevated structures, the cost to be borne half by the city up to $1,250,000 and half by the Long Island R.R.

Unfortunately the Act further provided that the agreement should be dependent upon the construction of an underground double track railroad from Flatbush and Atlantic Avenues to Manhattan at or near Maiden Lane and the operation of Long Island R.R. trains through it. (see chapter "Background of Penn Tunnels") A snag soon developed. A clause in the new city charter limited the life of any franchise to 25 years and the railroad was understandably unwilling to embark upon such an expensive enterprise for anything less than a fifty-year franchise. 1898 passed with no resolution of this difficulty. Then in 1899 the Legislature was asked to amend the charter. This was finally passed as Chap. 564 of the Laws of 1899. Accordingly, the Long Island R.R., under its subsidiary, the New York & Long Island Terminal Railway Company, applied to the Municipal Assembly for a franchise. The Assembly temporized and the measure died in 1899. The Long Island R.R. re-introduced it on Jan. 2, 1900, but again the Railroad Committee of the Assembly did nothing. In disgust, Pres. Baldwin withdrew the application on March 13, 1900.

The Brooklyn people who badly wanted the Atlantic Avenue tracks removed were in despair and prevailed on their legislators to introduce a bill modifying the original act by permitting the separation of the Atlantic Avenue Improvement from the tunnel scheme, but requiring the city still to pay the costs up to $1,250,000. The Legislature passed the bill but Mayor Van Wyck killed it with his veto in April 1900. The bill was then re-introduced into the Legislature in 1901 and passed. Mayor Van Wyck again vetoed it, but this time the Brooklyn representatives were determined and the bill was re-passed over his veto, becoming law on April 8, 1901.

The Board for the Atlantic Avenue Improvement then met for organization and appointed Walter M. Meserole general superintendent and J. V. Davies of the Long Island R.R. chief engineer. The Pennsylvania Railroad, which had during the course of the long litigation bought out the Long Island R.R., approved the scheme.

The engineers for the Improvement, in preparing the final maps for the work, took two things into consideration: the natural fall in the grade of Atlantic Avenue from west to east and the cost of the total project. At Bedford Avenue, Atlantic Avenue falls from its higher elevation between Flatbush and Bedford, but at Howard Avenue, the grade of the avenue rises again. Because of this change in levels, the engineers resolved to build a subway from Flatbush Avenue to Bedford Ave., and then an elevated road from Bedford to Howard Avenue; then another

subway at Howard Avenue and at East New York another elevated. Such a plan not only took advantage of the topography but had the additional value of lowering the cost. To put the railroad underground for the entire distance would have cost additional millions of dollars. The City of Brooklyn, not New York City as a whole, had been liable for the original plan; the necessity for saving money was imperative and the subway-elevated combination was the cheapest plan that could achieve the desired objectives.

The Board divided up the whole Improvement into these four sections:

Section I:	a tunnel from Flatbush Avenue to Bedford Ave.	6700 ft.
Sect. II:	an elevated section from Nostrand Ave. to Ralph Ave.	8010 ft.
Sect. III:	a tunnel section from Ralph Ave. To Howard Ave.	2910 ft.
Sect. IV:	an elevated section from Manhattan Crossing (Snediker Avenue) to Atkins Avenue	5573 ft.

In the spring of 1901, Colonel Meserole and a staff of a dozen surveyors went over the line of Section IV, a distance of just over a mile. The men located the site for each of the pillar locations while engineers and draughtsmen got up detailed plans for the steel work. Col. Meserole planned to let the first contracts for the foundations of the pillars of the elevated structure in July and the steel work contracts at the same time.

At the western end the incline was to begin at Snediker Avenue and to reach its full height at Williams Avenue, where the steel elevated structure would begin. The pillars were designed to be 40 ft. apart and 40 ft. apart in the cross section of the highway. The incline and elevated was to be four tracks wide at this point, which was no problem since the company owned a 49½ foot strip in the center of the street. The pillars would be built outside the then-existing line of surface tracks. As soon as the Fall 1901 timetable reduced the number of trains operating, physical work would begin. The Board thought the work could be completed in two years; in reference to manpower Col. Meserole made some comments that sound odd today in the light of our contemporary ethnic attitudes and prejudices: Americans and Swedes would be hired for the skilled work; Italians and others for the digging and unskilled work.

All through the summer of 1901 the Board was actively at work preparing elaborate plans and specifications; Jacobs and Davies of Manhattan, consulting engineers for the Long Island R.R., prepared the plans.

Finally, on Oct. 31, 1901, the commission awarded three initial contracts aggregating $989,665. The contract for furnishing the steel for the two viaduct sections between Bedford and Ralph Avenues and between Shepherd Ave. and Manhattan Crossing, and for the underground work, was awarded to the American Bridge Co., a subsidiary of the United States Steel Corp., their bid being much lower than any of the others. 16,000 tons of steel was estimated to be necessary for the construction of the viaducts and underground work. The contract price was $870,000.

John McNamee of Brooklyn was awarded the contract for two abutments for the approaches to the viaducts on Sect. IV and he was also to build the foundations for the viaduct columns. This contract was worth $76,165.

The United Engineering & Contracting Co. got the contract for the building of the two underground conduits of 32 ducts each holding the feeder wires from Manhattan Crossing to Atkins Avenue. As for time, the latter two companies had to finish their work before the summer timetable became effective in June 1902. The steel company had to begin furnishing the roof beams for the tunnel section in February 1902 and must begin the erection of the viaduct section in October 1902 after the expiration of the summer timetable reduced the train schedules. Engineer Meserole estimated that the whole job would take two years and cost $3,500,000.

On Dec. 3, 1901 an impressive public ceremony was staged to mark the beginning of the Improvement. 2500 tickets were issued by the 23rd Regiment Armory at Atlantic & Bedford Avenues to prominent Brooklynites. The lieutenant governor of the state, the borough president, the state senator, the mayor and many other luminaries attended and made speeches in the drill hall. At 4:30 Mayor Van Wyck turned the first shovelful of earth at the corner of Bedford and Atlantic Avenues where the subway section would begin, and in the evening the prominent guests were entertained at a banquet at the prestigious Union League Club.

In December the physical work on Sect. IV of the Improvement got under way. There were 266 pillar foundations to be set. Each pyramidal base consisted of five layers of concrete. Each layer was one and a half feet thick and the lowest one, which was set at a depth of nine feet below the surface, was 9'6" X 8' face surface. The face of each succeeding layer was one foot smaller each way than the one upon which it rested. The top layer was 3'6" X 4' and was 18 inches below the surface of the

ground. The layers of each foundation were anchored by four large iron bolts extending up through them all to the surface of the ground. Each pyramidal base contained 7 3/4 yards of concrete. A bell-shaped cap surmounted the cement foundation with sufficiently widely curved sides to protect the pillars from damage by passing trucks or other vehicles.

The pillars were 12" X 23" and made of the best open-hearth steel. The height of the pillars varied slightly but the average level of the tracks above the street surface was 15 to 16 feet. The heavy girders that supported the tracks were of solid steel plate 44 ft. long and 4 feet in depth with flanges at top and bottom. The track girders were three feet deep and on these rested the wooden cross ties for carrying the rails. There was a timber guard rail outside each of the rails. Four brackets were attached to each pillar. The girders supported the latter in place and gave added stability to the entire structure. The section girders in Sect. IV were 30 feet apart. The whole length of Sect. IV was 5573 ft. or a little over a mile.

It is obvious from these extraordinarily heavy specifications that the road was designed not only for passenger cars but for the heaviest freight locomotives which would have to use this structure to reach the large East New York freight yards along Van Sinderen Avenue. Assuming that all the freight cars were of steel and carried 50 to 60 tons each of coal, ice, beef, lumber, etc. the necessity to have solid underpinnings to sustain such weight is obvious.

During December 1901 the Long Island R.R. tracks were shifted to the curb lines from Atkins Avenue to Manhattan Crossing and by the end of the year, seventy of the great excavations for the pillars had been dug. In February 1902, the Board made a change in Sect. III, the tunnel section between Howard Avenue and Sackman Street. It was found that this would have required a raising of the level of these streets at the Atlantic Avenue crossing eight feet, thus damaging adjoining property. To avoid this, the Board decided on an open cut between Cooper Place and Howard Avenue, the tunnel section to begin at Howard Avenue. At the eastern portal there would be an open cut between Stone Avenue and Sackman Street, the tunnel section ending at the east side of Stone Avenue.

In April 1902 work began on the construction of the concrete abutments for the ramp at Snediker Avenue (380 ft. long) and at Atkins Avenue on the east end. Both were due to be completed by June 1902. Trenches had also been dug and many of the ducts had been laid for the feed wires for the electrical equipment of the line. In mid-April work

began on the abutments for the incline at Bedford Avenue and at Howard Avenue on the east end. The big job all during April 1902 was the shifting of the Long Island R.R. tracks to the curb line on each side of the street both east and west of Manhattan Crossing and out to Atkins Avenue.

During April 1902 the American Bridge Co. delivered 1000 tons of finished steel girders for roofing over the tunnel sections, while 3150 tons of additional plates and rolled beams were sent from the rolling mills to the Elmira Shops to be made into beams. Of this 1900 tons allocated to the East New York elevated section was brought to Brooklyn only as needed. 1000 tons of girders arrived in gondola cars loaded two tiers deep and were stored on a side track on the Manhattan Beach Division south of the East New York station.

A large number of men was engaged also at this time in excavating for the tunnel approaches at Bedford Avenue and at Stone Avenue. At Bedford two big derricks were set up and 500 men were put to work with picks and shovels. Hundreds of car loads of earth were daily hauled out on Long Island Rail Road flat cars.

In the midst of this feverish activity on Atlantic Avenue, the Board and the Long Island Rail Road were hit with an injunction granted at the request of the Brooklyn Rapid Transit forbidding all further work. The BRT claimed that, under the lease from the Nassau Electric Railroad, a BRT subsidiary, the Long Island Rail Road was limited to a surface railroad. President Baldwin vigorously denounced this injunction, claiming that the reasons cited were merely a smoke screen. In July the court brought in a verdict for the Long Island Rail Road and the Improvement Board and denied the BRT's motion for a permanent injunction on several grounds:

1. The plaintiff would not only not be injured but would actually benefit by the improvements currently being made to its property.
2. The legislation authorizing the Improvement is constitutional.
3. The plaintiff knew and observed the progress of the Improvement since 1896 and never raised any objection.
4. Contracts have been let, streets torn up, tracks shifted and men employed. It is too late to stop this work now after six months.

In mid-summer of 1902 the work on the avenue was causing much grumbling among the railroad patrons. The shifting of the tracks to a new roadbed and the detours necessary around the embankments made passage for the trains slow and difficult. The temporary tracks were not

as solidly built nor as straight as the permanent ones and the constant movements of workmen and materials further slowed down train movements, a state of affairs all the more painfully evident on the crowded summer timetable.

By July 15 all the pedestals for the pillars on Sect. IV had been completed. West of Bedford Avenue the excavation for the tunnel had progressed 250 feet and was 17 feet in depth and 36 feet in width, a sizeable pit and one that had to be carried 6700 feet to Flatbush Avenue. On Section III, the other tunnel section, the excavation moved more rapidly and thousands of tons of earth had been dug from the half-mile long ditch.

By Aug. 1 the East New York tunnel had been dug out anywhere from four to eight feet deep and 36 feet wide and two temporary tracks laid in the ditch, one on each side, so that dirt could be excavated and dumped directly into flat cars for quick removal. At this point the excavators had to stop and begin to shore up the sides before they caved in from the vibration of the moving trains at the curb. On the other tunnel, the contractor, the Wilson & Bailey Co., had finished digging out the tunnel fully between Bedford and Franklin Avenues and were beginning to put in the concrete sides and approaches.

No less excellent progress was done on Sect. IV. Here all the concrete foundations for the pillars had been completed. The American Bridge Co. had 4000 tons of pillars all ready and the contractors were planning to erect them right after Labor Day when the train traffic tapered off and offered less interference. The tons of dirt taken out from the two tunnel sections these days were being used at two places: to fill in the trestle work on the Rockaway line between Woodhaven Junction and Ozone Park and to fill in a triangular four-acre tract of meadow at Hammels for a sub-station site.

The final progress report for the year 1902 dates to Oct. 1. By this time the contractors reckoned that 25% of the work had been done. Wilson & Bailey had completed all 666 of the concrete foundations for the pillars on both sections II and IV. The firm had also removed 50,000 cu. yds. of earth from tunnel section III and was due to finish by Jan. 1. Pillar erection on Sect. IV was due to begin on Oct. 1 and to continue through the winter reaching completion by April 15. The contract for the timber work on the floor of both elevated sections was awarded to Eppinger & Russell of Long Island City. The contract called for 1,000,000 board feet of ties, platforms and guard rails of every kind.

The American Bridge Co. which had the contract for the steel work of the entire structure had, up to Sept. 1, 1902 rolled out 9150 tons of steel. Of this 3800 tons had already been made up into finished work comprising all the material for the roofs of the tunnel sections. 16,000 tons of steel would be needed altogether, and, at the price of $16 per ton, this came to $850,000.

At the end of the year 1902 a small segment of Sect. I west of Bedford Avenue reached completion in all respects, giving an idea of what the whole tunnel would be like. The width of the tunnel inside the retaining walls was 26 feet. The concrete floors were 18" thick and the retaining walls varied from seven feet at the base to three feet at the top. The height of the tunnel from the ties to the roof was 15½ feet. The roof consisted of I-beams two feet in depth with arches of concrete between the beams. The concrete bottom of the tunnel was in the shape of an inverted arch, the depression of which was filled with broken stone on which the tracks were laid.

As the tunnel approached Flatbush Avenue two obstructions loomed. The track of the Douglass Street (later St. John's) trolley entered Atlantic Avenue at Washington Avenue and ran along the south side of the street in the space now needed for the temporary eastbound track of the Long Island Rail Road. By special arrangement with the BRT, the line was detoured over Bergen Street until permanent tracks could be relaid on Atlantic Avenue. More serious was the elevated structure of the Brooklyn Bridge-Jamaica connection which entered Atlantic Avenue from the south at Sixth Avenue and ran in the center of the street to Fifth Avenue. The engineers now planned to remove the foundations of these pillars and to hold up the elevated, temporary supports would be constructed consisting of two horizontal beams at the street surface riveted firmly to the columns and supported at the ends by blocking, which would be outside the line of the tunnel. The steel beams in the new tunnel would later serve as the permanent support of the elevated columns.

To the dismay and annoyance of the Long Island Rail Road, the excellent progress of the Atlantic Avenue Improvement was interrupted at the end of the year 1902 by two attacks, one by the Reformed Church of Brooklyn, alleging noise and threat to light and air which was easily disposed of; more serious was that of New York City Comptroller Grout who objected to the elevated sections and wanted the entire line in a subway. When it was pointed out that this would increase the cost

by $2,000,000, none of which the City would pay, and delay completion by two years, it was agreed to let the matter rest.

Although the winter weather of 1902–03 slowed down the Improvement work, much progress was made on the iron work. On Mar. 16, 1903 an impromptu ceremony was held at Atkins Avenue at the beginning of the incline on the occasion of driving the first spike into the first rail to be laid anywhere on the line. At this time the ties and rails had been laid down to Van Siclen Ave. and the iron work was all up to Vermont Avenue, but owing to a strike against the American Bridge Co., no work had been done for two weeks past. Although the strike effectively stopped progress on Sections II and IV, work went on all the more intensively on the tunnel sections. We hear that on Apr. 22, for example, the longest line of dirt cars ever drawn through the new Atlantic Avenue tunnel passed through that morning—43 cars, each carrying an average of 20 tons of earth and drawn by engine #103.

On Apr. 29, 1903 the strike ended and work was resumed on Sect. IV. In five days the structure advanced to New Jersey Avenue and on May 7, the last girders were erected. The riveters, tie layers and painters worked hard all through May 1903 to have the section ready for trains on May 27, the start of the summer timetable.

Elevated section II lagged farthest behind. All of the 400 foundations were due to be completed on May 6. New contractors, Terry & Tench, were poised to begin work on the superstructure. Meanwhile, tunnel Sect. III was now almost wholly excavated and material for the concrete walls was being installed and floors laid.

By May 21 all 400 of the pedestal foundations for the elevated Sect. III had been completed and the great traveling crane began work to erect the pillars and girders for the superstructure. This mile and a half long stretch was expected to take three months to complete. An important alteration in the grade at Nostrand Avenue was made at this time. Since the elevated sloped to join the incline at this point, the bed of Nostrand Avenue where it passed under the railroad was lowered two feet nine inches and the trolley tracks lowered with it. The slowness of Sheehan & Co., the contractors at this point, forced the railroad engineers to finish the work themselves.

On May 28, 1903 the eastbound trains of the Long Island R.R. began running over the new section IV in East New York, the very first section of the Improvement to be pressed into service.

During June 1903 the contractor on elevated section II had erected 47 bents and promised to finish in 19 working days. The excavation on

Tunnel Section I was now approaching Carlton Avenue. Surprisingly, a spur was built into the south side of the tunnel wall just west of Franklin Ave. to provide for a connection with the BRT Brighton line.

On July 1, 1903, while a long train of 28 freight cars was climbing the incline between Snediker and Hinsdale Avenues, one car derailed and fell down to the street onto the westbound track still in use. A rapid transit train came along half a minute later but was stopped in time to prevent a collision.

On July 20, 1903 the westbound track on elevated Sect. IV was thrown open to traffic and at the same time the last rapid transit station on the ground at Linwood Street was abandoned. Close to 100 flagmen were thrown out of employment by the opening of this first full section of the Improvement.

By the end of August 1903 Wilson and Bailey had constructed tunnel #1 from Bedford Avenue 2000 ft. west to Grand Avenue. Between Bedford and Classon Avenue the tunnel had even been roofed over and the street restored. On elevated Sect. II riveting had been done on half the elevated section and deck workers were laying ties and rails. Tunnel Sect. III had its concrete sidewalls half up and the roof on for two-fifths of a mile. Over the roof was a layer of roofing paper and over that a thick layer of roofing asphalt.

By Oct. 1 all of the tunnel section III had been excavated and all the flooring and side walls done and roofed over. Completion was set for Jan. 1, 1904. On elevated Section II the riveting was four-fifths done, all but three blocks of painting done and the ties and rails laid as far west as Schenectady Ave. Completion was set for Nov. 1. Tunnel Sect. I had been entirely completed to Grand Avenue and the side walls were up to St. James Place. Only four long blocks remained to the end of the tunnel which by contract was at South Elliott Place. Even in this segment the side walls were up.

Just before the year 1903 ended, the Long Island R.R. issued a general order to begin running the trains on elevated Sect. II on Tuesday, Nov. 17, but an unexpected delay at the last minute moved the date to Monday, Nov. 23, 1903. With both the elevated sections now in use, only the two tunnel sections remained for completion in 1904.

The next great problem the Long Island R.R. faced was the total rebuilding of Flatbush Avenue station. When the railroad had re-entered Brooklyn in 1877 the stables of the Atlantic Avenue Railroad had become the station and passenger car yard. Unfortunately, accommodations were painfully cramped. There were only six short tracks

abreast for passenger trains, four short storage tracks and three short tracks leading to a turntable. A row of private houses occupied the Hanson Place front. On Flatbush Avenue 100 feet of frontage and 118'7" of depth was occupied by the 13th Regiment Armory. The corner of Hanson Place and Flatbush Avenue was an unoccupied lot, roughly 108 X 43. If the Long Island Rail Road was ever to have a modern spacious station at Flatbush Avenue, it would have to acquire these sites somehow.

In March 1903 the railroad made its first move to acquire the armory which had seen little use since formally abandoned by the Army, after which the Board of Education had used it as a storehouse. The controller had his own appraisal made and claimed that the property was worth $125,000, but when the railroad offered to pay this sum, he still refused to sell. The comptroller put the property up at auction on Mar. 10 and Henry Roth, a builder, got the property for $140,500. It turned out that Roth was bidding on behalf of the railroad and a month later, it was quietly transferred through a chain of intermediaries to the railroad.

The Long Island had no difficulties in acquiring the row of 20 X 100 houses on lots along Hanson Place. The corner plot owned by the Richardson Estate, the founder of which had been "Deacon" Richardson, father of the Atlantic Avenue Railroad, was the next obstacle. The trustees, fearful of condemnation, put up the property for auction on April 8, 1903 and bid it in for $75,000 so as to establish that sum as its value on condemnation. Some time during the next three months an agreement was reached on the value of the two lots. After this acquisition the railroad owned the entire tract.

After expending five and a half million dollars for a landmark project, it was only fitting that the railroad should cap the effort with a division terminal as grand and as bold in conception as the Improvement itself had been. The Long Island, through its amicable relations with the McDonald-Belmont subway syndicate, had in mind a large union terminal building that would serve the IRT as well as the Long Island Rail Road, and with a physical connection to the subway when the track reached Flatbush & Atlantic Avenues in the near future, so that IRT trains could run out to Jamaica. Such an arrangement would be far more advantageous to the Long Island than the Brooklyn Bridge-Jamaica service currently operating by contract with the BRT. The station building would be at least three levels, with a lower-level floor for a passenger terminal, a street floor for a waiting room, driveway and freight

delivery, and an upper floor for freight tracks. Above this could be built a multi-storied office building, the largest in Brooklyn. Contracts would soon have to be let for digging out the terminal yard and Atlantic Avenue in front of it so that the tunnel, now completed to within two blocks of the station, could lead into a wide and spacious underground terminal.

One almost insoluble problem arose almost immediately in connection with the demolition of the old Flatbush Avenue station. If service were to continue into Flatbush Avenue all during the construction period, where would trains terminate? There were only two surface tracks in Atlantic Avenue; besides these, the railroad owned a freight yard only 825 feet long on the south side of the street between 5th and 6th Avenues with only half a dozen tracks in it. The dilemma was temporarily solved by utilizing the existing elevated connection with the Fifth Avenue Elevated (built 1899). This connection left the surface of Atlantic Avenue at Carlton Avenue, entered the yard, ran up a small incline about 80 feet long and then continued as an elevated line passing out of the yard and then back into Atlantic Avenue at 6th Avenue. Here it continued directly above the surface tracks to Fort Greene Place where it entered the terminal yard and continued straight on just inside the property line to a junction with the Fifth Avenue Elevated road.

The railroad decided to take the section of the elevated structure immediately above its old station and to construct temporary wooden platforms alongside the tracks. Here the through trains would stop and discharge passengers, while the Rapid Transit trains would do the same or continue on to the Brooklyn Bridge via the Fifth Avenue Elevated as usual. Beginning Oct. 1, 1903 the heavy wooden underpinnings for the new platforms were "hung" on each side of the elevated structure. These platforms were 400 feet long and six feet six inches wide. Since the two new platforms gained were still inadequate, the railroad planned to dig out Atlantic Avenue between Fifth and Flatbush Avenues as soon as possible, put a roof on it, and then lay three tracks on the surface of the street for a wider and fuller temporary terminal. This would have to do until the new underground tracks on the Long Island Rail Road's own property could be finished and used for train service.

At the corner of Atlantic and Flatbush Avenues and just under the temporary platforms, the Long Island built a little one-story wooden temporary depot building for the use of passengers. During the last week of Dec. 1903 the old red brick Armory building was razed.

During February 1904 the excavation of the site of the new underground station was put up for bidding. The station area was 800 feet in length and in width varied from 150 feet to 360 feet. In shape, it somewhat resembled a fan, the handle or narrow portion to extend under Atlantic Avenue. The floor of the station was to be 18 feet and more below street level. A roof 100 feet in width would extend the whole length of the structure over its southerly half. Heavy retaining walls, 14 feet thick at their base, would enclose the station. The track layout inside the terminal was planned as follows:

2 through tracks, one eastbound, one westbound, connecting the Long Island Rail Road and the IRT.
4 terminal stands, one holding four cars, one five cars, one nine cars and one eleven cars.
3 storage terminal tracks
1 express track
1 track reserved for the wholesale dressed meat traffic concentrated along Fort Greene Place.
5 short service tracks

The downtown passenger concourse at the west end of today's underground station was not a part of the plans and access to the downstairs platforms was available only by staircases from the street level station.

The street level station was to have a waiting room and ticket office and broad stairways would lead to the platforms of the tracks below. On the Hanson Place side would be a court yard for a carriage approach to the station. The express and baggage business would be cared for in the buildings to be constructed over the northeast corner of the yard fronting on Hanson Place. The express shed and yard would occupy an area 150 X 100. Five tracks would be located directly under the express building and goods would move up and down by elevators. The railroad held off building any kind of super-structure on the massive walls of the foundations out of business caution; they wished to see first what kind of increased traffic would result once the IRT subway arrived.

In the meantime the work on the Atlantic Avenue Improvement continued. By July 1, 1904 the first of the two tunnel sections, Sect. III, had been entirely completed, and on Sept. 16, 1904 eastbound trains began using it, and on October 1, the westbound trains.

The Degnon Contracting Co. which was at this time working on the Steinway Tunnel for the Belmont interests won the contract for the

excavation of the Flatbush Avenue yard in April 1904 and went right to work. The Degnon Co. had to plan the excavation of the station site carefully in order to interfere as little as possible with the regular train operation in the terminal. To this end the company began its work in May 1904 at the far west and north end of the site where the armory, the Richardson plot and the private houses along Hanson Place had stood. The method adopted by Degnon was first to excavate the sites for the heavy retaining walls on the north (Hanson Place) and south sides (Flatbush Ave.), install the walls and then excavate the dirt in between.

During May and June the Degnon Co. began removing thousands of tons of stone and soil from the station site. Temporary tracks for dirt cars were laid and hoisting engines installed, while the earth, dug out by scores of workmen, was hoisted to dump cars by means of big buckets holding half a ton each. All the dirt taken from the excavation was being transported to Fresh Pond Junction where it was used in filling in the swampy ground in the rear of the Lutheran Cemetery; the cemetery, in exchange for this benefaction, granted a right of way through its property for the projected New York Connecting Railroad. The excavation work went on all during the summer of 1904. By the end of October the south wall had been completed and the north one started.

By late fall of 1904 nearly two acres had been excavated to the required depth of 20 feet. The excavation was creeping closer and closer to the old terminal tracks along the Atlantic Avenue side still in use. As soon as the roof could be completed upon the excavation in Atlantic Avenue and new tracks laid thereon, the old terminal tracks could be taken up and the site dug out.

By Nov. 20 the excavators had removed and dug out the brick wall that had separated the terminal yard from the sidewalk along Atlantic Avenue and had removed the southernmost track and platform. Meanwhile, the roof of the section in Atlantic Ave. between 5th and 6th Aves. and some distance toward Flatbush Avenue was about three-quarters completed. It was planned that by January 1 the roof would be wholly completed, the tracks laid on it and the old terminal closed up altogether.

During December unfavorable weather set in, delaying progress on the long improvement. However, just about all the north or Hanson Place wall for the new station was now complete and half the entire station site dug out. The date for transfer of the terminal tracks from their old site to the roof in Atlantic Avenue had to be pushed up from January 1 to February 1 and then May 1.

By the end of January 1905 the diggers were almost up to the foundations of the old station. In late February it became clear just how the track layout of the temporary station in Atlantic Avenue would be. This was an important matter because of the imminent introduction of the first electric service into Flatbush Avenue. The engineers revealed that the electric trains would come in via the new tunnel as far as Carlton Avenue, then exit into the yard, pass through it and come to the surface at the corner or 6th Avenue. At this point there was a longer distance between two pillars of the incline than the average space and the tracks would go through that opening and so go out onto the roof of the excavation in Atlantic Avenue near Flatbush and Fifth Avenues. This would be the new Flatbush Avenue terminus for the spring and summer of 1905 until the new station site could be completed.

By the end of March 1905 the excavators had largely dug out the former terminal site and the retaining walls along Ashland Place and Hanson Place were completed. The end of April witnessed the completion of track laying on the Atlantic Avenue roof and trains were already being run into this temporary four-track terminal. Since space was limited, extra tracks were laid in Atlantic Avenue between South Oxford Street and Carlton Avenue with accommodation for 48 cars.

In the great excavation meanwhile, the retaining wall behind the beef houses on Ft. Greene Place was being installed. The dirt under the old terminal yard and platforms was meanwhile rapidly disappearing under the assault of powerful cranes and clamshell buckets. At the west end of the excavation the foundations for the pillars to support the roof of the new station and the superstructure to be built above it were being laid.

The railroad in June 1905 put up a temporary frame ticket office and waiting room with a frontage of 62 feet on Flatbush Avenue and 60 feet on Atlantic Avenues with a baggage room 30 X 60 adjoining it on the east. In the last week of May 1905 the old brick passenger station at Flatbush and Atlantic Avenue was torn down and on the site the small wooden temporary station was put up. This was just in time for the opening of the new electric train service on July 26th.

By the third week of September it was estimated that only about 20,000 cu. yds. of earth remained to be excavated and this was being removed at the rate of 1000 cu. yds. a day. The roof was being rapidly laid over these areas already excavated and the engineers dared to hope that track laying in the new underground terminal could be completed by Nov. 1 to accommodate the electric trains. By October a large part of the roof had been completed and plans were made to rush work on the

above-ground station building or at least the east end where a branch Post Office was to move in by May 1, 1906.

On the midnight of November 4, 1905 an important change took place in train operation into Flatbush Avenue. The steam railroad service which had been running all along the surface of Atlantic Avenue from the end of the incline at Bedford Avenue to the temporary station at 5th Avenue (the electric trains using the tunnel) was shut down permanently and all service out of Flatbush Avenue turned over to the electrics. This involved the abandonment of the old Franklin Avenue or Bedford Station which had been in use since the very beginning of the railroad. At the same time the running time of the electrics was reduced from 25 minutes to 16 minutes to Jamaica and the name of the trains changed from the old designation of "suburban" to "locals."

During the first week of November track laying inside the new depressed station was pushed with urgent speed. By midnight of November 4 the fourth track into the new station had been laid, and the first, second and third tracks were doubled in length. On the morning of November 5, 1905 the electric trains began running out of the new underground station even though the permanent brick station was as yet wholly unbuilt and part of the platforms were unroofed and open to the sky. This move permitted the abandonment of all the surface tracks on Atlantic Avenue that had made the street impassable for two years.

We must at this point return to the completion of Tunnel #1 and the alteration of the incline above it. By the end of October 1904 tunnel #1 had been completed to Carlton Avenue and the permanent eastbound track was then being laid as far as Grand Avenue. Five blocks of tunnel #1 remained to be done. Concrete side walls were the first step in the process, after which the earth would be excavated from between them. The incline at that time occupied the center of Atlantic Avenue from South Oxford Street to Fort Greene Place and because excavations for the tunnel would undermine the foundations, it was necessary to put in supports of heavy yellow pine timbers till permanent supports could be installed on the roof beams of the tunnel. During November 1904 the south wall of the eight-block stretch was put in and four-fifths of the north wall; the foundation for the second track in the tunnel was also completed to Grand Avenue. By mid-January the eight-block tunnel had been fully roofed.

In March 1905 the railroad began work on a complete rebuilding and realignment of the incline and elevated connection to the Fifth Avenue Elevated road. Two factors made this necessary. At the west end the

progress of the excavators on the station site was about to result in the undermining of the supports of the elevated structure. At the east end the tracks as built led down to street level at Carlton Avenue; however, very soon the surface tracks in Atlantic Avenue were scheduled for elimination and a connection with the underground tracks would soon be needed.

On April 8, 1905 the Long Island R.R. discontinued the Jamaica-Brooklyn Bridge service, supposedly to permit the rebuilding of the incline. As it happened, however, the service was never resumed. As soon as the bridge service shut down, the railroad built a spur from the tunnel track at Carlton Avenue, continued it onto an incline and connected the track at 6th Avenue to the surface tracks leading into the temporary terminus. At the same time the two tracks in the tunnel were completed from Grand to Carlton Avenue and fitted with the third rail. By the end of July 1905 both tunnel tracks had been extended to Fort Greene Place and up to the underground station. This final spurt of work formally brought to an end the changes contemplated by the Atlantic Avenue Improvement. It took until the end of 1905 to get all the surface tracks off Atlantic Avenue and still longer to clean up, pave and gutter the avenue for vehicular use.

In November 1905 the Long Island R.R. announced that the incline and Fifth Avenue elevated connection would be rebuilt in a different location and see different use. The old 1899 structure had an incline that led up to an elevated structure in the center of Atlantic Avenue at 6th Avenue and then ran west two blocks on Atlantic Avenue, curving into the LIRR yard at 5th Avenue. In July 1903 the Long Island R.R. had acquired the square block between 5th and 6th Avenues and the engineers now decided to reroute the incline from its beginning at Carlton Avenue to an elevated structure that would run parallel to Atlantic Avenue and just south of it, cross 6th Avenue and continue over the newly purchased property and then cross Atlantic Avenue at 5th Ave. and so enter the station site. The elevated road would give access to a second story freight terminal behind the Flatbush Avenue passenger terminal and would no longer be used for passenger service. This change of plan caused a change in the building plans for the new Flatbush Avenue station; the original plans for business offices atop the station were now changed to build increased freight facilities.

The Long Island R.R. strove during 1906 to finish the improvement of its Atlantic Avenue division by devoting every effort to the completion of the Flatbush Avenue terminal. By February 1906 more than one-

half the roof of the big underground station had been completed and the upright steel girders were in position for the support of the remaining half. Very little of the steel roof had been decked over with concrete as yet so that passengers entering and leaving trains on the platforms below did so in broad daylight.

The new permanent passenger depot was sited for erection on the Hanson and Ashland Place side of the block rather than on Atlantic Avenue like the older structure. The new structure was designed by Jacobs & Davies, the two engineers who had charge of the East River tunnels. The P.J. Carlin Construction Company had the contract to build the structure and Mr. H. F. Saxelbye was the architect. It would be a brick-and-stone two-story depot with a frontage of 75 feet on Hanson Place, 62 feet on Ashland Place and 104 feet on Flatbush Avenue. The exterior would be of rough red brick with buff brick and buff terra cotta facings. The main passenger entrance would be at Hanson & Ashland Place at the angle of the structure and there would be three other entrances on Hanson Place at which would be handled all the baggage and express matter. There was to be a passenger entrance and the main exit on Flatbush Avenue.

On the ground floor was to be located the big waiting room, 73' X 90'8" which would extend upward to the dome of the roof of the structure 40 ft. above the floor. The various offices were to be arranged on a balcony above this waiting room. On the first floor were to be the operator's rooms, ticket offices and toilets. On the second floor the offices would be given over to the operation of the entire terminal station. The rooms fronting on the rear of the depot looking out over the depressed yard would contain departments for the station master, trainmen, conductors and motormen. The entrances to the underground platforms would be from a concourse on the east side of the building. A branch Post Office (Station L) was to be opened on the south side of the building on Flatbush Avenue the front of which would continue in style and decoration the main Long Island station.

All during the spring and summer of 1906 work continued on the new passenger station, interrupted at times by minor strikes. By September much of the external frame of the building was completed.

The steel frame work for the commodious express and baggage depot on Hanson Place with its covered driveway was all up. The underground tracks over the whole site were now roofed over with concrete. The central and easterly sections of this roof were occupied by an open spacious freight delivery yard for package freight. In the center of the

freight yard at the street level was an island platform 300 ft. long and 150 ft. wide, the floor of which was five or six feet above the level of the surrounding roadways and plaza for the use of terms and from which the packages of goods would be unloaded into wagons. This platform and freight yard was reached by ample driveways and entrances on all sides of the station, two from Flatbush Avenue, one from Ft. Greene Place and another from Hanson Pl. The entire platform and driveway was covered with a substantial roof.

Above the platform on the third floor there were six tracks and three covered platforms where goods could be loaded and unloaded. Packages unloaded from freight cars could be lowered by means of nine electric elevators to the big island platform at street level.

In the underground station seven tracks of varying length offered space for passenger trains and seven much shorter tracks were reserved for freight and express service. Space was left for a physical connection with the IRT subway when it should come but by May 1908 when the subway opened, the Long Island R.R. was no longer interested in interline service and the track connection was never installed. The IRT later used part of the space for a siding of its own.

By December 1906 the new terminal was rapidly approaching completion. The outside walls and terra cotta trim were finished and the roof was on and much of the interior work done. During January 1907 the plumbers, electricians and plasterers were due to follow them.

On April 1, 1907 the new Flatbush Avenue passenger station was opened to public use at noon. There were no special or formal ceremonies attendant on the opening. The doors were thrown open, two of the four ticket booths were ready for business and the information booth began its work. The Atlantic Avenue Improvement was finished at last, eleven years after the first steps in 1896.

CHAPTER III

Terminal Expansion at Long Island City & Jamaica 1903–1904

THE Long Island City station with its large depot building and terminal yard was not only the biggest on the railroad but also the most important. It was a disaster of major proportions, therefore, when the great depot took fire on the night of Dec. 18, 1902. The ticket offices, waiting room, baggage and telegraph rooms occupied the ground floor and the company offices the second floor. The fire started in the telegraph offices about 8:15 P.M. and moved via a staircase to the second floor gallery which soon became a mass of flames. The ten-year old depot building, built of wood from the second floor up, took fire almost in the twinkling of an eye. The fire swept over the building so quickly that the telegraph operators on the second floor were trapped and had to leap out of windows framed in fire. The doorman discovered the flames issuing from the telegraph office and he then ran all over the building giving the alarm. Forty passengers in the waiting room made a mad dash for the doors. The clerks in the second floor offices did not move fast enough and had to jump out of windows. In ten minutes' time the roof of the building had fallen in and in another 30 mins. the whole station was in ruins. The tall clock tower was of wood and this fell within 15 mins. after the fire started. About 50 cars were standing in the yard near the depot, but every engine in the yard was pressed into service, and all the cars were rescued. Two baggage cars caught fire and were dragged blazing from the depot but were partially saved.

Under Pres. Baldwin's energetic direction the railroad recovered with remarkable speed. By 3:52 A.M. when the regular morning train service started, the first train left the depot on time. A large force of men was put to work at daylight clearing away the ruins and the railroad immediately filed with the Dept. of Buildings for a new structure 50 X 100 on the site of the burned building. Meanwhile, the railroad officials found temporary quarters in six large rooms in the brick building of the New York & Queens County Ry Co., the trolley company across the street. Railroad tickets were sold to the general public in the ferryhouse.

Trains were run in and out of the station as usual and by noon the ruins had been so far cleared away as to admit of trains running to within a few feet of the burned building.

As it turned out, the rebuilding of the destroyed station served as the catalyst for a whole series of improvements. The contract for a new depot was let as soon as possible to avoid a delay in the structural iron deliveries. The new depot was designed to resemble closely the old one. The half of the structure facing on Borden Ave. would be two stories in height as before the fire, the waiting room to the south with entrances facing Front Street. The principal and perhaps only change was a reduction in the number of offices on the second floor. The auditor's office, the offices of the general passenger agent and the general freight agent were all permanently relocated in the Pennsylvania Railroad building at 5th Ave. and 29th St. Manhattan. The waiting room was to be of the same height and dimensions as before and with all the usual facilities.

Work on the new station began on Jan. 24, 1903. By the end of April the main floor in the station was about finished and much of the plaster work done; it was scheduled to open in two weeks. The offices on the second floor were just about ready. To the great regret of the traveling public the Long Island Rail Road did not replace the big four-sided clock that formerly crowned the tower of the old building. For a decade businessmen and commuters had come to rely on the great clock and its destruction left travelers, boatmen, factory hands and pedestrians with a deep sense of loss. Because of the heavy pressure of the race-track crowds to the Metropolitan Track in Jamaica, which opened April 15th, the new depot was thrown open informally on April 27th while a lot of finishing work was still being done to the interior. Replacement iron sheds were put up between the station and the platforms.

On June 11, 1903 the various officers of the railroad, holed up in the trolley company's offices, moved back into the new depot building. The completed building was a plain brick affair with the first story devoted to waiting room, ticket offices and baggage rooms. The main offices on the second floor were grouped about a well 30 X 50 over which there was a dome, furnishing light to the whole interior. The main stairway to the second floor was located on the north side as in the old depot; a spiral stairway led up from the sidewalk facing the train shed.

The private and main offices of Supt. Potter occupied the northwest corner of the building, and the private and main offices of the superintendent of transportation the northeast corner. The ticket receiver's

office was located between these two. The car record and train dispatcher's offices were on the east side of the rotunda and the trainmaster's office in the southeast corner. The real estate offices were in the southwest corner and the offices of the purchasing agent, chemist and supt. of telegraph on the west side of the building. The electrical equipment of the train dispatcher's office and the car record office was far superior to that in the old depot. The new switchboard had 75 to 80 wires connecting with every station on the road and a daily report was made from the various depots of the location of every car on the line.

The offices of the general passenger agent, general freight agent and the auditor never returned to Long Island City; they remained at 263 Fifth Avenue in the Penn Railroad building, while the offices of Pres. Baldwin and Chief Counsel Reilly stayed at 128 Broadway.

While all this change was going on at the depot, the decision had been taken to expand the cramped Long Island City passenger yard by buying out the properties on the south side of the tracks. Negotiations went on very quietly in the spring of 1903 with the owners of the abutting parcels and the plots acquired one by one until the railroad owned nearly every parcel down to Flushing Street (54 Ave.). With the addition of this land, the Long Island City yard was almost doubled in size, relieving the congestion that had bothered the officials of the system for years. With the steady expansion of passenger traffic every year, the need for more space was all the more acute. The buildings in the area were all substantial establishments: two large lumber companies, (D. S. Jones and Yellow Pine), a planing mill (Doncaster), a varnish factory (Mayer & Lowenstein), and a big chemical works (Feuchtwanger). The purchase of these sizeable establishments, none of whom wished to move without substantial inducement, cost the company several hundred thousand dollars, but the enlarged railroad yard that resulted from clearing away these properties allowed the Long Island Rail Road to increase its terminal tracks from 16 to 21 plus 3 for freight service, raised the passenger car capacity from 108 to 216, and in rush times, permitted that number to be increased to 250. By July 15, 1903 all these buildings had been torn down. The Mundus Hotel, a brick building on the corner of Vernon Avenue and 54th Street, proved a holdout.

During October a force of men was cutting down the land to make it level with the passenger yard. Carloads of ties and new steel rails were being delivered and eight additional tracks prepared. The platform behind the depot was extended south to these new tracks and platforms were built between them as elsewhere in the yard.

In these same October days of 1903 the railroad began to take thought to extend and enlarge the depot bulding. The idea was to extend it 100 ft. south along Second St., bringing it close to 54th Avenue. The whole building was to be three stories throughout and the additional office space gained would be given over to those departments of the service now housed in various small buildings in different parts of the passenger yard. All those structures could then be torn down and the yard would then have much additional room as a result.

One of the greatest gains at this time besides additional yard space was permission to lay additional outlet tracks across Vernon Avenue. In the late 1880's and 90's every attempt to do this had met the determined resistance of Long Island City's redoubtable Mayor Patrick Gleason. Now that Long Island City was part of the greater City of New York, permission came easier. The entrance to the passenger yard in 1903, with only four passenger tracks and two freight tracks, was in every sense choked. Four additional tracks were laid in November 1903 to permit two or more trains to arrive together or depart together, an impossibility before.

On Jan. 7, 1904 the Long Island Rail Road recorded in the County clerk's office the deeds for the property of the Export Lumber Company, L. Feuchtwanger, and Mayer & Lowenstein along Second Street & 54th Avenue.

During January 1904 the southward 100 foot extension of the depot building was progressing; the first floor windows and door frames were installed and the brick wall was rising rapidly. Across the street the frame for the new express shed was up and the roof was going on. The new extension exactly matched the rest of the station and made the Long Island City depot one of the largest buildings on all Long Island. All the new tracks had just about been laid in the passenger yard and as soon as the smaller office staffs moved into the new station, their structures would be torn down and still more tracks laid in time for the spring and summer rush.

The steel frame for the new shed of the Long Island Express Co. adjoining the station was now finished and the side plates of galvanized iron put in position. The new shed was two stories high for half its depth and the second floor fitted up as offices for the superintendent and other officials. The old shed, which had to be razed to make way for the Front Street tunnel shaft, was torn down as soon as its replacement opened. Three tracks ran into the street floor of the new building so that cars could be quickly loaded and unloaded inside. By the end of March 1904

all the new tracks had been laid and the small buildings demolished. Four new umbrella sheds went up along the eight new tracks during April 1904.

All during this time, Mundus' Hotel at the corner of Vernon & 54th Aves. persisted in its refusal to sell to the railroad. The hotel operator refused $20,000 and the owners $50,000. The railroad finally was forced to turn to condemnation proceedings.

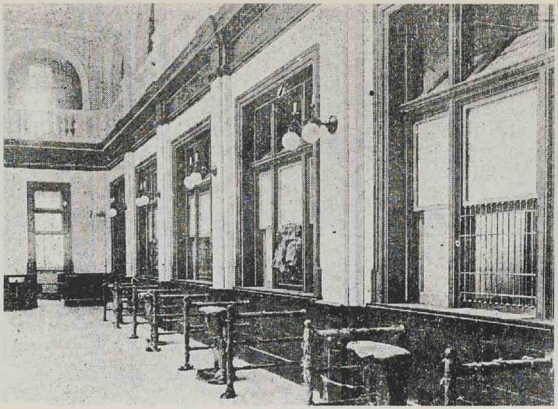
In December 1904 the railroad undertook the unusual task of reconstructing all the umbrella sheds on the train platforms. The sloping roofs of the sheds had poured water down the backs of the necks of passengers in bad weather and complaints had resulted. The new sheds now sported roofs that sloped inward toward the center instead of downward at each side.

The final improvements at the Long Island City terminal came two years later in 1906. When the building on Borden Avenue had been erected in 1903, no provision had been made for additional room for the executive offices of the company. By 1906 space had become so scarce that the company decided to put a second story on the addition that was only one story high. Work began immediately on the second story and was finished in mid-June 1906. The office capacity of the building was doubled. The extension was 126 X 75 and the open well in the center of the building enlarged to 56 X 17 with great sky lights overhead. General Superintendent McCrae had two rooms overlooking the platforms and yards 17 1/2 X 22 and 30 X 22. Superintendent of Transportation Hartenstein had two rooms 11 1/2 X 22 and 27 1/2 X 22. The paymaster had one large room to himself. On the west side overlooking the ferries Trainmaster Jarvis had two rooms and Electrical Superintendent Wells two more and Real Estate Agent Howarth two others. President Peters took for himself the whole north side of the building. In its final reconstruction the great Long Island City depot now extended 440 feet on Front Street from Borden Avenue to 54th Avenue and 400 feet of this was now two stories high.

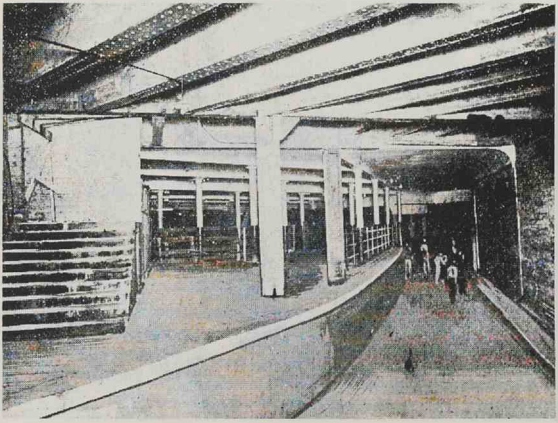
Next to Long Island City, Jamaica was the second most important station on the system. The fact that it was the junction of the Atlantic Branch, the Montauk Division and the Main Line plus the site of the main shops and roundhouse insured its importance. The Long Island Rail Road during the 90's had made extensive land purchases from Morris Park on the west (130th St.) to Sutphin Blvd. on the east so that by 1900, the Jamaica Yard was 26 tracks wide. Between Sutphin Blvd. and Jamaica Station the yard narrowed down to 12 tracks (see Vol. VI,

pp. 125-27), however, just east of Jamaica Station, at 159th St. (old Prospect St.) the right-of-way narrowed down to two tracks only. The station area was constricted enough as it was for the meeting of trains from so many divisions, but the dispatching of trains for the Main Line, Montauk, Wading River and Oyster Bay branches over only two tracks had become almost intolerable. The railroad had also in view the greatly increased traffic to follow the completion of the Atlantic Avenue Improvement and particularly, the coming of the IRT subway to Atlantic Avenue and the possible running of Long Island Rail Road trains into downtown New York. Electricity would greatly speed up the schedules already existing, but increased patronage could well make it necessary to dispatch trains under as little as 40 to 60 seconds headway. Jamaica Station, already inadequate, would then become impossible.

The railroad, in 1901, decided to delay no longer in putting an end to this condition by purchasing enough land to widen the right-of-way by the width of four tracks throughout Jamaica village. In July 1901 the railroad announced publicly its intention to enlarge its right-of-way along the south side of Jamaica from 159th Street eastward through the village to Rockaway Junction (later Hillside) and to establish a yard beyond that point extending as far as Hollis station. In September the railroad applied to the courts for the right to begin condemnation proceedings. Over the winter of 1901–1902 the railroad was able to acquire no less than 33 parcels of land over the one-mile distance. Each of these parcels so acquired was from 45 to 55 feet wide and varied in size from a 25 ft. city lot to strips one and even two blocks long. On the average the railroad had to pay anywhere from $1000 to $4000 for the smaller lots. A few parcels, however, were more costly. John M. Crane, president of the Shoe & Leather Bank, owned the whole block from 160th Street to Union Hall Street, a sizeable plot 400 X 300 ft. and the railroad bought it out complete including his mansion for $20,000. The mansion, a handsome and substantial dwelling 38 X 38 and three stories high, was divided into offices and used partly for the engineering department and partly for maintenance of way. A two-story wing, 25 X 60, was built to the north of it and there was a connecting wing 22 X 30, the latter containing a fireproof vault used for the preservation of records. The engineering department, which had been ousted from its building on Second Street in Long Island City because of the tunnels and yard expansion, was moved into the mansion. Another large parcel was that of John R. Carpenter who owned an extensive lumber yard two blocks long from New York Avenue to 166th Street. For this the railroad paid $37,500.



Ticket offices at Flatbush Avenue station in May 1908. ("Eagle") (Top)
The much-disputed IRT planned connection on May 1, 1908
("Eagle") (Bottom)



so that cars and trucks would have less of a climb in crossing the railroad. It was planned to have a 16 ft. headway between the floor of the bridges and the tracks below. On Nov. 18, 1902 the contract for building the three new steel bridges was awarded to the Owego Bridge Company with the strict provision that the work had to be completed by May 1, 1903.

In February 1903 a big steam shovel was put to work cutting down the banks on both sides of the roadbed. As soon as this was finished, the track layers could come in and lay the four new tracks with 100 lb. rail. The earth removed was carted out to Barnum's Island and used to fill in between East Rockaway and Long Beach.

By April all the earth had been cut away and the roadbed graded. The problem now was to take down the old bridges, put up a temporary trestle for the trolley on 160th Street, tear out the old bridge abutments and build wider new ones.

A few other changes were made at the same time. The old turntable at 159th Street was pulled out and moved a block east and opposite the Crane Mansion engineering building. More important was a change in the station platforms. With four new tracks available, it now became possible to rearrange the platforms to four island platforms and two outer platforms. Instead of having all the trains come in at two or three platforms as had been necessary over the years, it now became possible to separate the different divisions and assign platforms to each as follows:

North platform with station building
Main Line westbound track
Island platform
Rapid Transit westbound track
Island platform
Montauk Div, westbound track
Main Line eastbound track
Island platform
Rapid Transit eastbound track
Wide Island platform with station building
Montauk Div. eastbound track
Two dead-end tracks

To link up all these platforms, the railroad for the first time put in an underground passage leading from Twombly Place on the north to Beaver Street on the south. The entrance to the tunnel on the north was at a

point just west of the Jamaica Station, where the passengers descended by a flight of stone steps to the floor of the tunnel, and passed underneath all the tracks. The passage was seven feet high and six feet wide and over 200 ft. long. The brick side walls of the tunnel were three feet thick at the base and were drawn in by three successive four-inch steps to a thickness of two feet at the top, the roof being formed of 60 lb. iron rails. This arrangement did away with the former dangerous practice of passengers walking across the tracks or walking through trains. To insure that all passengers would buy tickets ahead of time, a turnstile was built into the Twombly Place entrance preventing people from entering the underground passage directly, but permitting egress.

In mid-April 1903 the 159th Street bridge was lowered onto its new foundations and workmen were busy laying the floor of the roadway and sidewalks. The Union Hall Street bridge was lowered onto its foundations April 27th. The old 160th Street bridge, because of the trolley track on it, was still in service but a temporary bridge just west of it was currently being built and scheduled to be in use on May 4th. The three new bridges were described, in the language of an engineer, as pin-connected, Pettit truss type, 44 ft. wide, with hogback truss frames.

By May 15th, 1903 the new bridge at 160th Street was nearly finished and ready for installation and the workmen were busy tearing away the abutments of the old one. Meanwhile, the trolley cars of the Long Island Electric Railway were running over a temporary wooden trestle-work structure. All the bridges were due for completion and the six new tracks (four passenger and two freight) were to be in use by May 27th, the date the summer timetable went into effect. The last days just before the deadline were hectic:

> 300 men are at work today changing the tracks through the Jamaica yard of the Long Island Rail Road., changing the station sites and building new platforms and the place looks as though it had been struck by a cyclone. The job had to be done quickly and all superfluous beams, joists, planking, old roofs and other material had to be thrown up in heaps in every direction until time can be taken to properly dispose of the stuff. Scores of men are at work in one place driving down big locust posts for foundations for platforms, other gangs are at work

> laying new tracks and shifting old ones, masons are still working at foundations and underground passageways and altogether the scene is a bewildering one to the hundreds of idle onlookers and to all but the officials, who will soon bring order out of the chaos.

All in all, the Long Island Rail Road spent $200,000 in the Jamaica improvement for purchase of land, grading, widening cuts, building three steel bridges with heavy abutments, installing a retaining wall on the north side and changing the station platforms. The final touch came in April 1904 when the railroad added glass enclosures for the various platforms in accordance with Penn. Railroad custom.

Interestingly, the Long Island Rail Road foresaw even at this time that the Jamaica improvement was at best a temporary stopgap:

> The change to be made in the Jamaica yard will be but temporary and will be in the nature of trial plans with a view to helping solve the problem of permanent plans for this station which will eventually be the central part of the Long Island Rail Road system. While the switching and platform arrangements have proven satisfactory, plans will be prepared for a suitable permanent station at Jamaica and undoubtedly a great brick structure will replace both of the present frame structures for east and west bound trains....It is recognized that this station besides being the terminal of the system of steam lines, will also be the terminal of the Pennsylvania-Long Island tunnel system and the Rapid Transit (IRT) tunnel. In view of this it is said that the largely increased facilities being provided at the point will be too small to provide for the enormous future traffic. Over 800 trains daily pass both ways through this station but once the tunnel and the Atlantic Avenue Improvement and the Interborough Rapid Transit are finished, the number will be four times greater.

CHAPTER IV

Electrification: The Physical Installations

THE whole Pennsylvania Tunnel project was capable of realization only on the basis of train operation by electricity; steam in a six-mile tunnel was inconceivable. As soon as the Pennsylvania Railroad began work on its tunnels, therefore, it also began work on power facilities. Before doing anything the Pennsylvania Railroad had to come to a decision upon the character of the equipment and the characteristics of the electrical apparatus. Because it seemed possible in 1902 that the Pennsylvania tunnel trains might some day connect with the lines of neighboring companies including the Brooklyn Rapid Transit Company, the Interborough Rapid Transit Company as well as the Long Island Rail Road, the directors considered that it would be wise to harmonize Pennsylvania Railroad trains and power installations with those of the existing subway, surface and elevated lines. It was decided therefore to adopt for the car equipment a type and dimension of car which would permit, if necessary, of through operation over connecting lines. It was also decided to adopt a system of electrical distribution which was standard on connecting lines, namely, third-rail contact and direct current at 600 volts for the propulsion current and alternating current transmission at 11,000 volts for conversion at substations.

In furtherance of this decision the Pennsylvania engineers had come to the conclusion that two large power houses, one in Long Island City and a later one in Jersey City, (never built) would adequately power the New York terminal operations and also the city and suburban operations of the Long Island Rail Road. Since all power generation at the turn of the century depended on coal, it would be necessary to find a site on or close to the water so that coal could be delivered cheaply and directly by barges. In Long Island City such a site was not too difficult to find since the Long Island Rail Road already occupied more or less fully five blocks of waterfront for its main passenger terminal, freight yards, express terminals and ferry.

The Pennsylvania Railroad selected the square block bounded by 2nd St., 5th Street, 50th Avenue & 51st Avenue, a plot 200 X 500, as the site for the big power house and engaged Westinghouse, Church, Kerr & Co. to draw up the plan (February 1903). The Long Island Rail Road formally leased to the Pennsylvania Railroad and the New York & Long Island Rail Road, the corporation formed to build the tunnel, the power house site for a period of 99 years and for an annual rental of $24,000 a year. The Long Island also leased a plot on the west side of 2nd Street, 37 X 24 opposite the power house, and the land under water from the old bulkhead line 315 feet west of old First Street and extending out to the United States bulkhead line; also the right to build and maintain on the Long Island Rail Road's property west of 2nd Street an elevated tramway supported on steel towers for the conveyance of coal and ashes about 500 feet from the waterfront to the power house; also to build two big flumes through a 17 foot strip from the river to the power house. The Pennsylvania Railroad undertook to pay all taxes and assessments. A few old buildings occupied the power plant site on the river side. The Pennsylvania Railroad engineers drove a few piles into the site in August 1903 to ascertain the character of the earth and the foundations and how far inland the river water came in. All the land here was "made land" and any structure would require pile support. The dimensions of the power house would be 200 X 500 and 100 or more feet in height.

On Nov. 8, 1903 a large force of men and teams began the work of excavating the Front Street end of the block. During December hundreds of piles were driven and during January 1904, the work force was engaged in cutting off the tops so that all the piles would be even. The railroad then constructed a great wooden-frame inclined ramp to pour concrete from the east end of the block into the hole at the west end. The purpose of pouring the concrete was to form a heavy bed; when set, the concrete would fasten itself tightly around the head of each pile and so form a solid foundation for the immense weight of brick, stone and steel to be reared upon it. Since the site was only 200 feet distant from the East River, piles and concrete were thought the surest way to secure a solid foundation.

On March 5, 1904 the contractor finished the work of driving 9113 piles using nine huge pile drivers to do the job. About 800 yards of concrete were going in daily, consuming 12,000 bags of cement a week. By means of the inclined plane broken stone and sand were hauled up to a 30 foot height and dumped directly over the concrete mixing machine.

By the end of March, 15,000 cubic yards of concrete had been poured in depths ranging from 6'6" to 8'6". At the western end were the concrete bases for two of the steel smokestacks, and halfway to the eastern end were the bases for two more. These bases were two feet higher than the concrete floor about them. Near the outer edge of the circular bases were embedded 20 large bolts of steel three inches in diameter and 11'6" in length. The nuts on the top of the bolts were to hold in place the bases of the steel stacks, each 23 feet in diameter at the bottom, 17 feet at the top and 275 feet in height. At the far west end of the excavation were two submarine tubes each 10 feet in diameter, one over the other. These tubes extended from the east end of the power house to the East River. Salt water flowed naturally into the lower tube and by means of pumps was raised to where it would be used to condense steam. The upper tube was for carrying the waste water back into the river.

Six weeks later, by the end of May 1904, the water tubes had been completed, the four smokestacks were halfway up, and the granite blocks comprising the outer walls were being sited. Three engine beds were under way to support the electric generators. These beds were built up from the floor of the power house and were of solid brick. The engines were up on the second floor, 16 feet above. For the first time in power house construction turbine engines were installed exclusively. When the boilers were installed, the first tier was up on the second floor and the second tier was 36 ft. above that. The purpose of this arrangement was to give plenty of room for the stoking system. The ground floor was left entirely free for the pipes, ducts, wires and other items. Each duct was made of fire-hardened clay similar to drain pipes. Each duct was about five inches in diameter, more nearly square than round. Trenches leading from the power house contained a large number of these ducts through which wires were run.

Beginning in May 1904 work was also begun on the sub-stations that would convert the high-tension power from Long Island City. Sub-stations were scheduled to be built at Woodhaven Junction, East New York and Hammels. It was planned to build two others later at Rockaway Park and Flatbush Avenue.

So extraordinarily rapid was the construction of the power house by the end of October 1904 that a delegation of Britons from the Iron & Steel Institute in London came to America expressly to view the marvel. In eight months five million pounds of structural steel had been erected for the skeleton framework, four mammoth smokestacks 275 feet high had been put up, and the brick walls had been completed with 4,500,000

bricks laid. To accomplish this, the bricklayers had averaged 1500 bricks per man per day! The work of installing the steam engines and dynamos was just beginning. The installation of the boilers was proceeding rapidly. It was hoped to have three units of the plan ready by the spring of 1905 to furnish all the electric current for the Rockaway and Atlantic Avenue Divisions. Each unit would consist of a Westinghouse-Parsons turbine engine and a dynamo; each unit would generate 5500 KW or about 7500 HP. These engines and generators were at that time the largest ever built and it was expected that one or more of the units could be started up in less than two months. An emergency stand-pipe, forty feet in diameter and eighty feet high, was erected on the north side of Borden Avenue and just east of the North Shore Division tracks. This structure too was given a foundation of 300 piles to sustain the enormous weight of 800,000 gals. of water plus the iron shell.

By Dec. 15, 1904 the 32 boilers on the first floor, paired off into 16 batteries, were now completed and ready for the fires. The same number of batteries was being constructed on the second floor so that when the second boiler room was ready, there would be 64 large water-tube boilers to furnish steam for driving the giant turbine engines. Only one generator had been installed so far and workmen were busy winding the armature; the engineers expected that it would take several men 60 days working 24 hrs. a day to finish winding one of them. On Dec. 21, the first turbine engine was tested and everything worked satisfactorily.

To bring in the coal a tower 190 ft. high was erected at the foot of 51st Avenue. From this tower to the power house several hundred feet away ran an elevated tramway 104 feet above the ground. A coal conveyor with buckets transported the coal from a barge to the bunkers just beneath the roof of the boiler house. From the bunkers the coal was fed through chutes directly to the furnaces, eliminating most stoking.

On Jan. 3, 1905 a severe winter windstorm lifted one of the huge smokestack covers, an oaken, zinc-lined lid about 18 feet in diameter and weighing several hundred pounds, and deposited it on the tops of two passenger cars on tracks 4 and 5 so lightly that the car roofs were not damaged. During May 1905 the steel towers for the elevated tramway carrying coal in and ashes out of the power plant were completed.

By July 1905 the great power plant was completed and preparations were made to run the first trains. The completed plant had a capacity close to 50,000 KW; when the tunnels had been completed, the power plant was scheduled to be enlarged to twice that capacity. In 1905 only three of the big Westinghouse-Parsons units had been set up, enough to

power the LIRR. These consisted of a 7500 HP turbine. Each turbine could be increased from its 7500 HP rating to 12,000 or 15,000 HP if need be. The turbines were known as three-stage, single-flow turbines, i.e. the thousands of tiny blades upon which the steam impinges were arranged in three sets, so that there were three stages of expansion of steam through the blades. The building was constructed to hold six of these units and two 4000 HP turbines in addition, making a total of 53,000 HP capacity, but in 1905 only three of the turbines had been installed, yielding a normal capacity of 22,500 HP. Each turbine was connected with a 5000 KW generator of the revolving field type. The stationary part of the generator, a three-phase 12,000 volt alternator, was so large and heavy that it had to be assembled at the power house as it could not be transported in its complete form.

A feature of the installation was re-evaporation of the condensed steam in the boilers. The great surface condensers each attached to a turbine, were the largest known. Each contained 5200 tubes an inch in diameter and 15 feet long. Each condenser used about 7000 gallons of water per minute to cool the exhaust steam, the water being drawn from the East River through the condensers by a centrifugal pump, subsequently returning to the river through another flume. Each generating unit weighed 250 tons.

The most interesting part of the plant was the great boiler room with its double tier of thirty-two 520 HP boilers with furnaces fed from automatic stokers from an overhead coal bunker storing 7000 tons. There was space for 16 more boilers of the same size. Coal was brought to the bunkers from a pier 500 feet away over a steel trestle 110 feet above the street. It was scooped out of the barge by a clam-shell bucket holding 3000 lbs. operated on a hoist. Then, by a mechanical process, the coal was dumped into a hopper 155 feet in the air, passed through a crusher and weighing machine and fed into steel cars holding three tons each and carried on a cable railway over a trestle and dumped in the proper place in the bunker by means of an automatic tripping device. Only two men were required to work all this elaborate machinery and to handle 500 tons of coal a day, the normal capacity of the station. Ash disposal was also provided for. The nearest tower to the power house was constructed so as to receive ashes from beneath the boilers which would be delivered automatically from the building to ash hoppers where Long Island Rail Road cars stood ready to receive them.

On the north side of the great engine room were four galleries the full length of the building. These were occupied partly by the electrical

apparatus such as the electrical switchboard and other devices necessary for the operation of the plant and controlling the current which passed through the great cables in the underground conduit system.

The construction on the electrical distribution system progressed as quickly as did the work on the power house. The current from the power house was carried through conductors and switches to parallel bus bars and from these through switches and group busses to the outgoing 11,000 volt cables. Each of the cables was three inches in diameter and running through these were three copper wires each a half inch in diameter and perfectly insulated. Each of the circuits consisted of three copper conductors of 250,000 circular mills; on the trunk line were five circuits or 15 cables. Each cable was carried in conduits through the built-up sections of Long Island City as far as the railroad yards at Dutch Kills. These ducts were laid during the summer of 1904. Unfortunately, there was a low-lying swampy area at Arch and Crane Streets off Jackson Avenue several acres in extent and filled with ponds of still water. No sooner were the ducts built than the engineers discovered that they were frequently flooded, especially after heavy rains, short-circuiting the high tension cables. Gangs of workmen had to be put to work digging a 700 ft. drain and installing automatic pumps to drain the waters.

From Dutch Kills the electric cables were brought overhead and carried on specially designed lattice steel poles roughly 150 feet apart. Each pole was of wrought iron, averaging 45 feet in height. All during the summer of 1904 workmen had been busy preparing the concrete pedestals for these towers. So strong were these poles that a hurricane could not harm them and they were designed to withstand the heaviest wind pressure when the cables were loaded with sleet. The cross trees on them were almost as big as railroad ties. The more than 10,000 glass insulators used were tested at 40,000 volts for leakage. Work on the erection of the towers themselves began on Jan. 31, 1905. By the end of March the work of drawing the heavy feed wires through the mile or more of subway ducts in Long Island City and of stringing them on the steel uprights that were to carry them to Woodhaven, Jamaica and Rockaway was almost completed and in April the cables were strung on the poles across Jamaica Bay. The pole line followed the railroad track to Rego Park from which it struck across country rejoining the Rockaway line at Glendale Junction and then on to Woodhaven Junction. At this point the line branched off east, south and west to the various substations. There were 10 miles in all of the steel pole line, 25 miles of wooden pole line and 11 miles where the cable was carried in ducts

below the street as was also the cable along Atlantic Avenue and in Long Island City from the power house to Dutch Kills. Wherever the transmission crossed the telegraph or telephone wires, the latter were led underneath the high tension wires, the very substantial character of the heavy electric cables precluding their breaking and falling across the telegraph wires. A further precaution was taken by having the poles placed closer together at such points. Lightning was guarded against by lightning arresters in all the sub-stations. The sight of the bare feed wires and towers along the right of way through Elmhurst and Woodhaven created uneasiness among the more faint-hearted of the citizens of the populated areas of Queens that the railroad was endangering life by running bare overhead feed wires. The railroad assured everyone that its lines were strung in the very best manner known to science and were guarded in every way that science and ingenuity could devise. The most difficult construction in connection with the pole line was along the four-mile trestle over Jamaica Bay. Here the poles used were 85 ft. long. It was necessary on account of the summer tide movements and winter ice to sink these poles 15 or 20 ft. into the bay bottom and for this, heavy water jetting machinery had to be carried out on the trestle. Moreover, each pole had to be creosoted from top to butt against the action of the teredo or shipworm which could eat through an unprotected pole in a year.

All during the summer of 1904 work was pushed on the construction of the sub-stations. These were five in number and were located as follows:

#1 Atlantic Avenue midway between Grand Avenue and Classon Avenue
#2 East New York, southwest corner of Atlantic & Snediker Avenues
#3 Woodhaven Junction, southwest quadrant of the junction
#4 Rockaway Junction (Hillside), south side of right of way on the line of 172nd Street
#5 Hammels, behind the Y at the station

As far as possible, sub-stations were located at junction points since it seemed more practical to locate them at points where heavy loads occurred. The electrical equipments in each—(transformers, switches,)— were set up in February 1905. The three-phase alternating current sent out from Long Island City at a pressure of 11,000 volts was reduced in the sub-stations to the nominal 650 volts.

The Woodhaven Junction sub-station was the largest of all— 72 X 85, being provided with an initial equipment of three 1500 KW rotary converters and nine static transformers of 550 KW capacity. Ultimately, the station was to be equipped with six 1500 KW rotary converters with a corresponding increase in the number of static transformers.

The Grand Avenue sub-station had an initial equipment of three 1000 KW rotary converters and nine static transformers of 375 KW capacity. The ultimate capacity was to include four 1500 KW rotary converters with a corresponding increase in transformer capacity.

The East New York sub-station was furnished with an equipment of three 1000 KW rotary converters with nine 375 KW transformers, while the ultimate equipment was to consist of four 1500 KW rotary converters and the corresponding number of transformers.

The Hillside sub-station had two 1000 KW rotary converters and six static transformers of 375 KW capacity, with expectations of upgrading to four 1500 KW converters.

The sub-station at Hammels was somewhat different in construction and capacity from the others. First of all, the site for it had to be created. The railroad filled in several acres of salt marsh behind the Hammels station, using dirt and stones from the Atlantic Avenue Improvement. This work went on during the autumn months of 1904. Then, because the sub-soil was nothing but beach sand, the engineers drove 840 spruce piles with 8" tips & 10" butts between 25 and 30 feet long by water-jetting into the coarse quicksand to secure a solid foundation for the heavy machinery. On the piles a double timber platform was built and this was overlaid by a concrete bed in some places 12 feet thick. The sub-station building was brick and 69 X 85, with an extension 62 X 100. $40,000 was expended on this one sub-station. The building was equipped with two 1000 KW rotary converters and six 375 KW transformers. Like the others this was planned to contain ultimately six 1500 KW rotary converters.

The most unusual feature of the Hammels sub-station was a large storage battery room 62 X 100. There were about 300 tanks capable of furnishing 3200 amperes rating and 9600 amperes momentary discharge. The reason for this installation was three-fold. For one thing the Hammels sub-station was farthest from the power house and the transmission line was exposed to an unusual extent, being carried over Jamaica Bay for four miles. In addition, the Long Island Rail Road operated on the Rockaway peninsula a trolley line, the Ocean Electric Railway,

and in the event of power failure at Long Island City, the battery installations alone could power the trolley line until repairs were made. The battery pile could also boost the third rail during periods of exceptional demand. Finally, the load at Hammels was very light during the winter, and the very large battery capacity— it was then the largest in the world in use for electric railway work— made it practicable to shut down the rotary equipment for much of the time during the winter months. If the power at Long Island City failed and stalled a train on the trestle, the battery made it possible to get the train off the trestle.

All five of the sub-stations showed that a maximum of equipment had been used in a minimum of space with great simplicity of arrangement. There were no mazes of ugly cables, for the cables were largely laid in ducts or disposed of below the main floor so that it was impossible to realize actually how many of them had been buried out of sight in the building. Each sub-station was bright and airy and the interior effect of yellow brick and grey soapstone pleasing to the eye. Most conspicuous of course were the 1000 or 1500 KW rotary converters, each with its three transformers. The various sub-stations were equipped with from two to four of these rotaries. All the sub-station buildings were constructed of red brick and concrete and steel. All were fireproof, the floors and roofs being concrete, the window frames of copper and steel, and the window glass wired to insure protection against fire from outside.

The main switchboard in each case was placed in a gallery on one side of the building from which the operators could have an uninterrupted view of all the machinery under their control. Because certain holidays or even particular hours of certain days resulted in enormously swollen traffic and created heavy demand for power, e.g. race-track days and beach days, the Long Island Rail Road devised two portable sub-stations, at that time interesting innovations in engineering. These were 1000 KW rotary converters with three transformers, a blower and switch complete, all carried on fireproof steel car on the heaviest type of standard Pennsylvania Railroad trucks. These portable sub-stations could reinforce and increase greatly the power at any point on the line and could be shifted from place to place. Small buildings to house the portable sub-stations were provided at Belmont Park race track and at Springfield Junction near the Metropolitan race track; others were located at Floral Park and at Hempstead Crossing.

The third rail used by the Long Island Rail Road and the distance it was fixed from the track rail followed the practice of the Pennsylvania

Railroad and the Interborough Rapid Transit Company. The standard distance was 27 inches from the gage line of the track to the center line of the third rail and with top of rail 3 1/2 inches above the top of the track rail. This arrangement permitted equipment interchange between the three railroads and generous clearance for steam equipment and freight cars. The third rail was bolted to sleepers which extended at intervals beyond the line of track and was supported by insulators made of vitreous clay. It was covered throughout its whole length by a wooden plank overhead. At either side of a grade crossing the third rail terminated in a broad sloping shoe. A cable connecting with the third rail passed underground in a concrete duct at a depth not likely to permit of interference by crossing repairs and came again to the surface on the other side of the break connecting with the next stretch of third rail.

During January 1905 the third rail was distributed all along the tracks from Long Island City to Rockaway Park and poles were set along the Jamaica Bay trestle to support the big cables. Hundreds of men had been at work bonding the rails with copper bonds since October 1904.

CHAPTER V

Electrification II—The First Services

THE electrification, as contemplated by the Long Island R.R. in 1904, was an extensive one: the total length of the road to be electrified was about 96 miles of single track:

Woodhaven Junction to Rockaway Park	8.53 route miles
Flatbush Avenue to Belmont Park	14.5
Jamaica to Locust Manor	2.6
Locust Manor to Valley Stream	3.8
Valley Stream to Far Rockaway	5.17

The car equipment of the Long Island R.R. consisted wholly of steam coaches and a complete new car equipment became necessary for the electric road. It must be remembered that at this time the Long Island R.R. still intended to operate its cars in the IRT subway from Jamaica to City Hall and to the Bronx and for this purpose the first cars had to be interchangeable with those in the IRT. The railroad accordingly ordered from the American Car and Foundry Company 122 steel motor cars that were practically the same as those in use at that time in the Manhattan subway. They would be the most complete and up-to-date vehicles of their kind in the world, fireproof and as nearly collision-proof as cars could be.

The specifications called for a steel car 51'4" long over the couplers, 8'8" width over the eaves and 12'1/2" in height with a weight of 79,564 lbs. and capable of seating 52. To do away with the necessity for a steel roof which would be likely to make the cars rather warm in summer, the roof was made of composite board, a fireproof preparation covered over with canvas. The cars as they would arrive from the manufacturer would be merely steel shells; all the equipment had to be installed after delivery.

To provide for this work, the Long Island erected its first big electric car shop with maintenance and repair facilities on the easterly side of Locust Avenue (now Baisley Blvd.), Springfield, opposite the Metropolitan Race Track. The building was 625 X 70 and was large enough to

permit 20 cars to be fitted out at one time. Other inspection sheds and car barns were built, all fireproof brick structures, at Rockaway park (Nov. & Dec. 1904) 100 X 30, another at Dunton 50 X 200 and another at Morris Park Shops 75 X 200.

The first cars began to arrive on flat cars in Long Island City in April 1905 and were run out to Springfield immediately where the electrical equipment sent out by Westinghouse, Church, Kerr & Co. could be installed as well as the seats and other furnishings. On April 13 a sample car arrived at Long Island City and a shipment of 30 to 40 was reported on its way from the works. By the end of April thirteen of the new cars had been delivered and twelve cars per week were promised for delivery by ACF until the entire order of 122 cars were completed. The shops performed all the necessary electric wiring on each car, installed two Westinghouse 113 two-hundred horse power motors on one truck and a complete Westinghouse multiple control and air brake system. A novel feature was the "dead man" control; if the motorman should take his hand from the lever, the current would be shut off and the brakes automatically applied. During the week of May 15 the electrical engineers conducted operating tests along the five-mile stretch of track between Aqueduct and Hammels, mostly the trestle across Jamaica Bay. There were no street crossings at all and at this season of the year—May—there was very little traffic moving on the division, making it an ideal place for trying out the steel cars. The authorities of Queens County obligingly granted permission for the temporary operation of electric cars over this section of track. The officers of the road accompanied the engineers on the trial trip when the first car was run and expressed astonishment at the smoothness of the run. New improvements in the motor and brake systems enabled the cars to be started or stopped without any perceptible jerk or jar, a great improvement over steam operation. The new cars were beginning to arrive in quantity by this time and it was proposed to try them out in units of one, two, three and six cars at a time. To insure the very highest degree of safety attainable, the current operating tests were planned as but the first of a series of exhaustive tests of every part of the electrical system.

On May 22 President Ralph Peters, accompanied by the superintendent, traffic manager and passenger agent of the road, along with Electrical Superintendent L. S. Wells and George Gibbs of Westinghouse, consulting engineer of the Pennsylvania, the Long Island R.R. and the Interborough Rapid Transit, toured the entire line of the proposed electrification in a special train, taking as guests Borough President Cassidy

of Queens and the chief inspector of the electrical bureau. The borough officials were especially impressed by the high quality of the installations and the elaborate precautions taken for the safety of the passengers. Highlight of the trip was an inspection of the great Locust Avenue shop with its six tracks and storage capacity of 60 cars. Over 200 men were at work fitting up the cars. Miles of steel pipe and ducts of every conceivable twist were currently being made here for the safe and perfect insulation of the wires, over 600 feet of which were used in each car. The switchboards, levers, brakes and rheostats were all fabricated and installed here. It was estimated that each car, when completed, had cost the road about $13,000 and since 38 cars had thus far been out-shopped with 11 more on the way, the total cost had mounted to $637,000 already.

To increase the size of the electric fleet, the Long Island R.R. was also fitting up as trailers with vestibules, couplers and jumpers, 55 center-door Rapid Transit coaches made obsolete by the Atlantic Avenue Improvement. In addition, President Peters saw fit to order from American Car & Foundry 10 more regular passenger cars and 5 electric baggage & express cars, the latter of wooden construction.

On August 17 a consignment of 15 of the new motor cars arrived in Long Island City. A more recent order for 5 baggage cars was yet to be delivered.

In the midst of all this success and eager expectation for inaugurating the electric service within a matter of a few days at the latest, the road was suddenly faced with opposition and delay from an altogether unexpected quarter. When the railroad had begun to equip its newly rebuilt Atlantic Avenue Division with the third rail, Borough Pres. Littleton of Brooklyn and his Public Works Commissioner Breckinridge protested against the installation on the ground that the third rail posed a danger to the public safety, specifically at those points where public highways crossed the railroad tracks at grade, giving easy access to the third rail. Since the railroad owned in fee its own right of way in the middle of Atlantic Avenue for the whole distance from Brooklyn to Jamaica, it was inclined to dismiss the initial protests of the borough officials. When the railroad, however, in March 1905 filed what it thought would be a routine application for "digging a trench between the railroad tracks on Atlantic Avenue where the same crosses existing streets for the purpose of installing jumpers for the third rail installation" and met with an adamant refusal from Comm. Breckinridge, it became clear that the disagreement would escalate into a major controversy.

When Pres. Peters was queried by the press as to his reaction to the refusal, he voiced the hope that the important work would not be delayed. In an effort to mollify the authorities, he emphasized that the third rail would be so covered through the 18 blocks that it would be impossible for anyone to touch the live area without taking considerable pains to do so and that there would be no third rail at all at the crossings nor within ten feet on either side. It was thought that the solution to the deadlock lay in a mandamus action brought by the railroad against the Public Works Department to compel the granting of a permit.

Commissioner Breckinridge, in an effort to justify his action and to adopt before the public the posture of a public official motivated only by considerations for the public safety, explained that he himself was a practical railroad engineer of long experience and could therefore claim some competence in passing judgment on the Long Island installation. He ascribed the Long Island's stubbornness to misguided advice from an "outside engineering firm" and predicted that the railroad would return to its old custom of cooperating with the city and working together for the best interests of the public. When Breckinridge was publicly criticized for delaying an important public improvement, he asserted that he had spoken to William F. Potter of the Long Island Rail Road as early as Sept. 1904 and sent a formal written communication to him on Oct. 13, 1904. Potter, in reply, had said that he would study his objection and would respond later. The railroad had thus known for months of the city's objection and had had ample time to alter the plans had they so desired. The railroad engineers, however, informed the borough's authorities that they still believed their system to be perfectly safe and proposed to install it in the face of city objections. Borough Pres. Littleton, fearing that an attempt would be made on Sunday, March 26, to lay the rail, directed police to patrol all 18 crossings to prevent the possibility of a surprise attempt on a day when the courts were closed.

In the light of the corporation counsel's opinion that he had no authority in the matter of laying the third rail, Comm. Breckinridge turned the whole matter over to the State Board of Railroad Commissioners which agreed to schedule a hearing for both sides. The whole matter had profound implications for both the Long Island Rail Road and the IRT, as it had been planned from the beginning to run through cars from the Bronx to Jamaica. The new motor cars had been built to the same designs as the IRT's subway cars expressly to permit joint operation and of course both were built to operate using the third rail

system. The Long Island Rail Road in its brief to the Board emphasized that a trolley wire could not be strung in the tunnels as there were only six inches of head room between the top of the car and the roof of the tunnel and pleaded not to be forced out of its operating agreement with the IRT and that any change at this late date would involve a very heavy expense and delay.

A month later—May 25—matters came to a head. A gang of Long Island Rail Road workmen had been at work in Queens County just east of Enfield St. where there was no objection to a surface third rail and after finishing the job, they crossed into Brooklyn to complete the unlaid portion. As the men proceeded to lay the rail, one of the policemen posted by Littleton to prevent just such an action arrested the foreman. The magistrate paroled the man for examination four days later after charging him for doing work without a permit. The railroad counsel maintained that the railroad owned its right of way in fee and did not need a permit. On June 14 the magistrate supported the railroad's contention that the railroad owned the property upon which the third rail was being laid in fee simple and that the police had no right to trespass on the Long Island Rail Road right of way or to interfere with the track layers.

The Littleton-Breckinridge controversy was not the end of the railroad's troubles with its electrification. While this problem was being settled in the courts, the New York City Board of Aldermen, near the close of its session on May 2, 1905, passed a resolution referring to the Long Island Rail Road's action in endeavoring to install a third rail system on Atlantic Avenue as "unwarranted, illegal and hazardous to life and limb," and forbade the installation. One alderman with a little more sense and less bluster voted to refer the matter to the corporation counsel to ascertain whether the board had any jurisdiction in the matter since the work was being done under the provisions of a legislative Act. The opposition conceded this point but claimed that jurisdiction was vested in the board by Chap. 187 of the Laws of 1876, giving the board authority to describe the rules governing the operation of trains on Atlantic Avenue. If the Corporation Counsel upheld the board and the mayor concurred, the Long Island Rail Road would be enjoined from proceeding with the third rail.

A month and a half later, Corporation Counsel Delaney returned the case with an opinion: "The Law of 1876 referred to in the resolution applies only to territory comprised within the limits of the City of Brooklyn at that date. The portion of Atlantic Avenue upon the surface

of which the Long Island Rail Road operates was formerly comprised within the Town of New Lots and was not annexed to Brooklyn till 1886. Your proposed ordinance cannot be legally adopted."

This legal opinion effectively disposed of the threat posed by the Board of Aldermen. Two official attempts to thwart the electrification had been defeated. A third one now arose from a private source. Mrs. Ella H. Leffernan, who lived on the southeast corner of Ralph and Atlantic Avenues, brought suit against the Long Island R.R. for $15,000 for injuries to her easements to light, air and access caused by the railroad structure on Atlantic Avenue. She charged that the Improvement Act required that the structure be 14 ft. above the surface in the clear for the whole distance but that the railroad had made an incline at Ralph Avenue with headroom of only 10 feet and that the company had then cut down the grade 4 feet.

In the first trial of this suit, the Long Island R.R. received an unpleasant shock when the judge awarded $1200 damages. The lady's attorneys were elated, promptly took on four more such suits and voiced the hope that once they tried numerous others, the railroad would ultimately pay out at least $200,000 in damages. The danger of the verdict lay in the fact that the judge ruled prescriptive right was only on the surface of the street and did not justify a structure above the surface, even though by legislative action, without a payment of damages for injuries suffered by property owners abutting on the elevated structure. This opinion, if sustained, could expose the railroad to damage suits from every property owner on both sides of Atlantic Avenue within Brooklyn. The Long Island R.R. appealed the case to the Appellate Division and obtained a reversal of the verdict, but the plaintiff took the case to the Court of Appeals.

The Court of Appeals in June 1905 ruled in summary that the Long Island R.R. did in fact own its roadbed in fee and that Atlantic Avenue was laid out on either side much later; that the plaintiff bought her property knowing the railroad was there; that the railroad changed the surface operation solely in response to the increasing demands of the times, and that the legislative Act authorizing this change implicitly sanctioned and legalized these inconveniences and annoyances to others which are inseparable to the proper conduct of a railroad.

With the last of the legal delays and harrassments disposed of, the Long Island R.R. made every effort to make up for lost time. Unfortunately, the summer timetable for 1905 had already gone into effect, and to inaugurate electric operation at this busy time of the year when travel

was at its peak and the railroad strained to meet its commitments would invite massive confusion and disruption. The officials therefore decided to slip in a few electric runs on a very limited basis and to hold off the substitution of a full electric service until the fall timetable.

On July 18, 1905 the first electric train to be run on Atlantic Ave. started from Manhattan Crossing (East New York) shortly after 11 A.M. with a party of Long Island officials on board. The train consisted of cars #1000 and #1032. As an evidence that confidence in the new propulsion system was not as complete as we might suppose, the officials arranged to be followed by a steam locomotive in case of a break down. The train, after reaching Flatbush Avenue, was started again for Rockaway Beach running over the entire division which had just been equipped with the third rail. The trip was made without a mishap and the engineers were understandably elated over its success. All along the route, the new train, so different from anything seen before and going at a much higher rate of speed than residents along the route had been accustomed to, caused hundreds to stand and watch as it easily distanced the locomotive lumbering behind.

In the next few days a number of the electric motor trains were run back and forth without passengers over the line of the railroad on schedule time between Flatbush Avenue station and Rockaway Beach. No accidents or untoward delays occurred; the most noticeable thing was the faster time made by the electric cars over the steam locomotives, suggesting a drastic change in scheduled time in the future.

The railroad now felt secure enough to announce that beginning the following Wednesday, July 26, 1905, they would inaugurate regular electric passenger train service between Flatbush Avenue and Rockaway Beach. Just three motor trains would be put on and they would each make four round trips. These motor trains would take the place of an equal number of steam trains and there would be two extra trips, one from Flatbush Ave. at 11:05 A.M. and one at 8:15 P.M. On the following Sunday the 30th, seven electric trains would be put on making 28 round trips between 7 A.M. and 12 midnight and taking the place of steam trains. To avoid disruption of the existing timetable, the electric trains were ordered to keep to the schedule of the slower steam trains.

Early in the morning of the big day Pres. Peters went over the line and Electrical Superintendent Wells was on hand all day. The first train left Rockaway Park at 7:55 A.M., arriving at Flatbush Avenue 35 minutes later after making 13 stops. Three trains of seven cars each were in

use, each train making four round trips; a total of nearly 5000 passengers was carried in the new cars this first day. To avoid the possibility of electric sparks setting the Jamaica Bay trestle on fire, immense buckets of water had been placed all along the trestle 20 feet apart to drown any blaze. The first days of electric operation on the Long Island R.R. were a "first" in two other respects also; the passenger trains were the first to use tunnel #1 between Nostrand and Flatbush Avenues and the first to use the new underground tracks and one lone platform in the half-finished Flatbush Avenue station excavation.

When the fall timetable was put into effect on Sept. 20th, the steam trains were taken off the Rockaway Beach service entirely and all service given by electricity. The electric service had effectively demonstrated its superiority over steam; so speedy had the trains proved that the timetable had to be completely overhauled to reduce the running time between Flatbush Avenue and Rockaway. The electrics had made the run roughly eight minutes faster than the steam trains largely because they started and stopped much more quickly.

To protect residents along the lines of electric operation from possible hazardous contact with the third rail, the Long Island R.R. built heavy wooden fences along its right of way, and in so doing, closed up informal but long-used pedestrian footpaths at various points. In several instances local residents, outraged at the closing of their familiar, well-trodden routes, cut down the fences and burned them. At Atlantic Avenue between Grant Avenue and Napier Place there was considerable excitement over the incident and several hundred people witnessed the attack. The railroad rebuilt the fence and this time set its police force to guarding the barrier.

At the other end of the electric line in Hammels, a party of residents on Sept. 29th cut down a picket fence crossing Pleasant Avenue. The railroad rebuilt the fence the next day and down it went again that night and the same performance was repeated a second time. In this case it was claimed that the fence cut off from access to the village two dozen families living along a dock in Jamaica Bay. The case had to go to court for settlement.

The opening of the electric service to Rockaway was but the first of the many planned originally by the railroad. Now that the Rockaway service had proved itself, the road could proceed with its program of electrification for the rest of the Atlantic Branch to Jamaica, the Main Line as far east as Mineola, the Montauk Branch to Valley Stream and the Far Rockaway line. Later would come Hempstead and the North

Side Branch. The railroad now turned its attention to Jamaica as the next goal. The bottleneck was still the Flatbush Avenue terminal, a yawning hole in the ground with only two underground tracks and one island platform. The railroad laid two more tracks and equipped them with third rail during August and announced that service to Jamaica would open August 22 or 23 with a few trains only until the Flatbush Avenue terminal could be expanded. This announcement proved over-optimistic; the railroad had to advance the date to August 30. The new service was assigned to four crews, each consisting of motorman, conductor, and brakeman. The trains would consist of three to five cars. 21 trips were scheduled in each direction from 5:30 A.M. to 11:30 P.M.

On Saturday Aug. 26th a test train made the run between Flatbush Avenue and Jamaica; everything went smoothly but at Jamaica station the breaks in the third rail seemed to pose dangers to waiting passengers and some modifications were made by the Westinghouse people.

On Tuesday morning Aug. 29, regular service opened. The first train left Jamaica promptly at 5:25 A.M. under the personal direction of Supt. of Transportation Hartenstein, while the first eastbound train left Flatbush Avenue at 6:19 A.M. The trip was made in about 30 minutes but it was expected to reduce this considerably in the fall timetable of Sept. 20. The new service replaced the old steam rapid transit which had been running since 1877 and they also were the first electrics to use the new elevated stations at Nostrand Avenue and Warwick St. The trains made stops at Nostrand Avenue, Manhattan Crossing, Warwick Street, Norwood Avenue, Woodhaven, Woodhaven Junction, Clarenceville, Morris Park, Dunton, Jamaica and Rockaway Junction.

In September the railroad began running experimental test trains to Queens Village and Belmont Park in the hope of having the electric service ready for the coming October meets. On Monday October 2nd electric service opened to Belmont Park and for the first time race track crowds used electric trains during the meet the following week. As soon as the racing season passed, the railroad planned to extend the rapid transit electric service from Rockaway Junction to Queens Village. On Wednesday November 1st, when the winter timetable came out, the electrics were extended to Queens on a regular basis. Twenty-five trains were put in operation and the name of the trains was changed from "suburbans" or "rapid transits" to "locals." Additional stops were now made at Hollis, Interstate Park and Queens. The headway was from 20 minutes to a half hour during the busy hours and it was expected the

excellent service would build up a whole new suburban section for a distance five miles out of Jamaica.

The fame of the Long Island Rail Road's electrification reached a crescendo in these exciting fall days of 1905. This small road, in terms of mileage at least, was the first road in the country to electrify an important division of its system. On October 17th the Long Island proudly ran an inspection excursion for a party of railroad presidents, officials and technicians from the BRT, IRT, the Erie, the Central of New Jersey and the Pennsylvania. The party ran out to Belmont Park first, returned to Woodhaven and then crossed Jamaica Bay to Rockaway, inspecting the car shops, sub-stations and other points of interest. On November 5 further adjustments were made in the schedule. The long-distance steam trains ceased operating altogether out of Flatbush Avenue and henceforth all the service was given by the electric trains. Displacing the steam service meant that 75 electric passenger trains each way daily now operated between Brooklyn and Jamaica and 25 of these were the locals. The old steam running time was cut down from Flatbush Avenue to Jamaica, 17 mins. as against 25 mins., and the trains now left Flatbush Avenue from one to three minutes earlier than their Long Island City counterparts so that passengers could have time to get out of the cars at Jamaica. All long-distance passenger service now operated out of Long Island City, quite a change from the old days when steam trains also originated out of Brooklyn and Bushwick.

Another important change was made on the Rockaway Division. The steam trains from Long Island City would henceforth make connections with the local electric trains from Brooklyn at the platform of the station at Ozone Park, where passengers could transfer from one train to another. The steam train would then run express across Jamaica Bay making no stops between Ozone Park and Hammels, while all the intervening stops would be made by the local electric trains from Brooklyn.

During the last days of October 1905 the Long Island R.R. had hundreds of men at work in the Rockaways in an effort to have the third rail system completed. Much of the right of way had already been done but the space in front of each depot remained. Other men were at work erecting picket and wire fences to prevent pedestrians from crossing the tracks; about three miles of this fencing was estimated as necessary before the cars could begin running. Progress was excellent; by November 20 the third rail had been laid from Hammels station to Cedarhurst and the tracks had been enclosed on both sides by high picket

fences. On Wednesday Nov. 29th the current was turned on and running tests were made all day; everything being found to work smoothly. On Friday December 1, the regular electric service opened to Far Rockaway with 15 trains each way.

Rather surprisingly the railroad followed this up with the extension of electric service from Jamaica to Valley Stream on the Montauk Division on Monday morning December 11, 1905. Nine express trains were run daily in both directions and the running time was reduced to 40 minutes. Over the winter the railroad delayed inaugurating electric service from Flatbush Ave. over the branch between Far Rockaway and Valley Stream. Then, when spring arrived, the road surprised everyone with the announcement that it would extend the Ocean Electric trolley service from Far Rockaway station up the branch to Valley Stream. This would give the inhabitants of Woodmere, Cedarhurst, Lawrence and Inwood frequent fast service all day long in place of the rather infrequent train service. As recently as December 16th, the people along the branch had protested against the poor schedule, especially during the middle of the day, and asked for electric service that would meet shopping needs.

In April 1906 the railroad began experimental runs with trolley cars over the branch, the cars being fitted with shoes to gather current rather than trolley poles. On April 3 a run was made with railroad officials and representatives of the Westinghouse Company as observers. Everything worked out very satisfactorily and the company prepared to start service on a regular basis during the summer. However, when the summer timetable appeared, this plan to use trolleys was dropped and regular electric trains gave service instead.

The next step in the first phase of electrification was the extension of the third rail to Hempstead. So anxious had the citizens of Garden City and Hempstead been to receive the benefits of electrification that they began a public subscription to raise the money and so induce the Long Island R.R. to agree. By the end of March 1908, nearly $2000 was reported to have been pledged; it was said that both the Garden City Estates and the Garden City Company had promised to buy books of tickets in advance. The whole third-rail installation was estimated at $5000 and it was hoped that the two villages of Garden City and Hempstead could raise half if not all of that sum. Portable substations at Floral Park and Hempstead would provide the necessary power.

Some unpleasantness arose between the railroad crews and the citizens when an attempt was made by the third-rail men to close Columbia

Street crossing by placing two heavy ties on end on each side of the tracks. The railroad men got the ties planted in the ground before word got to the Hempstead Village president Edward S. Titus. It did not take long for Titus and his men to saw off one obstruction and dig out the other. The railroad men then stretched wires across the highway on both sides of the track, but Titus cut them and the railroad men then stopped trying to put up obstructions. President Titus then left a watch at the crossing to insure that the men took no further steps to close off the street. The railroad men made no further attempt to "steal the street" and jumpers were later installed at the crossing.

By mid-May 1908 the railroad had finished third-railing the Hempstead line and on May 16, President Peters issued invitations to the officers of the road and many prominent Hempstead people for a trial trip between Flatbush Avenue and Hempstead on May 19. Residents of the village turned out en masse to greet the first electric train which arrived in Hempstead at 3 P.M. Although no special program had been planned, Pres. Peters and other officials spoke of their satisfaction at the completion of the line and the improved service it would bring. On Tuesday May 26, 1908 regular service began with electric trains on the Hempstead Branch and on this occasion, suitable village observances greeted the great change.

The last project in the first electrification phase was the third-railing of the Long Beach Branch between Lynbrook and Long Beach. Work began in the icy days of January 1910, when a large force of men surveyed and took measurements for the installation. The Long Beach Branch at this time was still a single-track road and had only recently been accorded year-round service. It was expected that in the coming spring months the branch would be both double-tracked and third-railed in one operation. This project went on very slowly over the next eight months. Finally, on August 26, 1910 the current was turned on and a test car run through to the beach. The railroad decided that, since the opening of the Pennsylvania Tunnels was now so near, to celebrate both events at the same time. Accordingly, on September 8, 1910, a momentous date in the history of the railroad, one of the first trains to run through the tunnels ran directly to Long Beach. Regular service began immediately.

The final spurt of electrification involved the newly-built Main Line tracks in connection with the opening of the Penn Tunnels and the Sunnyside Yards. (See these chapters and the Hopedale realignment.) This was done in three stages: Woodside to Jamaica June 23, 1910; Woodside

to Woodhaven Junction (Glendale Cut-off) June 23, 1910; Woodside to Penn Station, September 8, 1910.

To furnish power for the new lines, new sub-stations were built in 1910 at Winfield and Mineola, and in 1912 at Wreck Lead, Cedarhurst and Floral Park.

CHAPTER VI

Background of the Tunnels

IT is widely believed by many that the Long Island Rail Road's entrance into Manhattan was due solely to the vision and energy of the Pennsylvania Railroad. This is not historically true and is unfair to the Long Island Rail Road. The fact is that four different attempts to reach New York were made at different times by the Long Island and at the time of the Pennsylvania take-over, one of them was very close to realization. It was the opening of the Brooklyn Bridge in 1883 that first made the idea of a New York City terminal seem an attainable goal. President Austin Corbin conceived the idea of building a four-track elevated railroad from the Long Island R.R. terminal at Flatbush Avenue, along Flatbush Avenue and over a proposed Flatbush Avenue Extension to the Brooklyn Bridge, and, if the Bridge commissioners approved, to Chatham Square, Manhattan. At the same time the Long Island R.R. itself would elevate the rest of its tracks on Atlantic Avenue from the Flatbush Avenue terminal out to the Queens County line. Corbin hoped to interest British and American capitalists to buy up real estate and finance the elevated line. In May 1883 Corbin organized the Brooklyn and Long Island Trunk Line Railroad and incorporated it on May 31 with a capital of five million dollars. Although construction was confidently predicted for the fall of the year, the whole project quietly sank into the limbo of forgotten schemes.

The following year—1884—President Austin Corbin of the Long Island R.R. induced the officers of the Atlantic Avenue Rail Road to join him in a plan to build an elevated railroad along Atlantic Avenue from South Ferry to Jamaica. This company was incorporated as the Brooklyn and Long Island Cable Railway Company. An injunction prevented immediate construction but Corbin revived the idea in 1886 under the new name of The Long Island Elevated Railway Company. Again nothing happened.

In 1887 the New York and Long Island Railroad Company was incorporated with the avowed purpose of building a tunnel under the East River between Long Island City and 42nd Street, Manhattan. Pres.

Corbin of the Long Island R.R. publicly denied that he or any of the Long Island R.R. directors were interested in the tunnel but many believed the project derived its strength from secret backing. A dynamite explosion in Long Island City terminated all work in December 1892 and for twelve years the project lay abandoned. Then in 1900 the Belmont syndicate took over the idea and completed what is today known as the Steinway tunnel.

Pres. Corbin of the Long Island R.R. next seized upon the Blackwell's Island Bridge project as a vehicle for Long Island R.R. entrance into Manhattan. In December 1893 Corbin bought out the controlling interest in the bridge company and then incorporated the Long Island and New York Terminal Railroad Company. The bridge was to be built on the cantilever principle with four piers; there were to be two railroad tracks, two roadways and two footpaths. The New York terminus was to be at 64th Street and the Queens terminus on Thomson Avenue, Long Island City. Connection would be made with the Long Island R.R. on a steel viaduct at Sunnyside; in New York the trains would reach the surface at both 44th Street and 81st Street with stations at each. Construction on the bridge began in 1894 but the death of Corbin in 1896 stopped the work.

The last attempt and the one that came closest to realization was the tunnel scheme first proposed in 1892. In June of that year the New York, New Jersey and Eastern Railroad was incorporated to continue the Long Island R.R. in a tunnel from the Flatbush Avenue terminus along Flatbush Avenue, Fulton Street, Pineapple Street and thence under the East River to and under Maiden Lane and Cortlandt Street to the New Jersey state line and thence to a connection with the Pennsylvania Railroad in Jersey City. The work was expected to take four years and require vast sums of money. On Dec. 12, 1892 Pres. Corbin of the Long Island R.R. conferred in Philadelphia with Pres. Roberts of the PRR and a number of wealthy investors and they decided to begin the work at once. Directors were elected and empowered to proceed with the work of construction. In May 1893 the name of the company was changed to the Brooklyn, New York and Jersey City Terminal Railway Company. The company applied to the Board of Aldermen for a franchise and there the matter died. In 1897 the new president of the Long Island R.R., William H. Baldwin, renewed the project and tried to push it through the regulatory bodies in New York and Albany. The Municipal Assembly shelved the bill in two successive years, but in May 1899 Mayor Van Wyck of New York signed the tunnel bill. In June

1899 the Long Island R.R. incorporated the New York and Long Island Terminal Railway Company to build the tunnel to West and Cortlandt Streets in New York. In the midst of the preparations for this momentous engineering project, the Rapid Transit Commission announced its intention to extend the IRT tunnel system to Brooklyn. At this unexpected news the Long Island R.R. withdrew its application for its own tunnel and there the matter rested when the Pennsylvania Railroad bought out the Long Island R.R. in May 1900.

When the Pennsylvania took over, there was much speculation about what that giant system would do about a Manhattan terminal for the Long Island, and whether they would revive the dormant New York and Long Island Terminal Railway project. It is probable that two main factors influenced the Pennsylvania Railroad to drop the Brooklyn tunnel scheme and to build a tunnel elsewhere. One was the prospect of the New York Connecting Railroad which had been created by the New York Central R.R. and which had received a franchise in 1900. The N.Y. Central had shown no disposition to purchase the Long Island R.R., but its motive to build the Connecting Railroad was to make a satisfactory traffic agreement with the Long Island R.R. and have the use of that company's Brooklyn, Bay Ridge and Long Island City terminals for its own freight and passenger traffic. Access to the freight traffic of the City of Brooklyn with its million people was alone a powerful inducement.

The second overriding reason for an uptown tunnel was to gain a Manhattan terminal and to acquire space for freight and passenger yards. The Central had always profited greatly by the fact that its terminal was in Manhattan whereas the Pennsylvania had to be satisfied with Jersey City. The railroad had striven to overcome this handicap by establishing excellent ferry services between Jersey City and Cortlandt St., Desbrosses St., and 23rd Street. If now the Hudson River barrier were somehow to be surmounted, the Pennsylvania could secure a New York terminal like the Central and the same tracks could be continued under the East River to Long Island where connection could be made with the Long Island R.R. network and the projected New York Connecting Railroad. Instead of being dead-ended in Jersey City the Pennsylvania would secure extensive additional terminals, freight yards and depots in three of the five boroughs of New York. The Pennsylvania Railroad at the turn of the century was in the midst of an unprecedented mood of expansionism; its directors and officers were immensely capable, and its financial resources almost unlimited, thanks to its enormous

earnings and its ownership and control by the Philadelphia financial community.

The Pennsylvania Railroad used the remainder of the year 1900 to become acquainted with the physical layout of the Long Island R.R. and its equipment and operating methods. Pennsylvania officials did not interfere with Long Island R.R. workings; they were content to observe and study. The result for all this was a decision in Philadelphia to extend the Long Island R.R. into Manhattan by building a tunnel from Long Island City to midtown Manhattan. This was to be the first phase of a grand design; once the Long Island R.R. had been extended to Manhattan, the next step would be to extend the railroad from a point in the Jersey meadows under the Hudson River to a junction with the new Long Island terminal, making a through line.

The first step in this plan was effected in June 1901 with the incorporation of the Long Island Extension Railroad Company. The incorporation papers called for a four-mile tunnel from a point in Queens to a point in Manhattan south of 50th Street. Corporate life was to be 1000 years and the capital stock one million dollars. The tunnel was to consist of two parallel tubes and would be used for passengers only. Samuel Rea, 4th vice president of the Pennsylvania Railroad, was elected president of the new company and Pres. Baldwin of the Long Island R.R. was named as one of the directors. On June 22, 1901 when the map of the Extension Co. was filed, it developed that the tunnel was much farther downtown than had been assumed. The tunnel, after crossing the East River, would continue under 33rd Street and terminate at 7th Avenue with a station near Broadway. To avoid advancing real estate prices, the company would not say whether the station was to be east or west of Broadway.

The Pennsylvania at this time did not file for a corresponding tunnel under the Hudson River because it was already committed to a bridge proposal. The company had earlier secured a franchise for the North River Bridge Company. This bridge was to cross the river at or about 23rd Street with a terminal at 9th Avenue and a viaduct from it would connect with the Long Island R.R. tracks in the 33rd Street tunnel. The Pennsylvania Railroad was the prime mover in the bridge project but because of the expense and extent of the work, it was considered an enterprise to be financed by a union of all the railroads with terminals on the New Jersey shore: the Erie, the Delaware, Lackawanna & Western, the Central Railroad of New Jersey, the Lehigh Valley, the West

Shore and the Ontario and Western were all to contribute to the expense of the undertaking.

In the summer of 1901 the Pennsylvania's grand design evolved with great rapidity. First, the Pennsylvania Railroad bought from the New York Central Railroad the charter of the New York Connecting Railroad. Secondly, the Pennsylvania began an eight million dollar upgrading of its great terminal and pier property at Greenville, N.J. The motive behind both moves was to complete a great railroad belt around Manhattan. Roughly described, the route of the proposed belt line would start at Greenville (Bayonne) N.J. where the new piers and warehouses were already going up. From Greenville across the bay to Bay Ridge on the Brooklyn shore was three miles. The cars were to cross the water on floats and, upon being landed at Bay Ridge, would be run over the Long Island's Bay Ridge Division to Glendale. From Glendale to a point on the East River near Astoria, the cars would run over the proposed New York Connecting Railroad and the Hell Gate Bridge to a connection with the New Haven, and, by a further laying of track in the Bronx, from Port Morris to a point near 161st Street, achieve a direct connection with the New York Central. This plan gave the Pennsylvania Railroad a belt line around Manhattan island on the south, east and north, and with the proposed Long Island R.R. tunnel under the East River, a direct terminal on Manhattan island in the heart of the borough.

The first step in the implementation of the New York Extension Railroad tunnel under the East River was to secure the certificate of convenience and necessity from the Railroad Commissioners in Albany and this proved no problem. Next came the submission of the project to the Rapid Transit Commission for its approval. As late as October 1901 the Pennsylvania Railroad was still pushing the Long Island Extension Railroad through these regulatory bodies, yet by December 13th, a momentous change had occurred in the thinking of the railroad. The North River Bridge Company, which seemed as far away as ever of realization and burdened by the involvement of too many railroads, was abandoned by the Pennsylvania Railroad and that road instead boldly substituted a second tunnel, this time under the Hudson River, as the vehicle whereby it would realize a midtown Manhattan terminal, and link up with the Long Island R.R. subsidiary.

Accordingly on Dec. 13, 1901 the Pennsylvania Railroad requested the Rapid Transit Commission to suspend hearings on the Long Island Extension Railroad and to consider instead the revised route of a new

company, the Pennsylvania, New York Extension Railroad Company which would directly link the Pennsylvania and Long Island systems. This new company had been organized just two days before on Dec. 11, 1901 and provided for a Hudson River tunnel between 23rd and 45th Streets and to connect with the proposed Long Island R.R. East River tunnel under 33rd Street.

The Pennsylvania Railroad used the latter months of 1901 to begin acquiring property for a proposed terminal station in the vicinity of Broadway and 33rd Street (Herald Square). By the last days of December the road had acquired the final two parcels at numbers 49 and 51 West 33rd Street. The Pennsylvania also employed the latter months of 1901 to make soundings in the North River to ascertain conditions on the bed of the river. Although winter conditions like cold temperatures, winds and fog made the work difficult, the engineers were able to discover that no unexpected obstacles to the tunnels existed and that the project was entirely feasible. In April when the winter weather moderated, surveyors went out and triangulated the Hudson tunnel route.

While this work was going on favorably, the Pennsylvania Railroad again found it expedient to change the legal status of the corporation under which the tunnel was being built. On Apr. 21, 1902 the Pennsylvania, New York and Long Island Rail Road Co. was incorporated as a replacement for the Pennsylvania New York Extension Rail Road Co. The capital stock this time was set at $20,000,000. The company was authorized to build tunnels under 31st and 33rd Streets to the intersection of Thomson Avenue & Purvis St. Long Island City; also two additional tracks under 32nd Street from west of 9th Avenue to 5th Avenue; also as many tracks as necessary between 7th and 9th Avenues and 31st and 33rd Streets for terminal operation.

On Oct. 9, 1902 the Rapid Transit Commission issued a certificate of franchise and on Nov. 24, 1902 the State Railroad Commission granted a certificate of convenience and necessity. The next step was to get the permission of the city authorities, at that time the Board of Aldermen. The negotiations for this occupied several months; the agreement hammered out was as follows: 32nd Street from 7th Avenue to 9th Avenue would be closed for terminal purposes; also that the company could occupy 33rd Street 600 feet east of Fourth Avenue and 400 feet west of it for an east side terminal. All this was for 25 years with a renewal for another 25 years upon a reevaluation.

The compensation to be paid the city was as follows: for rights under the beds of the Hudson and East Rivers outside the pierhead lines $100

each annually for a period of 25 years; for rights under the dock and bulkheads, 50¢ per linear foot of single track railway annually for the first ten years and $1 annually for the next succeeding 15 years; for its rights and foundations under streets or avenues in Manhattan (except 31st and 33rd Streets between 7th and 8th Avenues and 8th and 9th Avenues) 50¢ per linear foot of single railway track annually for the first 10 years of operation and $1 per foot annually for the next succeeding 15 years; for rights under streets and avenues in Queens, one half these rates; for rights under 31st and 33rd Streets between 7th and 8th Avenues and between 8th and 9th Avenues, $14,000 annually during the first 10 years of operation and $28,000 annually during the next succeeding 15 years; for rights under the portions of 33rd Street and 4th Avenue used for station purposes $1140 annually for the first 10 years and $2280 for the next 15 years. The company was also required to pay $36,000 a year for its terminal facilities under the portions of 32nd Street between 7th and 9th Avenues until the city was authorized to convey to the company such portions of 32nd Street in fee simple, when the company was to pay $788,600 for the property. This franchise was ratified by the Board of Aldermen on Dec. 16, 1902 and by the Department of Docks and Ferries and the Sinking Fund Commission on Jan. 7, 1903.

Taken all in all, the payments assumed by the Pennsylvania Railroad amounted to almost a two million dollar increase in the company's fixed charges. Certainly ten or fifteen years before the boldness of so vast a project as the tunnels and the prospect of such an expenditure would have made the directorate of even the Pennsylvania Railroad gasp; now the very fact that the railroad eagerly embraced the terms proferred by the city demonstrated the almost unbounded confidence and optimism the president and directors felt in the future of New York City.

Even with this impressive battery of consents and franchises, the Pennsylvania Railroad still could not turn a spadeful of earth for the law, in addition, required that a railroad had to obtain the consents of the abutting property owners on 31st, 32nd and 33rd Streets. In a city the size of New York this could be a formidable task. Some consents could be obtained outright, others could be bought, but there was always a residue of properties tied up in litigation, estates in the care of the courts, and property in the hands of trustees for minors. This would force the company to make application to the Supreme Court to appoint a commission to investigate and give the consents for considerable of the property, a slow process.

Pres. Cassatt of the Pennsylvania Railroad in a news release, announced that not a day would be lost in beginning the work. The company, he declared, would spend $40,000,000 and the tunnel would be completed in three years. True to his promise of speed, Pres. Cassatt embarked upon the elaborate organization of men and materials that the gigantic scheme demanded. The plans for the great terminal station were entrusted to the prestigious firm of McKim, Mead and White, possibly the outstanding architects of public buildings at that time. The Pennsylvania directors felt that because of their previous large undertakings, they alone possessed the necessary organization and expertise to insure an artistic conception in keeping with the aspirations of the Pennsylvania. As Architect William R. Mead saw it, the station would have a frontage of 430 feet on 7th Avenue and a length of 800 feet along the side streets. To assure roomy approaches, the building line would be set back 50 feet on 7th Avenue and 25 feet on 31st Street.

Viewed from the front, the structure would rise 60 feet above the street level, a long unbroken stretch of Doric columns, with an Attic effect borrowed from the Parthenon. The impression created would be of one lofty story, but in the top section would be a floor of offices circling the entire structure with three additional stories along the 8th Avenue side. Granite, polished and carved, would form the outer walls and colonnades, while polished marbles and stone would blend in the interior construction.

The foot passengers, going in by the main entrance on 7th Avenue, would pass through a long and broad 70 foot arcade, modelled after an Italian gallery. Shops that would appeal to travelers were to border the arcade on both sides. There was also to be a main restaurant and lunch room, supplied from immense kitchens on the attic floor. The arcade would terminate in a flight of wide marble steps, descending 17 ft. below the street grade into a waiting room 100 X 300. A square dome-like tower of glass, 140 feet above the floor level, would flood this room with light and great windows of half-moon shape would admit air from every side. Here would be the ticket offices, baggage rooms extending forward under the ground floor arcade, retiring rooms, reading rooms and elevators to carry passengers up to huge barber shops and bath rooms (never built). No hotel accommodations would be provided in the station, but private rooms would be let to strangers to make a change of clothing. From the waiting rooms the passengers were to descend on marble stairways on all sides to a still lower level. This would be an immense distributing platform to be known as the concourse. Two flights of steps, a

score of them, would connect with the train platforms at the base of the deep structure. Along the platforms the tracks would be laid the full length of the station, lighted and ventilated by glass-domed air shafts, mounted behind the arcade shops.

The architecture of the Pennsylvania Station was but one of the four main areas into which the vast project was divided. The other main areas were: the tunnels

the mechanical and electrical engineering

the bringing of the railroad in and through the tunnels

To design and supervise the construction of the tunnels, the Pennsylvania Railroad appointed a committee of electrical experts headed by Col. Charles W. Raymond, U.S. Army Corps of Engineers of New York harbor; Gustav Lindenthal, the New York City Bridge Commissioner; William H. Brown, chief engineer of the Pennsylvania Railroad; these three took no direct part in the day-to-day tunnel work; the three active engineers were as follows:

Alfred Noble: served in the Army of the Potomac, Civil War, three years; later took up engineering. He was in charge of improvements on St. Mary's Falls Canal and St. Mary's River from 1870 to 1882; was general assistant engineer of the Northern Pacific from 1883 to 1886; supervised the construction of various important railway and passenger bridges across the Mississippi and in other places; from 1886 to 1904; served as a member of the Isthmian Commission, Board of Consulting Engineers of the Panama Canal. President of the American Society of Civil Engineers.

Charles N. Jacobs: the best known to New Yorkers of the group; born in England in 1850; first practiced in England, coming to this country to accept a position as chief consulting engineer to the Philadelphia & Reading Railway. He designed the North and East Rivers tunnel plans and was chief engineer of the New York & New Jersey Railway Co. He was consulting engineer for the construction of the Seine Tunnel for the road from Rouen to Havre. member of Royal Society.

George Gibbs: electrical consulting engineer; graduated from Stevens Institute in 1882. First a chemist, later a mechanical engineer; became in 1897 consulting engineer to the Baldwin Locomotive Works and the Westinghouse Electric Manufacturing Co.; consulting engineer for the IRT since 1901. Member of many societies.

President Cassatt put the commission to work in the spring of 1902, well before the granting of the franchise.

The mechanical and electrical equipping of power houses, passenger stations and the complete underground system of the East River and Hudson Tunnels was intrusted to the firm of Westinghouse, Church, Kerr & Company, designing and construction engineers. They would also work with McKim, Mead and White to design the electrical work in the station building above ground, as well as design and construct the sub-structure. This was the first time in the history of the country that so many different kinds of design and construction work had been turned over to any one company. Westinghouse, it was explained, was the only concern in the country which had the experience required. They had designed and constructed many electric interurban lines of considerable length, they had equipped the South Station in Boston, the Hotel Manhattan in New York and the new Kingsbridge power plant for the Metropolitan Street Railway. Although Westinghouse was a New Jersey company, it had offices in the Maritime Building at 8 Bridge Street, N.Y.

From the work already accomplished by the commissions, it was possible to state some further plans of the Pennsylvania. There was to be a double tunnel from the west side of Bergen Hill in New Jersey to the New York terminal at 32nd Street. From there four tunnels would run to Long Island City where the railroad's terminal facilities proper with the accompanying yards would be located. There would be two power houses, one in Jersey City and the other in Long Island City, aggregating upward of 100,000 HP. These would serve the entire system with provision for relieving each other. The Long Island power house would be built at once. The Pennsylvania Station, it was calculated, would require an excavation 1800 X 500 feet between 7th and 9th Avenues and would be 50 feet deep.

On March 24, 1903 President Cassatt appeared before the commissioners appointed by the Appellate Division of the Supreme Court to

pass on property consents. Mr. Cassatt explained in more than an hour of testimony that the North River tunnels became feasible only with the introduction of electric power. These made possible light weight, ventilation, freedom from smoke and non-obscuring of signals. The usefulness of the tunnels was self-evident—nearly a train a minute if need be, a gain of a Manhattan terminal for the Long Island Rail Road; increased travel between New York and Washington; 20 to 30 trains an hour through the two Hudson Tubes and twice that in the four East River tubes. President Cassatt disclosed that $10,000,000 had already been spent in surveys and real estate purchases. On May 15 the court confirmed the favorable vote of the commissioners and the last legal hurdle had been cleared to beginning the physical work. Chief Engineer Jacobs, when questioned by eager reporters, said that 10,000 men would be needed on the job and that the task would take three years. The work of constructing the tunnels would be carried on from various points including the west side of the Bergen Hill, West Hoboken; in both directions from the Pennsylvania Station site; on both sides of the East River and at the approach to the tunnel in Long Island City.

In the spring months of 1903 parties of surveyors crossed and recrossed the proposed line of the tunnel. Soundings were made at selected points in Manhattan and Long Island City and further soundings made in the river. The preparation of the immense quantity of blueprints which were in extreme detail and labor of getting up the work of specifications in themselves represented a body of work never before equalled on any engineering project. All the plans and specifications had to receive the approval of eminent engineers who formed consulting corps. Both tunnel departments, the one for the Hudson River and the one for the East River, had large corps of engineers and draughtsmen at work.

The Hudson Tunnel as now planned was to be an immense tube buried in the muddy bottom of the river and supported on piers built on the rock foundation perhaps 50 or 60 feet beneath the bed of the river. It was realized that skilled labor would be scarce in view of the fact that the Hudson and Manahattan Tubes and the Interborough Rapid Transit were all at work on similar projects; meanwhile, the great bulk of the property had been acquired by purchase. There now remained only putting out the two tunnel contracts to bidding. Since the work on each tunnel would be different in character, separate contracts would be awarded and bids solicited for each part.

After months of consultation with eminent engineers in New York and other cities, the Pennsylvania Railroad decided upon its method of constructing its tunnels. In substance, the tunnels under the North River would consist of two cast-iron tubes and would be built by the shield process; as these shields were pressed forward, the cast iron tubes would be lined with concrete. The Hudson River tube would have artificial foundations because the river bottom was soft and the tubes would not be laid deep enough to reach natural bed rock. Hence the tubes would rest on what are known as screw-pile foundations made of iron. The East River tunnels were to consist of four cast-iron tubes constructed similarly to those under the North River except that artificial foundations would not be necessary. The bed of the East River had the rock needed to uphold the tubes in safety.

By December 1903 all the preliminary work such as the drawing up of plans and specifications by a large extra staff of engineers and draughtsmen under the direction of Charles A. Jacobs and Alfred Noble, and at the cost of hundreds of thousands of dollars, had been completed, and the Pennsylvania was now ready to put the work out to contract. By this date also the immense sum of ten to twelve million dollars had been expended in buying a thousand and more separate pieces of property in Long Island City, Manhattan and New Jersey, much of it the most expensive residence property in America. All but about 50 houses and lots in Queens had been acquired; in Manhattan, just over 400 houses had been bought, most of them being torn down.

The first bids on the tunnels submitted to the railroads on or before December 15th were a disappointment to the Pennsylvania. The contractors, faced with a mammoth construction job and heavy risks, showed an unexpected timidity about assuming responsibility. The contractors in their bids seemed to be so fully protecting themselves that the Pennsylvania began to consider seriously the possibility of doing the work itself, since, after all, it was equipped with one of the best engineering staffs in the country. For a month the matter remained doubtful; then, on March 11th, 1904 the railroad, in a surprise announcement, revealed that the contract for the East River tunnels had gone to a British firm, S. Pearson & Co. Ltd. At the same time the contract for the Hudson River Tubes was awarded to the O'Rourke Engineering Construction Company.

S. Pearson & Company was at that time one of the largest contracting firms in the world. It was headed by Sir Weetman Dickinson Pearson, Lord Cowdry, who had been elevated to the peerage upon the

ascension of King George V to the throne in 1910. He had also been an intimate friend of King Edward VII. The firm had been established over 50 years and had invented many appliances used in tunnel building, including the system of shield-driven construction. In England Pearson & Co. had built the Blackwall Tunnels, the North City tube and the Dover Harbor Improvements; overseas, it had constructed the government docks at Malta and had had a number of large contracts in China. In Mexico Pearson's had built the Tehuantepec Railroad and the Vera Cruz harbor improvements. Sir Weetman Pearson came to New York himself immediately to look over the tunnel site and confer with the Pennsylvania engineers.

The O'Rourke Construction Company was capitalized at one million dollars and its head, John F. O'Rourke, had been the chief engineer on the Poughkeepsie Bridge. The company had won many important contracts and had much experience with difficult caisson work. The O'Rourke Company had already secured the greater part of the caisson work done in New York City and had the contract for improving the terminal facilities of the Grand Central Station.

Pearson's company promised to begin work on its four tubes within six weeks as soon as the necessary shields, air compressors, cast-iron covers, caissons, etc. were obtained. He estimated that up to 3000 men would be employed.

CHAPTER VII

Digging The Tunnels

As soon as the awarding of the contracts had been disposed of in March 1904, active construction began immediately. Both the Pearson and O'Rourke companies applied to the various city bureaus for the numerous permits necessary to open streets, use explosives, etc. The plans filed by the engineers gave the public for the first time a detailed description of the tunnels.

The North River tube was to extend from the western side of 9th Ave. to a point on the west side of Hoboken Heights at North Bergen, the length between these points being 14,481 feet or 2.74 miles. The tunnel structure varied in character several times in its length. From 9th Ave. west for 605 feet, it was a four-track subway under a single arch. The next section 1096 feet long was divided into three parts, the central one being big enough to take two tracks and each of the side ones a single track. The central passage descended more rapidly than the other two, and its floor was 10 feet lower than their floors at the western end. The side passages terminated there and were largely for storage purposes. The two central tracks continued on under a single arch and then crossed the river in two parallel cast-iron and concrete tunnels.

The New Jersey land section of the tunnel began on the Jersey shore at the Weehawken shaft and extended to the portal at North Bergen, 6290 ft. Again there were parallel single-track twin tunnels, spaced 37 feet apart centre to centre with a rock core about 11 feet thick between them. At intervals of about 300 feet a cross passage connecting the two tunnels was cut through the rock core and at these points the cross passages were enlarged to form chambers. The tunnel had concrete sidewalks and a brick roof arch and was water proofed on top and sides.

The most unusual feature of the North River tube was the system of screw piles or piers, the original design of Charles M. Jacobs. These were designed because of the fact that the North River tube did not go down to bed rock but instead rested in the silt bed of the river. It was feared that a tube resting unsupported in the silt might carry ordinary trolley traffic but it would not carry the weight of 100 ton locomotives

or 80 ton Pullman sleepers. Engineer Jacobs, to solve this problem, came up with the screw pile. The piles which were of iron 27 inches in outside diameter with a shell 1 1/4 inches thick, were made in 7 ft. sections. These piles were driven by means of a steel hydraulic screw driver of great power which seized the pile at the top and then twisted and forced it down through the silt until the bottom struck bed rock. The piles were built up from the top as they were forced down. When the pile reached rock, the core of mud inside it is dug out for a depth of 12 feet and concrete filled in. The pile is then cut flush with the floor of the tube. Over the cap of each pile are bolted big transverse girders and resting on these girders another pair longitudinal girders bridge the 15 foot interval to the next screw pile. In other words the North River tunnels practically were built on a bridge deck supported by piles. Each pile was capable of supporting a weight of 600,000 lbs., thus guaranteeing the tunnel absolute solidity and safety. The descent from the North Bergen portal to the lowest point, about 90 ft. below mean high water in the North River, is at a grade of 1.3%. From this point the ascent of the tubes towards Manhattan is at a grade of 0.53% for a distance of 2000 ft. The next 3000 ft. ascends at just under 1.92% to a point between 9th and 10th Avenues.

The East River tunnel section begins at 7th Avenue Manhattan, ending at Hunter's Point Avenue in Long Island City, 2.85 miles. Two separate lines of twin tunnels under 32nd and 33rd Streets at a varying depth to 2nd Avenue where they turn a little to the northward and gradually converge as they pass under the East River until they meet in Long Island City. From 7th Avenue to 5th Avenue each tunnel is of three tracks, concrete-arch construction; from 5th Ave. to 1st Ave. and a little beyond, each tunnel consists of twin single-track structures with concrete or brick & concrete lining. From about 1st Avenue to the Long Island City shore line each section consists of twin single-track cast-iron lined tubes and from the shore line to the open cut sections at the Long Island City portal, the tunnels are twin, single-track, concrete & brick arch structures.

The bottom of the tunnels were trenched for two drains and on each side there are solid concrete trenches containing the electrical conduits. The tops of the trenches form horizontal ledges, 3 ft. 8 in. wide which provide emergency walks at about the height of the car windows on both sides of the track. The concrete side walls are carried up 4 1/2 feet above the galleries and beyond that point the roof arch is built with five courses of brick laid edgewise and bonded together with occasional

pairs of brick on end. The concrete lining of the land sections is waterproofed with a half inch of Portland cement, six layers of felt and seven layers of coal-tar pitch.

The purpose of the 4 1/2 foot concrete walk at each side of the track is to make it almost impossible for a train to derail. If for any reason a train should be long delayed in the tubes, the flat top of the concrete walk affords a perfectly safe means of escape for passengers climbing through the windows.

There is provided all through the tunnels refuge niches and ladders in the faces of the conduit galleries. Ladders 25 feet apart give access from the emergency platforms to the tracks. The refuge niches are the same distance apart and opposite the ladders. At intervals of 300 feet the two tunnels are connected by transverse tunnels about seven feet high and five feet wide have their floors at the level of the emergency platforms and are closed by double-leafed padlocked steel plate doors.

The under river sections consist of cast iron shells lined with concrete, having thickened side walls forming benches which enclose the electrical conduits. The under river sections are not connected by transverse passages.

The outside diameter of the tubes beneath the river is 23 feet. The cast-iron shell consists of bolted-up segments each 30 inches long and consisting of 11 parts and a key piece in each. The minimum thickness of the shell is two inches. The segments are flanged on all sides, the joints planed and fastened with five or six 1 1/2 inch bolts. The gradient of the four tunnels from Fifth Avenue to the bottom of the East River is 1.5% and from the bottom of the river to the tunnel portal is 1.25%.

The groundbreaking for the tunnel began on Feb. 25, 1903 with the demolition of Nos. 557-559 32nd Street, two houses at the Hudson River. By June a sufficiently large section of ground had been cleared to sink the first shaft, work on which began on June 25, 1903. Even after almost a year had passed, 49 lot holders persisted in refusing to sell out to the Pennsylvania Rail Road for any sum of money and in March 1904 the railroad went into Supreme Court and secured from it the right of condemnation in 32nd, 33rd and 34th Streets. All in all about a million square feet of ground between these two streets were swept clear of buildings of all kinds, fine houses costing anywhere from $15,000 to $50,000, apartment houses, hospitals and churches, all at a cost to the railroad of four million dollars.

At 11th Avenue & 32nd Street the first shaft was sunk and in the course of weeks became a marvel to passersby. The great shaft was 60

feet long and 40 feet wide and descended 65 feet through solid rock. A wooden staircase led to the bottom. On the bottom two ragged arches hewn in solid stone pierced the rock and into them two narrow-gauge tracks entered. From time to time tiny cars laden with rock came out of the tunnels which had already advanced 200 feet westward thus far. This was the way all the tunneling would begin. In a short time the shaft would be equipped with elevators and then material and workmen alike would be raised and lowered to expedite the work. The Manhattan shaft was finished on Dec. 11, 1903. Across the Hudson half a mile away was the Weehawken shaft near the Erie Rail Road yards, identical in every way with its Manhattan counterpart. Work began here June 13, 1903 and was finished Sept. 1, 1904.

The final step on the New York side of the river was to award a contract for the immense excavation of the Penn Station site and the erection of long walls to keep the sides from caving in. Since the awarding of the tunnel contracts had yielded nothing to the New York political establishment in return for the enormously valuable franchises awarded, this excavation contract went to the New York Contracting & Trucking Company in June 1904. James J. Murphy, brother of the Tammany leader, was president of the company and the woman treasurer was the wife of Alderman James Gaffney. The contract specified that the work was to begin July 1 with completion in 22 months. The earth and rock excavated had to be loaded on scows and towed to Greenville, N.J. where it was to be reloaded on cars and dumped on the swampy site of the immense freight yards that the Pennsylvania railroad was building as part of its belt line project.

As early as April 1902 surveyors from the Pennsylvania railroad had carefully surveyed the land in the vicinity of the LIRR terminus at Borden & Front Streets. The Pennsylvania began early to buy land in Long Island City for the tunnel route; it was far easier to do so in Queens than in Manhattan, for much of the land at that time was farms or salt meadow. In July 1902 the Long Island R.R. recorded the deeds for 34 tracts of land on the Van Alst and Rapalje farms. With the land the Long Island R.R. already owned, this gave a continuous tract a mile long from the East River to the Queens County Court House. In July 1902 Pennsylvania engineers began to make test borings along Borden Avenue for sub-surface conditions.

The first task undertaken by the Long Island R.R. was the removal of the big iron, two-story Express shed covering the pier on the river side of Front Street and adjoining the ferry slips. This building had a

frontage of 110 feet in length and 60-70 feet in width. The tunnel line passed under the corner of this dock, under the station building and station platforms and then northeast beyond East Avenue. Alongside the express shed was a three-story building occupied by the departments of Maintenance of Way, Signals and Buildings & Bridges and this too had to go and its offices and staff moved to Jamaica. In the first week of November the building and the big express shed were demolished to make way for one of the tunnel shafts.

The Long Island R.R. utilized the winter months of 1903-1904 for legal work as well as demolition. The railroad purchased all the houses along Borden Avenue between East and Vernon Avenues and ordered them vacated by May 1, 1904. After that date gangs of men would raze the buildings so that work on the tunnels could progress without delay.

On Tuesday, May 17, 1904 the first spadeful of earth for the Long Island City tunnels was dug in a cellar at the corner of East & Borden Avenues where a test shaft was to be sunk, 16 feet square and 50 feet deep. One of the main objects of this shaft was to ascertain the character of the rock, for this section of the tunnel would run through solid rock and it was important to ascertain just the kind through which the tunnel would have to be bored. In a few days a shanty was erected on the ground just in the rear of where the razed buildings stood for housing the barrows and tools of the workmen and for office room for the superintendent.

In mid-June 1904 two more shafts were sunk, one on the site of the express building between Front Street and the river and two more between First Avenue and the East River and between 31st and 32nd Streets. These three new shafts would be permanent openings and would be lined with concrete after completion of the tunnel. By mid-July the test shaft on Borden Avenue had reached 25 feet in depth to bed rock and drilling had begun. A steam boiler supplied power for the water pumps and drills.

Meanwhile at the Front Street site, the building formerly used for the Long Island Express Company's offices had been hoisted eleven feet in the air and was now being used as the Long Island City office of the Pearson Company. Directly beneath it the shaft was being drilled 16 ft. square. Because the site was so close to the bulkhead line, seepage of river water was a constant problem. By the end of July this shaft had reached rock bottom and had been enlarged to 34 X 127 ft. Heavy planking had been put around the opening and heavy timbers to brace the planking. A steam engine furnished power for hoisting buckets and

for pumping out water. On the Manhattan side the First Avenue shaft had reached similar dimensions. Meanwhile at the Borden Avenue shaft, a second shift of men was put on so that there were now two 10-hour shifts in one day, working day and night till the contract could be completed. In August trouble developed with the Health authorities who had received a number of complaints from residents along Third, Fourth and Fifth Streets about the night operations between 11 P.M. and 5 A.M. at the Borden Avenue shaft. The ceaseless thud of machinery and jarring of the earth destroyed sleep for the inhabitants of a three block area. The contractors insisted that if the work were stopped, it would mean a delay of over three years, involve an enormous expense in idle machinery and inconceivable inconvenience. The Borden Avenue shaft by now was 100 feet long, 25 feet wide and 75 feet deep. A boiler house and a compressed air plant had been installed together with hoisting derricks. Powerful explosives were used for blasting and the noise was unavoidable. A hearing was held on Oct. 17, 1904 when lawyers for both sides argued the motion.

By Dec. 1 the contractors on the Borden Avenue shaft had begun boring three horizontal shafts 7 feet high and 10 ft. in width, all on the same level and each of these had progressed 350 feet west toward Vernon Avenue. Eventually each of the three would be enlarged to the full 21-foot diameter. Since the East River tunnels were to have four tubes, this fourth was scheduled to be bored later and on a higher level than the other three. On account of its higher level, this fourth tube for a considerable distance would run through earth, mud or sand. Boring a tunnel through such material was a more difficult undertaking than through rock, and in order to lessen the obstacles in the way, the construction was being delayed. Once the three present shafts under way were practically completed, then the water permeating the mud and earth would be drained into the three lower shafts and thus make easier the building of the upper shaft.

In the meantime the steam power that operated the drills had to be discarded in favor of compressed air because of the vapor. Elevators lifted the crushed rock and a spur from the Long Island R.R. extended to the shaft opening carried away the material.

Drilling work at the Front Street shaft soon became impossible because of heavy seepage and steel caissons were being built for this shaft and the one on First Avenue, Manhattan. In the meantime, a

machine shop, five air compressors and appliances of all sorts were collected at the shaft opening. This was the state of things at the end of the year 1904.

With the opening of the year 1905 a sudden change of policy took place. The free and steady flow of information about the progress of the tunnels and the technology devised to handle the problems encountered was suddenly cut off by the tunnel contractors and the press was left with no authentic information to pass on to an understandably curious public. Reporters were received with deferential old-world courtesy by the English engineers who informed them with infinite sadness that a clause in their contract with the Pennsylvania railroad forbade them to divulge any information about the tunnels. The American reporters, accustomed to rude receptions and brusque denials, were overwhelmed by the courtesy of the Pearson men, and their very refusal seemed somehow a gift bestowed as a favor and demanding in return grateful acceptance. From this time forward the newspapers had to get their information indirectly, by interviews with favored persons, sounding out of employees and constant observation at the Borden Avenue shaft.

On Jan. 27, 1905 the Stuyvesant Realty Company conveyed to the tunnel company all the property bought by Stuyvesant, the big Sunnyside tract covered by 159 separate deeds and 29 tunnel properties. The deeds were signed by Douglas Robinson, president of the Stuyvesant Company and Robert H. Graff of the Pennsylvania. The whole property cost almost $3,000,000 and included between 300 and 400 houses and lots and farms to be used for the tunnel and the Sunnyside Yard.

Once the three parallel tunnels became large enough for a man to stand in, a narrow gauge rail line was laid down to move excavated rock to the mouth of the shaft. Concrete foundations were laid down for an extensive air compressor plant alongside the 2nd Street shaft and an eight-inch pipe line was laid along the south curb of Borden Avenue to conduct compressed air to the Borden Avenue shaft.

Three months later on March 5 a reporter managed to accompany a Bureau of Combustibles inspector on an inspection of the Borden Avenue shaft. A pump incessantly sucked water out of the hole but the drip from overhead forced the men to wear oil-skins. The three tunnels had then progressed to just west of Vernon Avenue. The drilling was being done by drilling holes in the rock, putting dynamite in the holes, and then setting off the charge with fulminate of mercury. Afterwards, four 'muckers' with a mule and a hand car picked up the debris. Work went

on from 7 A.M. to 5:30 P.M. daily and from 7 P.M. to 5:30 A.M. On Sunday no work was done.

At the Front Street shaft, meanwhile, a large force of workmen was busy preparing for the sinking of the huge caissons at a point a few rods west of the offices of the contractor. The work of excavation would begin in a few weeks, and as the big hole was dug, the large steel caisson would gradually be lowered and its steel sides built up. Over on the Manhattan side between 34th and 32nd Streets was another busy place where they were getting ready to sink the 15 foot tubes that would form the walls of the river section of the tunnels. The two north tubes were designated A and B and the two south tubes C and D. The shafts here were 40 X 80 and 90 feet deep. In the mouth of each shaft another steel caisson nine feet in diameter was being constructed to carry two of the tubes. The New York caissons and Long Island City caissons would gradually advance toward each other and meet in two years.

On March 27, 1905 work was begun for the first time on the Weehawken shaft; then on Apr. 24th, the contract to dig the tunnel on Manhattan Island from 7th Avenue to 1st Avenue was awarded to the United Engineer & Contracting Company.

By April 1905 the three tunnels radiating out from Borden Avenue had reached the river's edge and the sand hogs began to work under compressed air. Pearson & Co. set up a portable hospital right at the tunnel mouth to treat workmen attacked by the bends. Pressure was 30 lbs. and men worked three to four hours at a time. At this point, too, it was now time to 'break out', i. e. enlarge the three headings to their proper size their whole length so that the caissons could be installed and the tunneling under the river could begin.

In June two big steel caissons were taking shape in the yards on 2nd Street, Long Island City, the compressed air chamber from which the tunnel diggers would push steel shields on under the bottom of the river, building up the steel tube as they progressed. The round discs, 20 feet in diameter, plainly marked on the sides of the caisson, indicated the starting point of these shields and the sides of the caisson, indicated the starting point of these shields and the size of the tubes or tunnels of which there were to be four, two starting from each caisson.

Accidents in this difficult and dangerous work were inevitable. No company could protect each man against his own carelessness or against some falling object. By August some six or seven men had been seriously injured. In December 1905 the press reported the death of a worker from a delayed dynamite blast. On the morning of Dec. 18, 1905 two

men were narrowly rescued after a cave-in in the East Avenue Tubes had buried them 36 hours. Tunnel B had become flooded and the men avoided drowning only by climbing into a pocket in the roof.

Undermining of the tracks in the Long Island City station was getting to be a problem. On Oct. 26, 1905 a long section of the brick wall, 10 feet high and enclosing the Borden Avenue side of the station was thrown down by the shock of a heavy blast in the tunnel. Track #1 adjoined the wall and at the moment of the blast a Whitestone train stood on the track. Twenty feet of collapsing wall fell against one coach, while another section, twenty feet or so, just missed the train. The tunnel from which the blast came was located directly under Track 6. As a result of this accident, the section of the passenger station below which the first tube passed was shored up with great beams to prevent the big terminal itself from collapsing.

Beginning in January 1906 the contractors began digging the landward portion of the East River tunnels from 11th Street to the tunnel mouths in the meadow. Two huge trenches were started, each wide enough to carry two tracks. At the 11th St. end the trenches were nearly 60 feet deep, the depth decreasing gradually as the trenches proceeded eastward. By September the 11th St. end was roofed over.

On Feb. 17, 1906 a portion of one of the rock roofs in the tunnels under the yards caved in at about 4 A.M. and three men were seriously injured. All were standing on a platform near the tunnel roof, putting in place the iron segments that were to form the wall of the tunnel. A few hours before a blast had been fired nearby, and it was assumed that the shocks loosened portions of the rock ledge. Suddenly and without any warning the rock ceiling over the men's heads collapsed and came rattling down about their heads.

As the tunnels moved deeper and nearer to the river, the hazardous nature of the work became more apparent. On Apr. 25, 1906 two young Italians were killed when a charge of dynamite exploded prematurely. The men were working in Tube B and the blast had been set about halfway between the 11th St. Avenue shaft and 2nd Street. Three charges had been buried in the holes that had been drilled in the rock but only one of the charges had been connected with the electric wires for detonation. The other two were several feet away and were to be exploded later. The victims were members of the firing gang. They had set the charges and then gone back to the shaft to detonate the charge. After firing, the men waited 20 mins. as was the custom. When the men had almost returned to the blast scene, the charge exploded late and killed

the men. The very next morning a man approached too near a loaded spot and a blast went off prematurely, tearing off the side of his face and eye. He died of his injuries later.

The sandhog's disease, the 'Bends', attacked very few men in the Pennsylvania tunnel work because the foremen strictly enforced the use of the decompression chamber at the beginning and end of each shift. However, one man while returning home to New York on the ferry was attacked by the 'bends', collapsed and died before help could be summoned.

During the spring of 1906 the passengers on the ferryboats plying between East 34th Street and Long Island City were astonished and a little alarmed to observe another aspect of underwater tunnelling, the boiling of the water in great seething masses and the unexpected appearance of geysers from the escape of compressed air from below. The nature of the tunnelling process made some of the leakage inevitable.

The Pearson Co. was encountering a great deal of trouble in digging the four tubes because of the soft sand and mud. In carrying on the tunnel operations a cylindrical steel shield was forced forward. The front end of the shield was entirely open and the men worked in the space between the shield and the wall of earth or rock ahead. The soft mud and water were kept back by means of the compressed air, the pressure of which was equal to that of the water above. When a particularly soft bed of mud was encountered, the air leaked through to the river bottom, causing a 'blowout' that let in mud and water and temporarily stopped the work. These blowouts began to occur with increasing frequency and caused many delays.

In March 1906 the contractors began to fight this by dumping thousands of bags of clay onto the river bottom to form an artificial roof that would put a stop to the waste of compressed air boiling up. When this method proved only partially successful, the contractors experimented with freezing the mud and sand to 25 to 30 degrees below zero so that even the water had to be chipped out with a pick. An experimental freezing plant was set up at the foot of East 35th Street to supply the low temperatures but engineers were divided on the reliability and the limited application of the process. Some engineers criticized the whole tunnelling operation because the tubes were not sunk deep enough. In some places, they said, the roof of the tubes was within eight feet of the bottom of the river bed, and in consequence, the crust was not thick enough to hold against the air pressure sent ahead of the shield to hold out the water. Whatever the truth, it was in any case far too late to

change plans now. On land, there had been from time to time some minor subsidence of the earth and the Pearson Company heavily braced and strengthened the ferry house and the Long Island R.R. depot to allay fears of collapse.

On June 20, 1906 a spectacular blowout occurred that cost the lives of two sandhogs. People crossing from Long Island City on one of the Long Island R.R. ferry boats to the Manhattan side at 5 P.M. were startled to see a veritable geyser of water spurt out from the depths of the river near the Manhattan shore. Mud and water shot up 15 or 20 feet into the air and shortly after, two dead men were seen floating nearby. They had been forced up from the head of tunnel B, far below the mud of the river bottom. The cause of the trouble was said to be due to the compressed air forcing its way through the strata of mud and silt between the roof of the tunnel heading and the bottom of the river. Two of the men had been caught in the upward rush of air and sucked through the roaring fissure to the water above. Panic seized the remaining workmen who made a rush for the small airlock at the end of the shield compartment. The foreman kept his presence of mind and forced the men to wait while one at a time passed through. In this way 19 men got out safely who might otherwise have drowned in the confusion. As it was, the water was up to the necks of those last leaving and they had not a moment to spare. The accident site was at the extreme end of the tube under the river about 1000 feet from the Manhattan shore and under about 60 feet of water and 25 feet of sand and silt.

In the face of these misfortunes, the almost conspiratorial policy of silence imposed on the contractors by the Pennsylvania Railroad began to backfire. The total blackout of legitimate news simply encouraged the growth and spread of all sorts of wild rumors of disasters, strikes, etc. in the tunnels. In June 1906 the Pearson Company finally induced the Pennsylvania Railroad to relax its policy enough to permit them to release a few facts about progress. The rumors about unrecorded deaths and strikes were denied and the company revealed that, as of that time, tunnel A had advanced 100 feet, tunnel B 550 feet, tunnel C 250 feet and D 600 feet eastward from the shaft on First Avenue, Manhattan.

While all this was going on in the East River tunnels, the spotlight was suddenly stolen by the O'Rourke Engineering & Construction Company whose tunnels in the Hudson River were approaching breakthrough. On June 1, 1906, all work on the tunnels ceased at midnight at which time the shields were 125 feet apart. The engineers then began a thorough review of the entire work, verifying every measurement to the

thousandth of an inch over five or six days. If there appeared the slightest error in grade level or alignment, it would be corrected now so that the two shields would meet with less than an inch of variation. After the most painstaking measurements, it was found that the shields were one-eighth of an inch off line and three-fourths of an inch off grade.

On Sept. 12, 1906 the first official trip through the North River tunnel was made by a party of 45 men. At 10:45 A.M. the party boarded two small work cars at the Bergen Hill entrance to the tunnel and rode by hand power to the first air lock. The party then entered one by one to adjust to the air pressure. After a suitable interval the party walked along the floor of the tunnel which was dry and well-lighted and arrived at 11:15 in the middle of the tube where the working shields had met. Nobody had been allowed to pass through the shields, and on either side the workmen who had driven them were lined up, ready for the cheers that were to mark the first passage through. Mr. Jacobs, as chief engineer, was allowed to go through the shields first, followed by Mr. O'Rourke. After the workmen had cheered the party, they were cheered in return. The party than continued its walk to the New York end, arriving there at 11:35. Later, the whole party of officials went to Delmonico's for lunch and speeches by Mr. Jacobs, Mr. O'Rourke and General Raymond. The engineers calculated that it would take two years of work to run trains through the tunnel.

In Long Island City meanwhile the tunnel at 11th St. was roofed over in September 1906 and workmen were preparing to turn over the street to normal traffic again.

In December 1906 a new series of blowouts similar to but not as serious as the June event hampered progress and attracted public attention by the geysers spouting up close to the ferry slips.

The year 1907 brought a new series of accidents. On March 2nd a magazine of explosives kept at the mouth of the tunnel at Homestead in North Bergen blew up, injured 60 men, tore a hole 40 to 50 feet across at the tunnel mouth and did widespread damage for a mile around from concussion. Windows were blown out and Springfield Street in Union Hill was littered with wood chunks and broken glass.

By March 1907 a considerable section of the East River tunnelling was actually completed. The southernmost of the four Long Island City tubes from 11th Street had now linked up with the river tube. The land tunnels under 32nd and 33rd Streets had also linked up with the river bores. Tubes B, C, and D heading out into the river from Manhattan

were piercing Blackwell's Island and reaching toward the Long Island City tubes.

On March 29, 1907 there had been a gang of ten men engaged in loading boulders on the tramway in the tunnel. The pick of one man struck a cartridge which had not been exploded and in an instant every man was blown off his feet. The Pennsylvania Railroad with its usual policy of secrecy spirited the men off to the hospital on the premises and kept silent. Someone informed the police and when the Roosevelt Hospital ambulance arrived, the doctor could not even get the names of the men much less their present whereabouts.

On May 10 fire broke out in the wooden buildings at the shaft entrance extending from 32nd to 34th Streets and from Fifth Avenue to the river. Only the prompt action of the Fire Department saved the building and compressor plant from the flames which had gained considerable headway. On June 28th the same building caught fire again, this time burning out the company's offices and hospital, but the powder magazine and compressor plant were saved.

In the close of the year 1907, the railroad took pains to dig out the easy land section of the tunnel from 11th Street to Hunter's Point Ave. Heavy rock spurs were encountered and heavy blasting had to be done.

The year 1908 witnessed intensive activity on the tunnels and the virtual completion of the physical work on them. In January Sir Weetman D. Pearson, head of the English contracting firm boring the East River section, came to America to check personally on the work. When pressed for news, he revealed that tube D was making especially rapid progress. On the 16th alone the tube advanced 37 "shoves" under the river; each "shove" represented 2½ feet and the record for that day in the four tubes was 131 "shoves" or 327½ feet in 24 hours. Pearson's visit was followed by an inspection trip by the four Public Service Commissioners. No one crossed the river, but Alfred Noble, chief engineer of the East River Division, led them through the non-compressed sections where they rode in two little cars on the tramway from Penn Station under 31st and 33rd Streets to the East River. Under the river they were informed the average rate of digging was then 1300 feet a month.

In February 1908 at the annual meeting of the Pennsylvania Railroad board of directors, the engineers reported that at the present rate of progress, the four tunnels would meet during the next three months; that one of the tunnels would be excavated and iron-lined in February; two additional ones in March and the fourth in April or May. Work

would then begin on the caulking and lining of the tunnels with concrete two feet thick.

These predictions were largely fulfilled. On February 21, 1908 the ends of tube D were joined and the completion was celebrated noisily, if informally. Flags were hoisted on the tunnel buildings and the whistles of the ferryboats shrieked loudly in celebration. A bonus of $5000 was distributed among the 50 men at work on the two headings. The men sent a "train" through the opening, a toy model of the "Congressional Limited" that created as much enthusiasm as would the real thing.

Within two weeks another tube was ready, although the working force had been reduced; the engineers did not want to hurry matters in order not to go faster than progress on the Penn Station. On March 5, 1908 tube C was joined and this time the chief engineers were on hand to crawl through the opening first. On March 18, 1908 tube A, the last of the four tubes, was linked up, and in celebration all of the men employed on the Long Island City half made their way through the three-foot hole over to Manhattan and returned. The S. Pearson Company celebrated the completion of the boring by inviting a representative from each of the newspapers to make a walking trip through the tube. The men were ushered into a dressing room where they found complete outfits of new overalls, shirts, coats, oilskins hats and big hip boots. E. V. Moir, vice-president of Pearson & Company, was the guide. He explained the great problem of working with compressed air; if it was too little, quicksand flowed from under the shield and between the joints of the tunnel lining; if too much, it blew the roof off and flooded the tunnels. Seven air compressors with a capacity of 35,000 cu. ft. per minute had been required to keep up the pressure. The party entered the air locks, where the air was 15 lbs. per square inch. Then the party walked single file part way under the river and then returned after touring the caissons and sumps.

During May 1908 a large force of men was at work on the land part of the tunnel from 11th Street to the tunnel mouth. A lot of blasting had to be done because of rock outcroppings.

From June 1908 to the end of the year, progress was rapid on the interior of the four tubes; all were acquiring the two-foot concrete lining and on July 4, the air pressure was taken off tubes C and D, and it became possible to walk to Manhattan through them. When no leaks developed, a gang of men went to work lining the walls.

Perhaps the most unusual thing in connection with the building of the tunnels was the series of tests conducted on the Long Island R.R. to

determine what kind of locomotive and what type of electrification to use. Six miles of the Central Extension, a very lightly used branch between Garden City and New Bridge Road, Island Trees, was utilized as a test track to try out every possible idea. The area was all prairie land and very sparsely settled. The questions that the Pennsylvania wanted to have answered were as follows:

1. Which of several types of locomotives would be the best to pull trains at a fair rate of speed in the tunnels?
2. Which locomotive can pull lightweight trains best at high speed?
3. Which is the best equipment for a single motor car?
4. How can trolley wires best be hung?
5. What is the best contact on the car roof?
6. Precisely how should tunnels be wired?

Between May and November 1908 $75,000 was expended on a business-like and comprehensive investigation. Considering that the railroad had already invested $5,000,000 in electrification and that millions more would be spent later, this sum seemed reasonable if it provided the answers. Mr. George Gibbs was in charge of this interesting operation and after weeks of preliminary planning, he put his experimental trains and cars in motion on October 1st. All kinds of mock-ups and trial appliances had been built, even imaginary tunnels, built to scale and looking like covered bridges, plus various overheads, catenary work and trolley wire. Three electric locomotives specially built for Mr. Gibbs were given high-speed tests hauling loads of flat cars loaded down with pig iron calculated to reproduce precisely trains with full loads of passengers. There was also a single-phase electric locomotive and single and multiple unit trains. Back and forth, all summer and all fall, over the six miles traveled these assorted locomotives and cars worked under every possible variation of conditions, while experts were on the ground taking notes and incorporating them into full-length reports which they submitted to Mr. Gibbs. Single phase high-voltage AC energized the experimental overhead. Steel supports set in concrete supported the overhead high-tension line and were ready for use in August. The overhead wire itself was completed in August as was 1000 feet of dummy tunnel. On Dec. 1, 1908 after two months of trials, the Pennsylvania Rail Road announced its decision to use third rail for their tunnels under the North and East Rivers and for the entire system between Newark, N. J. and Jamaica, L.I.

While the experiments on the Hempstead Plains were going on during the summer and fall of 1908, intensive work continued on the tunnels and their portals. By the end of October 1908 the elevated embankment across the meadows from Harrison to the Weehawken portal, a distance of six miles, crossing the Erie, Lackawanna and Pennsylvania Railroads, had been completed as well as the bridges over the Hackensack and Passaic Yards at Harrison.

Inside the tubes the air locks had been taken out and an army of men worked both day and night shifts ceaselessly to line the tubes with concrete. This work was scheduled for completion in January 1909, after which the scaffolding, staging and tramways would come out; the tubes would be cleaned and turned over to the railroad.

In mid-February 1909 Pearson & Company turned over the completed tunnels to the Pennsylvania Rail Road and tore down all its construction sheds in Manhattan and Long Island City. In the spring of 1909 all effort was concentrated on the deep trenches necessary to carry the mouths of the tunnels to the surface in the Sunnyside Yards. The main cut was as much as 100 feet deep and from 50 to 75 feet in width; four such deep trenches were necessary since each of the tubes terminated in a different spot. Next would come the masonry linings.

During July and August 1909 track laying was started in the North River tubes, in Pennsylvania Station and the four East River tubes; on August 2nd tube A became the first to be finished. The work of electrification was pushed as well, and at the Locust Avenue Shops, motors were installed in the fifty 1400 series cars, the first of the MP-54's.

In the fall of 1909 grading from the tunnel entrances to the Long Island R.R. tracks began, and much electrical work along the Main Line between Jamaica and the Sunnyside Yard. The Pennsylvania Station still had so much work to be done on it that trains could not possibly run in and out till June 1910 at the earliest.

On Sept. 21, 1909 tubes B and C were completed in the Long Island City yards; meanwhile, tube D, the first completed, was so far advanced that a trial train was run through and a construction train carrying supplies. On Dec. 10th the last tube was completed. By the end of December all four tunnels had been completely roofed over to their mouths and steam shovels were filling in the trenches.

The first months of 1910—the climactic year—witnessed the installation of the electrical equipment in the tunnels and the signal equipment. Then on April 13, 1910 the Pennsylvania Rail Road operated the first electric train through the tunnels under Manhattan Island and the East

River; the train made up of six construction cars and an electric locomotive ran from Penn Station to the Queens Boulevard viaduct in Long Island City.

Just when everybody expected the tunnel service to begin on June 1st, President Peters issued a statement saying that the opening would have to be postponed till mid-summer because of the inability of the road to get the steel cars needed for the Rockaway loop service. Fifty were ready now but 140 others scheduled for delivery between Feb. 1st and May 1st would not arrive before May 15th at the earliest and October 1st at the latest. After careful consideration the management decided that no satisfactory service could be given with fifty cars, and rather than offer an inadequate service, they preferred to await the arrival of an adequate number of cars. However, beginning June 16th, the date of the summer timetable, the railroad would operate electric trains to the Far Rockaway Branch from Long Island City via the Main Line and the Glendale Cut-off, handling the trains by locomotives between the Long Island City terminal and Hunters Point Avenue where the third rail then ended.

On May 2, 1910 the first electric passenger train made the trip from Penn Station to Jamaica with President Peters and other high officials aboard. The trip was made easily and rapidly and gave promise of what the regular service would be like. Observers noted that Peters and Belmont, men of an older generation who had all their lives been accustomed to cross the river by riding a car to the ferry, waiting for a boat and then making a leisurely passage, stared at each other in smiling wonderment and awed silence as the train, after scarcely ten minutes, burst from the gloom of the tunnel and out into the sunlight of Long Island City. For them the space age had truly arrived! In the third week of May 1910 several of the new electric engines to be used by the Long Island and the Pennsylvania in hauling trains through the tunnels under the East and Hudson Rivers arrived and daily trials were staged. The engines proved capable of a high rate of speed and the tracks were so well ballasted that there was little noticeable noise. Meanwhile word was received from American Car & Foundry that the motor cars would arrive in succession over the next two weeks which would give ample time to accustom the employees to their operation.

When rumors began to fly that the tunnels would open on Aug. 1st, Pres. Peters again issued a statement to the effect that a thorough inspection of the tunnels, yards and Penn Station had been made by him and some engineers on July 6th. Although the tracks and platforms

were ready for an August 1st opening, the condition of the station, the cleaning to be done, the fixtures and furnishings to be installed and men to be trained would not justify an opening before September 8th.

On Aug. 17th, President Peters released the schedule of "official" trains for the first day. Celebrations were planned for every station; local committees would have charge of the decoration of railroad stations, buildings and streets and the distribution of badges, etc. One train each was to start from Penn Station and run to Sag Harbor, Babylon, Long Beach, Far Rockaway, Wading River, Hempstead, Oyster Bay, West Hempstead and the Main Line to Greenport. During the last week intensive preparations were made readying the new electric cars which were arriving at the rate of five a week. The new tower at Harold Avenue was activated; here at least four men would be regularly employed on each shift to handle the levers and there would be three shifts each working eight hours.

On August 30, 1910 an official trip was made through the tunnels with important persons as guests: August Belmont, Theodore Shonts, president of the IRT, President Peters of the LIRR and 200 lesser officials including some of the directors. The party toured the new Penn Station and then took a train of five cars; first a stop was made at the portal on the Hackensack Meadows, then back to Penn Station and on to Long Island City, then on the Atlantic Branch to Laurelton and finally down to Rockaway. A return was made via the big trestle to Long Island City and Penn Station.

The great day that all New York had been waiting for through eight years of expectation came at last on Sept. 8th. The great runway and walk on the 33rd Street side were thrown open to the public a few minutes after midnight and those persons who had stayed up to ride the first train rushed to form lines at the ticket windows. The first train out was a Jamaica train scheduled to leave at 3:40 A.M. As train time approached, the crowd pressed at the gates to have their tickets punched; the platform soon filled with people and photographers took dozens of flashlight pictures. At 3:36 a baggage train loaded with newspapers pulled out for Port Washington; then at 3:40 the first passenger train pulled out with its two cars comfortably filled with passengers. A quick stop was made at Woodside and twenty minutes later, the run ended at Jamaica.

The really big crowds of the day arrived at Penn Station around 8 A.M. including President Peters who had come in from Garden City and General Manager McCrae from Woodmere. By this time various

buildings and private houses in 7th and 8th Avenues and 32nd and 33rd Streets had been decorated with flags and banners. By 9 A.M. the Long Island R.R. section of the big station (the only part open) was thronged with delegations of citizens from all parts of the island. The Brooklyn and Long Island delegations under the leadership of Borough President Steers of Brooklyn all wore badges.

The first trains sent out were the specials for each division of the road. The electrified lines used MU cars and the non-electrified, steam coaches drawn by electric locomotives. The train for the Main Line left at 8:25 in charge of Conductor Rushmore, oldest and most popular conductor on the road, in service since 1866. In the Sunnyside Yard, steam engine #211 took over the train, consisting of parlor car #793, a smoker and four coaches. After the departure of the Main Line train came the Montauk Division train, the Oyster Bay, Wading River runs, and then the electrics for Far Rockaway, Hempstead and Rockaway Beach.

The "Official Train" left Manhattan at 9:32 A.M. When the train reached Jamaica, it was met by a reception committee and the passengers joined a parade to King Park, where a bandstand had been set up. Crowds of people sat or stood on the grass and within a few minutes the band played lively airs and successive speeches were made by the dignitaries. After the exercises there was an elaborate meal at the Real Estate Exchange. At 2:37 P.M. the official party left Jamaica for Long Beach, where Senator Reynolds, the creator of that resort, entertained the whole party. "Tunnel Day" was concluded with a formal banquet at the Garden City Hotel at which all the officials, committeemen and politicians were entertained.

Bright skies and fair weather prevailed all day and all over the island houses and public buildings were hung with flags and bunting. In every Long Island town and village touched by the railroad, excitement and enthusiasm reigned supreme in honor of the great achievement in transportation that was making New York a closer neighbor to Long Island. Big delegations representing every town were out in force to greet the trains and at each station, passengers and townsmen milled about, waving and cheering. For the most part the programs consisted of parades through the business center of the village, in which the town fathers, prominent citizens, fire companies, societies and automobile parties took part. The Tunnel Day celebrations were especially noteworthy at Jamaica, Lynbrook, Rockville Centre, Babylon, Islip, Oceanside and Massapequa; at the latter Roxy, the Long Island R.R. dog, was present.

Someone had attached an American flag to his collar and he ran up and down the station platform, barking excitedly.

So passed Tunnel Day, the most eventful day in the history of the railroad. Another three months passed before the Pennsylvania Railroad opened the rest of Penn Station for its own trains. Just after midnight on the early morning of Nov. 27, 1910, the Penn Station was opened to Pennsylvania runs. The first regular passenger trains left two minutes after midnight and at 12:50 A.M. a train from Washington arrived, the first inbound passenger train to use the Hudson River tunnels. After eight years of unremitting effort the full length of the tunnels was now at last open to regular traffic.

CHAPTER VIII

The Sunnyside Yards

THE idea of the Sunnyside Yards was part of the grand design embracing the Pennsylvania tubes, the Pennsylvania Station, the New York Connecting Railroad and the Greenville-Bay Ridge car float envisaged by the Pennsylvania Railroad in 1900. Some open area, not too far from the Pennsylvania Station, spacious and offering the possibility of infinite expansion if desired, easily accessible, yet moderate in cost had to be found if the proposed Penn Station was to fulfill the expectations of its designers as the busiest and largest railroad terminal in the world. It would seem logical to us today that the Pennsylvania would have chosen the vast and then empty Jersey meadows as the site of its marshalling yard. Certainly, there was infinite space, nearness to New York and cheapness—persuasive reasons in favor of the meadow site. There were two drawbacks, however. The meadows in 1900 were still largely in their primeval condition and it would have taken almost unimaginable quantities of land fill and years of effort to level out a yard a mile or more long and half that in breadth. The other objection was an operational one. It was far easier to run trains into the proposed Penn Station and then continue them onward and outward for break-up rather than reverse them and back them out again over the same route to the Jersey meadows. Similarly, a newly made-up train could more easily move in one direction from Long Island and then onward to its destination than to repeat the in-and-out process from the meadows. The main consideration was the reduction of deadhead mileage.

Though it is difficult for us to imagine it today, the Long Island City area of almost a century ago—1900—was populated and built up only in a five or six block area east of the river front and then in a through line along Jackson Avenue and along Steinway Street. East and north of this settled area lay a vast stretch of farmland or swamp. Much of inland Long Island City had been swampy and criss-crossed with streams draining into Newtown Creek. At the time of the incorporation of the city in 1870 and for years thereafter, filling operations had been going on to bring extensive tracts up to grade. The railroad hearings and

court papers of 1900 repeatedly refer to Astoria and Steinway as "rural Queens" and so it was.

The whole alignment followed by the present Main Line of the Long Island R.R. and Jackson Avenue is only a little more than a century old. Jackson Avenue was laid out as a private turnpike road in 1859 and continued to collect toll from farmers until May 1871. The Long Island R.R. laid out its line to Hunter's Point in 1861, more or less paralleling Jackson Avenue and the upper reaches of Dutch Kills. The name Sunnyside derived from the name of a small roadhouse on Jackson Avenue at 35th Street. The Sunnyside area had its own railroad station in 1875–76.

The railroad made no particular effort to purchase land in the Sunnyside section until September 1902 although it had been very active in acquiring property along the line of the tunnels all through 1901 and 1902. The Pennsylvania Railroad had been fortunate in that the Long Island R.R. and the old North Shore Railroad already owned much of the land needed for the tunnels, but for good measure the road acquired most of the land up to the Queens County Court House because it was at first planned to locate the tunnel mouths here rather than at Hunter's Point Avenue where they are presently located.

The Sunnyside Yard area today begins at Hunter's Point and Van Alst Avenues and runs eastward all the way to 43rd Street near Woodside; in width, the yard takes in almost all the land south from Jackson Avenue to Skillman Avenue and the westward relocation of that avenue from 34th Street to a junction with Queens Boulevard. In 1900 the extreme western end was largely the swampy headwaters of Dutch Kills Creek. This is the present Diagonal Street viaduct area. The most thickly settled tract was farther east between Skillman Avenue and the Long Island R.R. track near Jackson Avenue and from Van Dam Street east to 38th Street. Beyond this, and all the way to Woodside Avenue there were only farms of considerable size in the hands of farmers settled on the land since Revolutionary days.

As it happened, this was historic country, and today this tract along Skillman Avenue and the road just north of it, Middleburgh Avenue or 39th Avenue, now obliterated, would easily rate as a historic district. The British troops just after the Battle of Long Island in August 1776 had encamped along Middleburgh Avenue and their officers had been billetted in the farm houses of the Bragaws, Gosmans and Morrells along the road. The windowpanes of some of the houses still bore the scratched initials of some of the British officers and the residents had

heard stories from their grandparents of forcibly requisitioned cattle and woodland. Until the Long Island R.R. came in 1861, the earthen foundations and fire pits of the British and Hessian troops could easily be seen along the roadside.

Between October 1902 and January 1903 many large parcels of land adjoining and running parallel to the Long Island R.R. tracks quietly changed hands. The railroad sent out various agents purporting to represent various persons in an effort to avoid establishing a recognizable pattern and so to escalate the price of land. So successful was this tactic that several months elapsed before residents and real estate agents realized that the Pennsylvania Railroad was behind it all. The larger parcels containing the historic homesteads attracted the most attention and the "New York Sun," the "Brooklyn Eagle" and the "Long Island Weekly Star" ran illustrated feature articles on their passing.

In January 1903 the railroad bought the Elias T. Bragaw farm on 32nd Place; more property on 37th Street in March 1903. In April 1903 a corps of surveyors attracted considerable attention as they measured the hills around Sunnyside. A large number of houses on standard city lots dotted this area and many residents were startled by the generous money offers tendered by non-commital agents. The agents did nothing to stop a rumor that the railroad was preparing to dig down the hills and leave up in the air the plots of property owners refusing to sell out.

Whatever doubts that may have lingered in the minds of the Sunnyside people as to who was behind the break-up of their neighborhood were dispelled in June 1903 when several of the old colonial-descended farmers went into court and demanded that the city open, grade and curb Middleburgh Avenue so that they could break up their farms into city lots and put them on the market. The farmers complained that since Queens had joined New York City in 1898, they were forced to pay city taxes and were unable to raise enough produce off the farms to meet the expenses. Only by breaking up the farms could they recoup the value of their property.

At the court hearings the Pennsylvania Railroad and the Long Island R.R. through their counsel opposed the opening of Middleburgh Avenue and so had to reveal publicly and in full what many had surmised up to now; that the whole Sunnyside tract would soon be the site of a great railroad yard. The railroad opposed the street opening because it would cut through the center of the yard and destroy its usefulness. Borough President Cassidy of Queens himself attended the hearing and inquired how near the end of the Penn tunnels the street would be and

the railroad lawyer informed him that it was within a couple of hundred feet. He explained that while the greater portion of the yard would be used for the storage of a vast number of cars, a part just south of Barn and Orchard Streets (now Queens Plaza) would be used in the construction of a Long Island City passenger terminal. Although the railroad counsel must have known that this was a great extension of the truth, he shrewdly calculated that the officials would be impressed. A terminal station at the Queens end of the then-proposed Queensborough Bridge would be a feather in the cap of the borough. With this inducement, the Middleburgh extension project was quickly tabled and soon forgotten.

On July 27, 1903 the Long Island R.R. filed 160 deeds for various Sunnyside lots, houses and farms. All were bought in the names of dummy purchasers and transferred to the Stuyvesant Realty Company, the Long Island Rail Road's real estate subsidiary. In the first week of July 1903 the railroad had a large force of men at work tearing down between 200 and 300 one and two-story frame houses along 31st to 38th Streets and between Skillman and Jackson Avenues. On Aug. 15, 1903, the Pennsylvania Railroad filed 18 more deeds for property, including the historic Richard Bragaw farm and John Debevoise farm. In January the railroad paid almost $100,000 for the land south of Jackson Avenue from 39th St. (Harold Ave.) to 46th Street (Bliss St.) Many Sunnyside residents had received eviction notices as of Apr. 1, 1904, and after they sadly pulled out, the area became a ghost town. Not quite, however; often the residents had barely time to move out of their houses before scavengers under cover of darkness moved in with crowbars and pickaxes and demolished whole houses overnight for the sake of the wood and plumbing.

During September 1904 the railroad dumped some of the excavated material from the tunnel at the west end of Sunnyside Yard at Van Alst and Beech Streets, formerly the upper reaches of Jack's Creek.

The whole of 1905 passed with no work done on the Sunnyside tract. Nearly all of the property had been acquired and 200 to 300 homes torn down, but the electrification project took higher priority. Railroad officials said that in the spring of 1906, gangs of Italian laborers would be put to work leveling the hills. In a publicity release in January 1906, President Cassatt of the Pennsylvania R.R. said:

> "The establishment for the New York & Long Island Rail Road of a great terminal to be called Sunnyside Yard between Jackson and Thomson Avenues in Queens Borough (is being

> planned). It is to be upward of one mile long, to average nearly a third of a mile wide and to include an area of about 8712 city lots or about 400 acres. This yard will be of prime necessity to efficient operation of the new system in Manhattan and to proper care of the great additional traffic which we believe our improvements will bring to the city. There is within the Borough of Manhattan no suitable place for so great a terminal yard. The site chosen is almost entirely open and unused land, and apart from its great advantage to Manhattan and Brooklyn, its establishment in Queens with the business incidental to it must very considerably increase the general volume of business in that borough. Among new plans are a freight terminal at 3rd Avenue & Hunters Point Avenue and a freight delivery yard north of Hunter's Point Avenue to occupy 109 city lots."

In May 1906 the railroad, in an effort to get rid of the Second Ward Primary School #3 on a 120 foot hill at Skillman Avenue and 31st Place, offered to trade other lots on 33rd Street for the tract. After some negotiation the city accepted a tract on 48th and 49th Streets; the old school was closed on March 1, 1907, by which time only eight children were in attendance. The railroad was able to level down the hill and dump the dirt in the low-lying former bed of Dutch Kills at what is now the Diagonal Street viaduct.

Another hint of the future plans for the Sunnyside Yard appeared in April 1906:

> "Trains will come into the Penn Station from both the Long Island and Pennsylvania R.R., and upon completion of the New York Connecting R.R., from the New Haven. The big Sunnyside Yard in Long Island City, a mile and a half long, will be a busy place at all hours of the day. Over 1500 trains per day will be made up there and routed for all parts of the South and West and Long Island and New England. It is estimated that from 1200 to 1500 employees will be kept busy in the yard regularly through the year and that hundreds of homes for them will spring up in the adjacent Sunnyside and Dutch Kills sections. The trains in the yard and through the tunnels will all be operated with electricity."

In December 1906 the Long Island R.R. applied to the city for the closing of 52 streets, almost all of them paper streets that were actually

meadow land, submerged at high tides and filled with rank meadow grass and tall weeds, a great mosquito breeding area. The railroad in its application revealed a few more plans for the Sunnyside Yard. It would take two years of constant and laborious work to complete the yard and the approaches to the tunnels which opened out into the yard. This would have to be done without disrupting the heavy volume of passenger and freight traffic constantly using the area. To permit passage over the yard, viaducts were planned at Thomsn Avenue, 35th Street (Honeywell), 39th Street (Harold) and a new Diagonal Street to connect Queens Boulevard with the Queensborough Bridge Plaza. Three streets would be carried under the yard: 43rd Street (Laurel Hill), 48th Street (Gosman) and Woodside Ave. All in all, the city gained by the elimination of 15 grade crossings and all without cost to the city. Finally, the railroad decided to shorten the east end of the yard at 48th Street (Gosman Ave.) and not to extend all the way to Woodside because of interference with real estate interests in Woodside then in full development.

The railroad agreed to relocate the west end of Skillman Avenue to follow the south border of the yards. More surprisingly, the railroad announced that it would build an elevated connection from the midst of the west end of Sunnyside Yard up and over Meadow Street, Hunter's Point Avenue and Borden Avenue to the Montauk Division in order that all the freight business handled through the float bridges in the Wheeler Yard might be taken out to the Montauk Division and kept out of the passenger yard. All in all, 73 miles of tracks were due to be laid in the Sunnyside Yard to care for the storage of passenger trains.

In December 1906 the railroad started condemnation proceedings against the remaining 105 owners of property in Sunnyside, mostly minor heirs or cases requiring correction of title. This was only about one-eighth of the whole of the original number of owners. On Dec. 14 the Board of Estimate gave a hearing on the general plan and approaches of the proposed Sunnyside Yard as it affected the street system of Long Island City. As a result of the hearing the board on Feb. 15, 1907 adopted a resolution approving the Sunnyside Improvement and formally closing Dutch Kills Road, Thomson Avenue, Skillman Avenue, 34th (Moore), 35th (Honeywell), 36th (Buckley), and 37th (Hulst) and 38th (Van Pelt) Streets.

On March 15, 1907 it was announced in the papers that the Degnon Contracting Company had secured the contract for grading and filling in the big Sunnyside car yard and that work would begin within the next 60 days or as soon as the necessary machinery could be installed for an

undertaking involving the excavation of 2,300,000 cubic yards of earth and 2,000,000 yards of filling in. The Degnon Company at this time had just about finished up the boring of the Steinway Tunnel and the securing of this rich contract was a tribute to the important social and political connections of Michael J. Degnon.

Degnon's company went to work in mid-February 1907; instead of the ice and snows of winter hampering their operations, they made winter an ally by building a mile of railroad track over ice a foot and a half thick on the submerged meadows and swamps at the headwaters of Dutch Kills Creek. The tracks extended from the Sunnyside Hill, formerly located at a point above the Diagonal Street viaduct, where Van Dam Street and Skillman Avenue, if projected beyond their present lines, would meet, southward to Hunter's Point Avenue and the Main Line tracks of the Long Island R.R. Over this temporary roadbed locomotives hauled trains of loaded dirt cars and an embankment was built up on either side of the tracks the whole distance. When the ice began to settle and melt in late March, the solid embankment was of sufficient height above the water to permit the shifting of the tracks from the ice roadbed to the permanent embankment of earth which was wide enough for four tracks and four steam shovels. The company had eight locomotives and 150 dummy cars at work on the task of raising the surrounding 250 acres of land from 10 to 28 feet above tide level. To get some idea of the change in grades necessary, Thomson Avenue which crossed the meadows, was due to be raised even with the tops of the tall telephone and electric poles that then lined its sides.

While this physical work was going on, condemnation commissioners appointed by the court were holding three sessions a week in Brooklyn taking testimony on the disputed value of several hundred lots. The railroad set a value of $500,000 on the 400 acres and the 70 owners claimed just double that amount. The commission on July 22, 1907 made a total award of $705,102.96 for the 135 parcels involved and for which the company had previously offered the owners $485,650.50.

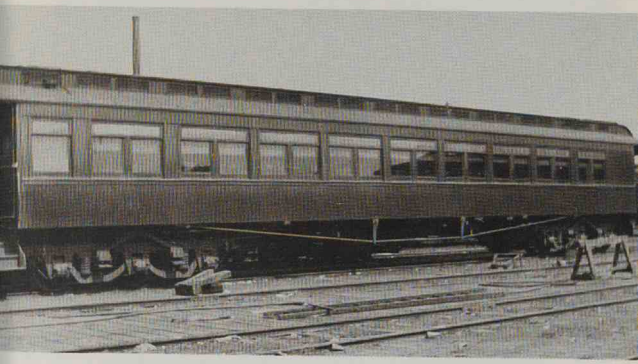
In the first days of June 1907 a large force of men went to work moving the tracks of the North Shore Div. between 11th Street (old East Ave.) and Thomson Avenue because they were in the way of building the tunnel mouth. A new roadbed was laid out east of the old line. All through the summer of 1907 ten or twelve construction trains daily transported thousands of cubic yards of dirt from the Sunnyside Hill of roughly 200 acres to the vast swamp and meadow section south of the Queens County Court House. By the end of the year 1907 the four or

five big steam shovels had pushed back the western face of Sunnyside Hill several hundred feet. Over 100 acres of the plateau over 40 feet in height had been removed. A huge area of the meadow had been filled in anywhere from 10 to 30 feet. Roughly one third of the Sunnyside excavation and fill could be considered completed.

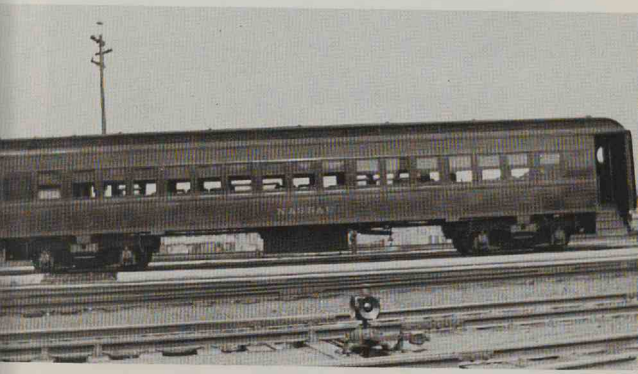
A start had also been made by the end of 1907 on the viaduct abutments which would carry Thomson Avenue over the network of tracks. This was already 25 to 30 feet in height and 60 feet in length. The southern abutment was all completed and the north one 10 days from completion. The new roadbed for Thomson Avenue was at this time an embankment across the meadows at a height varying from 10 to 30 feet and about a mile long. The city had opened and graded 43rd Street (old Laurel Hill St.) in preparation for the steel bridge which would carry the Long Island R.R. tracks over it. This was also the easterly limit of the yard and the location of the loop track by which Pennsylvania trains could be turned around. Concrete pillars had also been put up at 39th St. (old Harold Ave.) and 35th St. (old Honeywell St.) for the viaducts at those points.

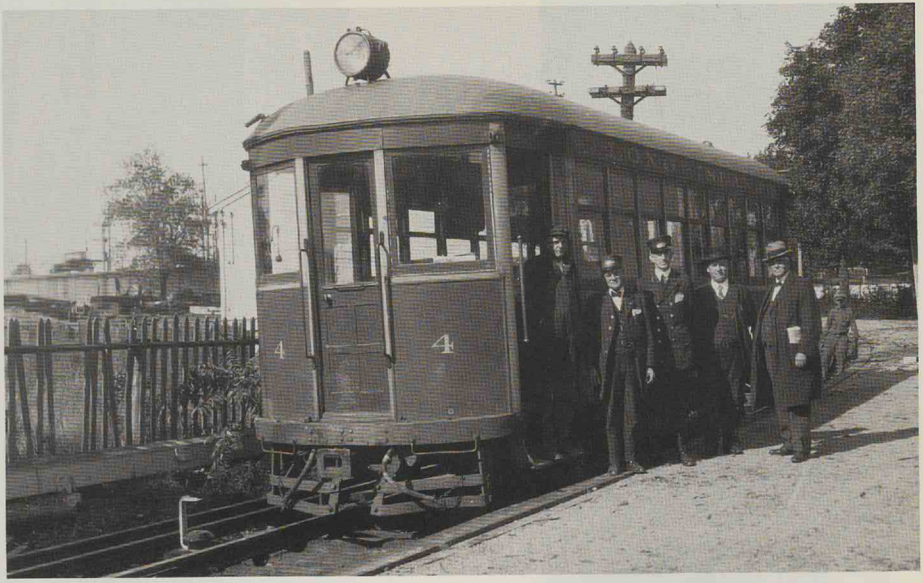
In January 1908 the Degnon Contracting Company turned over the contract for the Sunnyside Yard to the Degnon Terminal Improvement & Realty Company. This company had been incorporated in November 1905 with a capital of one million dollars to improve 700 lots on both sides of Dutch Kills Creek and had been organized with the interests of the Long Island R.R., the Penn Tunnel Company and the Belmont tunnel interests with Michael J. Degnon at the head. The company was to buy all the low-lying meadow land on the creek owned by the New York Land & Warehouse Company, and the ex-Governor Flower estate, fill it in with rock excavated from the Penn and Belmont tunnels and Sunnyside Hill, bulkhead the two sides of the creek, dredge it to a depth of 23 feet and to set up a great industrial park. The site offered a handy place for all the excavated material from the various tunnels at a vast saving in cost to the contractor, but would also extend the Long Island freight yards over 1000 acres in the Blissville district and along the Newtown Creek front at Laurel Hill where the Long Island R.R. had recently bought a large tract from Calvary Cemetery and added 1000 feet to its already extensive waterfront on Newtown Creek.

All went according to plan; by March 1907 over 30 acres of the Degnon Company's tract comprising 2000 city lots had been filled in and the Dutch Kills Canal, 100 feet wide, had been dredged to a navigational depth of 23 feet; an interior basin 500 X 200 had been dredged



#785 Parlor Car, Barney & Smith 1899 (Holman Collection) (Top)
#389 Club Car, converted to a coach in 1917, ACF 1913 (Holman Collection) (Bottom)

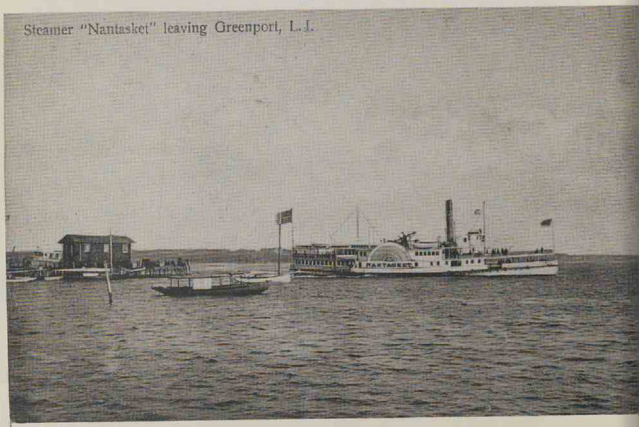


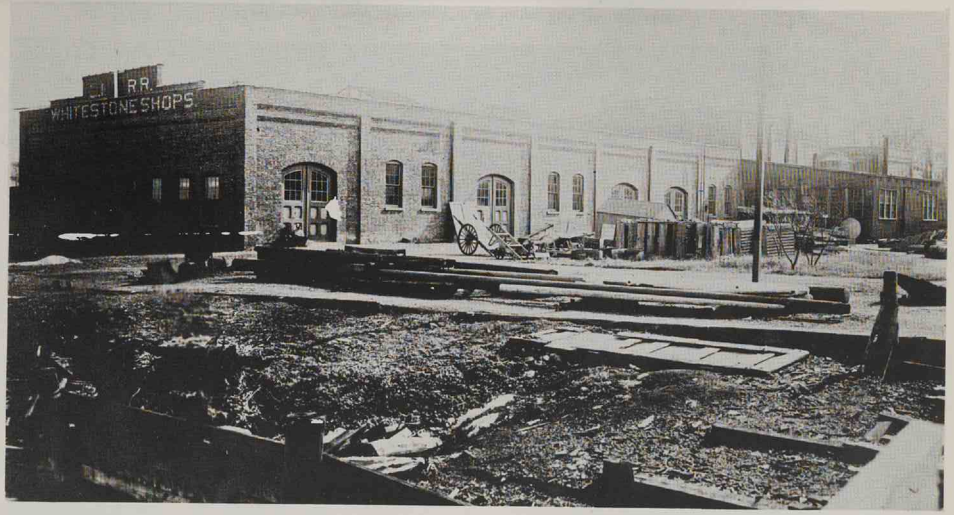


#4 Storage Battery car ("dinky") at Mineola station in 1926 on the West Hempstead Branch track. Note 3rd rail being installed. (Burt photo)

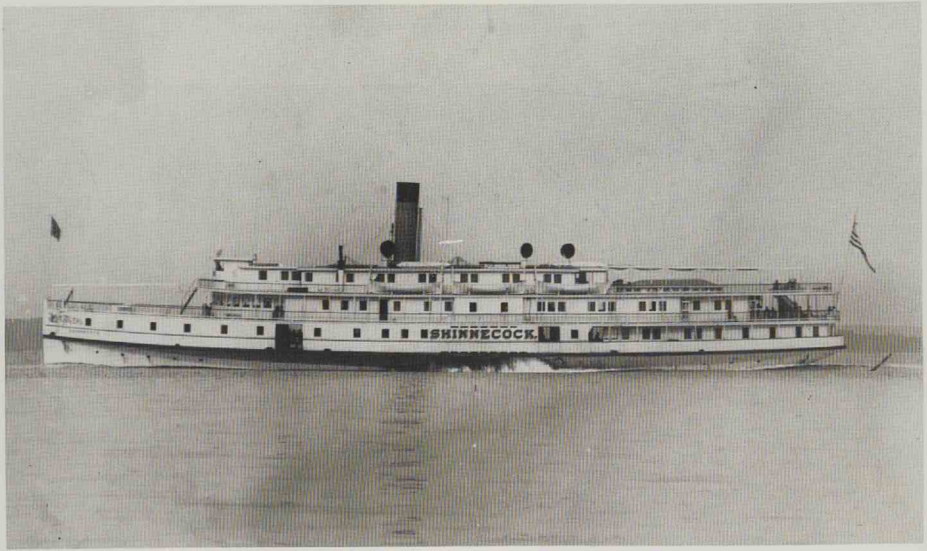
The steamer "Greenport", a wooden paddle-wheeler, bought by the LIRR in 1903. 1800 capacity, 106 staterooms. Built 1866 (H. O. Korten photo) (Top)
Iron steamer "Montauk", bought by the LIRR in 1905. Built 1891. (H. O. Korten photo) (Bottom)

Steel screw steamer "Wyandotte" at Greenport. Built 1892. (Top)
Wooden paddle-wheel steamer "Nantasket" at Greenport, Built 1878. (Bottom)



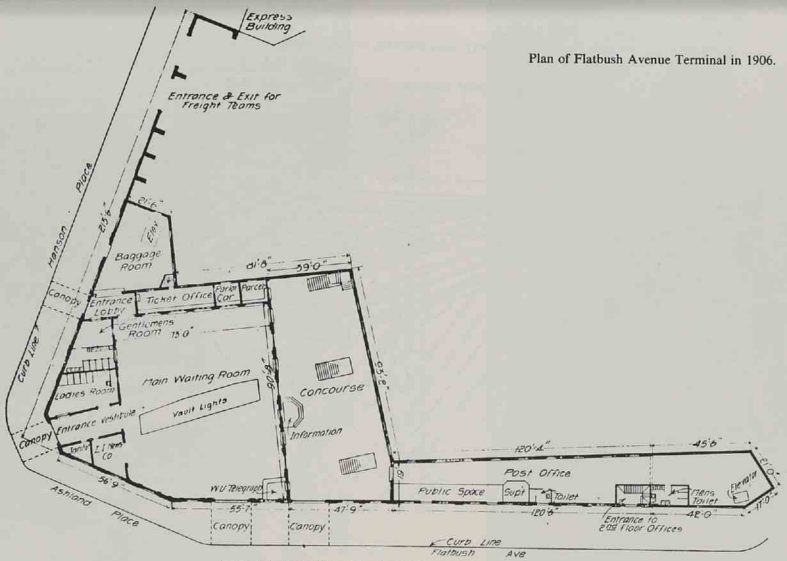


The marine shops at Whitestone Landing where all ferries were repaired. (Ziel photo)



Steel paddle-wheel steamer "Shinnecock" in Sag Harbor. Built 1896. (Ziel photo)

Plan of Flatbush Avenue Terminal in 1906.



Long Island Brooklyn Terminal—Plan of Passenger Station.

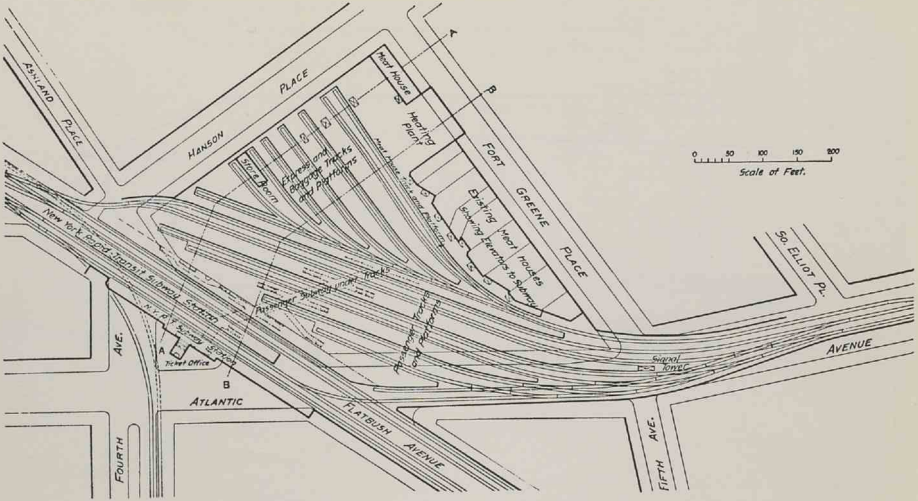
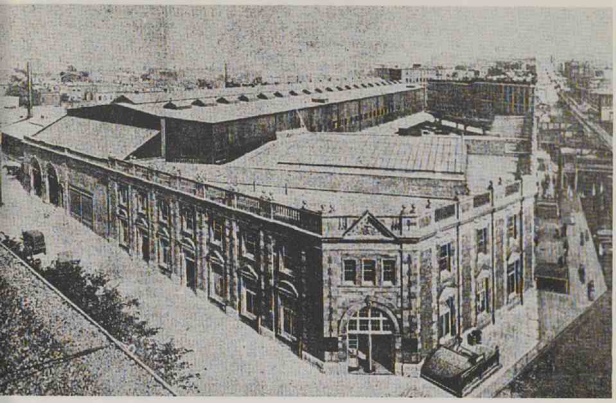
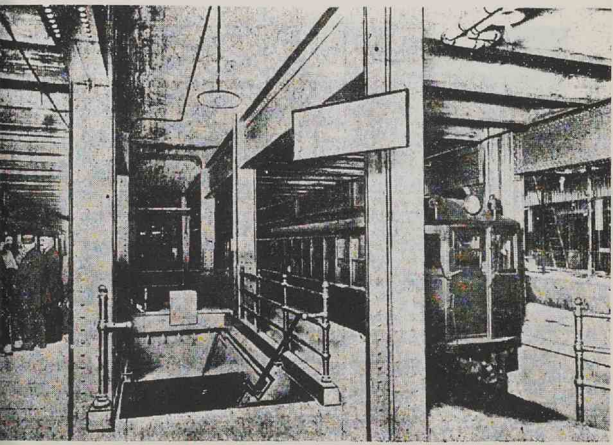


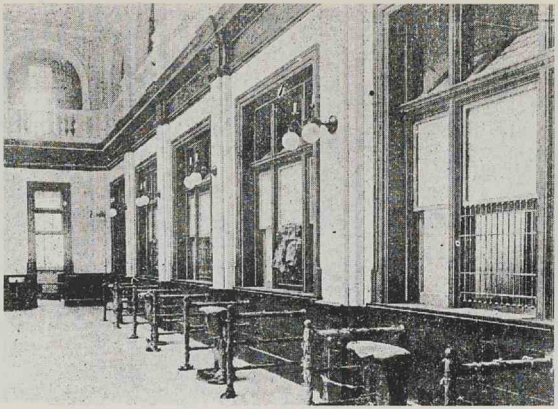
Fig. 1—General Plan, Flatbush Avenue Terminal.

Original planned track layout of Flatbush Avenue Terminal 1905. The track connection with the IRT was never installed.

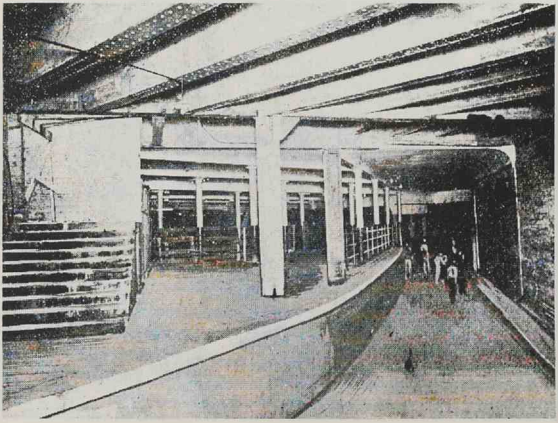


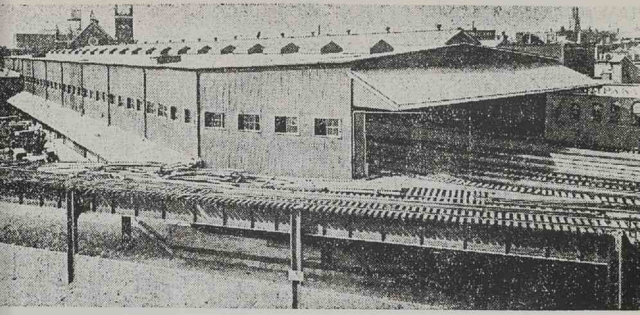
The best view ever taken of the Flatbush Avenue station, showing passenger station, baggage and freight station. "Eagle", July 1908. (Top)
MP-41 on Track #1 of Flatbush Avenue station- May 1905. (Bottom)



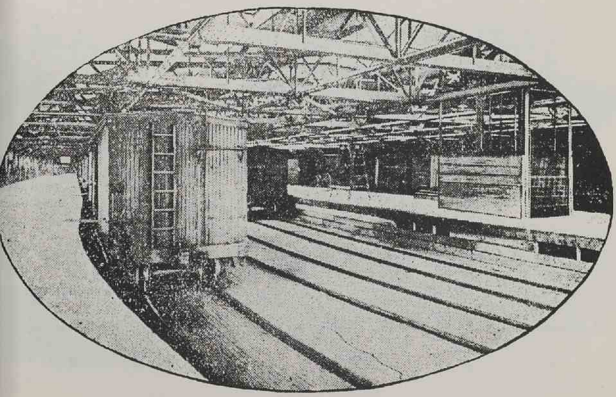


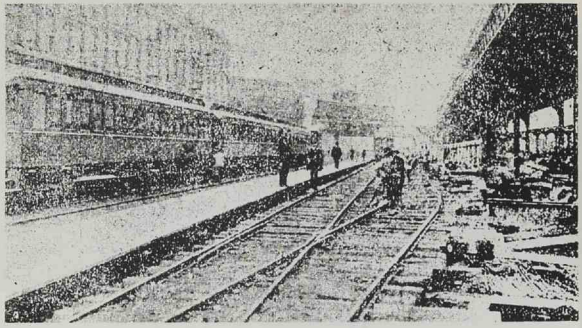
Ticket offices at Flatbush Avenue station in May 1908. ("Eagle") (Top)
The much-disputed IRT planned connection on May 1, 1908
("Eagle") (Bottom)



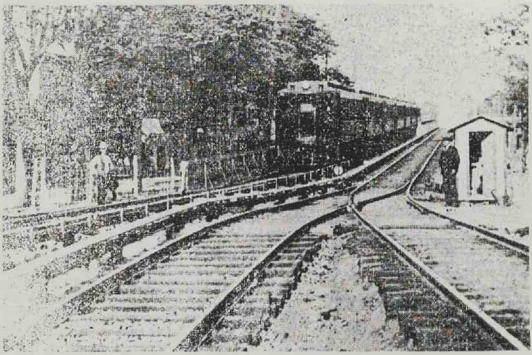


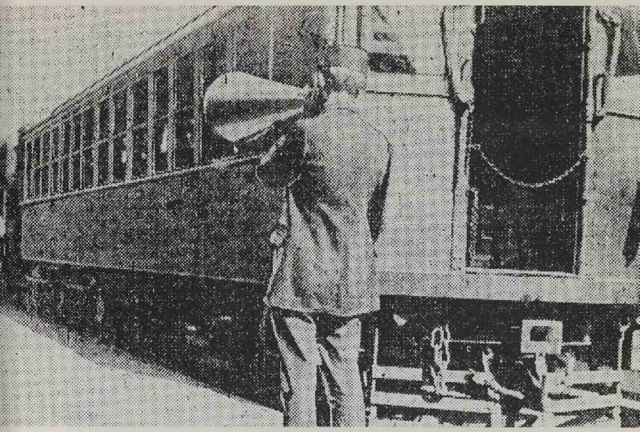
The freight depot built in 1908 with its track layout. ("Eagle") (Top)
Interior of the freight depot on July 17, 1908. ("Eagle") (Bottom)



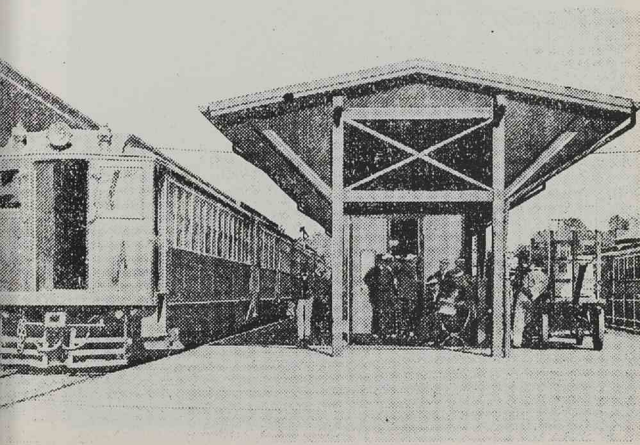


Only known view of the temporary station in Atlantic Avenue during the summer of 1905. ("Eagle") (Top)
The temporary switch at Bedford Ave. in 1905; electrics used the tunnel and steam trains ran on the surface (right). ("Eagle") photo. (Bottom)

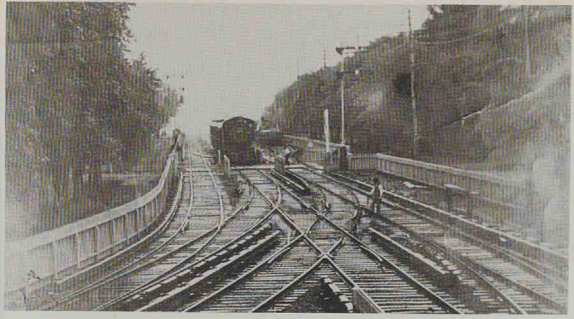




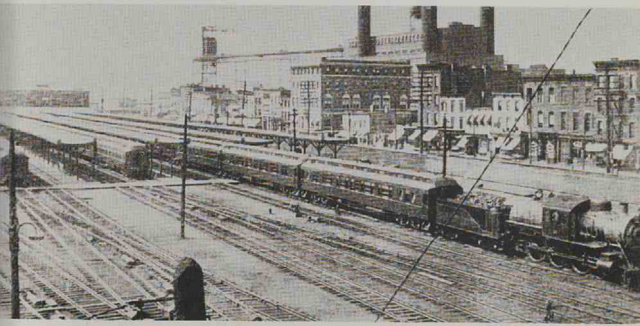
Calling out the trains at old Jamaica station in May 1908 (Top)
MP-41 at old Jamaica Station in September 1908 ("Eagle") (Bottom)

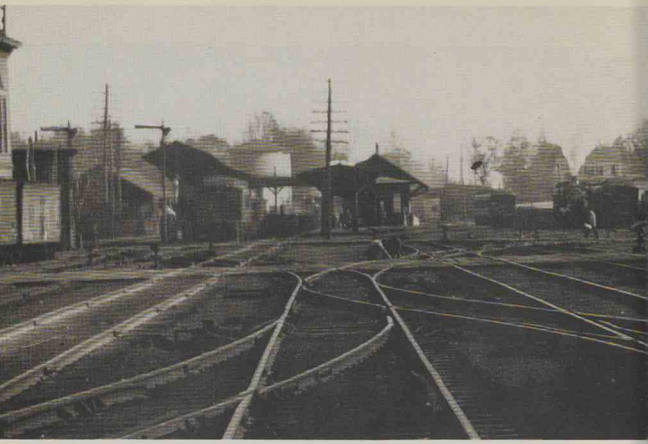


Looking east from East New York along Atlantic Avenue in March 1923.
Manhattan Beach tracks on right of el structure. (Dr. Rahilly photo)



Looking west from Woodhaven Junction in 1905. Rockaway branch-off on left. (Top)
Long Island City terminal in 1909. (Reuther's L.I. Views) (Bottom)





Layout of Jamaica Station looking east in Nov. 1902 (Ziel photo) (Top)
Layout of Jamaica Station after re-arrangement of tracks and platforms, March 1904. (Ziel photo) (Bottom)

out for a turning basin and over a half mile of the banks of the creek substantially bulkheaded. A handsome pressed brick office building 110 X 30 had been built near the canal as an executive office. The company had many other grandiose plans for huge warehouse buildings and apartment houses.

By mid-February 1908 the Terminal Company had excavated 125 acres of the high tableland. Although the company projected that the work of filling in the meadow could not be completed before the summer of 1909, officials thought that they could complete enough of the grading to lay a dozen or more tracks sufficient for the beginning of train operations by the end of the year if the Long Island R.R. so desired.

The city in mid-January 1908 approved the plans for the substructure of the largest of the diagonal viaducts across the Sunnyside yard, the Queens Boulevard crossing from Bridge Plaza to Van Dam Street. The total cost of this viaduct was $165,646 of which the city paid half and the railroad half. At the east end of the yard tract the railroad in March 1907 bought the fee to the roadbed fronting the estate of Eliza Van Alst and Cynthia A. Brown on Skillman Avenue between 35th and 38th Streets.

By May 1908 over 1000 men, 15 locomotives, scores of dirt car trains and four 70-ton steam shovels were working steadily and over a third of the immense job of grading down the hill and tableland from 50 to 75 feet above tide level and a mile and a half in length by half a mile in width was more than a third completed. The great hill, crowded at one time with houses and farms, was melting away like snow and over the entire area of 250 acres of swamp land lying south of Jackson Avenue and the Court House along the upper valley of Dutch Kills Creek, the land was rising to a height of 10 to 30 feet. Near Thomson Avenue not a vestige remained of the unsightly salt water marshes once covered at high tide with two or three feet of water upon which floated a green scum amid a wilderness of rushes. One of the big steam shovels had recently filled 900 dirt cars, 3 cubic yards capacity each, in 10 hours, breaking all records. These shovels lifted 12-ton boulders and rolled them along the ground ready for the blasters. The work of grading was scheduled to be completed in the winter of 1908–09 so as to permit the laying of 75 miles of track through the yard.

The viaducts were progressing fast. The concrete walls of all the abutments were from 18 to 20 feet thick at their base and 35 feet in

height. The bridge over Hunter's Point Avenue was the first; the contractors were the Naughton Company and Arthur McMillan. The next was Thomson Avenue, scheduled to be opened in October. This was then the central highway to inland Queens and already had an automobile traffic of 1000 cars a day. The next avenue east was Diagonal Street, now Queens Boulevard, connecting Bridge Plaza with Van Dam Street. This new street was 100 feet wide and 1000 feet long, and supported by 18 concrete piers and two abutments. 35th Street (old Honeywell St.) was next, again with a 1000 foot long bridge. 39th Street (old Harold Ave.) crossed Sunnyside Yard partly on a viaduct supported by pillars and partly on an earth embankment with natural slope sides. 43rd St. (old Laurel Hill Ave.) and 48th Street went under the Long Island R.R. and these bridges were to be built wide enough for ten tracks. Through the center of the Sunnyside Yard at the westerly end, rows of concrete piers were being built upon which the freight tracks were to be laid to connect the old North Side riverfront yard at the foot of 48th Street (old 6th St.) with the Montauk Division.

Between June and September 1908 the Degnon Company built the new permanent embankment for Long Island R.R. trains through the Sunnyside Yards. The structure started west of Hunter's Point Avenue with the tracks running beneath the new bridge, also under Thomson Avenue. The embankment, some 18 to 20 feet high, continued through the yards to 48th Street where it began to descend, reaching grade at 58th Street. On Sept. 12, 1908, the Long Island R.R. began running all its Main Line and North Side trains over this new four-track embankment. The removal of the tracks from the old surface route gave the Degnon Company the opportunity to go ahead with the work of grading that section of the Sunnyside Yard up to then occupied by the Long Island road.

By September 1908 a million and a half cubic yards of earth had been moved and used to fill in low ground resulting in a noticeable change in the topography of Long Island City. About a million yards more remained to be moved, the job to be completed in the summer of 1909. All the abutments for the eight viaducts were completed as were the elevated ramps to carry the freight line over the passenger yards. All were massively built and as monumental as the Penn Station itself. The floors of the viaducts, 100 feet in the case of Queens Boulevard and Thomson Avenue and 80 feet in the case of the others, were thoroughly waterproofed. There were six plies of asphaltum paper embedded in asphalt on top of a layer of concrete and on top of these was laid a concrete

pavement. The steel girders were also to be protected from all water coming from overhead.

An important feature of the work at Sunnyside Yard was the installation of an adequate drainage system for the whole 400 acres. The big central main was 6 X 9 feet and the outflow carried through the 40th Avenue sewer to the East River. Every possible precaution was taken to prevent a drop of water from getting into the tunnels. The cost of this drainage system came to over $200,000.

On Dec. 19, 1908 the Thomson Avenue viaduct was officially opened to traffic; 30 tracks of the Pennsylvania and Long Island Railroads lay 38 feet below. The viaduct over this one important street had cost $500,000, the expense borne equally by the city and the railroad.

The year 1909 was given over largely to completing the long and expensive bridges over the Sunnyside Yard at Diagonal Street and the 35th and 39th Street bridges. The structures themselves were built at the cost of the railroad and the city contributed only the approaches to them on either side. Over the summer the tracklayers were at work rapidly completing the network of tracks to carry the trains coming into the yard. As of September 1909 the tracks had been laid as far as Diagonal Street. Another task was the installation of 10 miles of iron fences all around the yards to keep out intruders.

In June 1909 the Pennsylvania Railroad gave orders for the removal of the entire commissary department from Jersey City to the Sunnyside Yard so that all the dining room cars on the trunk lines could be supplied with ice, food, table linen, wines and other necessary supplies out of the Long Island City storehouses. An army of car cleaners, clerks, trackmen, inspectors and repairmen were transferred from Jersey or newly hired locally to staff the facilities.

To accommodate the Jersey-based workers, the Pennsylvania ran a work train daily from Jersey City to Long Island City and return; the train was to be continued for a year or two to give the employees sufficient time to relocate, after which it would be discontinued. The railroad in June 1911 did make one attempt to abolish the train but because of resultant hardship, the order was rescinded in two weeks.

The final work to be done in 1910 was the completion of the Queens Boulevard viaduct. By mid-1910 the bridge was just about finished and in June a wrecking company began removing the buildings facing on Jackson Avenue blocking access to the bridge from Queensborough Bridge Plaza. When this was completed, the Atlantic Construction

Company took over the creation of a roadway. The length of the highway was 1830 feet from Jackson Avenue to Van Dam Street and 1030 feet of this consisted of bridge over the network of tracks. The graded section was 800 feet in length and 100 feet in width, 100 feet from Jackson Avenue to the bridge abutment and 700 feet from the southerly abutment to Van Dam Street. The contract for grading and curbing came to $16,763 and the work had to be done in ten days. The Barber Asphalt Company got the contract for the paving for $19,994 and its work had to be done in 30 days.

By mid-October the great Queens Boulevard bridge was all completed and ready for use and there was much grumbling among automobilists at its continued closure. Even at this early date—October 1910—5000 cars passed this point on Queens Boulevard in the 12 hours of daylight! An inquiry disclosed the fact that the Pennsylvania Railroad refused to open the structure until the city quit-claimed to the railroad the right of way over all the streets now occupied by the company's tracks in the yard, a part of the agreement by which the railroad had agreed to pay half the cost of the great viaduct. Not until December 28, 1910 did the city finally get around to deeding title to the fifty-odd streets to the railroad. On receipt of the papers the railroad on December 29 threw open the viaduct to traffic.

On Nov. 23, 1910 the Pennsylvania R.R. for the first time turned on the lighting system in the Sunnyside Yard. Over a thousand high-power lights illuminated the vast two-mile stretch from Van Alst Avenue to Woodside. As operations in the yard had to be conducted at night as busily as in the daytime, the railroad found it necessary to floodlight the whole area.

The Pennsylvania Railroad came out with its long-awaited announcement of the opening of the Penn Station and Sunnyside Yard together as of November 27th, the day the winter train schedule went into effect. The following morning Long Island Rail Road commuters rolling through the Sunnyside Yards rubbed their eyes in wonder as they saw over 300 cars, mostly Pullman coaches, standing in long lines and being revictualed and provided with new linen and table ware. Other trains were moving around the loop tracks on their way back to the big terminal station in New York. Officials confirmed that many of the cars were from Chicago, St. Louis, Jacksonville, and New Orleans. The regular daily schedule called for 125 trains of 8 to 10 cars a day. Sunnyside Yard had at last after nine years come into its own.

CHAPTER IX

The Jamaica Grade Elimination

AS early as 1903, when the railroad devoted a great deal of time and money to improving and widening the right of way through Jamaica, the engineers and officials of the road realized that this was only a temporary alleviation of the space problem and that in the not-too-distant future, the work would have to be redone on a far larger scale. Some intimation of this was given to the public as early as 1905 on the occasion of hearings before the State Railroad Commission relative to the possibility of depressing 150th Street (Rockaway Rd.) and 158th St. (Church St.) under the tracks at Jamaica Station. Chief Engineer Savage of the Long Island Rail Road testified that his office was just then embarking on plans to raise the entire network of tracks in the Jamaica Yard for 100 feet on either side of the station to a height of several feet above grade to meet the changed conditions that would exist when Jamaica became the steam terminal and all lines west would become electrically operated rapid transit lines.

By June 1908 these plans had ripened into full growth: a rearrangement of the entire line in the Jamaica Yards and all tracks elevated from Van Wyck Avenue through Jamaica to Rockaway Junction station. All grade crossings would be abolished and a big 17-track transfer station and office building would be built. This was a considerable advance over the more modest intentions of 1905, but by this time the Sunnyside Yard was well under way and the Penn Tunnels were daily coming closer to reality.

The immense size of this project and the vast expense entailed involved some very lengthy and complicated bargaining with the City of New York and agreements with the city's highway engineers. These negotiations culminated on July 1, 1910 in an agreement whereby the Long Island Rail Road, in consideration of the payment of $450,000 by the city, agreed to abolish all grade crossings in the Winfield-Woodside area, to elevate the Main Line and Montauk Division tracks through Richmond Hill and the Jamaica Yard out as far as 160th Street, and on

the Atlantic Division from Morris Park to South Street. So vast a commitment called for the expenditure of millions of dollars, and all this just after the expense of the Glendale and Maple Grove cut-offs that had already cost the railroad $3,000,000. It would be the biggest engineering project ever undertaken by the Long Island Rail Road and would have the happy result of eliminating 18 or 20 of the most dangerous grade crossings in Queens County. In the Jamaica area 12 or 13 tracks would be elevated a distance of nearly two miles, and Van Wyck Avenue, 150th Street and Sutphin Boulevard would be carried under the tracks. In Jamaica a new marginal street, Archer Avenue, would be created on the north side of the tracks, and on the south side, Beaver Street, would be relocated to become the south marginal street.

On Tuesday, July 26, 1910 the great work of elevation of the terminal yards and station, a work second only to the Sunnyside Yards in importance and character, began at Van Wyck Avenue with the start of a two track steel bridge to carry the tracks over Van Wyck Blvd. On Wednesday, July 27th, contractors began the excavations for the foundations for the new Jamaica station which was to be located in what was then the yards about 1500 feet west of the existing station. The end of the station would front on Sutphin Blvd., a new street which would be created out of Carlton Street between Hillside and Jamaica Avenues, Guilford Street south of the railroad and Jay Street plus Rockaway Turnpike in South Jamaica.

The contractors were under orders to build and complete first a new station building 66 X 176 facing Sutphin Blvd. to be four stories at first but expansible to 12 stories. The work was to be complete and the station building ready for occupancy by Dec. 1, 1910. The material of the building was to be marble and polished terra cotta and was to contain 1,400,000 cu. ft. of space. On Dec. 1, the operating and engineering staff of the railroad were to be sent from Long Island City into this new headquarters.

The whole Jamaica elevation project called for 1,800,000 cu. yards of earth embankment from 159th (Prospect Street) on the east to Morris Park on the west; the use of 48,700 cu. yds. of concrete; utilizing 3850 tons of steel; erecting 10,000 feet of train sheds, laying 78,000 sq. ft. of bridge flooring, 185,000 sq. ft. of pavement, 164,000 feet of pipe, 214,000 ft. of new track and 233 switches.

During August and September the two-track bridge over Van Wyck Blvd. was erected. In October a rising groundswell of resentment arose in Jamaica at the prospect of closing 151st Street and the erection of a

Chinese wall dividing Jamaica in two. This feeling found expression in a big indignation meeting on October 9th at which the railroad was roundly denounced. Many speakers attacked the railroad for a series of broken promises in the past and urged the borough officials to open new streets for the convenience of the public. To defuse some of the objections of the residents of Jamaica and compromise some of the conflicting views of the city and the railroad engineers, Borough President Gresser of Queens appointed a committee that struggled hard to protect the interests of the people while considering the operating necessities of the railroad.

One of the biggest parts of the Jamaica project was the importation of earth to fill in the immense area to be elevated. The Long Island Rail Road decided to kill two birds with one stone by straightening and grading down the crooked right of way between Syosset and Huntington and to haul this excavated dirt 22 miles to Jamaica. Steam shovels were set to work at Woodbury near Syosset and trains of dump cars shuttled back and forth to deliver the almost two million cu. yds. of fill needed. By November 1910, 3000 tons or 70 carloads a day were rolling in. By January 1, 1911, 120 gondola cars were being used, 20 cars to a locomotive and two to three round trips per day made. Each car held 23 cu. yds or about 2800 lbs. to the yard or nearly 45 tons per car. Even with this massive movement, it was estimated that it would take two years to complete the job.

After all, there were four tracks of the Main Line, two tracks of the Montauk Division and four tracks of the Atlantic Division in addition to 16 or 18 siding tracks, all of them slated to be elevated 18 to 35 feet. In the extensive car yard being laid out just east of the Morris Park shops, where all the steam trains would in future end their runs, the tracks also had to be elevated from 18 to 20 feet. Under these circumstances two million cu. yds. of earth seemed none too much.

By the end of 1910 the bridge carrying the tracks of the Main Line over Van Wyck Avenue had been completed and trains began running regularly over the structure. During the same month of November two massive concrete abutments, 35 feet high and each 200 feet in length, were almost completed. These were to carry the Main Line eastbound and Montauk Division tracks over the Atlantic Avenue Division. Another steel bridge would carry the tracks over Van Wyck Avenue for its new width of 100 feet, the width of this high bridge being 200 feet.

In March 1911 the committee convened by Borough President Gresser surprised both the city and the railroad by recommending four

additional underpasses under the Jamaica tracks besides those already planned: these were at 143rd Street (old Foley Ave.), 130th Street (old Maure Ave.), 89th Avenue (old Ridgewood Ave.) and 84th Street (old St. Anne's Ave.) These four additional openings would add about $500,000 to the cost of the work. The railroad was willing, under the General Railroad Law, to pay half the cost if the city would pay the other half.

Only after the railroad had already determined the site of the new Jamaica Station and made detailed plans did it petition the public Service Commission in July 1911 for permission to build on the new site. Notice of a public hearing was posted in the Flushing newspaper instead of in Jamaica and the printed notice of the application and hearing was posted in an obscure corner of the Jamaica station. There was good reason for this hesitation to advertise the change of site. The old station was in the heart of Jamaica at 158-159-160th Streets and the railroad was now proposing to shift the depot 1790 feet west, no less than a third of a mile away. What was the motive for imposing this inconvenience on the village? One strong motive was land values. The residents of Jamaica had been promised a fine new station since 1878 and landowners who held property adjoining the station had been anticipating for years a rich profit when the railroad took the land it would have to have. Acquiring the hundreds of plots needed in the heart of the village would have proved a very expensive undertaking. Another strong deterrent to expansion on the old site was the presence of Prospect Cemetery directly adjoining the railroad on the south, the town's oldest burying ground and used by many of the first families. Moving this cemetery would be unthinkable. Even if the railroad managed to close a part of Beaver Street on its south border, there would still be space for perhaps 10 tracks at the most.

The new station site had the attraction of low land costs, room for unlimited expansion and closeness to the junction of the Main Line, Montauk and Atlantic Divisions; most of the land had been bought and paid for ten years before. The selection of the new site aroused considerable indignation in Jamaica particularly among the business community who saw the importance of their stores, saloons and hotels adjacent to the station threatened. The traveling public felt outraged as well at the prospect of a long walk, particularly in winter. It became increasingly clear as the work progressed that some sort of compromise would have to be worked out.

On July 25, 1911 the Long Island Rail Road and the City of New York signed a final agreement as to the share of the expense borne by the city in the Jamaica grade elimination because of the increased number of highway crossings in Jamaica and Richmond Hill. The entire work would come to $3,000,000 and the city would pay $575,000. The agreement covered these sixteen crossings:

Sutphin Boulevard old Guilford Street	Spanned by bridge 180 ft. long and 250 ft. width
143rd Street old Foley Avenue	32 foot arch bridge, 540 ft. long
150th Street old Rockaway Road	10 track girder bridge over 80 foot roadway
158th Street old Church Street	32 foot span, 210 feet long
Beaver Street (Atlantic Div.)	two-track girder bridge over 60 foot roadway
Liberty Avenue (Atlantic Div.) (old Catharine Street)	two track girder bridge over 80 foot roadway
South Street (Atlantic Div.)	two-track girder bridge over 80 foot roadway
84th Street (Montauk Div.) old St. Anne's Ave.	two-track girder bridge over 60 foot roadway
85th Avenue (Montauk Div.) old Ashland Ave.	two-track girder bridge over 60 ft. roadway
117th Street (Montauk Div.) Briggs Avenue	two-track girder bridge over 100 ft. roadway
Lefferts Avenue (Montauk Div.)	two-track bridge over 60 foot road
Jamaica Avenue (Montauk Main)	two bridges, one two-track diagonal of 100 feet and one four-track of 80 feet
89th Avenue (Montauk Div.) old Ridgewood Avenue	two bridges—one over 80 ft. road one diagonal 150 ft. long

130th Street (Montauk Div.) old Maure Avenue	32-foot cement arch bridge, 510 ft. long
Van Wyck Avenue	three separate bridges on 2 levels carrying 13 tracks over 100 ft. rd.

During July 1911 one of the two big steam shovels was taken away from Cold Spring Harbor and returned to Jamaica to handle the mammoth task of spreading around the two million cu. yds. of earth. The work then being done at Jamaica was the most gigantic work in the way of grade crossing elimination ever carried out by a single line of railroad in the United States if not in the world. A great plateau from 1½ to 2 miles in length and from 100 to 500 feet in width was being raised to a height of 30 or 40 feet. At the same time massive abutments many feet thick were going up to support steel girder bridges or broad concrete arches.

It was in the midst of this excellent progress at Jamaica that the Sherwood trouble began. James K. O. Sherwood owned an irregular strip of land 90 X 225 or 15½ city lots on the west side of Van Wyck Avenue and just south of the railroad tracks. The railroad, in the course of acquiring property to expand and elevate its tracks, routinely made an offer to Sherwood as it did to all others, but Sherwood refused to sell out. Lots in the neighborhood had been going for $500 each and the railroad had offered $7000 but Sherwood insisted on $20,000. When negotiations proved fruitless, the railroad, on Aug. 19, 1909, began a suit to acquire the property. Surprisingly, the Supreme Court in November 1910 denied a motion for an order to condemn the property whereupon the railroad carried an appeal to the Appellate Division.

Up to December 1911 the railroad had been working for a year and a half as far as was possible within its own property, but operations had now reached the edge of the Sherwood tract and work would have to stop since the necessary land was right in the heart of the improvement. In December 1911 the appellate Division confirmed the original verdict of the Supreme Court, claiming that the new layout of the company was in effect a change of route, and in this case it would be necessary for the company to get a franchise from the Board of Aldermen for the new route passed by an affirmative vote of two-thirds of the members. Also, the court claimed the necessity for acquiring the Sherwood land had not been shown.

This second adverse verdict in a row left the Long Island Rail Road with only one course left—take the case to the Court of Appeals. The seriousness of the legal situation confronting the railroad spurred the road to an extraordinary effort to sell its case. President Peters made the point that this was a vital improvement affecting three divisions of the road and that there were over 450 trains a day that passed through here; that a very large sum of money had already been spent on the project and that it had reached the point of being irreversible now; that the present temporary condition of affairs in the Jamaica Yard was working much harm to the entire island and if prolonged would depreciate property to the extent of millions of dollars. Train service had to be curtailed, trains delayed and the running time lengthened and Jamaica business disrupted by the construction. Meanwhile, heavily traveled streets were continuing to produce grade crossing casualties daily despite gates and flagmen. Mr. Peters said that the railroad had bought 284 lots at a cost of $257,314 for the Jamaica Elimination and that it had all but 19 lots aside from the Sherwood property. He emphasized that the Sherwood property was the key to the entire project because upon it had to be placed a large portion of the westerly abutments and walls to support the Van Wyck bridge. Over it would run two eastbound and two westbound Atlantic Ave. Div. tracks, two Montauk Div. tracks, two eastbound Main Line tracks, one yard track and a track connecting with the Montauk Div. Without this property the railroad's plans for the elimination of the Van Wyck Avenue grade crossing must be absolutely abandoned and it might be said that the inability to secure this property would absolutely ruin the railroad's plan for its Jamaica Improvement.

The railroad was heartened by the fact that the Appellate Division's decision had been a narrow one of 3 to 2; the dissenting judges had written opinions stating that the change of route issue was erroneous and a misconstruction of the statute and that the improvement itself demonstrated a rule of reasonable necessity. While the decision of the Court of Appeals was awaited, the railroad moved its center of operations eastward to the site of the new Jamaica station. In February 1912 application was made to the Building Bureau for permits for the erection of the passenger platforms. These, according to the plans, would be five in number, each 991 X 22, made of concrete and iron, and would cost $15,000 each. Construction was slated to begin at once.

At this point a new obstruction appeared in the form of J. & F. Adikes Company of Jamaica, hay, grain and feed merchants. Their main plant and mill faced on Jamaica Avenue at 148th-149th Streets

and the firm had a siding running to this mill on which at times as many as 40 cars stood. The railroad had informed the Messrs. Adikes that there would be no sidings on the north side once the embankments had been built, and had offered the Adikes a strip of land on the south side plus the cost of removal. The railroad proposed to condemn the siding area and had gone into court for the appointment of commissioners but Adikes bitterly contested the move as virtual confiscation of their business.

In the meantime, the Court of Appeals, on March 19, 1912 handed down its decision on the Sherwood case; the verdicts of the circuit court and the Appellate Division were reversed as to the contention that the improvement constituted a change of route, but the railroad was directed to start a new action that should determine the issue of necessity alone.

The favorable verdict of the Court of Appeals was greeted with vast relief by the Long Island Rail Road, the Jamaica residents and patrons of the railroad in general. The railroad after six months of forced inaction now returned to the prosecution of the embankment and bridge work and to the building of the huge new passenger station. Funds enough were on hand from the State, the city and the Pennsylvania to push the work and to complete it in another year's time.

On April 23, 1912 a hearing was held in Special Term for a certificate of necessity for acquiring the Sherwood lots. Chief Engineer Savage was cross-examined all day on the necessity of taking the property. The Sherwood lawyers, ever alert to discover a delaying pretext, objected that the modifications of the original plans by the addition of more street openings had been approved by the city but not by the Public Service Commission and that their formal consent would be necessary. Sherwood attempted to delay the Public Service hearings with requests for postponements, pleading urgent engagements elsewhere, but the court would not entertain them. On June 14, 1912, the Public Service Commission gave its formal approval to the amended plan.

James Sherwood was finally disposed of on February 17, 1913 when the Supreme Court awarded him $30,917.25 for his property, a far cry from the $70,000 he had originally demanded. As a consolation the justice awarded him $1000 for legal expenses incurred by reason of the long drawn-out fight.

On June 13, 1912 the Long Island Rail Road let a contract to the Northeastern Construction Company to build the new Jamaica station building. The foundation for the building had already been finished. The

former freight yard then fronting on Jamaica Avenue and the carpenter's shop and express stable were all to be moved by Sept. 15th and were to be relocated on the south side of the railroad fronting on Van Wyck Avenue. The railroad now deeded the roadbed of Sutphin Blvd. to the city as a new wide street that would give access to the new station from Jamaica Avenue.

On the second and third floors of the large new station would be quartered 180 officers and clerks: the general superintendent, the superintendent, chief engineer, engineer of maintenance & way, bridge engineer, superintendent of police, trainmaster, dispatcher, telegraph operator, draughtsman, and field engineer.

On Aug. 1, 1912 the court gave the Long Island Rail Road the certificate of necessity and commissioners in condemnation gave the company the right to condemn the Sherwood property. The railroad lost not a moment in moving men onto the tract that had created three years of expensive litigation.

It is easy to imagine that the mere size of this great project created a huge pay roll and a sizeable cash outlay every week. Although the city had agreed to pay its share for the expenses of the crossings eliminations, months went by without any check from the municipality and in October the company was compelled to commence suit in the Supreme Court for a mandamus proceeding to compel the city to pay $375,000 as its share of the grade crossing elimination to date. The city was to make payments as the improvement progressed, one being due July 1911 and another in Dec. 1911. The railroad explained in court that the city had ignored requests for payment. The comptroller justified his delay by claiming that two questions had arisen: one was the power of the city authorities to make any such contract with the railroad in the absence of any order by the Public Service Commission as is required where a change of grade is made under the General Railroad Law. The other question was whether the franchises were obtained under the legal methods of procedure calling for public hearings after advertisement. Both of these technicalities would have to be adjudicated favorably by the courts before the comptroller would feel authorized to disburse any money.

Financial problems were not allowed to stand in the way of pushing the improvement, however. The railroad was using part of the yard at Morris Park for the dumping of hundreds of thousands of cu. yds. of soil from the Cold Spring Harbor hills. By the end of December 1912 trains were already running over the first and second decks of the three-

level bridge at Van Wyck Avenue. A temporary trestle had been built over 150th Street along the southern edge of the new station to connect the existing tracks at 159th Street (Prospect) with the new tracks entering the new station. This was made necessary because the entire old station site (Twombly Place to 158th Street) and the yard west of it (158th-148th Sts.) was to be obliterated under tons of dirt and elevated to the top of the new 20-foot high retaining walls. The bridge over the new Sutphin Blvd. was also almost completed as were the arched bridges over 130th Street (Maure Ave.) and 143rd Street (Foley Ave.)

By the end of the year 1912 the new Jamaica station was far advanced. The five immense platforms, each 1000 X 22 were in position with individual sheds and waiting rooms. Each station track was long enough to hold 16 cars so that all five could accommodate 128 cars at once. In the new transfer station, as the railroad termed it, there would be 12 tracks: 8 for passenger trains, 2 for freight and two for the engines and cars to run around the station. The two northside platforms were designed for westbound movements, where passengers from steam trains would walk across the platform and transfer to electric trains for New York and Brooklyn. The two southbound platforms would serve the same purpose for eastbound traffic. The center platform was reserved exclusively for the Atlantic Avenue local service. It was estimated that if no hold-ups developed, the new station could be opened in February or March 1913 at the latest.

On Oct. 3, 1912 the Board of Estimate approved plans for the 150th Street bridge and the tunnel carrying 158th Street under the railroad yard. The bridge over 150th Street on which work began immediately consisted of four separate plate girder structures carrying 10 tracks. The streets in the vicinity had not yet been incorporated upon the city plan but the drawings conformed with the tentative map approved. The bridge was designed to span an 80 foot street with intermediate curb columns; a minimum clearance of 14 feet was provided; the deck was to be of solid concrete. The tunnel along the line of 158th Street was 211 feet long and 32 feet wide with a roadway width of 20 feet.

Because of the extreme unhappiness of the people of Jamaica with the removal of the main station a third of a mile away, the Long Island Rail Road in January 1913 filed plans for a new rapid transit station between New York Avenue and Union Hall Street to be served by local trains. The plans called for a small brick station to cost $4500.

At the end of February 1913 the railroad put up a large notice in the trains:

> "The new Long Island Rail Road station at Jamaica will be opened on Sunday, March 9. On this date the main station at Jamaica, also the station known as Jamaica (Beaver Street) will be abandoned. A number of electric trains will make a stop at Jamaica (Union Hall Street) affording an additional accommodation for residents of Jamaica."

On Sunday March 9, 1913 the huge new station opened at 4:47 A.M. when the Speonk newspaper train became the first to pass through. A Sunday had deliberately been chosen to create the least possible confusion. Crowds of people turned out from the village to look over the platforms and watch the dispatching of trains. In the station building at the street level only the waiting room at the east end was thrown open to the public. The rest of the building was still unfinished and the upper floors could not be occupied by the engineering dept. and other offices for several weeks to come.

Shortly after midnight, after the sight-seeing crowds had gone home, a gang of more than 200 laborers arrived at the old station and began tearing down the platform sheds and waiting room that had served passengers for more than 40 years. A number of newsboys eagerly watched for the tearing up of the steps leading to the old waiting room and reaped a rich harvest of pennies, nickels and quarters which had accumulated through the years under the steps where they had been dropped by hurrying travelers.

The new station, in point of fact, opened six months before the completion of the elevation work and was actually forced by the necessity of getting the operating department out of the way of the engineering department carrying on the construction. The project had reached the point where it was necessary to begin burying the existing yard around 148th Street over which trains were then running at grade. While this was going on, it would be necessary to run all eastbound and westbound trains temporarily over two tracks that came down from Sutphin Blvd. on the southern edge of the embankment to the surface by an incline and reached grade at the signal tower at the east end of the old station. This would unfortunately cause congestion and delay for the next six months but the final result would justify the temporary inconvenience. It would also mean that no fuller service could be given owing to the limited number of trains that could be run over the two tracks. During the construction (March to August 1913) the entire freight service of the island bypassed Jamaica by running from Long Island City over the

Glendale Cutoff and bay trestle to the Rockaways and up to the peninsula to Valley Stream and Mineola.

Four more months of laborious construction passed; then, on July 1, 1913 two additional platforms were opened for traffic, bringing all five into use. Trains began to run on the new permanent tracks leading straight into the station from the east, and the two curved tracks over which trains had for several months detoured to the south so as to be out of the way of the work of building the embankment in front of the old station were abandoned.

Agitation for better service in the old section of Jamaica continued. As early as Mar. 20th, business men and commuters organized to protest the skimpy Union Hall Street service and the narrow platforms. General Manager McCrae freely admitted the service was bad but insisted nothing could be done at the moment with only two tracks out of a planned eight operable. In May 1913 business men demanded that the Union Hall Street station be designated as "Jamaica" and that the new monster station be called "Jamaica Transfer" or some other suitable name. In September, a number of Jamaica citizens went before the Public Service Commission to complain about the lack of a station in the center of population. The group urged that a new station be opened at South Street on the Atlantic Branch because South Jamaicans had to walk so far to get a train; it was 7900 ft. between the new station and Cedar Manor. Failing this, they asked that old Beaver Street station on the Atlantic Branch be reopened to the people. The railroad representatives announced themselves as unalterably opposed to this and asked for a postponement to gather evidence.

In November 1913 another effort was made before the Public Service Commission. The railroad in March had built a temporary station at Union Hall Street; the citizens complained that although 90% of the residents of Jamaica village used this station, none of the steam trains stopped there; also that one-quarter of the local trains from Flatbush Avenue stopped at the main station and did not run to Union Hall Street and that express trains from the city did not stop there. Finally, there were no facilities for baggage at the Union Hall Street station nor an adequate waiting room.

Although the new Jamaica Station had opened in March, work on the massive embankments continued slowly all during 1913. By August the 11 tracks for passenger service had been finished and were in use, but the three tracks for freight use were still not ready. Two grade crossings were still being worked on: South Street and Liberty Avenue on the

Atlantic Branch. The arch for 143rd Street had been completed but the Adikes suit preventing the removal of the freight spur referred to earlier prevented the opening of the avenue through to Jamaica Avenue and access to the station platform by that thoroughfare. Not till 1914 was this accomplished.

The controversy over adequate service to the old part of Jamaica at Union Hall Street station was solved in January 1914 when the Public Service Commission ordered the road to stop 15 westbound express trains, nine eastbound express trains and 12 local trains each way beginning on Feb. 2, 1914. The railroad complied but served notice of an appeal, claiming that this would cause too much congestion in the Jamaica yard. The 12 local trains were then run through to Hillside station (old Rockaway Junction.) As a result of rehearing for the benefit of the railroad, the Public Service Commission modified its order, directing the railroad to stop 13 westbound expresses and 9 eastbound expresses, effective Mar. 18, 1914. After this, we hear of no further complaints.

CHAPTER X

The North Side Elevation and Electrification

THE possibility of upgrading the North Shore Branch was first considered in 1907 & 1908 by the management of the Long Island Rail Road but the huge outlays of funds on other improvements elsewhere postponed any realization of the plans. In February of 1908 P. H. Woodward, secretary to Pres. Peters disclosed that the Long Island Rail Road was making active preparations for the practical rebuilding of the North Shore Division into a double-track road and its conversion into a third-rail electric system. He estimated that the work would cost three million dollars and would entail the laying of 30 miles of track from Long Island City through Flushing, College Point, Malba, Whitestone and Bayside to Port Washington. There had been some hesitation up to now to commit so much money to the North Shore Branch, but the passenger traffic was becoming sufficient to justify such an outlay. Transportation records since the first of the year 1909 showed a gain of 700 commuters, an increase of 11% over 1908 and overall traffic on the branch since January 1908 had increased about 20%.

During 1909 the Long Island Rail Road concentrated all its energies on four-tracking the Main Line, the Maple Grove realignment, the Glendale Cut-off and the electrification from the tunnel entrence to Jamaica. This work alone affected the North Side for it caused Woodside to become a transfer station for all North Side riders after the tunnels opened in September 1910. The steam trains from Port Washington terminated their runs at Woodside and all passengers changed to the electrics for the ride to Penn Station.

During 1909 the railroad selected the site for a large new sub-station at Winfield 123 X 50 and to cost $38,000; plans for the bldg. were approved by the city in late Oct. 1909, and construction was slated to begin shortly. The new station would supply power for the 14 miles of tracks from Winfield Junction to Port Washington and the 5 miles from Whitestone Junction to Whitestone Landing.

With the coming of spring in 1910 the railroad began intensive work along the middle stretches of the North Shore Branch in preparing for

double tracking the now inadequate single-track road. Beginning May 1, railroad gangs went to work on the high banks just east of Broadway station, cut them down and began building a retaining wall. At different points between Broadway and the station at Auburndale, the cut was excavated and widened to the desired width and the loose earth carted up the line for use as fill. From a point east of Auburndale station and for the distance of a mile, the grading work was rapidly completed. Between Bayside station and the beginning of the meadows very little had to be done because the cut there was almost the required width. Farther east in the deep cut between Douglaston station and Little Neck, steam shovels were set to work for weeks on end, cutting out tons of earth and sand, and large trees. Again from the Little Neck meadows to Great Neck the cut required little work to bring it to the requisite width. Great Neck was intended to be the end of the double tracking, with Manhasset, Plandome and Port Washington remaining single-tracked.

West of Flushing no physical work was done as yet but the railroad busied itself in purchasing adjoining strips of land where these could be had at a reasonable price; at some points such as in Whitestone, considerable stretches of land were transferred without payment to the railroad by realty trusts who stood to benefit by more frequent electric services. No work was done on double tracking because the long stretch from Winfield Junction to Broadway station was due for elevation and grade crossing elimination. From Flushing Creek to Broadway station there were 12 grade crossings alone and all of them in busy streets. The Long Island Rail Road made formal application to the Public Service Commission in July 1910 for elimination of grade crossings through Flushing village and this was approved by the commission on Dec. 30, 1910.

As so often happened whenever the Long Island Rail Road attempted any improvement, unforeseen opposition arose over the elevation in Flushing village. Just east of Main Street the railroad passed through the land of the Flushing Institute, a magnificent Greek-porticoed private school for boys. After almost a century of distinguished accomplishment the school had closed in 1902 and at this time was being used as a boarding house by the heirs of the founder, Ezra Fairchild. Fairchild had permitted the Flushing and North Side Railroad to run trains through his park-like grounds in 1864 only on condition that the track be enclosed in a tunnel 200 feet long and 30 feet wide and that the railroad pay $2000 for this privilege. This agreement had

been reduced to writing and signed and sealed by both parties. When the railroad sought permission of the Fairchild heirs to eliminate the one-track tunnel and to take additional land to build a two-track embankment the heirs flatly refused and insisted that the railroad hew to the letter of the 50-year old contract despite changed times and conditions. When argument and money proved of no avail, the Long Island filed a writ of lis pendens in Queens County clerk's office against the heirs.

While the Fairchild case wound its slow way through the courts during the next two years, the railroad continued work on the east of the North Shore Branch where there was no opposition. In the last week of July 1910, the big steam shovel was brought from Great Neck where the widening had been completed to a point midway between Little Neck and Douglaston. The newspapers commented that since the roadbed had been raised fully 20 feet between Little Neck and Great Neck, the running time of the trains had improved.

To eliminate the very dangerous crossing at Broadway (Northern Boulevard), the railroad purchased from the Rickard-Finlay Realty Co. a strip of land extending 858 feet along the right of way just west of the depot. The Board of Estimate of New York City had agreed to split the cost for the elimination of the 12 grade crossings and for whatever land had to be purchased to make foom for embankments. On Sept. 15, 1910 the railroad submitted to the Public Service Commission its detailed plans for the elimination of all grade crossings in Flushing on both the Port Washington and Whitestone Divisions. The season of 1910 closed with the completion of the Douglastion-Little Neck widening, a great improvement over the constructed roadbed of half a century before.

Controversy continud to rage inside Flushing village over the merits of an embankment versus a depressed roadway. At hearings held in December 1910, the chief engineer of the Board of Estimate revealed what had been agreed upon between the city, the railroad and the Public Service Commission. The plan called for an elevation from Flushing Creek easterly over New Lawrence and Main Streets and beyond that a depression east to Murray Hill and rising from that point to grade at 157th Street and then continuing easterly on an embankment 8 to 10 feet high over 158th Street, 162nd Street, Broadway and all intervening highways to 167th Street, where the tracks would come to grade. A bridge was to be put in at 158th Street, a highway as yet unopened, and a wide bridge 250 feet long at Broadway-162nd Street. The property owners accepted the embankment between Flushing Creek and Murray

Hill without much enthusiasm but there arose strong opposition to an embankment east of 157th Street.

One of the chief considerations in the elevation plan was cost. The total cost for the proposed plan came to $1,070,000 but if the Murray Hill area were depressed, the cost would be $300,000 higher. The project, to be carried out under the present grade crossing law, involved an expenditure of $200,000 by the State, $200,000 by the city and $400,000 more or less by the railroad. Even this would carry the improvement only to Murray Street. The Long Island Rail Road agreed to spend the extra $150,000 called for under the embankment plan, but balked at the prospective additional expenditure for a tunnel. The embankment plan would cost the city nothing and this was the time to do it when earth from the cuts was available. The great argument against a long cut was that all the highways crossing it would have very objectionable grades, 8½% at Bridge Street and 19% at 163rd Street. The alternative would be raising the streets 10 or 12 feet, also impossible because of the problems it would create.

To mollify the residents, the railroad pointed out that the embankment would be only 2000 feet in length from 157th Street to 166 Street instead of a mile as had been previously reported.

The series of hearings before the Public Service Commission on the elevation controversy came to an end on Nov. 4th with the commission recommending the embankment plan for the section east of 158th Street. The whole controversy took on a decidedly different aspect when the city informed the property owners in the Murray Hill district that the city's share of a depressed roadway would have to come from a special assessment levied on the property owners. On hearing this, the owners decided that they preferred to give up their principles rather than their money and endorsed the Public Service Commission's plan.

On March 23, 1911 the railroad went to work on the double-tracking and electrification of the North Shore Division. The men started work near Little Neck and expected to complete the stretch from Broadway to the city line. All the excavation work in this area and in Nassau County had been done in 1910 and it was hoped that it would not take long to lay the track and third rail. The hardest part was the section through Flushing village where land had to be purchased first before the embankment could be built and the numerous grade crossings eliminated.

Pending the rebuilding of the bridge over Little Neck Creek, trains crossed on a gauntlet track to do away with the necessity of switching.

Another corps of engineers was taking soundings in Flushing Creek in order to determine the depth of the foundation for the new bridge to be built there. It was planned to be 30 feet high above tidewater and would be of the lift pattern.

Any further progress was delayed meanwhile by the high prices demanded by the property owners for their land along the right of way between Main Street and Murray Lane through which the tracks were to be depressed.

The railroad was not seeking to buy the property outright but only to secure an easement on the rear of the lots. The retaining wall at the top would be entirely on railroad property, but as the wall descended, it widened out towards the base by a series of steps which would project 6 or 8 ft. at a considerable depth beneath the surface inside the building line of private owners. The company had agreed to pay $1 per running foot for the encroachment which, in the eyes of railroad officials, was so far beneath the surface that it would injure no one. The property owners were demanding $5 per running foot which the railroad refused to pay.

Although no resolution of this deadlock seemed imminent, work on the double tracking between Northern Boulevard and Great Neck progressed so well that on May 14th this first stretch of dual rail was put into use. All during May and June the railroad, the civic associations and the realty companies worked hard to compromise what they considered to be the excessive demands of individual property owners, and one by one the recalcitrant individuals signed, urged on by the importance of the work and the great benefit fast electric service would confer on Flushing. At one point the railroad in exasperation threatened to reopen the old Stweart line and bypass Flushing altogether but this extreme measure proved to be more rhetoric than reality.

During August 1911 some physical work was done for the first time on the west end. A large gang of men began tearing down the large water tank at the Main Street station which had done duty for 30 years. Another gang was making preparations to drive several rows of piles from the railroad crossing at Lawrence Street towards the meadows. The War Department sent up several employees from Washington to check on the railroad's application to string electrical cables over Flushing Creek.

By the end of August 1911, 75% of the consents from property owners to build the retaining walls had been obtained. For the remaining 25%, condemnation proceedings seemed the only alternative. The most important hold-out proved to be Laura Fairchild, heir to the

Flushing Institute property, the key to the whole western improvement. An agreement having proved impossible, the railroad applied for the appointment of condemnation commissioners. Agreement had been reached with the City of New York on Lawrence Street which was to be widened to 80 feet and on Main Street which was to be 100 feet wide and crossed by a special ornamental bridge.

All the steel work necessary for the elevated sections of the line including the new steel bridges over Flushing Creek on both the Port Washington and Whitestone Divisions had been ordered and most of the material had been shipped to Long Island City. Contracts for the work were advertised in September 1911 and bids opened and decided upon. No awards were made until the contracts and bids had been approved by the Public Service Commission. In a burst of optimism President Peters predicted that electric trains would be in operation between Port Washington and Penn Station by June 1, 1912.

The railroad used October 1911 to complete the acquisition of the dozen remaining parcels of property still needed in downtown Flushing including some with no clear title or some having owners who could not be reached. At the last minute the railroad reached agreement on the Hinman property, a strip of land 4½ feet X 100 ft. on either side of the roadbed west of Broadway station.

In the second week of October 1911 the railroad awarded the contract for double tracking and electrification as far as Broadway on the east and Winfield on the west to P. H. Clements & Company, a Philadelphia firm. By this time the entire line had already been double tracked with the exception of two or three short spaces, leaving only a third rail to be laid to make the line ready for electric trains. A bridge over Mill Neck Creek at Little Neck, a bridge over Flushing Creek and track elevation over the Corona Meadows remained to be done.

As 1911 drew to a close, Clements & Company began shipping their plant to the spot and providing docking facilities and it was hoped that operations could begin during November. A thousand men were to be put on the job. An engineer on the railroad staff said that the work would start just west of Main Street, Flushing. One gang would work west to Winfield while another gang would start at Broadway, Flushing and work west. As a temporary measure the old bridge over the Flushing Creek would be used pending elevation of the meadows trackage and the installation of a new lift bridge. A third gang was ready to start tearing down the Old Main Street station and begin work on the brick and stone structure. The Public Service Commission announced on

October 25th its approval of the new station plans. To service the public, meanwhile, a temporary station was erected midway between Main and Lawrence Streets.

Before Clements & Company could do any extensive work in the Flushing Creek area, it was found necessary to condemn land west of Lawrence Street. The court appointed commissioners and the awards, in the light of modern land values, are interesting:

C. W. Copp	400 X 40	$8500.
L. Bradford Prince	50 X 30	528.
L. Bradford Prince	30 X 25	400.
Terry & Scroggs	30 X 25	525.
Mrs. Mary Ryan	30 X 25	500.

As was usually the case, another hold-out developed. Daniel S. Jones, a wealthy coal merchant, demanded $45,000 for a strip varying in width from 9 to 30 feet running from Lawrence Street to Flushing Creek. The railroad offered $5500.

In March 1912 the Public Service Commission approved the plans for the new Main Street station, details of which were then publicly announced. The new structure of brick and concrete would cost $25,000, would be two stories in hight and would have an entrance on Grove Street about 200 feet from Main Street and another on Main Street where the Long Island News Co. would set up a stand. There would also be a new station at Murray Hill to cost $18,000 to $20,000 and would be suspended over the tracks.

In the spring of 1912 came an important change of plans for the Whitestone Division. The original plans called for the elimination of all the grade crossings clear to Whitestone Landing but the vetoing of the bill by Governor Dix which provided funds for the elimination of grade crossings that year caused a change in plans. To get a new measure through the Legislature would require just about all of 1913 and it would be another year before the money would be actually available. Realizing that delay would be caused by this hold-up of funds, the railroad decided to proceed to electrify the Whitestone Division at the existing grade and the work would begin immediately. Preparation for laying the third rail was begun at once and electric trains were expected to be running from Manhattan to Whitestone Landing by September 1, 1912. The important result of this was that as soon as electric trains began running through Bridge Street, Flushing, to Manhattan, practically all the commuters in Flushing would travel from that station and

persons coming through on steam trains from Main Street and points east would transfer at Corona instead of changing cars at Woodside as was then being done.

In the meantime the work of electrifying the Port Washington Division was pushed on as rapidly as possible. All the electrical machinery was on order and four new sub-stations were scheduled to power the road: one each at Port Washington, Little Neck, Whitestone Landing and Whitestone Junction. To facilitate the work of elevation, the railroad was given permission to close for two or three weeks Union, 147 St. and 149 Place, and when these bridges were in position, Parsons Avenue. The embankment from Flushing Creek to Main Street had gone up 20 feet in height and 33 feet in width and provided room for two tracks. On August 1, 1912 trains began using a single track over Lawrence Street bridge for the first time.

During August the Public Service Commission held hearings in New York on the progress of the elimination and electrification at which representatives of the Flushing Association and the Long Island Rail Road were present. The Flushing men suggested that steam trains from Long Island City should meet the electric trains from Penn Station at Woodside, couple them onto this train, and haul them out to Whitestone and Port Washington. The railroad gave some interesting reasons why this could not be done. Steam trains have a braking pressure of 110 lbs. and electrics only 70 lbs. To couple together such a mixed train would leave the steam cars dangerously underbraked. Another reason was that a locomotive could not haul a train of electrics becuse of a difference in weights of the cars. Steam coaches weighed only about 75,000 lbs. but electrics 106,000 lbs. so that a locomotive would be overtaxed. Finally, Woodside station was a very busy place and shunting about cars there would greatly delay through traffic. Secretary C. L. Addison lost his temper at the hearing and labeled Flushingites "sore-heads" because their litigation over property and easements was holding up the improvement. He asserted that the North Shore trains were run at a loss as it was and that the people were making things as difficult as possible for the railroad. After this outburst the Public Service Commission tactfully postponed the hearing.

The last days of August 1912 witnessed the completion of the south retaining wall from Flushing Creek to Main Street and the north wall from Main Street to Parsons Avenue. As of Sept. 10, the trains began running over the new depressed tracks from Union Street three long blocks to 147th Street. On Oct. 1, 1912 the steel spans for the bridge

over Main Street were placed in position and on Oct. 18 the central span. To get enough room for the retaining wall at Main Street station, the railroad purchased a three-story frame building at 117 Main St. that abutted the station and additional property on Grove Street.

Work on the Whitestone Branch meanwhile was pushed as rapidly as possible. It was an easy matter to lay a third rail with no grade crossing elimination work to slow down progress. The new sub-station at Whitestone Landing received its finishing touches in late September and the railroad announced that electric service would begin on Oct. 22, the date the winter time table went into effect. 24 trains would give service each way. On Sunday, Oct. 20th an experimental train of six cars filled with railroad and borough officials ran over the branch to test clearances. Stops were made at some of the stations and on the meadows to give the engineers an opportunity to make observations. Many curiosity seekers waited at each station to see the train go by. All of the half dozen stations and platforms were enlarged and raised for high-platform operation.

The new service proved very popular from the start. In Flushing many people deserted the Main Street station in order to catch the electrics at Bridge Street. The newly developed section of Beechhurst was greatly pleased to be able to reach the Penn Station in 25 minutes and a sudden great demand for plots and homes developed. The electrics were making the run in 28 mins. as against 36 minutes for the steam trains.

In the Flushing area, meanwhile, work began on Oct. 15th on tearing down the fine brick railroad station at Murray Hill opened 25 years before when that section was first developed. On Nov. 11, 1912, the old Main Street depot in Flushing was abandoned and a temporary station at Grove Street between Main and Lawrence Streets was opened for use. On the same day trains began running for the first time over the new big bridge over Main Street.

A minor squabble developed late in November 1912 over Northern Boulevard. It appeared that in 1910 at a conference between representatives of the Long Island Rail Road, the Public Service Commission and the residents of upper Flushing, an understanding had been reached by which the railroad was to pass over Northern Boulevard on an artistic elevated structure which was to be 8 feet in height and to substitute an embankment of cinders and dirt 12 feet high. The engineers of the Borough of Queens, it developed, had ordered the change; the street level would be raised three to four feet above the present grade expressly to avoid a pocket that would collect water after every storm. The twelve-

foot embankment built on the required grade would still be only eight feet high over Northern Boulevard.

By the last days of December 1912 the old brick-lined tunnel through the Fairchild property east of Main Street had been demolished and the space filled in. From Union Street east to Murray Street, about a mile, two concrete retaining walls of an average height of 22 feet and with a thickness of nine feet at the base, forming the two sides of an open cut, had been two-thirds completed.

During December 1912 some very modest cash awards were made by the condemnation commissioners to various property owners, most of them far below the original sums demanded for land in the Murray Hill section:

W. G. Gilbert	$4620.
H. Loundsberry	600.
John Cadoo	468.
John Fuller	190.

In connection with these condemnation awards, President Peters made some tart comments on the experience of the Long Island Rail Road in its efforts to improve the line through Flushing:

> "About 1906 the company began negotiations for the purchase of property, a large amount of which had to be acquired to carry out this improvement between Flushing Creek and Broadway. To be exact, the company had to acquire 41 separate parcels of real estate and 64 easements for the retaining walls. In other words, we had to negotiate with 105 different people. I think it is safe to say that 90 of the 105 property owners opposed the company in every way by exorbitant and unreasonable prices for their property. However, the company finally acquired most of the easements but had to condemn 13 of the 41 parcels. Some of these comdemnation proceedings have not been closed up as yet and it may be two or three months before they are. We have, however, to get possession of sufficient property to keep the work going, and if there has been any delay, it has been due to the unneighborly and selfish attitude of the property owners through Flushing."

A possible serious delay in the prosecution of the work through Murray Hill was prevented by the courts in April 1913 when a petition by the Borough President of Queens to amend the original Public Service Commission order approved on Dec. 30, 1910 so as to provide for an

additional three-foot elevation of the tracks through the Broadway section to avoid a need to depress the streets was denied.

A second nagging problem was also favorably disposed of by the courts in May 1913. The Fairchild heirs had appealed their case against the Long Island Rail Road all the way to the Court of Appeals. The final verdict permitted the Long Island Rail Road to abrogate the agreement of 1864 made with Ezra Fairchild and confirmed the destruction and filling up of the old single-track tunnel.

In July 1913 work was started on the Northern Boulevard bridge at 162nd Street, the last big job to be done in the improvement program. As finally settled upon, the bridge was to be an ornamental structure of concrete and steel resting on three heavy piers. The bridge was to be built only four feet above the grade of Northern Boulevard as it was in 1913, but that main thoroughfare and 162nd Street were to be lowered 10 feet so as to give the bridge a clearance of 14 feet over the roadway.

In a burst of optimism, Chief Engineer Savage of the Long Island Rail Road announced that the Port Washington Branch would be opened with electric trains on Sept. 15, 1913, but by mid-summer he was forced to renege on his promise. Although the laying of the third rail had been almost finished by mid-summer, the elimination of the grade crossings in the Murray Hill section had progressed more slowly than had been anticipated. The officials of the Long Island Rail Road softened the resultant disappointment with the announcement that the first electric train over the North Shore Division would run on Saturday, October 25, the day the winter schedule went into effect.

On the afternoon of Sept. 24th the big steel girders of the Northern Boulevard bridge were eased into position, the last major piece of construction work. On Oct. 17th, 1913, the current was turned on in the third rail in Flushing for the first time even though there was still a mile of temporary single track through the Murray Hill and Broadway sections; on the 18th the rail on the temporary track was energized and on Sunday the 19th over the entire division.

The prospect of electrification stimulated the business men's association of Port Washington to plan a big celebration, including a parade, fireworks and a banquet, to welcome the first electric train. On Sunday, Oct. 9th, 1913 a five car motor train tested the new rails and electrical installations; on board were President Peters and Chief Engineer Savage. Allowing for the usual stops at all stations, the train had no difficulty in maintaining the 45-min. schedule. Curious crowds watched the train at every station as it glided smoothly past. At Port Washington a

large crowd welcomed the test train and Business Men's Association treated the Long Island Rail Road officials to a luncheon at Bradley's Hotel.

On Tuesday, Oct. 21, 1913 the first regular train made its run through from Port Washington to New York. The last steam passenger train pulled out of Port Washington at 3 A.M. just one moment before the new timetable went into effect. On Saturday, the 25th, the people of Port Washington turned out en masse to celebrate the age of electrification. There was a monster auto parade of 1000 cars all along Northern Boulevard to Bayside, where a second auto parade from Flushing joined the first. The whole cavalcade then returned to Port Washington in time to meet the 2 P.M. train from New York, bearing President Peters and other prominent guests. In the evening there was a monster banquet and congratulatory speeches by railroad and local officials, all very reminiscent of the 1898 celebration on the occasion of the arrival of the first steam train.

All in all, the work of elevating and electrifying the North Side from Flushing Creek to Port Washington had consumed seven years; over 270,000 cu. yds. of earth had been moved, 61,000 yards of concrete wall built; two miles of concrete fences and 109,000 lineal feet of conduit.

The new schedule permitted the operation of an express service of 36 minutes to New York with stops only at Flushing, Bayside and Great Neck. As we learn from a complaint to the Public Service Commission, the Long Island Rail Road in 1913 operated a shuttle train from Woodside down to the old Long Island City station for the convenience of North Shore people who had business on the east side of New York and preferred the old route and the East 34th Street ferry to the through ride to Penn Station.

At this very time the rapid transit in New York had taken a giant step forward with the signing of the dual contracts allowing for construction of the elevated lines to Flushing and Astoria and with joint service by the IRT and BMT. It was not long before the civic associations of Flushing and Bayside started an agitation, first voiced in June 1913, to connect the proposed IRT tracks at Corona with the Long Island Rail Road and to run rapid transit trains out to Bayside station and even to the Nassau County line at Little Neck. The new incoming mayor of New York, John Purroy Mitchel, willingly gave his approval to the proposal in writing.

The Queens extension, meanwhile, became a reality on June 22, 1915 when service was opened through the Steinway tunnel to Jackson Avenue. It was only a matter of time before the elevated line would continue along the authorized route on Queens Boulevard and Roosevelt Avenue to Elmhurst, Corona and Flushing. The Board of Estimate in 1914 authorized a further extension to the city line at Little Neck. On Feb. 23, 1915 there was a largely attended meeting at Flushing Town Hall to discuss a proposed connection of the Long Island Rail Road tracks with the coming IRT elevated tracks in Corona. In this way the IRT and the 2nd Avenue Elevated could run out to Flushing, Murray Hill, Broadway and Bayside. The idea for such a connection was laid before President Peters and he promised to submit it to the LIRR directors. The Board of Estimate and the Public Service Commission looked favorably on the idea since it would save building a costly elevated line paralleling the Long Island Rail Road. Further discussion brought out the fact that the Board of Estimate opposed extending rapid transit service to College Point and Whitestone because this branch still had grade crossings: 3 in Flushing, 1 in College Point and 4 in Whitestone.

There was some incentive for the Long Island Rail Road to accept a leasing arrangement. The city would be taking out of the center of the North Shore Division 10½ miles of road, the part that generated the bulk of the revenue. The 6 miles from Little Neck to Port Washington earned considerably less. As the combined railroad fare and surface car fare to Penn Station for a Flushing or Bayside resident now amounted to from 37¢ to 41¢ per day, as compared to a total of only 10¢ a day over a city-built line, it was evident that the rapid transit line would absorb practically all the railroad passenger traffic between Bayside and Corona, resulting in a great loss and the practical confiscation in this territory; however, if rapid transit trains used the railroad tracks, the railroad's property would be preserved and the city would secure rapid transit facilities about one-third the annual cost of a city-built line.

In March 1915 President Peters informed the city and the Public Service Commission that the Long Island Rail Road would be willing to make a 10-year contract with a privilege of renewal for another 10 years. In the meantime questions were raised as to whether the Public Service Commission had the power to enter into such a leasing contract and whether the city could enter into such a contract with two private carriers. On Mar. 16, 1915 a large delegation from the Third Ward Civics Associations called on the Public Service Commission to press the plan, but the commission was still investigating legal aspects. During

the summer of 1915 the Long Island Rail Road came out with a figure of $250,000 as its price for an annual rental; this created much opposition from the Board of Estimate and the Public Service Commission who felt that the city should not pay an initial rental greater than the earnings of the section of the road to be leased, plus an annual increase equal to the average annual increase of the net earnings for the last five years. Based on the earnings figures for 1914, the Long Island Rail Road agreed to reduce its rental figure to $125,000 with a 6% annual increase.

The prospect of an early agreement seemed so probable that in January 1916, the Public Service Commission, the Long Island Rail Road, the IRT and the city all conferred together to hammer out the terms of an agreement. All through 1916 negotiations continued and in September the parties toured the proposed trackage in detail, ruling out once again the Whitestone Branch, but endorsing a take-over to Little Neck. The city seems to have expected the Long Island Rail Road to make futher concessions, while the Long Island Rail Road felt unwilling to lose revenue on the proposition. As the months passed in stalemate, the project gradually became academic if only because of the creeping progress eastward of the Corona Extension of the IRT elevated. Service opened to Queens Plaza on Nov. 5, 1916 and to 104th Street, Corona, on May 21, 1917. As it turned out, Flushing had to wait till 1928 for the Rapid Transit to finally reach Main Street and by that time, all plans for an extension to Bayside much less to Little Neck had been quietly shelved.

The last grade crossing eliminations on the North Side were undertaken a dozen years later. In April 1929 work began at Bayside-Auburndale. The railroad tracks were carried on an embankment over Cross-Island Blvd. and Utopia Parkway and under Corporal Kennedy St. and Bell Blvd. New stations had to be built at Auburndale and Bayside. The work was finished in the spring of 1930.

The final piece of work was done in Corona during 1931. The crossings at Junction Ave., National Ave., 102nd St., 104th St., 108th St. and 111th St. were all eliminated by the building of an embankment carrying the tracks over these busy crossings.

CHAPTER XI

Four Improvements: Glendale, Maple Grove, Cold Spring, Woodside

THE Glendale Cut-off had its genesis in the line of high-tension transmission poles that left the main line at Rego Park and then went cross-country to the Rockaway Branch tracks at the point where they branched off the Montauk Division at Glendale. These poles were installed in 1904 and could not help but suggest in the minds of the Long Island Rail Road engineers and officials the thought that a track laid along the same route would make it possible to run trains from the Main Line tracks to Rockaway Beach. At first this was not important since a train originating out of the Long Island City and bound for Rockaway could just as easily use the Montauk Branch tracks as the Main Line. However, when the prospect of running trains out of Penn Station began to loom up and come closer with every passing year, the desirability of such a connection became more insistent. land developers and speculators were daily swallowing up the farms and open country in Forest Hills and Glendale at this time, and if the right of way was ever to be secured, speed was of the essence before the appearance of paved streets and houses would make such a project prohibitive in price.

It was in the summer of 1906 that the engineers of the company began to draw up plans for the new two-mile cut-off. In November the Committee on Plans and Contracts of the Rapid Transit Commission took up the application of the Long Island Rail Road for a franchise for the cut-off. During the discussions it developed that the two principal questions at stake were the compensation the city was to receive and who should bear the expense of opening streets through an embankment. President Peters wanted a nominal sum but the commission felt a fair price should be set with provision for upward adjustment in the future. After much wrangling it was agreed that when a new street was to be put through the railroad embankment, the city would pay the cost of opening, grading and paving, but the company was to pay the cost of buttressing up the embankment and constructing the necessary bridge.

In June 1907 the Rapid Transit Commission, as its last act before dissolution, granted a franchise to the railroad for the cut. The initial payment was set at $5000 with an annuity of $1000 for the first ten years and $2000 for the last fifteen years. The franchise next had to be acted upon by the Board of Estimate. Engineers of the road, meanwhile, went to work and calculated that the cost of the land necessary with the building of the tracks and other necessary work would come to $2,500,000. On the morning of Aug. 22, 1908 Chief Engineer Savage began physical work on the cut-off at Glendale. It was planned to move 300,000 yards of earth taken from the hill in Sunnyside to construct the embankment. The Degnon Construction Company again got the contract for the new road. During September the contractor put five dirt trains to work transporting the 300,000 yards of earth needed for the long fill through the flat terrain from Rego Park to Glendale Junction. The embankment needed stretched about two-thirds of a mile and was to be 20 feet high. The most important street to pierce the embankment was Metropolitan Avenue, where a new station, Parkville, was to be built. The new junction with the Main Line, newly named Whitepot Junction, branched off at the highest point of the divide on the Main Line between the descending slope to Jamaica on the south and the descending slope to Long Island City. This made possible a deep cut at the junction, allowing the westbound track to tunnel under the Main Line tracks and join the westbound Main Line local track on a wide sweeping curve.

The new construction, once started, progressed with great rapidity. About 2000 cu. yds. per day were being carried by the three work trains in use, making four round trips each per day. Between September 22 and October 22, 1908 over 50,000 yards had been transported and it was estimated that four more months' work would see the line completed by Feb. 1, 1909.

The embankment in the Yellowstone Blvd. area was 30 feet high and a steel bridge about 200 feet in length and supported on massive concrete abutments carried the tracks above Yellowstone Blvd. and old Whitepot Road. From here to Metropolitan Avenue was 1800 feet and here another amaller steel bridge carried the tracks across 20 feet above highway grade. Just below Metropolitan Avenue was another 200 foot steel bridge over Trotting Course Lane; just below here, the road divided, two tracks going straight south to the Rockaway Beach Branch and crossing the Montauk Line at a height of 12 feet; the other turned to the east and effected a junction with the Montauk Division at grade.

The Glendale cut-off progressed with no delays and track-laying and electrification moved along speedily, so that on March 1, 1909 the line was opened. Small though it was, the cut-off was the last piece of new railroad line on the Long Island Rail Road. During these same busy years before World War I the Long Island Rail Road undertook three large projects of line-straightening, each one of them a major work: Maple Grove 1908–1909, Cold Spring 1911 Winfield-Woodside. 1912–1913.

The Maple Grove relocation was a project to reduce the curvature of the Main Line track at the present Kew Gardens. Fortunately for the railroad the whole area in the neighborhood of Union Turnpike was in 1908 still open country with a very few farmhouses and no street pattern. The Long Island Rail Road, on the eve of the opening of the Penn Tunnels, wanted a straight, low grade, high speed, four-track road between New York and Jamaica, and a realignment of the roadbed at Maple Grove would both straighten the road and reduce the distance by not quite a half mile. The new cut-off began at the present 84th Drive on the east and continued to about the present Ascan Avenue in Forest Hills. The old line ran straight from Winfield to within a few feet of Queens Boulevard at Lefferts Avenue and then curved sharply southeast and around the southern edge of Maple Grove Cemetery, producing a sharp and undesirable radius of curvature. East of Lefferts Avenue the new cut-off passed through the high ground of the A. P. Man estate, the Richmond Hill Golf Club, and on the west side of the turnpike, through farms recently acquired by the Cord Meyer Development Company. The railroad, after consultation, careful study and negotiations between the engineers of the railroad and the city, established a grade line for the railroad that significantly reduced the old gradient and so made it possible to achieve a higher rate of speed. Maple Grove station, at that time only 500 feet south of Kew Gardens Road (old Newtown Avenue), was now about to be moved about 600 feet south farther down Lefferts Avenue to a new site north of the tracks and on the west side of Lefferts Avenue.

Much of the success of the Maple Grove cut-off was due to the good will of Alrick H. Man, the founder of Richmond Hill. The railroad bought out his estate of 25 acres on the west side of the turnpike and also the property of the Richmond Hill Golf Club also owned by Man, which organization was now forced out of existence since the new cut-off cut the grounds in two. Alrick Man, who in 1908 still owned a large part of Richmond Hill and many of its fine houses, gained materially by

the railroad move since the railroad station would now be far closer to the built-up section of Richmond Hill. He also lost no time in cutting streets through the golf club property nearest the new "Kew" station and building handsome, high-quality houses in what was already an exclusive, expensive section.

Although this mile and a half of relocation was a costly one—roughly $500,000—the railroad felt that the heavy expense was justified on the ground that the improvement was a permanent one and that it affected the main line of the road, so that all Long Island would be benefited by shorter running time.

During September 1908 preliminary work began on the Maple Grove cut-off before the Glendale cut-off could be finished. The four-tracking of the Main Line was planned at the same time and all the massive new bridges were designed for four tracks east of the Glendale cut-off and six tracks to the west. In mid-November 1908 the contract for the cut-off was awarded to the Elmore and Hamilton Company of Albany; the terms called for the straightening of the Main Line from Grand Avenue, Elmhurst, to Jamaica Avenue, Richmond Hill, a distance of about four miles. The contract provided for the elimination of all grade crossings by means of overhead or underneath crossings and involved the shifting of 1,500,000 cu. yds. of earth in various cuts and fills. The grade crossings to be removed were: Grand Avenue (widen existing bridge), 57th Avenue (old Caldwell Ave.) widening existing bridge, 63rd Avenue (old Remsen Ave.), Woodhaven Blvd. (old Trotting Course Lane), Yellowstone Avenue (old Whitepot Road) to be widened by the city from 44 to 80 feet, 71st Avenue, Union Turnpike, Lefferts Avenue, Metropolitan Avenue and Hillside Avenue. Fourteen existing grade crossings in this four mile stretch were slated for elimination. The railroad applied for and received permission to make the change from the Board of Estimate and the Public Service Commission. The new right of way varied from 150 to 200 feet in width and could accommodate six tracks if in the future these became necessary.

In November 1908 a number of substantial wooden barracks were erected on the railroad's property by the contractor in Forest Hills; the heavy machinery was rapidly being assembled and steam shovels were soon to begin work at Kew Gardens and near Forest Hills. Winter slowed down progress but work began in earnest in March 1909. Two new bridges were added to the plans in 1909 for the Forest Hills section: Ascan Avenue and Penelope Avenue, each of these a new 650 foot highway. So rapidly did the work go all during the summer of 1909 that by

September both grading and track laying had been completed. On September 4th Main Line service opened over the Maple Grove cut-off and through Forest Hills.

In the midst of all this progress, the city of New York through the Board of Estimate made objection to the third, fourth, fifth and sixth tracks on the new Main Line, insisting that the railroad apply for twenty-five year franchises as if these new rails were street railway tracks. The railroad insisted that the State grant of 1860 for the New York & Jamaica Railroad granted permission for two tracks in perpetuity plus the right to build all sidings necessary for the transaction of business. Rather than delay so valuable and desirable an improvement as the Main Line, the city agreed to let the court settle the dispute; needless to say, the issue was decided in favor of the railroad.

With the completion of the cut-off and the Main Line, the railroad had only to improve the alignment at Woodside to have a completely rebuilt, grade crossing free, wholly modernized road between New York and Jamaica. Before undertaking this final step along the Main Line, however, the Long Island Rail Road turned its attention to another part of the road that was unsatisfactory from an engineering point of view because of bad curves and a steep gradient. This was on the Port Jefferson Branch between Syosset and Cold Spring Harbor. In selecting this spot for correction at this particular time, the Long Island Rail Road had a double motive. Realignment would mean a great deal of excavation through very hilly country and a lot of sand and gravel would have to be dug out and disposed of. At this very moment, 1911-1912 the railroad was commencing one of the biggest grade-crossing eliminations and yard relocations in its history: the total realignment of Jamaica station and all the yards connected with it. To elevate so vast an area would require two million yards of fill and the Cold Spring hills offered the nearest and cheapest source, even though a haul of 22 miles was involved.

In February 1910 railroad engineers staked out a route between Syosset and Huntington which would somewhat shorten the distance. The proposed line would cut into a bank on the property of Henry A. Monfort and keep as near a straight line as possible, doing away with the sharp and dangerous curves in the Woodbury valley and making possible faster running time. Since the station at Cold Spring was situated right on the curve, it would have to be moved. As a preliminary to the work, the Long Island Rail Road bought out the farms of three

residents in the area, Charles Ost, Scudder V. Whitney, and Peter Hoenighausen.

In July 1910 the Long Island Rail Road made application to the Public Service Commission to eliminate the Woodbury curves and change the grade; it was stated that the elimination would shorten the road 1277 feet overall; that a curvature of 268 degrees would be eliminated and a 46 foot elevation would be reduced. If permission were obtained, work would begin in the fall. The improvement was expected to extend roughly three miles beginning at a point 2600 feet east of Syosset station and extending to the top of the hill east of Cold Spring station, and, in addition to this, a great embankment would be built across the Woodbury Valley several hundred feet south of the line of the present route, keeping the elevation over 46 feet below the lowest point of the then-existing line and reducing the old grade of 1.5% to .4%, and incidentally doing away with four dangerous grade crossings. Instead of descending into the Woodbury Valley and up out of it, the new alignment would cut into the hillside and bridge the valley.

To haul the large number of dirt cars in and out of Woodbury, it would be necessary to double-track the road between Hicksville and Syosset. Meanwhile, the Long Island bought $350,000 worth of earth-moving machinery, including 100 gondola cars and two big steam shovels. In September 1910 the Long Island Rail Road began preparations on the Peter Hoenighausen farm just east of Syosset. Wells were sunk to supply water to the boilers of the big steam diggers and for the locomotive boilers, and in mid-September a number of bunk houses and tool houses were erected to accommodate several hundred laborers. At the same time the railroad between Hicksville and Syosset was being double-tracked with several gangs of men and two work trains. By the end of October 1910 the double track had been laid to a point about a mile east of Syosset and was expected to be placed in full operation within a month.

Because the need for earth was pressing at Jamaica, the railroad did not let the cold and bad weather of the winter slow the work down; in Dec. 1910 between 65 and 70,000 cu. yds. of earth were dug out of the hills and 82,000 in March 1911. The embankment began to attract the attention of commuters and then geologists. As the banks of fine sand were exposed, bands of brilliant color began to emerge; vermilion, orange, lighter yellow, crimson, pink with varying tints and shades, all due to the presence in the soil of iron pyrites and metallic salts.

In modern terms the sand pits of 1910-1912 were located just east of the present Syosset-Woodbury Road and extended for a mile along the north side of the tracks to the present Van Sise Road. All this area is today 60 feet below its old level because of the extensive mining operations of 70 years ago. During March the sand trains began using a small part of the new alignment east of Syosset; the new rails were 20 feet below the old grade and about 30 feet north of the old track location. At the present South Woods Road the old line had curved sharply to the north and ran to about 500 feet above the present track, then curved sharply south again, crossing the present track just west of the present Van Sise Road. The old track then continued about 300 feet and then curved sharply east, rejoining the present line a little west of the present Woodbury Road. If one walks this route today, it is evident that the old track followed a snake-like course, intersecting the present line three times between mile post 30 and a little beyond mile post 31.

In the midst of all this progress in 1911, trouble arose in the form of a protest lodged with the Public Service Commission against the Long Island Rail Road by Henry A. Monfort, a wealthy lawyer and landowner of New York and Jamaica who owned a summer estate of 237 acres directly south of the Cold Spring Harbor station on what is now East Gate Drive. The proposed alignment of the tracks through the Woodbury Valley bisected his farm and he wanted the railroad to buy out his property altogether rather then ruin the scenic effects. At his farm the new railroad route would dip 1500 feet south of the old one and the new Cold Spring Harbor station would be moved correspondingly south and a little west.

The Public Service Commission held several hearings in the autumn months; the hearings seemed to get down to a matter of money with the railroad offering $25,000 for the Monfort estate and the owner holding out for not less than $100,000. Surprisingly, in June 1912, the railroad decided to give up all attempts to relocate at Cold Spring Harbor and applied to the Public Service Commission for permission to withdraw its application as to a change and relocation of its route through that place, and as to the discontinuance of its established station at that place.

While this litigation about Cold Spring Harbor was going on, the railroad decided to curtail the sand mining operations at Syosset and removed one steam shovel, and half the working force, reducing the output of dirt to 70 cars a day. In December 1913 the railroad took away the other steam shovel at Syosset and construction work along the road

between Syosset and Cold Spring Harbor stopped. Apparently the railroad was well satisfied with what relocation and grade improvement had already been achieved. Although the line of road had not been wholly straightened and lowered as planned in 1910, at least three curves had been eliminated. Although the gradient had not been brought to below 1% as had been hoped, the steepest grade was now only 1.6% (west of Woodbury Road).

In April 1914 the railroad extended the double track over the new improved right of way from Syosset to Cold Spring Harbor, and on May 27, 1914 trains began running over it. It may be mentioned in passing that the Long Island Rail Road managed to make one further improvement to the right of way in the Woodbury area in 1924. At the present Van Sise Road the track formerly curved slightly south to about 300 feet distant and then curved east again to rejoin the present line just west of Woodbury Road. In 1924 both of these curves were taken out and the right of way converted to a very slightly undulating line between Van Sise and Woodbury Roads. This final betterment to the right of way produced a route that was a vast improvement over the pre-1910 route and permitted a much faster operation of trains.

In point of time the Woodside-Winfield relocation was the last major project on the Long Island Rail Road before World War I. The idea of eliminating all existing grade crossings in the populous Woodside area first grew as a logical extension of the work on the Sunnyside Yards which had eliminated all crossings in Long Island City. However, the Long Island Rail Road had more in mind here than just elevating the railroad over busy streets. When the railroad was built through the Woodside area in 1861, the surveyors unfortunately built into the line a reverse curve that added the hazards of poor vision and reduced speed to the usual necessity of exercising caution at grade crossings. The railroad saw in the grade elimination plan a golden opportunity, and very probably the last one, to get rid of a fifty-year old operating hazard by relocating the line onto an altogether new and relatively straight right of way. Woodside had grown enormously since 1861 and it would take a major effort to carve out a new road through a built-up area and to get the approval of the residents and the city for such a bold move. The length of the improvement would be 1¼ miles long, three-fourths embankment and the remainder in a cut.

President Peters, in a public letter to Mayor McClellan of New York urged that the city should cooperate with the railroad company, and as

an inducement, offered the prospect of the elimination of 19 grade crossings at once plus the chance to connect up ten streets presently dead-ended at the railroad. A year later in September 1909 the railroad revealed that it had made purchases of land and was willing, with city help, to erect a massive 200 foot bridge costing $250,000 over Queens Boulevard, the heaviest traffic artery in Queens. Other bridges would span 61st Street and Woodside Avenue. The Queens Boulevard crossing with a traffic volume of 6000 cars a day already was a major headache for the Long Island Rail Road for every month one or more persons was killed at this crossing and no number of gates or flagmen seemed to dissuade automobilists and pedestrians from ducking under the gates and courting disaster.

By the end of 1910 the plans for the relocation had become a little more specific. Queens Boulevard would be crossed by a 200 foot bridge; the railroad would go over the west end of Woodside Avenue, 60 feet in width at the east end of the Sunnyside Yards. Six-track girder bridges would cross over 55th, 56, and 58th Streets and 39th Avenue. The old grade crossings at 59th and 60th Streets would be closed and traffic diverted by a new marginal street to the 58th Street underpass. 61st Street and Roosevelt Avenue would be bridged. The 62nd Street crossing would be closed and the line of 63rd Street (Trimble) diverted to a marginal street. East Woodside Avenue, 41st Avenue (Fairbanks), 65th Street and 65th Place would be carried over the railroad. The 64th Street crossing would be deflected to 63rd Street and 43rd Avenue (Grant) would be eliminated. 69th Street (Fisk) and 47th Avenue would cross under the railroad as also Maurice Avenue.

The railroad proposed to acquire and cede to the city a fifty foot marginal street to connect 64th and 68th Streets; also to cede to the city the land required for the bed of Calamus Avenue to make it a through street, and most important, to cede to the city the existing right of way it hoped to abandon.

The city and the railroad engineers reached a tentative agreement on the plan which was submitted to the Board of Estimate for approval on Feb. 23, 1911.

When the question of building a new terminal station at Woodside came up in Apr. 1911, where connection would be made with the IRT, Secretary Woodward of the Long Island Rail Road dismissed the idea and called it a "pipe dream." By the end of July 1911, about 70% of the necessary property for the realignment in Woodside had been acquired. Again a year passed while the matter lay dormant; the railroad was busy

with grade crossing eliminations on the North Shore and at Jamaica at the time.

By July 1912 all the land needed for the Woodside-Winfield elimination had been obtained and the plans had received the approval of the city and of the authorities of the Borough of Queens. The railroad in buying its right of way at private sale had to take entire lots or plots, which was just as well as the sloping sides of the embankment would require at least 75 feet at minimum and sometimes almost 150 feet; the embankment was 25 feet high on the average.

In early April 1913 the condemnation commissioners made awards of $43,567 for 3¼ acres needed on the north and south sides of Queens Blvd. for the foundations of the massive 200 foot bridge. In May the Public Service Commission approved of the shifting of the Winfield station site from 150 feet west of 70th Street (Madison) to 300 feet east of that street.

In January 1914 the progress of the embankment for the elevation had so far advanced that the old Woodside station at 58th Street had to be abandoned and a new temporary station was set up at 61st Street and Woodside Avenue. At this point there is a considerable hill and a cut had been carved out here with Woodside Avenue carried across the railroad on a bridge. The building of this bridge was slow work because of the trolley tracks for the Corona line of the New York & Queens County Ry. that had to be provided for, and work continued on into August 1914. It was now obvious to all that the new temporary Woodside station would very soon be transformed into a major transfer station. Although the new location was 1200 feet east of the old site, it had important advantages that the old one did not. The Corona trolley line passed directly underneath the station on 61st Street and the new IRT-BMT Corona Extension elevated line on Roosevelt Avenue would soon pass overhead. Once this important new rapid transit link opened, Long Island Rail Road passengers could transfer to trains for Long Island City and the Manhattan subways in New York via the Steinway Tunnel.

During 1915 two temporary bridges were built by the Long Island Rail Road over Queens Boulevard, the smaller one a single track trolley bridge for the Manhattan & Queens Traction Company and the larger structure to enable the daily average of 6000 automobiles to get over the railroad tracks in safety. On Oct. 6, 1915 the two westbound tracks of the six on the embankment were thrown open to traffic; on Oct. 17, 1915, the date for the winter timetable, all the Main Line and North Shore tracks on the new line were opened to traffic.

On Monday, November 8 the last eastbound train went over the old right of way at grade through Woodside and on Tuesday, Nov. 9 the route was abandoned and ceded to the city. Some strips of land were held by the city to connect streets previously cut off by the railroad; the remaining land was put up for auction to the highest bidder, with preference given to abutting owners. Between November 1 and 15th the old wooden Woodside station at 58th Street was demolished and the pieces carted off for firewood. On Nov. 10, laborers began tearing up the rails on the old grade level railroad route.

CHAPTER XII

Holban Yards and the Hollis-Queens Elevation

THE Long Island R.R., when it bought extensive tracts of land north and west of Jamaica Station in 1899 for a large and spacious freight yard, thought the problem of sufficient space to make up freight trains had been solved for quite a few years to come. However, when the Pennsylvania Railroad announced its intention to build the Hudson and East River tunnels and that electrification of the western lines of the railroad would follow as a necessary corollary, it became apparent that the Jamaica Yards would have to be turned over to passenger trains and that a new and not too distant site would have to be found for the extensive and yearly increasing freight business.

During 1904 the railroad pondered the pros and cons of various nearby sites that could be bought at a reasonable cost and that could stretch for a mile or more without interfering with important highways or impinging on thickly settled communities. The site that seemed to offer the best possibilities and the fewest disadvantages was Rockaway Junction, where the Montauk Division diverged from the Main Line. The neighborhood between Hollis, the junction, and St. Albans was very thinly populated, crossed by only a few secondary roads and occupied by farms which no one seemed interested in developing. A yard built in the angle of the junction would offer ready access to the main line, the principal money-earning branch of the road, and could spread a mile along the south side of the Main Line to Hollis without encountering any obstruction.

In the summer of 1904 the Stuyvesant Realty Company, the railroad's real estate subsidiary, was authorized to begin dickering with the farmers whose lands would be needed for the new yard. On October 18, 1904 Stuyvesant filed deeds of transfer for 14 farms aggregating about 125 acres and 50 building lots, plus seven acres north of the railroad between 184th and 186th Street and 3½ acres north of Jamaica Avenue between 184th Street and 184th Place. The total cost of this property was in the neighborhood of $500,000, but it did extend the railroad's

property from 183rd Street to Farmers Avenue, Hollis, and was 500 feet and more deep.

The railroad lost no time in laying out the new yard. Large quantities of dirt fill were carted to the site from the Flatbush Avenue station excavation and the East River tunnel. Engineers planned to lay eighteen to twenty miles of track to store up to 1400 freight cars. In January 1905 Stuyvesant Realty succeeded in buying up nine more lots east of 183rd St. lying south of the railroad.

Over the next five months practically all of the grading in the new yard was completed. About 175,000 cu. yards of earth were dumped on the easterly end of the tract to create a "gravity yard". The trains would be drawn up to the top of an incline with the highest point at the east end of the yard, and there the cars destined for different points would be detached from the mixed train one at a time, and after being started on their journey, would be shunted onto the correct track, gravity providing the momentum. By this process few switching engines would be required.

The yard was in the shape of a triangle with nearly a mile frontage on the Main Line and an equal frontage on the Montauk Line. The southerly half of the yard was to be devoted to the business of the Montauk and Rockaway Beach Divisions and the northerly half to the Main Line, Oyster Bay and Port Jefferson Branches. Plans called for 16 parallel tracks in each section for the accommodation of cars of the different divisions. Once the yard was completed all the freight trains then made up on the network of tracks west of the Jamaica passenger station extending as far west as Dunton would be removed to the new yard.

Over the summer of 1905 the track layers worked busily to put down the many miles of track needed in the yard; the completion date was set for January 1, 1906. All went smoothly, and as the new electric cars began to occupy the Jamaica Yards, the freight service moved into the new and spacious "Holban Yards", a new name made by combining the first syllable of Hollis with the last of St. Albans.

In February 1908 the railroad succeeded in buying up the last essential tract needed to complete the yard, the Moag property running from 186th Street to almost 188th Street and 360 feet deep on the north side of the tracks and 538 feet deep on the south side. This increased the size of the railroad's holdings on both sides of the track to nearly 200 acres, a largely square tract bounded by 183rd Street on the west, Jamaica Avenue on the north, Hollis & Farmers Avenues on the east and 104th Avenue on the south.

The railroad had hardly begun to use the new Holban Yard when the first of what would prove to be a long line of troubles began in February 1908. Henry B. Salisbury, an attorney living in Hollis and a member of the Hollis Improvement Association, secured an injunction against the Long Island perpetually restraining the road from blocking Farmers Avenue in Hollis for more than five minutes at a time with its freight cars and from using soft coal on any locomotive in the yard, and from storing cars loaded with fertilizer unless it be covered or enclosed in cartons. As a result of further agitation on the part of the Hollisites, the Queens County grand jury in May 1908 investigated into the legality of the railroad's actions in regard to the two streets affected by the establishment of the yards, namely, Hamilton Avenue (now 183rd Street) and Farmers Avenue. From the records of the Bureau of Highways it appeared that the railroad had secured a permit to use Farmers Avenue in June 1905 and a permit to lay one additional track across Hamilton Avenue in November 1904. Hollis residents complained that they were now compelled to make a wide detour in moving north and south and they insisted the grand jury take action to force removal of the tracks across 183rd Street.

In July 1908 the Improvement Association procured an indictment of the railroad for maintaining a nuisance at 183rd Street to keeping a fence across the highway and for laying 16 tracks across the street. President Peters was not inclined to yield and asserted that the road had to have the yard for handling its heavy freight business. In November the court entered 10 judgments in favor of different property owners in Hollis for damages resulting from coal smoke and bad oders.

For four years the battle between the railroad and the Hollis Association remained dormant only to flare up again in 1910. In May 1910 the indictment found against the railroad in 1908 was tried in court. The county clerk of Queens County had been subpoenaed by the prosecution and he arrived in court laden with heaps of old maps and records. The air of antiquity was enhanced by the presence of some 20 or 30 graybeards assembled to testify that 183rd Street had been a road and general highway, the route taken by farmers of a generation ago on their way to market. When the case was called, the railroad counsel said he was not ready to proceed because Chief Engineer Savage was too ill to come into court and that in addition, there was a mandamus suit directed against Borough President Gresser in which the railroad had intervened, seeking to compel that official to open the street. He wanted to get the civil suit out of the way first and the judge agreed.

On June 5 the case was resumed and for the occasion, the Long Island R.R. brought out the original copy of its charter of 1834, the first time this document had come into the light of day in years, and, so far as is known, the last time up to the present day. The charter specified that

> "Said corporation shall have the right to construct and during its existence to maintain a certain railroad or railroads with single or double tracks and whatever appendages as may be deemed necessary for the convenient use of the same...."

The Long Island was basing its present defense on the word "appendages" as justifying the 16 tracks in the Holban Yard.

In rebuttal the corporation counsel displayed the Royal Charter of 1734 from King George III setting up the Town of Jamaica and appointing trustees to lay out and govern the king's highways. By other records it was shown that one of these was Hamilton Avenue (183rd St.) The old men in the court testified to using the road as far back as 1851. In fact the Long Island R.R. had maintained Willow Tree station at Hamilton Avenue until 1872 and that avenue was the access road. After the station was discontinued the railroad counsel maintained that the street had gone out of use and that the railroad company had obtained possession by inference.

On June 7th the jury returned a verdict of guilty of unlawfully seizing a public highway and converting its roadbed into a part of its freight yard. The judge assessed the maximum fine of $500 and the railroad counsel filed a notice of appeal. The court could have issued an order directing the removal of the tracks at once but because the general manager of the Long Island had testified that the road could not handle its freight in its yards without these tracks, the court refrained.

On Dec. 21, 1910 the Supreme Court in Long Island City heard the mandamus proceeding against Borough President Gresser in which the railroad had intervened, and confirmed that the railroad had illegally taken possession of the street and blocked the crossing with its cars. The way was now open for the Hollis Improvement Association to apply for another peremptory writ of mandamus to compel the Long Island R.R. on eight days notice to remove its tracks.

The railroad pushed through its appeal but early in 1911 surrendered after a jury rendered a verdict in a mandamus action that directed Borough President Gresser to tear up the tracks if the railroad failed to remove them in the meantime.

Still confident in its ability to beat local legal talent with the money and top—flight legal arsenal of the Pennsylvania Railroad and loath to lose the valuable service Holban Yard afforded, the Long Island spent 1911 carrying the case to the Appellate Division, and when that failed, to the Court of Appeals in 1912. This highest court in the State ruled adversely and there was no further recourse for the road. When preparations were made by Borough President Gresser to have the Highway Dept. rip up the tracks, the railroad secured an injunction on April 15th restraining him until July 15th. The reason was that the railroad intended on May 23 to go before the Board of Estimate for permission to construct a concrete arch bridge over Hamilton Avenue. A public hearing was laid down for June 20. At this hearing the matter was referred to the Railroad Committee and particularly Borough President Connolly who had interested himself in the matter. Connolly recommended a bridge and the paving and relighting of Hamilton Avenue for its full length at the expense of the railroad. In July a representative of the Board of Estimate personally visited the site and conferred with the Hollisites who were opposing a bridge and damanding a depression of the whole yard. Mayor Gaynor of New York himself intervened in the dispute and persuaded the court to extend the July 15 deadline to tear up the tracks to September 20th. On Sept.25 the Borough President, the Comptroller and the Engineer of the Board of Estimate visited the site and as a result on Oct. 10. 1912 the Board of Estimate announced to the railroad that it must depress its tracks at Hamilton Avenue as the Hollisites wanted. The railroad objected on the ground that this conflicted with the elevation of track order of the Public Service Commission. This additional grasping at straws on the part of the railroad infuriated the Hollisites who mandamused the borough president to tear up the tracks. When the borough president pleaded lack of funds to do the job, the Hollisites secured a contempt order. At this extreme juncture the railroad, to avoid embarrassing the borough president, surrendered and on Nov. 18, 1912 tore up all 16 tracks. The shunting of freight cars now had to be done under considerable handicaps at the west end of the Holban Yard and partly at Belmont Park.

Flushed with their victory at 183rd Street (Hamilton Avenue), the Hollisites now campaigned with renewed intensity to force the Long Island Rail Road to depress its tracks all through Hollis, Bellaire and Queens Village to the Nassau County line. The Public Service Commission had issued an order to the railroad to elevate the track in September 1912 but the residents refused to accept the reality of this ruling and

determined to force the Long Island Rail Road to itself ask for a suspension of the order.

Farmers Avenue at Hollis became the next battlefield where three tracks came out of the Holban Yard and merged into the Main Line. The Hollis Association and its lawyer, Harry B. Salisbury, started an action in the Supreme Court to force the road to tear up these entrance tracks, but on January 8th, the railroad informed the court that an application had been made the previous May for a franchise to maintain the tracks and that this was still pending. In February Salisbury and others appeared before the Public Service Commission to withdraw their order for track elevation and to force the railroad instead to depress the tracks about six feet all the way from Hillside to the Nassau County Line. Engineer Savage of the Long Island Rail Road vehemently opposed this change on several grounds. The cost would be enormous first of all, but there was a headroom problem as well. To get 18 feet or better, 21 ft., headroom between the top of the rail and the bottom of the bridge girders, it would be necessary to build a series of high bridges with long approaches on either side that would disfigure the landscape and injure property. It would also injure the railroad by converting the right of way to a sort of roller coaster with an elevation at Jamaica station of 70 feet above sea level, 48 feet at 183rd Street and below ground level at Hollis. Finally, all the flood water north of the railroad, following a natural southerly flow, would drain down into the cut. The embankment, on the other hand, would be cheaper, maintain a reasonable grade for the tracks and avoid flooding. the commission listened to witnesses on both sides and adjourned the hearing to Feb. 21. It developed that the city engineers had already prepared their official topographical maps in conformity with the track elevation ordered by the Public Service Commission, and the Long Island Rail Road counsel showed that the railroad had already spent $22,000 for adjoining strips of property to widen the right of way for the sloping banks, and had entered into contracts for $9000 more. At the final hearing on Feb. 21st, Salisbury asserted the elevation would ruin 99th Avenue facing the railroad for business, but a real estate agent witness admitted that he had sold property there at an advance.

On Feb. 27, 1913 the mayor and the president of the Board of Aldermen recommended to the Board of Estimate to grant a franchise to the Long Island Rail Road to maintain tracks at 183rd Street, Farmers Avenue and South Street; also that the Long Island R.R. be permitted to put its Main Line tracks and the entrance tracks into the Holban

Yards on one bridge over Farmers Avenue. The Hollis Association and its lawyer, after lengthy conferences with the Public Service Commission, and the railroad finally adandoned their insistence on a depressed roadway because the Public Service Commission engineers had demonstrated the necessity of a relatively level railroad roadbed through Queens and freedom from drainage problems. Reluctantly, the officers of the Hollis Association accepted the embankment originally proposed, and were relieved that the plan required only a two-foot depression of Farmers Avenue and no change at all at Springfield Blvd. 218th Street (Wertland) and 212th Street (Bennett). The vexing Hamilton Ave. (183rd St.) question was also settled in the same agreement. The railroad would put down surface tracks immediately, thus regaining use of the yard, but within two years a concrete arch bridge would be erected at the site. The embankment solution for the road through Hillside and Hollis also meant that the Holban Yards could once again operate in the gravity principle as they were originally designed to do with the Farmers Avenue end higher than the Hillside end.

In March 1913 plans for the big track elevation through Hollis and Queens Village were drawn. The State allocated $250,000, the city $250,000 and the railroad $500,000 to finance the elevation of three miles of right of way. The engineers for the Public Service Commission established the grades; it worked out that the average height of the embankment would be 14 feet above the current level of the tracks. Since the tracks were already depressed five to seven feet through a portion of Hollis, the embankment here would only be seven to nine feet above existing ground level. The tentative plan called for five to six tracks through Hollis and three tracks through Queens Village with a width of 46 feet generally on the top of the embankment.

The compromise plan agreed upon by the Public Service Commission, the Long Island Rail Road and lawyer Salisbury had hardly been patched together when the Civic associations of Hollis and Queens Village began attacking the agreement as a sell-out and demonstrations were organized asserting that a Chinese wall was being foisted on the community and that the highways depressed under the railroad were being converted into sump holes. Much of the remainder of the year 1913 was taken up with more tedious hearings before the Public Service Commission and threats to demand a review of the commission's ruling by the Appellate Division.

The matter was finally put to rest on Feb. 6, 1914 when the recommendations of the commission, made the previous February, were

embodied in a formal order. It was a close vote with two commissioners voting for depression, two for elevation and the chairman casting the deciding vote to uphold the original order for elevation.

During 1915 the work slowly got under way. In January 1916, 200 of the Italian laborers working on the project in Hollis went out on strike for an additional 25¢ a day. The men had been getting $1.75 for eight hours work. The International Labor Union organized the men and presented a demand that the railroad give the men their tools and pay them $2 for a nine-hour day. The railroad refused the compromise and staked out policemen and special officers along the tracks. Since there was a time limit of May 6 in the Board of Estimate franchise to finish the elevation, the timing of the strike had been well calculated. The strike issue died out but the railroad was forced to get an extension of time to August 6th to complete the work on four counts: a shortage of labor, a labor strike, difficulty in securing material because of the European war and inclement weather through February and March. The Board of Estimate acquiesced and the job through Hollis reached completion during the summer.

The status of the Holban Yards was altered in a legal maneuver in February 1916. The Long Island Rail Road conveyed to the Stuyvesant Realty Co. for $240,000 seven parcels of land at the new Jamaica station, and the Stuyvesant firm in return conveyed to the Long Island Rail Road for $236,000 the entire Holban tract of 96 acres. In the transfer document the dimensions of the yard were given as follows: 967 ft. on 183rd Street; 7637 ft. on the Main Line and Montauk Division; 2465 ft. on South Street; 228 ft. on Hollis Avenue and 220 ft. on Farmers Avenue. Since the Stuyvesant Co. was a subsidiary of the Pennsylvania Railroad this exchange was probably motivated by a desire to relieve the Long Island Rail Road of the annual 4% interest payment on a large mortgage; in return, the Pennsylvania was enabled to sell at a profit over 100 lots at Jamaica that were unneeded and had grown increasingly valuable.

As it turned out, the onset of World War in April 1917 interrupted abruptly all construction work on the Long Island Rail Road and the final half mile of elevation work through Queens village was left uncompleted. The crossings at the Hempstead Turnpike, 218th Street, Springfield Blvd. and 222nd Street remained at grade until 1923 when the project was finally and belatedly completed.

CHAPTER XIII

The Cedarhurst Cut-Off

WHEN the New York & Rockaway Rail Road Company built its road from the present Hillside Station to Far Rockaway in 1872, no one could then have guessed the complicated and bizarre chain of events that would follow in years to come. The Long Island R. R. after the collapse and foreclosure of the road in 1877 saved the upper half of the road from Hillside to Springfield Junction (now a part of the Montauk Division) but let the lower half go (Springfield Junction to Cedarhurst). Colonel Sharp, the receiver, tore up the tracks and for years thereafter the right of way reverted to the familiar appearance of an abandoned railroad, a ridge of sand, weed-grown and hardly distinguishable from the meadow land all about. When the possibility of electrification of the road first arose in the late 90's, officials and engineers began to consider which branches of the road would justify this costly investment. Since the Long Island in 1900 was largely a summer railroad with its chief revenues derived from one-day excursions to the beach, the races and the hotels and boarding houses, it was obvious that Rockaway would receive top priority in any program of electrification. The Jamaica Bay trestle was certainly unrivaled in respect to direct access, shortest mileage and scenic attraction, but at peak periods it became crowded with trains and operation over it was necessarily slow and cautious. The other way around to Rockaway via Valley Stream and the peninsula was much longer and indirect and therefore more costly to operate. The route across the meadows to Cedarhurst was the third alternative— four miles shorter and already built. Why not electrify this so-called Cedarhurst Cut-off and so create a loop that had the attraction of being operable in both directions simultaneously? When it was decided to electrify the Rockaway line first before all others, the Cedarhurst Cut-off became part of the plan.

In December 1904 the Long Island R. R. announced that it would begin relaying the ties and rails over the still-graded right of way in the coming spring of 1905. Because the new route from Jamaica would be

only eight miles as against twelve miles via Valley Stream, it was estimated that the trip could be made in 12 to 15 minutes rather than 30-45 minutes the long way around. It was even proposed to erect a sub-station opposite the Cederhurst Depot to provide energy for the branch.

The Long Island R. R. made its usual legal maneuvers to infuse new life into the moribund New York & Rockaway Rail Road. On Dec. 22, 1902 the Jamaica & South Shore Railroad was specially incorporated in preparation for the foreclosure on May 27, 1903 of the aged New York & Rockaway. On Dec. 19, 1903 the property and assets of the old road were transferred to the new Jamaica & South Shore. It is difficult to see in retrospect what the Long Island R. R. gained by this legal maneuver but it was thought desirable at the time. In April 1905 the railroad bought from one Phillippina Gross two small parcels of land at Springfield Junction in order to make possible a smooth curve in both directions from the Montauk Division tracks to the Cedarhurst tracks, the old crossing having been almost a right angle and without any connecting curves.

This new junction point suddenly became the scene of a railroad "war" in September 1904 when a trolley company, the New York & Long Island Traction, tried to cross the track at grade. The Long Island, of course, was in the midst of an expensive grade crossing elimination program and opposed the prospect of a trolley line crossing the busy Montauk Division. To prevent construction the Long Island mounted a blockade of six freight cars at the crossing. The trolley company, anxious to complete its road as soon a possible, decided to build a bridge at the crossing in December 1904, and in this way the brief railroad war came to an end.

Since the Long Island wanted a double track railroad as well as an electrified one across the meadows, the old and narrow sand embankment was scheduled for regrading; the right of way was 50 feet wide offering ample space for two tracks. On May 15, 1905 physical work was started on the cut-off with grading teams. The contractors had hardly begun work when trouble started at the Cedarhurst end. A property owner named James H. P. Vandewater claimed ownership of a tract of land and to make sure that the Long Island R. R. would respect his claim, plowed up the right of way that crossed his tract and then dug a cellar twenty feet square in the middle of the disputed strip, after which the railroad men withdrew.

Hardly had this problem arisen when a second appeared to confound the railroad management. When a force of ten Italian trackmen and

their foremen came to work near Cedarhurst station, they found a fence newly erected around the very property they were to work on. The following day the fence was torn down by a gang of men alleged to be employees of the railroad company. Mrs. Mary T. Mulry, owner of the strip in dispute, had her carpenters rebuild the fence and stationed several deputy sheriffs in her four houses which she was having erected on another part of the property to watch for the return of the railroad gang. When the railroad men reappeared and commenced to pull down the fence once more, the deputies came forward and placed all eleven men under arrest.

At the arraignment it turned out that the property had originally belonged to William B. McManus, Mrs John Mulry's father. In 1869 when the South Side Railroad was being extended to the Rockaways, the railroad got possession of the property in condemnation proceedings, the appraisers fixing its value at $425 which McManus angrily rejected as being far too little. Although the money was offered to him repeatedly, he long refused to accept it. The South Side Railroad was built and opened in July 1869 in the teeth of his objections, but the Cedarhurst Cut-off section was abandoned in 1880 (cf. Vol. I, pp.24-25) and the tracks torn up. Mrs Mulry based her present rights to the disputed property on this act, claiming that through the abandonment of the line by the railroad, it reverted to her father's estate of which she was the heir. To enforce her claim. Mrs. Mulry hired men to plow up the property so as to keep the railroad men at bay.

Before the Mulry and Vandewater disputes could be resolved, the Long Island Rail Road opened its electric service between Flatbush Avenue and Rockaway Beach via Jamaica Bay on July 26, 1905. This made the completion and electrification of the Cedarhurst Cut-off all the more desirable. It would not take long to electrify the road from Hammels to Far Rockaway and then the loop service could be introduced to the peninsula with trains running in both directions to handle the excursion crowds. To this end the railroad dispatched 60 to 70 men on July 31 to work on the cut-off. So optimistic was the road that it was hoped to have the loop in operation by Dec. 1. To prevent another outbreak of trouble, the railroad went into Supreme Court and secured a temporary injunction restraining Mary T. Mulry and her two unmarried McManus sisters from trespassing upon the disputed lands. In October the railroad sought a renewal of the injunction.

For a whole year peace reigned on the cut-off project while the Mary Mulry case went to court for disposition. During the summer of 1906

the railroad resumed working on the cut-off and by November it was three-quarters finished. An immense amount of dirt and stone had been necessary to get the roadbed well above the meadows, a fill of from five to eight feet being necessary in many places. Half a dozen new bridges had to be built over channels to accommodate the proposed double track.

By the spring of 1907 the railroad men had crossed the meadows and had reached West Broadway, about 1300 feet from a junction with the existing Rockaway Division tracks. It was at this point that a full-scale war broke out with James H. P. Vandewater, owner of the land from West Broadway to the Long Island R. R. Rockaway Division tracks. The Long Island, with the power and the money of the Pennsylvania behind it, was accustomed to getting its way and sometimes it took a little time and sometimes it took a little guile and even sharp practice, but that was what railroad lawyers were paid for—to get results. But no one in Philadelphia or Long Island City had taken the measure of Mr. Vanderwater, a scion of the Holland Dutch stock and as fiercely independent and every bit as stubborn as old Peter Stuyvesant himself.

Early in the morning of Sunday June 2, 1907, a trainload of Italians and other laborers arrived via the cut-off and immediately began to lay tracks through the property. A barn which Vanderwater had begun to remodel into a cottage was attacked first by the laborers and completely overturned. The building, 30 X 40, and two stories high, stood directly in the line of the proposed tracks. Vanderwater had been expecting trouble from the railroad and when the gang arrived and began operations, he went out and damanded that they leave the property. A burly laborer came up to him and sent him flying. Vandewater was powerless against a force of fully 300 laborers who were protected by the Long Island R. R. police and a small army of deputy sheriffs.

While one part of the gang attacked the barn, another set to work laying the tracks about 700 feet of which were put down before the under-sheriff of Nassau County arrived on the scene at 10 A.M. In the meantime, two local deputy sheriffs, trying to look after Vandewater's interests, were assaulted by the railroad men. The news of the battle spread fast and almost the entire village population began to gather at the scene and a serious riot seemed about to break out. After scattered fist-fights a railroad representative agreed to stop all work pending a conference with Long Island R. R. officials in New York the next day.

When the newspapers got wind of the Battle of June Second, they sought a statement from Secretary Woodward of the railroad. Woodward, in a carefully worded statement, averred that the railroad was merely trying to take possession of its own property, to which it claimed an absolute title and one guaranteed by a trust company. Vandewater was characterized as a squatter and an unreasonable man whom the railroad had been forced to chastise as a father reproves a refractory child. As to the abandonment, Woodward passed it off as a "temporary discontinuance."

On the following morning June 3, a gang of railroad laborers again started in to lay tracks and while there were a number of quarrels between the laborers and Vandewater's men, no trouble such as occurred on Sunday morning was experienced. Meanwhile, a Nassau County judge issued an injunction restraining the Long Island R. R. from continuing any further track laying. Rumors of further clashes provoked a statement from President Peters asserting that the railroad would solve the dispute in the courts.

On June 13, 1907 the Nassau County Grand Jury handed down an indictment against the Long Island R. R. and its chief engineer for forcible entry and detention and arraigned the officials of the road. Five days later a show-cause order was issued to the railroad as to why an order should not be issued compelling the removal of the railroad tracks altogether from the property of Vandewater. The Long Island replied to the order, asserting the grounds for its title. Vandewater proved that he had been in possession of the disputed land since June 1, 1889.

To the amazement of everyone the Long Island R. R. a week later surrendered completely and agreed to pay Mr. Vandewater his original price of $15,000 in cash and to build him a new barn to replace the one destroyed by the railroad employees. In return the railroad would receive a clear title to the disputed strip, 1500 feet long and 50 feet in width. Mr. Vandewater agreed to waive all claims for damages, trespass, forcible entry, detention and detainer to recover which he had already begun suits.

The court on June 27, 1907 considered the indictment against Chief Engineer Savage and another against the Jamaica & South Shore Railroad and on July 3 fined the road $500 and released Savage as an employee without a will of his own. The surrender of the Long Island R. R. on the Vandewater issue emboldened another Cedarhurst man, Herbert A. Weeks, owner of a V-shaped plot only 15 feet long and 50 feet wide, crossed by the Cedarhurst Cut-off tracks, to tear up 700 feet of the

tracks on August 22nd. There was no one about to resist this aggression at the scene but the railroad took Weeks to court.

Three years after the Vandewater affair the Supreme Court finally handed down a decision in the Mulry case. In May 1908 the court ruled that the Long Island R. R. was in rightful possession of the property and confirmed the road's title. This was at least small consolation for the humiliating defeat earlier. Further balm for its wounds came in July 1908 when the court ruled that Herbert A. Weeks had no right to tear up the tracks of the Long Island R. R. on the ground that, although the receiver may have acted to abandon the New York & Rockaway, has actions did not bind the stockholders or bondholders of the road and that the Jamaica & South Shore now proposed to revive the route.

The disposal of the Mulry, Vandewater and Weeks cases removed the last obstacles to completing the Cedarhurst Cut-off. By July 1908 the double track had been laid over the entire stretch right up to the Weeks strip. The whole year passed with no futher action other than to complete the junction with the Rockaway Division. In October 1909 it was reported that although the road had been ready for over a year, "legal complications" had prevented the operation of the route; however, it was hoped to begin service by Jan. 1, 1910. Two years later in October 1911 the residents of Cedarhurst were voicing anxiety as to when the shortcut would open; the tracks were all in place and had been for two years but the roadbed was overgrown with weeds.

Why was the Cedarhurst Cut-off left to rust after so much legal effort and expense to complete it? The answer does not appear oficially anywhere and we are left to conjecture. The author has heard that it was because Chief Engineer Savage opposed the cut-off. This explanation has an aura of truth for this road was the only assignment in his professional career for which Savage suffered humiliation and public censure in court. Another explanation is that the Long Island had three years of experience in operating its electrification to Rockaway before the cut-off was ready. By that time patterns had been established and operating methods devised that worked well without the cut-off and which would have had to be wholly revised to utilize it. The built-in inertia and resistance to change that is so often the curse of the railroads operated to exclude the cut-off. A third simple explanation is that by the time it was ready, it was no longer needed. The volume of traffic to Rockaway had shifted. Whatever the real reason, the cut-off reverted to weeds till 1918 when the pressures of World War I and the shortage of steel made someone remember the road and its unused 80 lb. rails. These were torn

up and relaid on the Hempstead Branch to provide a double track to the military camps.

CHAPTER XIV

Rails, Roadbed & Extensions

THE extensive elevations and realignments of the railroad west of the Nassau County line during the decade and a half from 1901-1916 make it evident to the reader of the preceding chapters that the Long Island Rail Road of the 1890's was totally replaced, and in the process, all the earlier installations—stations, water tanks, switches, towers, signals, etc.—were wholly swept away. The railroad that emerged was a new one, very different looking from its predecessor. In the rebuilding process the railroad had the opportunity to upgrade the rails to withstand the increasingly heavy weight and greater size of the locomotives and the ever-longer trains of passengers and freight carried during these years. In 1885, 62½ pound rail had been adequate; by 1890, 70 pound rail was needed; in 1892, the weight was increased to 76 pounds; in 1893, 80 pounds and in 1899, 90 pounds. In 1901, 85 pound rail was still being bought but by 1902, 100 pounds became the new standard under the Pennsylvania Railroad management. Constant rebuilding and expansion consumed many tons of rail:

1901	2901 tons (85 lb. rail for double tracking)	
1902	3300 tons (100 lb. rail)	
1903	2754 tons	
1905	2801 tons for renewals;	3309 tons for second track & sidings
1906	2110	1165
1907	2829	360
1908	1462	71
1909	1930	211
1910	1849	3883
1911	1829	1183
1912	723	1134
1913	180	1994

As the table shows, the electrification of 1905 and the Atlantic Avenue Improvement created peak rail demand, followed by the Jamaica

elevation and Maple Grove changes in 1910. The first section of the railroad to get the new heavy rail was the heavily-traveled Montauk Division; in the summer of 1901 the eastbound track between Valley Stream and Baldwin was relaid with 100 lb. rail and new rail plates. During the spring and summer of 1902 the stretch from Rockaway Junction to Valley Stream was added and the thirteen miles from Long Island City to Jamaica. This big job was completed in late March 1902 and consumed 3000 tons of rail. The 80 lb. rail taken up was transported east and used to relay the Main Line between Manor and Aquebogue. During April, 100 lb. rail was put down between Mineola and Hicksville and Jamaica-Mineola. Before the 1902 season closed some work was done on the Wading River Branch with 80 lb. rail laid from Hicksville to East Northport.

In the 1903 season the railroad decided to push on with the upgrading of the Montauk Division by relaying the stretch from Baldwin to Babylon. By the end of March the gang had reached Wantagh and by the time the summer timetable began, had reached the goal of Babylon. In the fall of 1903 the gang resumed its work and by December had pushed through to between Oakdale and Sayville. The 80 lb. rail displaced here was relaid during the summer of 1904 on the stretch from Aquebogue to Southold, replacing the old 65 lb. rail, and on the Wading River Branch between East Northport and Port Jefferson.

In the fall of 1905 100 lb. rail was put down on the Hempstead Branch from the junction at Floral Park to Hempstead and on the Oyster Bay Branch from Hicksville to Roslyn. During all these years the track laying on the Long Island R.R. had always been done in the old conventional way—laying the ties directly on the ground. The Long Island R.R. had been getting by with this practice because the underlying sand and gravel insured in most places a natural drainage. This practice was changed in 1907 for the first time when a bed of eight inches of native gravel was built up between Hicksville and Kings Park and the track and ties jacked up onto this bed. The advantages of the new technique were noticeable immediately; no cinders and dust, a springy roadbed, good drainage and longer tie life. The native gravel did not even have to be hauled; it was available almost anywhere on the island.

Even before the process of wholesale rail upgrading had been completed, the Long Island R.R. embarked on a project of double tracking sizeable sections of the road, and in some busy spots, four tracking and even six tracking the line. On Oct 9, 1902 a track gang started work on

laying another track between Winfield and Jamaica. At the same time a contract was awarded to Charles A. Sims & Company of Philadelphia to lay two new tracks on the widened right of way through Jamaica village from the station to Rockaway Junction. This extensive rebuilding was a part of the enlargement and modernization of the Jamaica area during the year 1903 (cf Chap. III)

During 1903 the Far Rockaway Branch received the railroad's attention; the roadbed between Valley Stream and Lawrence was widened and graded in March and April. The double track reached Hewlett in June and by August was completed to Far Rockaway.

During the fall of 1903 the railroad four-tracked the Rockaway Beach Branch between Woodhaven Junction and the bay trestle. This was in preparation for the electrification and the increased traffic it would bring. At the same time the right of way on the beach from Hammels to Far Rockaway was expanded along the south side of the existing tracks in order to lay a third track in 1904. This was for the use of the new Ocean Electric trolley service. On June 26, 1904 this trolley track was connected with the main tracks at Hammels station and put into use on June 29th.

During the fall of 1904 the railroad acquired a 50 foot strip along the south side of the Main Line between Rockaway Junction and Queens Village with a view to giving additional service to the soon-to-be-built Belmont Park Race Track. The third track was laid and completed in 1906.

The momentum of double tracking picked up considerably in 1905. The Old Southern Division from Jamaica to Springfield Junction got a second track and a third track was added from the junction to Valley Stream. On the Atlantic Branch a third and fourth track were laid from Railroad or Autumn Avenue to Woodhaven Junction (completed Apr. 28, 1905). In addition some long sidings were added to the Main Line between Woodside and Jamaica. As a sign of the heavy business on the Montauk Division, the stretch from Babylon to Oakdale was started in late 1905, something that residents there had clamored for for two years; the double tracking was finished in January 1906. During the spring and summer of 1906 it became the turn of the North Shore Branch to get its share of double tracking. During the spring a second track was laid from Whitestone Junction and the meadows to Flushing and plans were made to carry on the work as far as Great Neck. At the same time land was bought at Higbie Avenue, Springfield, to widen the right of way and lay more tracks.

The spring and summer of 1907 witnessed some double tracking on the Oyster Bay Branch. The stretch from Hicksville to Roslyn was already double tracked; in this year contracts were given to the Andrews Brothers to do the grading and to Wilson & Meserole of Locust Valley to lay the rails from Roslyn to Glen Cove. Land acquisition for this stretch proved difficult and in October comdemnation proceedings had to be instituted against 20 estate owners in Greenvale and Glen Head.

During March and April 1907 two extra tracks were installed on the Main Line between Woodside and Jamaica and work was completed on the triple tracking between Queens and Floral Park. The financial crash of late 1907 forced the Long Island R.R. to curtail most of its plans for the next year and as a result the year 1908 passed with small accomplishment. On the Far Rockaway Branch the stretch from Cedarhurst to Far Rockaway was triple tracked and some preliminary work was done in Greenvale and Glen Head. The year 1909 was another one of small accomplishment but on May 12th the double track from Roslyn to Glen Cove was opened for use. In 1912 the work of the condemnation commissioners progressed far enough to make it possible to carry the double tracking from Glen Cove to Locust Valley.

Some progress was made on the Montauk Branch as well in 1910. The long-postponed plan of carrying the double tracking to Patchogue was completed this year with the laying of a second track east from Oakdale. A third and fourth track were added between Springfield and Lynbrook for the express purpose of providing for the Long Beach electrification between September 1910 and the spring of 1912. At the same time the Long Beach Branch itself was double tracked from Lynbrook to East Rockaway.

As is evident from all the foregoing, almost all the heavily-used trackage on the western end of the railroad had been double and triple tracked by 1910. The remainder of the road could be done at leisure. Before the advent of World War II the Long Island extended its double tracking only along the Wading River Branch and this only during the Cold Spring Harbor realignment. On Mar. 17, 1911 the stretch from Hicksville to Syosset was opened and on May 27, 1914 from Syosset to Cold Spring Harbor.

During 1911 a double track conection was installed at Floral Park with the Hempstead Branch, making it much easier to get trains into and out of this electrified branch. The final spurt of double tracking took place in 1918 under the pressure of World War I military movements;

the stretch from Hicksville to Central Park on June 7, 1918 and through to Farmingdale in Aug. 1918.

Hardly less important than the ties and rails of the road were the numerous bridges and trestles needed to carry the line over streets and uneven terrain. The large number of new bridges on the western section of the road have been described at length in the chapters on the various elevations and grade crossing eliminations. We can mention here, therefore, the important improvements elsewhere.

During the year 1902 all the important bridges on the Wading River Branch came in for extensive rebuilding to withstand the weight of heavier locomotives and longer freights. The first to be renewed was the structure over the Bread & Cheese Hollow Road between Northport and Kings Park. A new viaduct 200 feet long and 45 feet above the lowest point in the valley was erected. The new bridge was supported by abutments at each end and on two intermediate towers, each tower having a span of 30 feet and resting on masonry piers. The columns in the towers were composed of two 12" channels united with a 15" plate and lacing. The spans between the abutments and the towers were 40 feet in length and between the towers 60 feet. The bridge was of plate girder construction, the plate girders being 48 in. deep for the 30 and 40 foot spans and 72" deep for the 60 foot spans.

A very similar bridge was built to span a valley west of Stony Brook (Long Hill Road) consisting of four 30 foot spans and one 60 foot span. Beyond this the railroad put in another bridge east of Setauket (old Town Road) consisting of four 30 foot spans and one 50 foot span. Just east of Stony Brook the road put in a masonry arch bridge with a 20 foot span (Nicholl Road) and over the Dark Hollow Road west of Port Jefferson a similar structure was erected.

The greatest span on the Wading River Branch and the longest and highest on the whole railroad next to the Manhasset Viaduct is the structure over the Nissequogue River and valley at Smithtown. This bridge was completely renewed in 1902; the new structure was 460 ft. long, comprising two 75 foot spans, five 30 foot and four 40 foot spans. The American Bridge Co. was the contractor for the superstructure on this big span and the one at the Bread & Cheese Hollow. The material was on the ground in the middle of March 1902 and fully in place by June 1.

During July 1902 a new bridge with masonry abutments was installed over the West Rogues Path just east of Cold Spring Harbor station; the first train passed over this structure on Aug. 13th.

With the Wading River Branch largely renewed with new rail and new bridges, the railroad could turn to other areas needing attention. Between Nov. 1903 and June 1904 railroad gangs worked at Edgemere on the widening of the bridge over Norton's Creek; this structure had to be expanded 18 ft. to permit two additional tracks to be laid across the creek.

During 1904 and 1906 the railroad did a lot of filling in on trestle work that occasioned constant expense because of spile renewal and shipworm damage. Beginning in October 1904 and continuing through the winter the railroad erected a crib work alongside the long Douglaston trestle running across the meadows from Bayside to Little Neck and then filled it in with dirt excavated from the East River tunnel. In January 1906 the railroad began filling in the marshes under the Jamaica Bay trestle at Goose Creek, the Raunt and Broad Channel with earth and boulders dug from tunnel excavations. The railroad wanted to reduce the long Rockaway trestle to only those portions over open water and to fill in all sections over tidal marsh and meadowland.

On Jan. 27, 1909 a disastrous fire completely burned out the timber bridge over the Forge River near Mastic station and compelled the railroad to suspend the running of trains. For the first day the railroad pressed carriages into service to transfer passengers to another train at Mastic, and the following day the transfer was made easier by a temporary footbridge. By Jan. 30 a temporary bridge was again carrying trains and in the spring of 1910 a two track concrete bridge eliminated any repetition of a fire.

In January 1910 the railroad reluctantly began temporary repairs on Long Wharf, Sag Harbor, a pier with a railroad track and useful for transferring passengers and freight to the Montauk Steamship Company's boats. In July 1908 engine #32 had toppled off the dock and into the water because the dock underpinnings were so undermined and during 1909 storms buffeting timbers did further damage. A contract for permanent repairs was given in 1910 at a cost of $25,000.

There is little information available on any extensive upgrading of the Long Island Railroad shops during this period. In 1914 the railroad extended the machine shop, built a new flue room, a new coal trestle and storage bin at Morris Park. In June 1907 the railroad was reported as expending $100,000 for new machinery in the machine shop, including 20 turning lathes, additional equipment for the blacksmith and coach shops and a large amount of new shafting and belting. At Locust Avenue the railroad put up another car shed in 1904 to accommodate

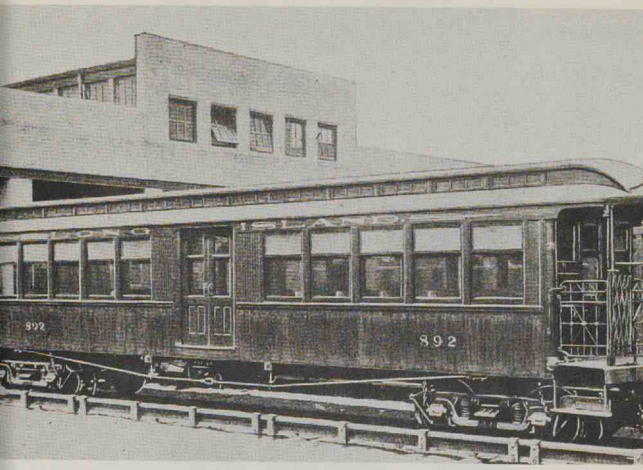
the electric trains that were fitted up there with their electrical equipment.

The railroad increased its yard facilities at various points as might be expected during this period of constant growth. In March 1905 the railroad bought 20 acres of land north of the railroad at West Islip from Amos Dow as a site for a completely new Babylon yard. The old site in Babylon village had been crowded and the constant movement of switching engines, noise of escaping steam, shriek of whistles and rumbling of engines at the round house had been a recurrent source of complaint over a period of years. The round house was moved away during the spring of 1905 into the new yard and the making-up of trains became much easier in the ample new yards.

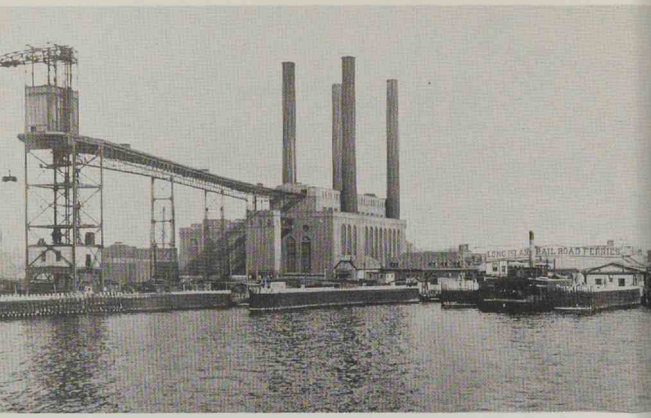
In the spring of 1907 the Long Island R.R. spent $85,000 for a new terminal and transfer station at the Hicksville wye. A large new terminal yard property was bought here in the expectation of extending the electrification to this point but the financial depression in the fall of 1907 put an end to any development.

During every decade of the railroad's existence through the 1880's & 90's there was always talk of building extensions and this period before World War I proved no exception. Surely the most-talked about extension over several years was the prolongation of the Wading River Branch to Riverhead and south to Westhampton or Hampton Bays. The absurdity of the Wading River Extension meandering nowhere and abruptly ending in a field perplexed and baffled everyone since its building in 1895 and the consensus of opinion was that it could make sense and serve some useful purpose only by terminating at Riverhead. Even the railroad officials after Austin Corbin's day shared this view. In March 1902 President Baldwin conferred with Riverhead merchants and himself drove over the eleven miles that separated the two points to inspect the terrain. The residents of Baiting Hollow and Northville liked the idea enough to hold meetings. Pres. Baldwin said he would have the route surveyed and estimates made of the construction cost. He stressed that the railroad would do no more unless the right of way were given outright to the company. On April 14 there was a large public meeting in Riverhead to promote the idea. Proponents urged that the extension would open up a rich farming district, and that the railroad would do a good business by running trains through the North Shore instead of running empty trains between Farmingdale and Riverhead.

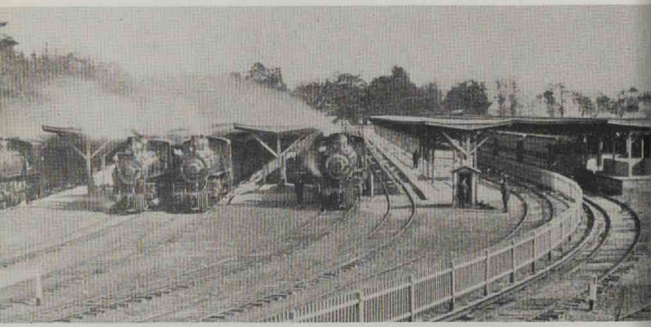
Enthusiasm for the new extension seems to have reached a peak in May 1902. The Hampton Bays people held a mass meeting and

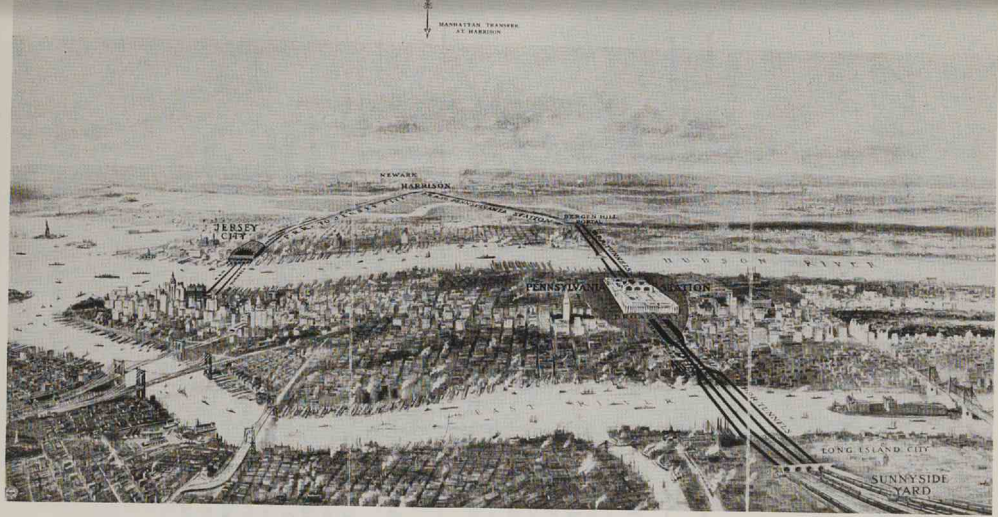


#892, rapid transit cars made for the Brooklyn Bridge service; later they became trailers for the MP-41's. (Top)
First electric trains into Hempstead in 1908. (Alex photo) (Bottom)



Long Island City power station and ferry slips (Reuther 1909) (Top)
Belmont Park Station in 1909 (Reuther) (Bottom)





Pennsylvania Station and tunnels (Huneke)

THE
LONG ISLAND EXPRESS.

SUPERINTENDENT'S OFFICE,

LONG ISLAND CITY, N. Y.

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195 Chambers Street	6362 Cortlandt
304 Canal Street	3301 Franklin
257 Mercer Street	4317 Gramercy
77th Street, bet. 3d and Lexington Aves.	4 Seventy-ninth Street
574 Columbus Avenue, Cor. 88th Street	2457 Riverside
133 West 125th Street	492 Morningside
59th Street and 6th Avenue	4865 Columbus

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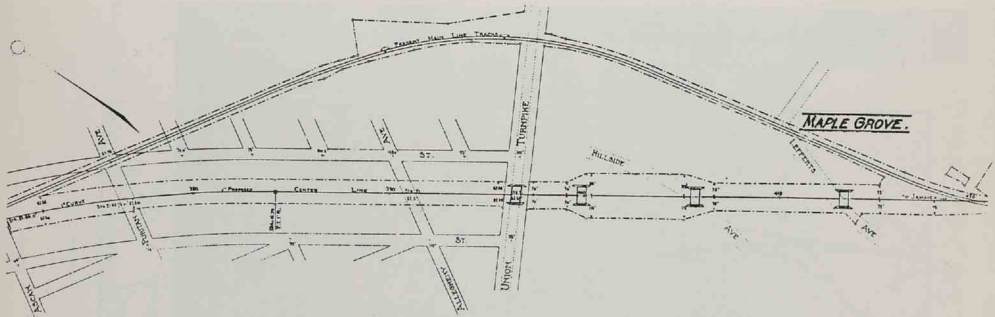
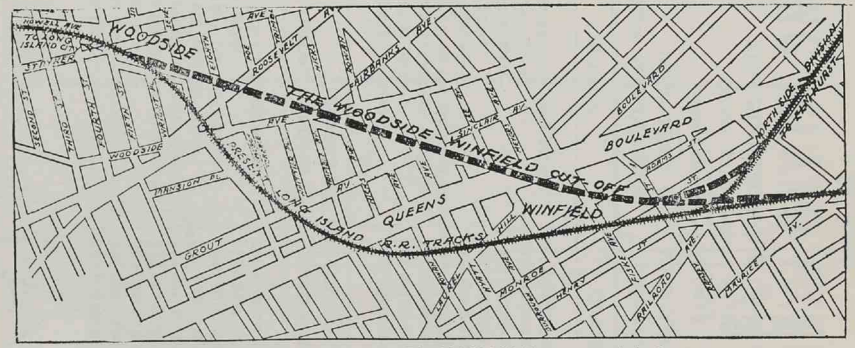
L. I. R. R. Depot, Flatbush Avenue	560 Prospect
333 Fulton Street	1164 Main
501 Broadway, cor. Union Avenue	2940 Williamsburgh
Bushwick and Montrose Avenues	621 Williamsburgh
Atlantic Avenue, near Vesta Avenue	196 East New York
4113 Third Avenue, near 41st Street	310 Bay Ridge
Bath Beach	204 Bath Beach
Sheepshead Bay	526 Coney Island
Vanderveer Park	707 Flatbush



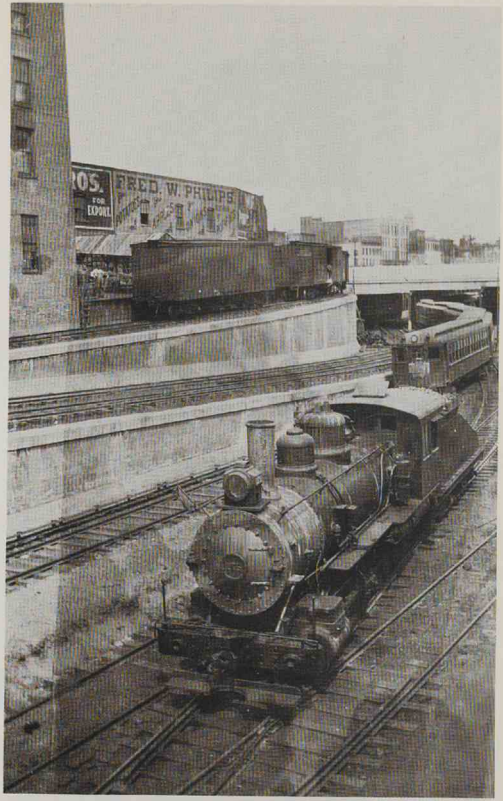
Map of the Maple Grove re-location; the old track had a sharp curvature and came very close to Queens Boulevard. (Huneke)

WOODSIDE-WINFIELD CUTOFF OF LONG ISLAND RAILROAD.



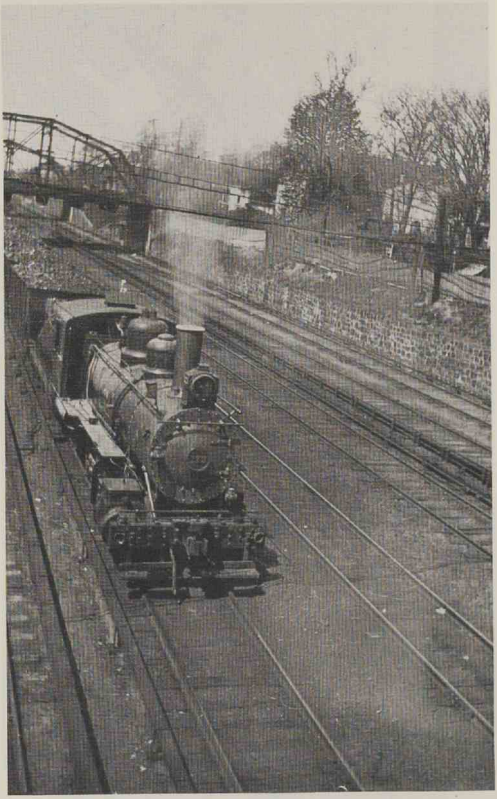
Work Will Be Started Soon on Big $1,500,000 Improvement in Queens.

Woodside-Winfield re-location. The improvement eliminated a reverse curve and a dangerous grade crossing of Queens Blvd.



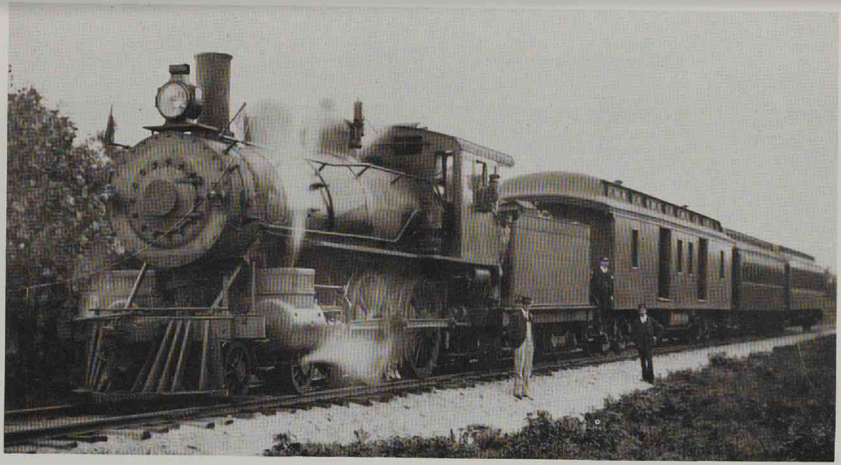
Tunnel entrance from the Carlton Avenue yards with an 0-6-0 switcher #175 in 1906.

(Holman Collection)



Looking from Union Hall St. Bridge west along the tracks to the 160th Street bridge, Jamaica.

(Holman Collection) #173 switcher

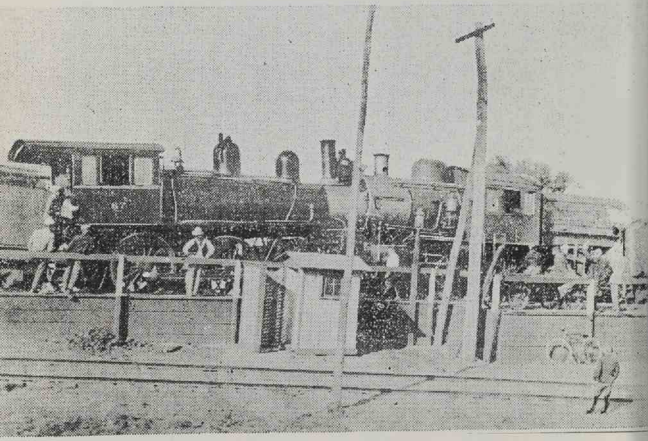


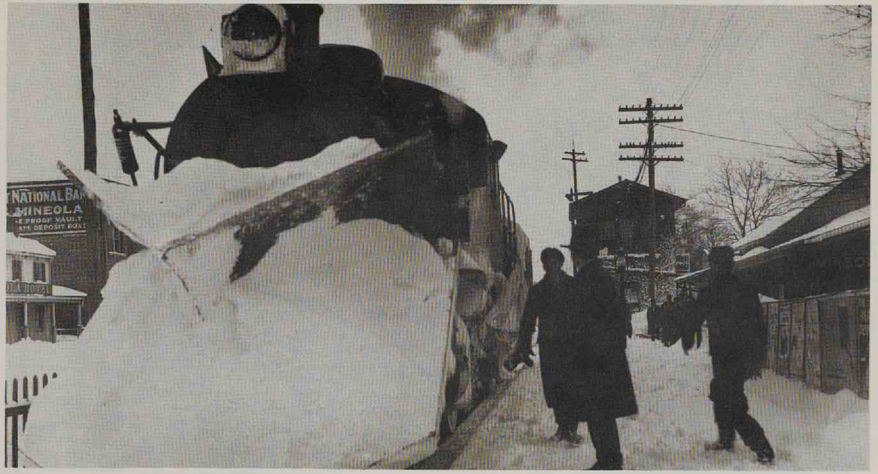
#94 hauling the first train to the Medford Experimental farm in 1907. (Ziel photo)

The Shelter Island Flyer coming through Deer Park in 1904 (Ziel photo)

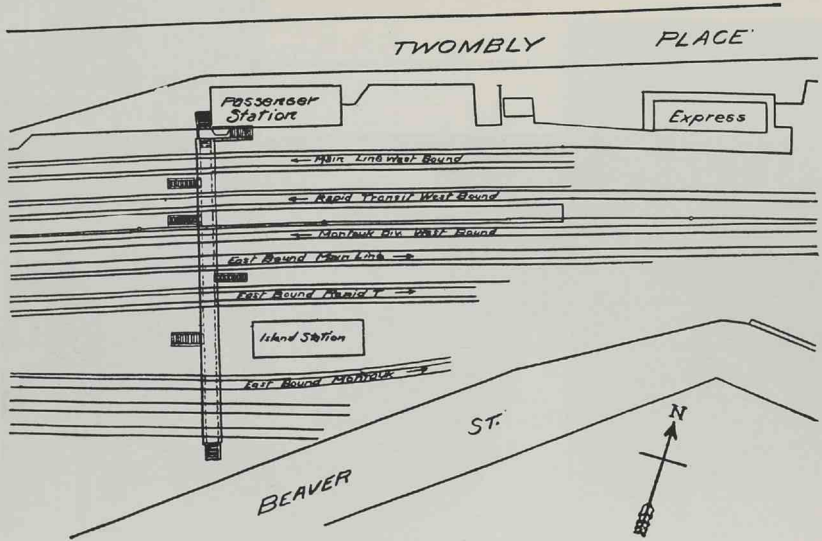
#77 thundering through East Hampton in 1899 (Ziel photo)

The experimental farm at Medford in 1910. (Top)
Engine #67 of the Scoot Train collides with a Main Line Camelback at Jamesport on Oct. 27, 1908. ("Eagle") (Bottom)





Railroading in winter: #16 in Mineola on Jan. 15, 1910.



MAP SHOWING NEW SIX-TRACK LAYOUT OF L. I. R. R. THROUGH JAMAICA YARDS.

Old Jamaica station track layout, 1903–1912 ("Eagle")

TIME TABLE TAKING EFFECT JUNE 25TH, 1902.

(Subject to change without notice.)

(Corrected to July 15th.)

W. F. POTTER
GENERAL SUPERINTENDENT

HOWARD M. SMITH
GEN'L PASSENGER AGENT

AMERICAN BANK NOTE CO., NEW YORK. 22 A. R 12621 50M.

Cover of the June 1902 timetable

SUNNYSIDE ELECTRIC STORAGE YARD

This Great Railroad Terminal Yard Will Cover 400 Acres and Provide Storage and Shifting Facilities for Nearly 1,000 Trains.

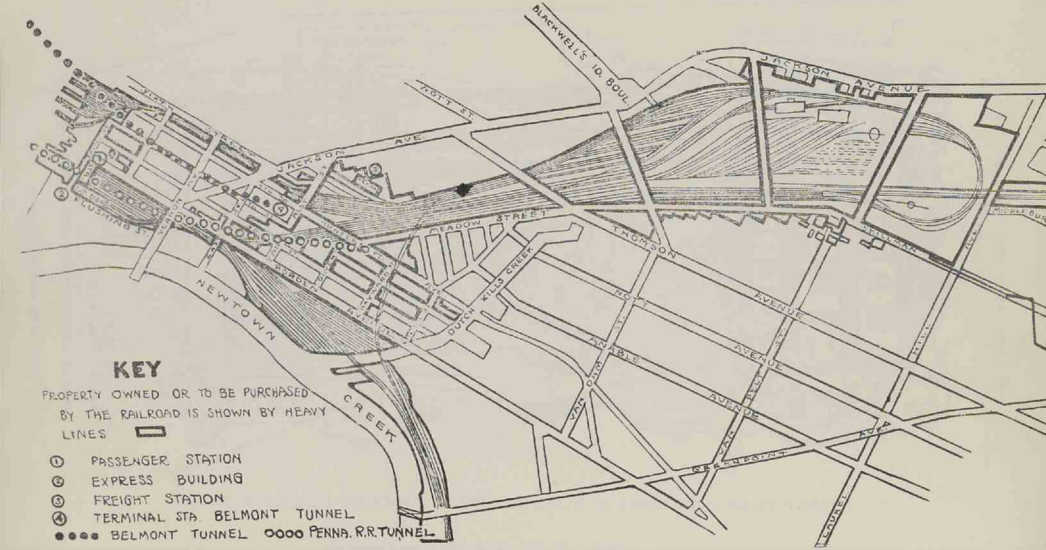


Diagram of the Sunnyside Yards as of April 13, 1907, three years before opening. ("Eagle")

entertainment on May 21st. On May 14 President Baldwin, superintendent Potter and other officials again conferred with Riverhead officials and inspected the route. Engineers began running lines the next day to fix on a route. Supt. Potter attended the Hampton Bays meeting on May 21st and told the people that the railroad was beginning to take the proposal seriously and that it would cost about $300,000. It was thought that after the railroad fixed on a route that the right of way would be donated readily. Surveying took up a good part of June and thereafter nothing further was heard of the project except for occasional revivals of interest.

In January 1903 the railroad allowed to be circulated a map of the 18-mile route of the proposed route from Wading River through Baiting Hollow, Riverhead and Flanders to Hampton Bays. One year later in March 1904 there was still talk about which route to use and where to locate a new Riverhead station. In November of 1905 it was reported that the extension was to be built "at once." When two or three important officials of the cauliflower growers' association protested over delayed freight pickups, Pres. Peters explained that the Riverhead freight yards were congested but that the railroad was going to commence work on the Wading River Extension very shortly and have it completed by the summer of 1906 which would improve freight movements markedly.

In May 1906 Pres. Peters ended all speculation by advising the Riverhead Board of Trade that the railroad would not build the extension until the western terminal plans and the tunnels were completed; as a consolation, he put down Riverhead on the list for new railroad stations. The last recorded flicker of interest in the extension came in April 1911 when petitions were circulated in Riverhead and over a thousand signatures were gathered; of course, nothing came of the effort.

Even more far-fetched than the Wading River Extension was the Fort Pond Bay scheme of 1910–1912. The establishment of an ocean terminal for trans-Atlantic ships had been a fond dream of Austin Corbin and the scheme was renewed by a syndicate late in 1910. In February 1911 the Long Island R.R. signed a contract to purchase 160 acres of land at Fort Pond Bay; this acreage plus the 60 the railroad already owned gave at least 220 on which it would be possible to build extensive piers, storehouses, sheds and other buildings. The railroad clearly considered the deepwater port a possibility and wanted to be in a position to provide freight and passenger yard, shops and terminal facilities for the accommodation of any trans-Atlantic trade that would

materialize in the future. Surveyors were at work in 1911. The railroad had already drawn up plans for piers and switchyards. A breakwater would be necessary across the mouth of Fort Pond Bay from Rocky Point and the railroad was then estimating its cost. To find out whether fast service could be given from Montauk to New York, the Long Island R.R. ran a test run for the benefit of officials of the International Mercantile Marine Company and the White Star Line. The train left the Pennsylvania Station at 7:30 A.M. and arrived at Montauk at 9:25, a run of 119 miles in an hour and 55 mins. or at a rate of 62½ MPH. There had been a three-minute delay at Woodside to change engines. Although the British visitor said nothing for publication, it was known that the Europeans were impressed. It was obvious too that the railroad and the shipping interest had something serious in mind.

In February 1912 the Montauk Harbor Improvement Company filed papers of incorporation and its spokesman, Arnold Aronovici, revealed that big financial interests in Paris, Antwerp, Brussels and Amsterdam were behind the company and were ready to invest from fifty to one hundred million to improve the harbor and develop it into one of the important steamship terminals of the world. The company had already bought 4200 acres and 160 acres was being allocated to the Long Island R.R. for terminal facilities. No officers of the Long Island R.R. or the Pennsylvania Railroad, however, were directors of the Harbor Improvement Co. The Europeans were convinced that New York was overcrowded with shipping and that the new venture could bring in a profit of millions. Mr. Aronovici declared himself ready to begin in two months on the building of the power plants and piers.

Months passed and in August 1912 a railroad engineer began to build a commissary and bakery for Italian laborers. In August the Long Island R.R. and the promoters were astonished by an unfavorable report from the Army Corps of Engineers on the building of a breakwater and the establishment of a port of entry. Only after the receipt of the discouraging report from Washington did the Long Island R.R. get the financial estimates and recommendations it ordered. The breakwater would cost three million. One alternative would be a free zone operated by the Federal government. The other alternative would be development of the enterprise by the Pennsylvania Railroad.

In December 1912 the Montauk project was killed altogether by the announced opposition of Secretary of War Stimson who asserted there was no real need for the port, that the time saved would be negligible and that the government would be put to great unnecessary expense to

build customs houses, immigration stations, aids to navigation, etc. After the Stimson decision nothing further was done at Montauk and the idea was never again seriously advanced.

The one extension that did get built—if it may be called that— was the spur into Belmont Park in 1904–05. In February 1904 the Long Island R.R. bought from Thomas Callister of Queens Village a tract of 1½ acres of land 579 X 100, lying south of the Main Line, for enlarging the right of way east of the station. In November 1904 the railroad awarded a contract to the firm of Ryan and Kelly to build a large depressed terminal south of Hempstead Avenue. The contractors laid ten tracks 100 feet long and parallel with the highway; there were seven platforms, each with an umbrella roof. A passenger subway 20 feet wide led under the tracks and the highway into the racing grounds. Two tracks connected this terminal with the Main Line tracks a mile to the north. A third track was also laid on the Main Line from Queens to west of Hempstead Avenue to lay up trains when needed. This work was pressed all during the winter months in spite of frozen ground and finished up in late April 1905. When the new Belmont Park Race Track formally opened for its first season on May 4, 1905, the new station accommodated the first race track specials. In April 1913 the Westchester Racing Association deeded to the Long Island R.R. a strip a little over half a mile in length and from 20 to 63 feet wide along the south side of the Main Line for additional track and yard facilities.

CHAPTER XV
Passenger Services

THE Long Island R. R. during the first two decades of the 20th century practiced the same liberal policy of running too many rather than too few trains and of encouraging every variety of excursion that marked the railroad of the 90's. As we read the timetables of the railroad from its takeover by the Pennsylvania Railroad in 1900 to the outbreak of World War I, we are struck not only by the gradually increasing frequency of the basic train schedule but also by the generous offering of one-day and weekend excursion trains on the occasion of the great holidays of July 4th and Labor Day and on special occasions.

While the annually increasing patronage of the trains was the most viable and obvious evidence of the public's appreciation, what was perhaps even more appreciated was the road's willingness to continue its summer schedule far into the fall and so to encourage summer visitors to prolong their sojourn at the boarding houses and watering places until Thanksgiving. The Brooklyn Eagle of Oct. 18, 1903 expressed this well:

> "People are well-pleased over the retention of the summer timetable and as a result, a much larger number of city residents than usual are remaining through the month of October at their country homes. Many say that if the present excellent service is continued, they will stay out on Long Island until the holiday. The very full summer timetable has been preserved to all points 40 miles and more out on the island and over 400 trains daily leave Long Island City and Brooklyn, more than Grand Central.
>
> The new policy of the Long Island R. R. has resulted in giving more than twice the number of daily trains than were run on the schedules of six years ago, and an even greater ratio of increase on the Oyster Bay, Port Jefferson and Main Lines has resulted in an enormous increase in travel and growth of population all along the divisions.... Pres. Baldwin has continually

> advanced the train service far beyond what the immediate traffic returns would warrant and even beyond what his associates thought was prudent, but every such increase has been justified. The faster time and better service are additional factors."

This liberal policy of steady expansion was interrupted only twice in sixteen years. The first cutback was triggered by the Panic of 1907. In the third week of October, a panic in the New York Stock Exchange spread consternation through the money markets of the country and began to tumble banks. The sober awakening after an exuberant period of euphoria was reflected on the Long Island R. R. in radical reduction of services to bring down the operating expenses. A number of local trains were discontinued and the express trains had to do the business of the locals; about 1000 train-miles per day were saved.

As it turned out, the 1907 Panic was essentially a banker's disturbance that did not filter down deeply enough to upset the naturally expanding economy of a prosperous nation and the railroad rapidly recovered and even surpassed its former prosperity. The second retrenchment in the fall of 1911 had nothing to do with the economy; it could be ascribed to a combination of strains such as over-investment in very costly capital improvements, a half million dollar increase in wages, a $100,000 increased expense for anthracite coal, a $100,000 increase in real estate taxes and a law forbidding the railroad to keep telegraphers working beyond an eight-hour day; increased expenses of new service into the Penn Station and finally, heavy rental charges. In October 1911 the railroad deficit, because of these accumulating pressures had threatened to top the $600,000 mark and the railroad reacted by dropping 22 trains outright and cutting down the runs of other trains. Again the rising prosperity of the country and the ever-expanding number of patrons bailed the railroad out of its immediate difficulties and encouraged the restoration of the full former schedule.

During the 1900–1916 period there were at least three important alterations in the traffic flow of passengers because of terminal changes and subway openings. The first deflection came as a result of the opening of the IRT-Brooklyn Extension to Flatbush Avenue on May 1, 1908. Before this date passengers had for years detrained at Flatbush Avenue, then mounted the elevated steps to the 5th Avenue-Culver Line trains and had then ridden to Park Row, New York where they could take trolley cars or the new IRT subway to their destinations. On and after May 1, passengers could walk from the LIRR trains directly to the

IRT trains without coming to street level and could then ride to anywhere on Manhattan Island without further change.

The significance of this revolution in traveling convenience was so universally appreciated on Long Island that celebrations and parades were held in Jamaica and some of the bigger south side towns, and souvenir spoons and lapel buttons were widely sold to mark the date in memory. Not only did through passengers utilize the new IRT connection but large numbers of local passengers began to patronize the Long Island R.R. stations at Nostrand Avenue, East New York and local stops out to Woodhaven in preference to the elevated and the trolley cars because Manhattan was now reachable in a half hour or less and with considerable less crowding and waiting. The Atlantic Branch had always done well in traffic volume but the new IRT connection pushed the traffic density to saturation levels that continued well after the Penn Station was opened.

The second big shift in Long Island R.R. traffic was caused by the opening of the Queensborough Bridge on Mar. 30, 1909. At first only vehicles and foot passengers were allowed across the bridge, but on Feb. 5, 1910, the New York & Queens County trolley line began to run through cars over the bridge to New York from Flushing, College Point and Corona. The effect was felt immediately on the North Shore Branch of the Long Island R.R. Although the Flushing traffic had been falling gradually since 1898, it now fell steeply; the railroad fare to Hunter's Point was 15¢ and the trolley fare only 5¢; the trains ran half hourly but the trolleys gave a 10-minute service. Because of this unfavorable competition the railroad was left with only the traffic east of Bayside. When the New York & North Shore trolley opened to Roslyn in 1910, revenues on the North Shore Division fell even further. The Long Island R.R.'s 34th Street ferry business similarly began to feel the effect of the new Queensborough Bridge; the frequent service of former days gave way to longer intervals and fewer boats.

The third big shift in travel and certainly the most far-reaching came as a result of the opening of the Pennsylvania Station in Sept. 1910. The operation of Long Island R.R. trains into this massive New York terminal created a whole series of changes in operational patterns. The fact that only electric trains could operate through the tunnels forced a modification of the old patterns; for long-distance steam trains it became necessary to uncouple steam locomotives at Harold Tower and to substitute electric locomotives that laid up in the Sunnyside Yard for this purpose. Later, this change was shifted to the new station at Jamaica.

Until the North Side line was electrified in October 1913, it was necessary to detach steam locomotives at Woodside station. The opening of the Penn Station was also responsible, of course, for the building of the Glendale Cut-off; the Rockaway traffic in summer was extremely heavy and could not feasibly be handled by electric trains out of Brooklyn alone; it was far more advantageously handled by the electrics and the steam trains out of Long Island City. Once the cut-off had been built, it became possible to run through electric trains to Rockaway from New York.

Although as many as six million passengers used the Penn Station service in 1911, the first full year the station was open, it would be a mistake to think that the old Long Island City service and the 34th Street ferry were abandoned overnight. No less than three million passengers continued to use the old route in 1911 and 1912, and in 1912 the Long Island R.R. felt it worth while to rebuild the East 34th Street station on the Manhattan side. Part of this was force of habit on the part of some commuters, part a need to reach the east side of Manhattan to which the ferry and elevated connection gave better access than did the Penn Station; however, the most compelling reason to use the old route was the differential in fare. The Long Island R.R. charged roughly a dollar more a month to commuters to Penn Station than it did to Long Island City or Brooklyn. It was the opening of the Steinway Tunnel in 1915 and the IRT-Queens elevated lines in 1916-1917 that dealt the death blow to the old station; by July 1918, only 63 commuters were still traveling to Long Island City. The Long Island, in fact, maintained a regular service into Long Island City until as late as May 1925, when 12 trains were withdrawn. From that day until the present, only two or three trains a day have been run into the old terminal.

The acquisition of a terminal on Manhattan Island for the trains of the Long Island R.R. was not entirely a blessing for the road. While it proved an enormous convenience to the passengers, particularly the commuters, for the railroad it meant slightly over a mile of added travel on every run, and this additional expense plus the assumption of a heavy annual rental exacted by the Pennsylvania Railroad for the use of the tracks and terminal facilities. The railroad charged passengers additional fare for a through ride to the Penn Station but this surcharge never fully paid for the additional cost in wages, power and maintenance.

Still another change of traffic flow in the Long Island City area was caused when the Long Island R.R. opened Hunter's Point Avenue station on July 1, 1914. The station was built expressly to give passengers

access to the Steinway Tunnel only one block distant. Commuters with business on the east side of New York would find this subway more useful and a change to the uptown and downtown trains at Grand Central was available. As it turned out, the Long Island R.R. was a year ahead of the IRT for the subway station at Hunter's Point did not open till Feb. 15, 1916.

The passenger flow by terminals on the Long Island R.R. is, unfortunately, available to us for all too few years but we do have the distribution for five important years:

	1910	1911	1912	1913	1914
Penn Station	1,422,909	6,224,429	7,732,184	9,629,021	11,031,845
Flatbush Ave.	13,455,991	14,094,003	15,772,402	17,501,524	18,064,729
Long Island City	6,332,878	3,308,938	3,071,004	2,318,568	1,471,541

As can be seen, the traffic into Flatbush Avenue was twice that of the Penn Station. There were two strong reasons for this: Brooklyn was cheaper by 10¢ a ride or a dollar a month, and downtown New York was still the business and entertainment center of the city. The Pennsylvania Station was located uptown in what was then still largely a residential area, too far on the west side and without good transit facilities. The original IRT subway came across 42nd Street and moved up Broadway, by-passing the Penn Station area altogether. When the 7th Avenue subway opened from Times Square south to Penn Station on June 3, 1917 and to South Ferry on July 1, 1918, the position of the Penn Station improved; the gradual shift of city life northward to the midtown area after World War I enabled it to finally eclipse and surpass Flatbush Avenue as a Long Island R.R. terminal.

One of the phenomena of the early years of the 20th Century was the emergence of the commuter as an important factor in railroad economics. In the 1880's and 90's the bulk of the revenues came from summer riding, weekend and holiday excursions and the heavy freight business. In the years before World War I we find the emergence of the suburban commuter an increasingly important factor; it was in these years that Cypress Hills, Woodhaven, Brooklyn Hills, Jamaica, Richmond Hill, Elmhurst, Corona, Ridgewood, Middle Village and Glendale developed intensively with block after block of new houses occupied by a new generation of young householders eager to escape the crowding and ugliness of the old neighborhoods. Out on the island this era was the golden age of the summer "cottage", often a luxurious house on a large property, elegantly landscaped and staffed with an army of live-in servants,

available in inexhaustible supply and at low wages. It became the fashion to display one's wealth and social position with beautiful furnishings, matched horses drawing fine carriages, outdoor sports like boating & yachting; for the wealthy—and there were more of them than ever before—a way of life emerged that was closely modeled on that of the English nobility in their country houses. Fine estates on commanding sites along the North Shore and in the picturesque valleys in between became commonplace. The Montauk Highway along the South Shore was similarly bordered for long stretches with handsome residences and estates.

The railroad benefited from all this affluence in both middle class and upper class society. The suburban homeowner bought commutation tickets at a rate that grew by 10% every year, while his wealthy counterpart in Nassau and Suffolk bought parlor car excursion tickets for weekend visits to the manorial estate from spring until as late as Thanksgiving and 500 or 1000 mile tickets for the servants and for the use of the family on weekdays. The clothes and household goods necessary to maintain the proper social image arrived in special baggage trains piled high with valises and steamer trunks that netted a profitable return to the railroad. Even the master's horses traveled in a special horse parlor car 780 befitting their rank.

As the years passed, the commuter became the backbone of the railroad's business. A few statistics showing the steady growth of the commutation business have been preserved in the newspapers:

	January		February		March			
	1907	1908	1907	1908	1907	1908	1911	1912
Main Line	735	764	722	742	745	772	1396	1762
Montauk Br.	2020	2426	1986	2007	2017	2136	2968	3258
North Shore	2293	2029	2134	1939	2338	2009	3276	2443
Far Rock. Br.	583	688	593	660	615	707	1183	1368
Rock. Beach	189	219	193	215	199	236	448	492
Hempstead	299	319	297	315	312	323	627	776
Oyster Bay	272	265	277	240	282	258	399	436
Wading River	207	186	195	181	190	202	361	375
Atl. Avenue	182	181	167	183	186	199	684	666
Long Beach	1	39	0	38	4	42	151	167
Manhat. Beach	0	0	0	0			1	1

These totals, modest though they look to us today, reflect riding at the poorest time of the year—the winter months with no holidays. The summer riding is preserved for three different years and makes an interesting contrast with the winter figures.

	July 1911	July 1912	July 1918
Main Line	1530	1842	3493
Montauk Branch	4488	4977	7352
North Shore Br.	2311	2341	3522
Far Rockaway Br.	5286	6131	8732
Rockaway Beach	2511	2925	6994
Hempstead	647	803	1236
Oyster Bay	1055	1129	1402
Wading River Br.	904	947	1080
Atlantic Ave. Br	507	519	877
Long Beach Br.	457	496	1020
Manhattan Beach Br.	2	2	4

The long-range gain shown in these tables reflect a healthy trend. The Eagle of Jan. 3, 1912 commented:

> "The average number of commuters during the month of Dec. 1911 was 11,888, an increase of 1450 or 12% over Dec. 1910. The average of every month during 1905 was 6337 and during 1911, 13,526 or a gain of 104% in six years. The average in 1910 was 11,869, the increase for this (1911) year over last year (1910) being 1657 or 14%."

A scrutiny of these same tables reveals some of the historic trends on the Long Island R.R.: the declining performance on the North Shore because of the increasing inroads of competition from the trolleys and the IRT elevated line; the increasing importance of the Montauk Branch as the chief money earner of the road; the poor performance of the Oyster Bay Branch, still true today. Only in very recent times have the Main Line and Wading River Branch improved on their World War I performance. The best performer of all—the Rockaway line—is today wholly lost to rapid transit.

Riding on the whole Long Island R.R. grew very moderately in the pre-World War I years and then exploded beyond all expectation:

	Total riders	Increase or Decrease	Commuters
1901	14,520,218	increase over previous year 17.2%	
1902	16,611,102	7.33%	
1903	17,552,060	5.66%	
1904	18,815,477	4.54%	
1905	18,199,162	decrease 3.28%	
1906	21,626,390	increase 18.83%	
1907	23,950,547	10.75%	
1908	23,242,838	decrease 3.0%	
1909	27,466,761	increase 18.17%	
1910	30,978,615	12.79%	
1911	33,867,228	9.32%	10,262,950
1912	37,319,812	10.19%	11,534,562
1913	40,606,183	8.81%	12,543,030
1914	42,127,526	2.53%	13,374,679
1915	42,629,325	2.39%	14,074,975
1916	45,802,722	3.44%	15,932,739
1917	50,786,028	10.9%	17,601,613
1918	55,004,086		17,642,700
1919	64,067,541	16.48%	25,426,950
1920	72,743,820	13.54%	28,891,350
1925	100,922,813		56,675,578

Another interesting way to view Long Island R.R. traffic is to see it in terms of its distribution by types of service; paucity of records again limits us to four years:

	Commuters	Local electric	Other	Delancey St.-Rockaway Beach
1909	7,744,860	4,252,201	14,305,920	1,163,778
1910	8,932,413	5,452,342	15,221,268	1,372,592
1911	10,262,950	6,290,398	15,778,166	1,515,714
1912	11,534,562	7,749,967	16,504,817	1,530,466

Still another interesting sidelight on the growth of Long Island R.R. traffic is revealed by the increased sales of the seven different types of tickets available in this era:

	1906	1910
Commutation	83,028	151,210
10-Trip	15,354	31,279
20-Trip	20,676	20,921
50-Trip	18,087	16,781
500-Mile	46,514	110,964
1000-Mile	13,393	1,538
Special Tickets	197,052	332,701

We have the commutation statistics of a few stations for this distant period:

	June 1909	June 1910	July 1912	July 1915	July 1918
MONTAUK BR.					
Springfield	89	97			
Lynbrook			480	615	828
Rockville Centre	540	591	665	755	992
Baldwin	160	160		216	
Freeport	523	601	676	963	1209
Merrick	76	103			
Bellmore	57	66			
Amityville	228	552	303	342	393
Babylon	226	243		299	335
Bayshore	211	268	478	496	569
Islip	73	76			
Sayville	63	83		200	225
Patchogue	99	94		205	
LONG BEACH:					
East Rockaway	71	107			
Long Beach			385	525	724
ATLANTIC BRANCH:					
East New York	8	21			
Railroad Avenue	33	80			
Union Course	47	64			
Woodhaven	4	15			322
Morris Park	128	178	220		250
Jamaica	291	336	390		840

	June 1909	June 1910	July 1912	July 1915	July 1918
OYSTER BAY BR:					
Roslyn	63	77			
Sea Cliff	378	367	614	522	677
Glen Cove	47	54			
Oyster Bay	139	138			
NORTH SHORE BR:					
Elmhurst	60	50			
Corona	175	144	198		
Flushing Main St.	243	214			330
Murray Hill	384	386	381		
Broadway	82	91			
Bayside	266	302	302		565
Douglaston	90	117			
Little Neck	137	143			
Great Neck				268	366
Port Washington	203	192		329	433
College Point	61	53			
Whitestone	231	225			222
Whitestone Landing	73	79			
HEMPSTEAD BR:					
Hollis	131	152			
Queens	87	125			305
Floral Park	97	124		281	350
Nassau Blvd.	3	25			208
Garden City	145	206	310	277	443
Hempstead	310	338	384	395	501
MAIN LINE:					
Mineola	52	74			217
Westbury	24	41			
Hicksville	65	73			
Central Park	32	43			
Farmingdale	46	50			
Ronkonkoma	16	23			

	June 1909	June 1910	July 1912	July 1915	July 1918
WADING RIVER BR:					
Huntington	215	251	369	373	415
Northport	112	86			
Kings Park	13	24			
Port Jefferson	31	43			
Shoreham	12	21			
ROCKAWAY BR:					
Woodmere	108	121		294	319
Cedarhurst	237	222	345	450	503
Lawrence	198	220		224	263
Far Rockaway	1490	1541	2468		2726
Edgemere	156	175	568		1531
Arverne	764	799	2170		3211
Rockaway Beach	930	1122	2708		6241

The early timetables of the Long Island R.R. show no particular pattern of train numbers but in 1907 the Long Island decided for the first time to adopt a system of train numbering that conformed to the practice of the big trunk lines of the country in assigning particular number blocks to particular branches. On the Long Island the following system made its appearance with the spring timetable of May 17, 1907:

0-200	Montauk Branch
200-300	Main Line
500	Oyster Bay Branch
600	Wading River Branch
700	Hempstead Branch
800	Long Beach
1000	Rockaway & Atlantic Branches
2000	Sunday trains

Having viewed the railroad as a whole, we can profitably turn at this point to the particular services of each branch and the traffic densities on each during this era.

The Main Line to Greenport usually enjoyed three through daily trains during the spring, summer and fall and three Cape Horn trains. The most famous through train was the Cannon Ball which originated in Long Island City sometime after 4 P.M. and made the 65 miles to

Manor in an hour and 28 minutes. and the full 95 miles run in an hour and 55 minutes. At Manor the train divided, half going to Greenport and half to Amagansett or Montauk. The Cannon Ball usually began running around June 1 and continued often till about Nov. 1. The first passenger stop after Jamaica was Riverhead and the true destination of the passengers was not Greenport but the hotels on Shelter Island or at Orient which did an immense business during these golden years. The Cannon Ball usually consisted of 12, 13 and 14 cars followed by a separate baggage train; in some years the traffic forced the railroad to run the train in two sections.

The Cape Horn trains (Greenport via Manor to Amagansett) normally made one trip a day, but two others met the Montauk train at Eastport and ran back to Greenport. The railroad activity at Greenport at this day was at its height. All summer long a newspaper train left New York at about 4 A.M. and arrived in Greenport at around 7 A.M. On July 4th, Labor Day and weekends during heat waves, special trains sometimes had to be made up outside of the timetable to accommodate the crowds arriving on the boats from New London, Orient and Shelter Island. Riverhead enjoyed five trains a day each way in summer and three in winter. In the fall the county fair held at Riverhead on four days attracted visitors from all over the county and special trains came over the Main Line and from the south side villages by way of Eastport. The present-day practice of cutting the Main Line in two and terminating trains at the halfway mark in Ronkonkoma was unknown before 1906, but after that date from three to five trains daily terminated their runs here instead of at Hicksville or Wyandanch as formerly.

An unusual feature on the Main Line was the annual Shopping Day excursion organized by the Long Island Rail Road for the benefit of the East End people. The big stores in downtown Brooklyn cooperated in this venture with special sales of all kinds advertised in the county papers a week in advance. The date was often the Saturday at the end of the first week in January and the cost of the excursion ticket was only a third of the regular fare and entitled the purchaser to stay overnight besides. This train left Greenport just after 5 A.M. and picked up passengers as far west as Riverhead; the Wading River special offered the rate only east of Port Jefferson and the Amagansett train as far west as Speonk. In 1910, three thousand persons patronized this excursion; in 1916, the Greenport special brought in 586, of which 216 came from Riverhead; the Wading River train originated 36, the Amagansett special 476 and the Speonk special 508. It is interesting to note that the

East End special has been revived by the Long Island R.R. in the last two or three years.

The opposite end of the Main Line at Long Island City was a veritable railroad paradise on summer weekends and holidays. Train after train of parlor cars, day coaches and baggage cars steamed out of Long Island City headed East; as many as 100,000 bustling, perspiring people poured through the gates of this crowded station. A reporter detailed to watch the July 4th traffic in 1908 noted that at 1 P.M. the Cannon Ball pulled out in two sections; at 2 P.M. the two sections of the Amagansett train; at 1:35 the nine cars of the Greenport Express; at 1:47 ten cars of the Hamptons train; at 3:42 P.M. ten cars of the all-parlor car train to Quogue & Amagansett; at 4:12 another Riverhead train of 10 cars and at 4:15 section one of the Hamptons train with nine parlor cars and section two with half parlor cars and half day coaches. During the two-day July 4th weekend in 1910, twenty extra trains had to be hastily made up at Long Island City and the railroad was so desperate for motive power that drill engines and yard switchers had to be pressed into service. As we look over the gaunt and ravaged railroad yards at Long Island City today, it is almost impossible to imagine that this was once the goal of hurrying throngs and the scene of more than 650 train movements in one day.

The Montauk Branch was the busiest line on the Long Island R.R. in the summers before World War I and, like the Main Line, enjoyed the distinction of name trains and a variety of special services. During the summer time Amagansett was the usual terminal of the Montauk Branch, with service fluctuating between five and seven trains on weekdays; up through 1905, only two trains a day ran through to Montauk on weekdays, but after 1906, all five or seven trains operated to the Fort Pond Bay terminal. Between 1900 and 1905 anywhere from two to five additional weekday trains turned back either at Center Moriches, or Eastport, but after about 1910, Speonk became the regular turn-back point. Patchogue, as the most important village west of the Hamptons, enjoyed a special service of its own; there were Patchogue Expresses with limited stops and at least five or six weekday trains terminated their runs here. This number rose rapidly to nine in 1913 and 11 in 1914. Seventeen miles to the west was Babylon, a sizeable village; Babylon had been the terminus for the local service on the south side since the first train had come through in 1867, and when the Long Island

R.R. enlarged and relocated the yard facilities in 1905, increasing numbers of trains terminated their runs at Babylon. In 1901, only six eastbound weekday trains terminated at Babylon but by 1913, fifteen trains were ending their runs here.

During the summer time the stately and wealthy old villages of East Hampton and Southampton along with the lesser neighboring villages of Westhampton, Quogue and Hampton Bays supported an express train service that matched in speed and luxury the Cannon Ball and Shelter Island Express. The Cannon Ball itself broke at Manor and ran non-stop to Westhampton, ending its 104 mile run at Amagansett in two hours and 50 minutes. Besides the Cannon Ball was the Hamptons Limited, an all-parlor car train, running non-stop to Quogue and then making the way stations to Amagansett.

Beginning in 1905 the Long Island R.R. made a special effort to stimulate train and boat excursions to Block Island and for this purpose created a new fast train, the Block Island Express. The new express left Long Island City at 10:42 A.M. daily, made the 116 mile run in two hours and 54 minutes; it was rated as the 7th fastest train in the United States. The train's original consist was a combination car, two coaches, two parlor cars, but as the train became popular, ten to twelve cars became the rule. The Block Island Express, unlike the Cannon Ball, operated the whole distance over the Montauk Branch, stopping only at Babylon, Bay Shore, Patchogue, Center Moriches and Westhampton.

In the spring of 1909 the railroad put on a new fast express, the "South Shore Limited" leaving Long Island City at 4:42 P.M., stopping only at Bay Shore, Sayville, Patchogue, then all stops to Eastport.

Besides these name trains the Montauk Branch had its regular Montauk or Amagansett Expresses, limited-stop trains from Center Moriches or Speonk, Patchogue Limiteds, club-car specials, etc., making this branch the most heavily traveled on the system. The homeward-bound Labor Day crush of 1909 gives us a good picture of the frenzied activity on the south side in this golden age of railroading. The regular parlor car train #3 left Amagansett with nine day coaches and three parlor cars; train #7 followed with twelve parlor cars. Number 31 left Center Moriches in two sections of ten cars each and #49 pulled out of Patchogue in two section; the first, an all-parlor car train of ten cars and the other, ten day coaches. Train #9 had to be run from Amagansett in three sections, each of 10 or twelve cars. Evening trains on the same day duplicated the morning rush: the 7:30 P.M. Amagansett train came in three sections of ten to twelve cars each and one baggage section. Train

#15 came in two sections from Patchogue; #23 had an extra section from Sayville and #11 in two sections, the second picked up at Center Moriches. There were 15 to 18 solid baggage trains besides one to three baggage cars on each of the long-distance trains. The earliest known instance of Long Island R.R. trains running in three sections appears in accounts of the Labor Day crush of 1908, and this phenomenon is peculiar to the Montauk Division only.

Sag Harbor, almost at the far end of the Montauk Div., was a large town with over 3000 people. Steamboats operated by the Long Island R.R., gave passage to Greenport, Shelter Island and New London, and commercial fishing made the town prosperous. Most of the trains running to Amagansett and Montauk had a Sag Harbor connection which consisted of a shuttle train waiting on a siding at Bridgehampton station. The consist was always one of the Long Island's oldest locomotives, an aged 4-4-0 or ex-Manhattan Beach 0-4-6 tank engine pulling two ancient turtle-roof coaches of Civil War vintage, one a combine; curiously, the engine ran backwards headed south for lack of a turntable at Bridgehampton. Rather suprisingly, the Sag Harbor Branch had a small local service all its own, which consisted of three rush-hour trips each way on weekdays; these commuter trains made a stop at Noyack Road.

Although the western end of the Montauk Branch lacked the varnish and elegance of the eastern end, it nevertheless enjoyed a full and frequent train service. Babylon usually had 25 weekdays trains each way along with the advantage of being the first stop for a few through East End trains; the bigger villages of Freeport and Rockville Centre normally had 16-17 trains each way. In the first few years of this century, the North Shore Branch and the Montauk produced almost equal numbers of commuters, but after 1914, as the North Side lost riders to the subway, the Montauk Branch moved far ahead in commuting patronage with Rockville Centre and Freeport the best paying stations.

The Wading River Branch normally had about a dozen trains a day each way; three of these only went through to Wading River and the rest terminated at Port Jefferson with an occasional short line train to Smithtown or Northport. The outer twelve miles of the line was a revenue vacuum because the branch terminated in a meadow and served tiny hamlets that showed a semblance of life only in summer. Port Jefferson, an old village and the business center for a large area originated a small traffic in passengers and freight, but the real economic support for the Wading River Branch came from the village of Huntington and

to a lesser extent, Northport. Huntington especially originated a heavy passenger and freight traffic the year around; the summer traffic was enormous thanks to the large number of affluent people who owned estates or rented houses. Boating and yachting were big pursuits in Huntington Harbor and Brooklyn's Squadron "C" Cavalry held summer maneuvers regularly in the southern outskirts. The local trolley, and, after 1909, the cross-island trolley, contributed to the bustling commercial activity of Huntington.

Northport was a thriving summer resort town with many hotels and boarding houses and its broad harbor invited boating and fishing. The handicap of being located three miles away from its own station was remedied in 1902 when the Long Island R.R. itself built a connecting trolley line for passengers and freight.

The summer timetable of the Wading River Branch had one name train, the "Port Jefferson Flyer" that made Huntington the first stop; despite the single track, tortuous grades and hilly country the trains made fast time, one hour and twenty mins. from Long Island City to Port Jefferson. The "Flyer" stopped only at Huntington, Northport and Port Jefferson and made it possible for businessmen to spend the weekend with their vacationing families. It usually appeared on the timetables about April 1st and was withdrawn around Thanksgiving Day. On the big holidays we read of Wading River trains run in two sections with up to nine cars on each and with separate baggage trains following. Some way trains even in summer did not run through to the city; the train ran only as far as Mineola where passengers transferred to a waiting Oyster Bay train.

The Oyster Bay Branch had twelve to fifteen trains each way the year around depending on the season. Most of the stations on the line served rural hamlets that originated little revenue for the railroad; only the villages of Roslyn, Sea Cliff and Glen Cove had substantial population and traffic. Roslyn was an old village in a deep valley at the head of Hempstead Harbor; the stores located there, and the trolley running north and south, made it a small commercial centre. Sea Cliff was a summer resort with many hotels and boarding houses, a steamboat landing place and the site of a summer Methodist camp meeting. Glen Cove was a large commercial town with sizeable factories and a substantial population (6000).

There were no name trains on the Oyster Bay Branch but there were fast summer expresses stopping only at Roslyn, Sea Cliff, and Glen Cove. These trains left Long Island City at 4:34 and 5:32 P.M. and

returned from Oyster Bay at 7:20 and 8:17 A.M. After 1909 there was an extra Wednesday train and a Saturday midnight theatre train. On the big holidays—July 4th and Labor Day—two-section trains appeared, one all parlor car and one all day coach. Interestingly, down to as late as 1908, it was customary to run some Oyster Bay trains over the Hempstead Branch to Garden City and then over the northwest quadrant out at Hempstead Crossing to Mineola. In 1901 half the Oyster Bay trains ran via Garden City but by 1909 this routing had been abandoned. The Long Island R.R. operated its Sound steamboats to landings at Sea Cliff, Glenwood and Roslyn, but this service no longer paid after 1914 and World War I ended it.

The Long Beach Branch was completely transformed in the first decade of the century. Long Beach in 1900 consisted of one big hotel and a satellite string of 19 oceanfront cottages. On the bay side there were a few fishing stations that came alive in summer and sometimes offered minimal overnight accommodations. The Long Island R.R. offered a summer service of 14 to 16 trains a day each way through to New York or Brooklyn plus one or two shuttle trains to Lynbrook on the Montauk Branch. The service usually began with Decoration Day and ended about Oct. 1. As the communities along the Long Beach Branch grew slowly, the complete lack of winter service proved a hardship, and in the summer of 1907, a few residents of East Rockaway and Oceanside petitioned the Public Service Commission to order year-round train service. The result was that, beginning with the winter timetable on Oct. 25, 1909 the Long Island R.R. put on four trains a day to run all winter. In 1907–1908 ex-Senator Reynolds and a group of investors acquired control of Long Beach and completely transformed the property. The contours of the island were radically altered by dredging and filling, streets were laid out, resort hotels built and private housing encouraged. The result of all this intensive development created a substantial year-round population and a large summer business. By 1914 Long Beach had 22 daily trains each way in summer on a 41 min. schedule and on the Fourth of July and Labor Day, holiday crowds jammed long special trains to the newly fashionable resort. Long Beach had joined Rockaway and Coney Island as the latest seaside attraction for New Yorkers.

The beach traffic to Long Beach, however, was as nothing compared to the enormous business of the Rockaways. An almost uninhabited peninsula in 1870, Rockaway had developed rapidly in the 1880's once it became accessible to the city, and by 1900 the whole peninsula had grown into a succession of villages that extended end on end for four

miles. Rockaway Beach and Far Rockaway formed the two ends, with Edgemere, Arverne, Hammels, Playland and Seaside sandwiched in between. Sections of boardwalk sprang up in the 90's and on the side streets countless summer hotels, boarding houses and family cottages grew up to meet the demand for summer housing. Along the boardwalk was an endless succession of beer halls, saloons, amusement palaces, bath houses, stage shows and fast food shops that catered to the public hunger for food and entertainment. Beginning in June and continuing until almost October, uncounted throngs of sweltering New Yorkers and Brooklynites sought out Rockaway as a refuge from the heat and confinement and decorum of the city. Access to the Rockaway peninsula until World War I was solely by rail unless one wanted to make a 30-mile roundabout journey via Jamaica, and Springfield around Jamaica Bay. The cross-bay trestle had been built in 1880 and by this slender path, an almost unimaginable traffic was moved into and out of the peninsula each weekend of the summer months and almost as much on weekdays by the railroad. Over this same route the Brooklyn Rapid Transit moved its own trains to Rockaway by agreement with the Long Island R.R. (1898–1917). In addition to this cross-bay traffic, the Long Island operated trains via the Far Rockaway Branch. Incredibly, all this traffic moved on only three tracks throughout this period. Adding to the train movement problem was the fact that the stations on the peninsula were so close together that a long train could easily straddle two stations at once. In 1904 the railroad laid down a third track for the exclusive use of trolley cars between Hammels and Far Rockaway. In the springtime the railroad operated about 17 trains daily each way on weekdays and 25 on Sundays via the bay and a similar number via Far Rockaway. During July and August 25 to 30 trains ran on weekdays and 50 or more on Sundays.

The Brooklyn Rapid Transit normally began operating its daily Broadway Ferry—Rockaway service on June 1st and continued till Labor Day. There was a 15-minute headway on weekdays and 10 on Sundays. The changeover from steam to electric operation was made in 1906. The Long Island R.R. made its own changeover from steam to electric in 1905 and the fact that the Rockaway Branch was the first to be electrified was a tribute to the paramount importance of the Rockaway line and that it commanded first priority in the thinking of the railroad. Electric trains to the Rockaways during the first six seasons ran only out of Brooklyn, but with the completion of the Glendale cut-off electric trains from Penn Station also began to serve the Rockaways.

The next important change came in 1908. The BRT trains from the Broadway Ferry had given good service, but owing to the extra cost of the ferries and the loss of time, the trains were not patronized very heavily by New Yorkers. To improve patronage from this source, the BRT strengthened the Broadway elevated structure to withstand the running of heavy Long Island R.R. motor trains over it, and instead of terminating at the ferry, service was extended over the Williamsburgh Bridge to Delancey Street in Manhattan. This new service to Rockaway opened on Decoration Day 1908 and the trains covered the whole distance in 47 mins. running time. On Aug. 4, 1913 the New York terminus was moved to Chambers Street. The Long Island R.R. used its MP-41 class motor cars with the old side-door wooden trailers. This joint operation of the Long Island R.R. with the BRT proved unprofitable, and after the summer of 1917, the interline operation was abandoned and never resumed.

Train movements on the Rockaway peninsula were unique and different from anywhere else on the railroad. On the same four miles of track steam trains from Long Island City, electric trains from Brooklyn, steam trains from the BRT, electric trains from the Far Rockaway Branch and trolley cars of the Ocean Electric Ry. all operated simultaneously one behind the other, a situation that would appall any regulatory body today, yet in all these years there was never an accident or any loss of life.

On the great holidays and during heat waves trains became so frequent and streamed in from so many directions at once that operation became a nightmare and a source of nervous tension for the dispatcher. Milling, turbulent crowds thronged the platforms of stations and the scenes of jostling and mad stampeding for seats became the subject of feature articles the next day in the city papers. Only at Rockaway was the Long Island compelled to resort to the extreme expedient of herding passengers in bull pens, heavy wooden stockades whose stout timbers forced a semblance of orderly train loading on the wild crowds of crying children, fear-maddened women and cursing men, many of them drunk and spoiling for a brawl. The press of the day printed graphic descriptions of Rockaway weekends:

> "The crowds of excursionists which spent yesterday at Rockaway was a record breaker, the police estimating the number at 75,000. The heat in the city caused a great exodus to nearby resorts and Rockaway Beach got its share. The Long Island

R.R. found itself unable to carry all those who desired to go to the beach, and early in the day the schedule was abandoned and trains ran between the beach and Brooklyn at short intervals. A number of trains from the BRT had to be pressed into service on the Long Island City Branch; the BRT ran on five-minute headway but even then could scarcely carry the crowds. Nine trolley cars were run on the four-mile stretch between the Park and Far Rockaway and thousands of people were brought down by that route. The steamboats were thronged on each trip while the crowds were increased by driving and automobiling parties. One continuous line of trains reached all the way across the trestle and when the homeward rush came, the crush at all stations was beyond the control of the officers.

Seventy-two trains each way averaging nine cars each were run from Brooklyn and Long Island City to Rockaway and they carried 50,000 people to and from the beach. Seventy-two trains of five cars each were run each way by the BRT from the Broadway Ferry to Rockaway, carrying 25,000 each way. The Ocean Electric carried 16,000 and 25,000 came by the boats, making more than 110,000 in all. The steamer "Chester W. Chapin" brought 1084 to Rockaway and Manhattan Beach from New Haven, docking at Long Island City; the "William G. Payne" brought 500 from Bridgeport to Long Island City for Rockaway and Manhattan Beach." Eagle, July 27, 1903

"Yesterday on July 12th the BRT and LIRR jointly ran 91 six-car trains over Broadway from the ferry and bridge to Rockaway Beach, carrying 25,000 people. All the other trains from Flatbush Avenue and Long Island City carried 10 cars each. The Broadway trains ran three minutes apart in the rush hour." July 13, 1908

"Yesterday's beach traffic broke all records. Trains were run on the trestle under a four-minute headway. It is estimated that 224,000 passengers were carried in each direction of which 40,000 came from Brooklyn. Fifteen extra trains were run from the Penn Station." Eagle, July 3, 1911

The other beach resort served by the Long Island R.R.—Manhattan Beach—was already in its decline by 1900, the golden prosperity of the 80's and especially the 90's having been eroded by the rise of Brighton

Beach and Coney Island. Much of the traffic to the Manhattan and Oriental Hotels had been stolen away by the Brooklyn Rapid Transit trains and the ubiquitous trolley cars; for several years more Austin Corbin, as owner of Manhattan Beach, used his position as president of the Long Island R.R. to give the place a service in excess of the actual demand. The Pennsylvania Railroad, as new owner of the Long Island R.R., had no such personal interest in the resort and cut the service to more realistic levels. During the winter months four trains a day served Manhattan Beach but in the summer time, this was increased to eleven or twelve trains each way on weekdays. Between 1901 and 1908 as many as 25,000 persons came by train to Manhattan Beach on Sundays, many of them to attend the races at Sheepshead Bay and Brighton Beach tracks. Many others who boarded the cars at Long Island City were excursionists brought down by boat from New Haven, Bridgeport and Norwalk. After 1909 when the race tracks were closed, the traffic fell sharply and by 1913 there were only four weekday trains and two on Sundays. In 1911 the Manhattan Beach Hotel was torn down and in 1916 the Oriental followed; train service shrank to three a day from 1918 to 1921, two after 1921 and complete abandonment followed in 1924.

The Far Rockaway Branch running from Valley Stream through to Far Rockaway and Arverne served a number of small residential communities that furnished a slowly increasing traffic throughout the year. In 1901–02 seven trains a day each way on weekdays was sufficient to handle the traffic; by 1904, this had increased to eleven and after 1907, 15 to 17 trains was the norm. Real estate activity in Woodmere, Cedarhurst and Lawrence flourished in the years before World War I and this accounted for a steady rise in the number of commuters.

The Hempstead Branch retained single track down to 1918 and had only two stations of consequence, Garden City and Hempstead; up to 1908 some Oyster Bay trains used the branch and stopped at Garden City. Hempstead for most of the period before World War I had 15 trains a day, a third of them running via Mineola. The West Hempstead Branch had a steam service of 4 or 5 trains a day only until 1913; thereafter two battery cars gave a sort of trolley service on this lightly-patronized branch. An informal station was maintained at Hempstead Crossing as a transfer point for passengers between West Hempstead and Hempstead Branches because there was no station at the actual junction at Country Life Press until 1913. The battery cars made additional stops after 1913 at Doubleday's to pick up plant workers and at Franklin Avenue. Service over the West Hempstead Branch from the

Montauk Division was limited during the first years to one or at most two trains a day; in 1913 the railroad changed its policy and began to run six to eight through trains a day via the Montauk Division. On Oct. 19, 1926 the first electric trains began running over the West Hempstead Branch, displacing the two battery cars.

The North Shore Branch was perhaps the only division on the Long Island R.R. on which service diminished over the years; at the turn of the century there were 30 trains to Whitestone Landing and 23 to Port Washington but by 1914, the Whitestone Landing service had fallen to 24 and the Port Washington had remained unchanged. Trolley and subway competition had eaten into the inner-city revenues; fortunately, the Port Washington line gained suburban riders in Great Neck, Manhasset and Plandome which compensated for heavy losses in Elmhurst, Corona and Flushing. For years it had been customary to break some of the trains at the meadows junction where the Whitestone cars were uncoupled. Beginning in June 1916 the trains were broken at Corona station instead to save time and delay.

The Atlantic Branch with its eight local stations between Jamaica and Flatbush Avenue was, in the years before World War I, a busy and important part of the railroad. The local service, variously called "rapid transit" and "suburban" served the rapidly developing communities of Cypress Hills, Woodhaven and Morris Park and catered to a growing number of commuters. When the IRT subway opened to Atlantic Avenue in May 1908, the Atlantic Branch traffic doubled overnight. Much of the traffic that had formerly gone to Long Island City and the ferries changed over to Brooklyn and serious crowding resulted. The railroad had previously been in the habit of holding the Brooklyn train in Jamaica station until two or three steam trains had discharged their passengers. Now, it became apparent that with the tide of travel diverted to Brooklyn, the electric trains quickly overloaded. Even after the Penn Station opened, twice as many people rode to Brooklyn as to New York. An investigation into complaints of persistent overcrowding by the Public Service Commission in 1912 revealed that there were regularly 500 to 700 standees in the morning and evening rush hour. Because the schedule was too tight already to add additional trains, the railroad agreed to run longer trains of seven cars. Unhappily, this exceeded the length of all the station platforms both at Jamaica and at Flatbush Avenue. When this remedy proved inadequate, the Public Service Commission ordered eight, nine and ten car trains but at Flatbush Avenue people had to walk through the cars to unload. In August 1914 inspectors from the Public

Service Commission found that 1200 to 1500 people were still crowded onto one train with 100 to 284 standees. The commission then prevailed on the railroad to withdraw the smaller MP-41 cars and to substitute the newer and longer cars holding 72 persons seated. The railroad went into World War I with the crowding problem defying any solution. The embarrassing fact was that the new Flatbush Avenue station, just opened in 1907, was already too small to accommodate long trains. Furthermore, the station had been built to accommodate smaller cars and the wooden trailers; the much longer and higher MP-54 class cars experienced difficulty with the tight clearances and sharp turns in the underground terminal.

The opening of the Hunters Point Avenue station in 1914 relieved very slightly the pressure on the Flatbush Avenue station, but it was not until the opening of the 7th Avenue IRT line in 1919 and the general movement of business uptown in New York that the Penn Station began to draw the bulk of the passenger traffic.

Few people are aware today that there was once a direct passenger train service between the Flatbush Avenue station and Penn Station. When the Pennsylvania Railroad had its New York terminal in Jersey City, it had for years operated a ferry service between Jersey City and Fulton Street, Brooklyn, for the convenience of Brooklyn patrons. When the Penn Station was about to open in September 1910, the railroad discontinued the ferry. Brooklyn organizations complained that they were losing an important convenience and extracted from the Pennsylvania Railroad a promise that trains would run from Flatbush Avenue station direct to Penn Station to compensate for the shutdown of the ferry service.

The shuttle train began operating as promised with 13 trips a day and at a 35¢ fare. The three-car train of MP-41 cars ran out to Ozone Park on the Rockaway line, changed ends and then non-stop to the Penn Station. At first about 200 persons a day used the service but the high fare drew protests. Even though the fare was eventually reduced to 10¢, patronage began to fall off in the first months of 1911 and the Pennsylvania quietly informed the Brooklyn public that the service would be withdrawn as of Aug. 31, 1911. Loud protests landed the case in the lap of the Public Service Commission; their inspectors discovered that 151 people used the service in January, 184 in February, 134 in March, 250 in April, 165 in May, 110 in June and 102 in July. The railroad had cut out the service to eight trains each way daily, but even then the passenger level in mid-summer came to only six per car. The Pennsylvania was

losing ten to twelve thousand a month on the service and the Long Island R.R. found the Ozone Park switching a nuisance and a hindrance to its Rockaway traffic. Protests continued but the Public Service Commission authorized the abandonment and on Aug. 31, 1911, the shuttle made its last run.

We have surveyed the traffic on each of the branches; a final word may be said on the few excursion services provided in this 1900–1916 period. Sunday excursions to Newport, R.I. were offered in 1903–04 with a special fast express from Long Island City to Greenport, where passengers boarded the "Chester W. Chapin" of the Norwich Line for Newport. The train left Long Island City at 8:20 and the round trip fare was only $1.50. On July 26, 1903, 882 persons were carried; on Aug. 2, 935 passengers and on Aug. 16th, 1055. On at least one occasion in 1905 the Long Island R.R. steamer "Sagamore" was used for a Hudson River excursion, leaving Long Island City at 10:30 A.M. Music and refreshments were on board and the round trip fare was a modest 50¢. In July 1913 the railroad offered excursions to Glen Island on the steamer "Nassau" from the trolley dock at Halesite.

The Block Island excursions were run beginning in 1905 and down to the summer of 1916. Fast express trains left Long Island City at 10:30 A.M. daily and ran to Fort Pond Bay in three hours; a one and a half hour sail brought the passengers to Block Island. After an overnight stay at a hotel, passengers took the return boat at 6 A.M. and caught the train at Greenport at 7:30, arriving in New York at 11:32 A.M. Nine thousand people patronized this service in 1905. The excursion was an expensive one to operate but the railroad continued it as a prestige run.

The race tracks of the metropolitan area generated a very special traffic. The Long Island Railroad ran special excursions on racing day to the Brooklyn Jockey Club's track on Gravesend Avenue at Avenues S & T down to 1909 when racing was outlawed inside Brooklyn. The Jamaica Race Track in South Jamaica near the railroad's Locust Avenue shops attracted crowds of Brooklynites and New Yorkers. On July 27, 1903, 15,000 persons crowded the special trains and on August 1st, 10,000 persons filled the fourteen extra trains run to Locust Manor station.

Beginning in 1905 and for a few years thereafter the Vanderbilt Cup Races for dare-devil auto drivers on the country roads of Nassau County attracted thousands to Mineola. Big crowds came by special train and additional hundreds came by trolley or in their own automobiles.

The biggest attraction of all was Belmont Park. The track opened in 1905 and every year thereafter attracted crowds to its vast grandstand and spacious grounds. The special station and terminal built by the Long Island Railroad enabled it to run many trains to Belmont with relative ease and dispatch. The description of the experiences of the Long Island Railroad on opening day, May 4, 1905 deserves quoting:

> "The rush of travelers over the East River ferries and through Long Island City from 8 o'clock Thursday morning up to 2 o'clock in the afternoon was unprecedented even in the history of the largest racing events ever held on Long Island. It is estimated that by 12:30 over 1200 autos had crossed the 34th Street and 92nd Street ferries and there were a number of tally-ho coaches and vehicles of other descriptions. Borden Avenue and Jackson Avenue, the main thoroughfares leading from 34th Street ferry to Jamaica by way of Thomson Avenue and Hoffman Blvd. presented an animated scene up to 2 o'clock, the procession of road vehicles being at times almost a continuous one.
>
> The first racing train of the Long Island R.R. rolled out of Long Island City yard at 11:20 with 800 people aboard. This was followed at intervals of ten minutes by another special and in some instances the time was shortened. By half past two nearly 17,000 people had been carried out from Long Island City station to Belmont Park. There were 24 trains of 10 cars each and they were packed to the utmost. Two ferry-boat loads were put aboard each train and ferryboats were run under four or five minutes headway. This was about as fast as the crowd could make its way through the entrances and exits at the foot of 34th Street, Manhattan. The waiting room of that station was crowded with hundreds of rushing, perspiring men and women who besieged the dozen or so extra ticket sellers, keeping them busy making change as fast as they could make their fingers move. The crowd not only filled the waiting room but extended in long lines out upon the sidewalk. A special train of private parlor cars was reserved for August Belmont and his party and the five special coaches for the Turf and Field Club were made a part of this train. The Long Island Railroad, to be

prepared for the rush, had obtained 20 steel cars from the Central of New Jersey which were conspicuous by their green color, and 20 cars from the Pennsylvania Railroad. They used also five extra locomotives brought over from the Pennsylvania Yards. The run from Long Island City to the tracks was made in about 25 mins. The rush eastward of track employees, vendors and others began very early in the morning and the 6:35 A.M. train out of Long Island City took two or three hundred to Belmont Park, and every regular train thereafter was well filled. All the trolley lines from Long Island City, Elmhurst, Flushing and Jamaica were crowded and cars were run out as rapidly as possible without any attention to schedule time.

Nine special trains were run out of Flatbush Avenue and they carried about 5000 people. Every regular train to Queens was also crowded. Not less than 10,000 persons went from Brooklyn by Long Island Railroad trains and 300 to 400 by the elevated and trolley cars of the BRT." Eagle, May 6, 1905

In later years the Long Island Railroad operated 35 to 40 trains daily on each day of the racing season, usually a week in May. After 1905 all service was furnished by electric trains and the experience of the first hectic seasons enabled the road to handle these annual traffic surges without disrupting the regular schedules.

CHAPTER XVI

Marine Operations

WHEN the Flushing Railroad in 1854 and the Long Island Railroad in 1861 first commenced the operation of trains into Long Island City, the close association of the railroads with the East River ferries began. The East 34th Street ferry started up April 20, 1859 and this was shortly followed by the James Slip service on June 12, 1860. Most of the ferry service was in the hands of James M. Waterbury and his East River Ferry Company, and the service was provided by side-wheel, double-ended wooden boats. After 1870 the newer boats were built of iron. In July 1887 the East River Company sold out to the Metropolitan Ferry Company and on Apr. 21, 1892 the Long Island R.R. bought out the two routes which directly concerned its passengers, the East 34th Street and James Slip ferries.

At the turn of the century the Long Island Rail Road was operating two old wooden boats, the "Hudson City" built in 1868 and the "Long Island City" built in 1869; in addition, to these, there were seven iron ferryboats in regular service:

Southampton	built 1869	length 170.8
Garden City	1872	171.2
Flushing	1878	163
Rockaway	1879	150
Long Beach	1880	150.5
Manhattan Beach	1884	152
Sag Harbor	1884	152

By 1900 the railroad was carrying twelve million passengers a year and if we assume that at least half of these journeyed to and from Long Island City, it is easy to see that nine boats were none too many to ferry the crush of passengers that swarmed in and out of the Long Island City terminal, particularly in the summer time.

The ferry business was not the only part of the Long Island Rail Road's marine operations. In the 1880's the railroad became increasingly involved in the freight business and in 1888 bought its first tugboat. In the 90's this first purchase soon expanded into a fleet:

Gladiator	built 1888	wood, length	110.6
Wrestler	1889	wood	115
Montauk	1895	wood	96.6
Syosset	1899	Steel	102.6
Patchogue	1907	Steel	90.5

The third and most important of the Long Island Rail Road's marine operations was the steamboat fleet. The Montauk Steamboat Company had started up in October 1886 to run boats between Manhattan and the east end of the island, chiefly Greenport and Sag Harbor with additional service to Orient, Block Island and New London. When the steamboat line began to become a serious competitor with the Long Island Rail Road for passenger and freight traffic, the railroad bought it out in 1898. At first, only two boats passed to the Long Island Railroad, the "Shinnecock" and the "Montauk", but within the next few years the Long Island Rail Road built up a large steamboat fleet as follows:

Greenport	built 1866	wood	paddle wheel	244 ft.
Nantasket	built 1878	wood	paddle wheel	173.5
Manhanset	1879	iron	screw	104.4
		accommodated 1100 pass.; speed 18 MPH		
Meteor	1883	iron	screw	162
		rebuilt 1901		
Cape Charles	1885	iron	paddle wheel	252.5
Shelter Island	1886	iron	paddle wheel	175
Montauk	1891	iron	paddle wheel	175
Wyandotte	1892	steel	screw	155.6
Long Island	1893	steel	screw	132.5
Orient	1896	wood	paddle wheel	142.6
		accommodated 1200 pass.; speed 16 MPH		
Shinnecock	1896	steel	paddle wheel	234
		had 84 state rooms		
Nassau	1898	wood	screw	133
Quaker City	1901	steel	screw	155.5
Sagamore	built 1901	steel	screw	155.5 length
Montauk II	1902	steel	screw	193
(Queen Caroline)		accommodated 750 pass. speed 16-18 knots.		

When the Pennsylvania Railroad took over the management of the Long Island Rail Road in 1900, the boat operations of the Long Island

were overhauled. Previously, there had been a superintendent of floating equipment to handle all marine operations; in April 1900 the road abolished this position and set up the Marine Department, divided into four separate operating units:

1.	The Montauk Steamship Company	steamboats
2.	The River and Harbor Transportation Company (dissolved Mar. 1, 1914)	tugboats, floats
3.	The Long Island Ferry Company	East River ferries
4.	Long Island Marine Repair Shops	Whitestone repair facility

The fourth unit was the newest and the need for it had been growing, especially since the purchase of the Montauk Steamboat Company. Both the Pennsylvania and the Long Island Railroads wanted a site that was close to the East River so that the ferries and tugs could be regularly serviced, yet not too costly to acquire or likely to be threatened by commercial developments. The ideal site was found in Whitestone Landing where the railroad already owned a 200-foot frontage on the waterfront; the spot was within ten miles of the Long Island City terminal, was situated in a semi-rural area and could be expanded if necessary. In May 1904 the railroad began the construction of an immense dock out into the East River, 383 feet long and at its end, a "T" 100 feet long. A track was designed to run the length of the pier. This dock was erected to serve as a landing place for all the floating property of the railroad when in need of repair. Directly behind the dock the company built one of the largest marine repair shops; it was of brick, 340 X 110 feet, two and a half stories high. A siding was laid from the main track which ran through the center of the building and out onto the pier.

The railroad was even considering for a while buying another 90 acres of shore land and building another large dock at which boats of the Montauk Co. could land passengers and then transfer them to waiting trains for New York. This failed of realization, however. By mid-April 1905 the great shops for forge works and shipbuilding and the ship railways were well under way. The railroad could now service the large Montauk fleet, the three Annex steamboats, the ordinary ferry boats, barges and tugs in its own shops. The big Whitestone facility was opened on July 1, 1905 at a cost of over $100,000.

One might assume that when the Pennsylvania Railroad absorbed the Long Island in 1900 with the express purpose of physically linking up the two roads by means of a tunnel, the ferries would have begun to

suffer neglect and disinterest. Such was not the case. Even though the Pennsylvania had committed itself explicitly to a tunnel by late 1901, it seemed to realize that so momentous a piece of construction would not be the work of a year or even of a few years, but rather the effort of almost a decade. During that time a constantly growing passenger and freight traffic over the East River would have to be not only maintained but expanded and increased to a peak of efficiency. This was the reason why the ferry and steamboat traffic reached its peak in the very years that the tunnels were being bored, 1902 to 1910.

In the spring of 1903 the Long Island Rail Road greatly enlarged its waiting rooms on the south side of East 34th Street, New York, and 200 feet east of First Avenue. An extension, one story high and brick and 42 X 131 was added to the existing structure, making the waiting room 117 X 197 and extending from 34th to 33rd Streets.

Two years later in 1905 the railroad upgraded the three slips themselves. The old sheds that covered the ferry slips were torn down and four new modern slips with bridges were put under construction along with a large new ferry building to cover all four slips, 400 X 170, and extending from 33rd to 35th Streets. The bridges were an innovation; not only were they the most solid in the metropolitan area but they were the first to be raised and lowered entirely by electricity and would no longer move up and down with the tides by floats as had been the custom. All the work was completed in October 1905 at a cost of $64,096.

The next step was to overhaul and put in thorough repair the piers on the Long Island City side of the river. Sixty thousand dollars were earmarked for this project. The whole modernization on both sides of the river would enable the railroad to inaugurate a five-minute ferry service. The Long Island City improvements were completed by Dec. 1, 1905.

In June 1906 the Long Island Rail Road added two new steel car floats capable of carrying 22 cars each and costing about $45,000 apiece.

In March 1908 the railroad found it necessary to dredge out the Long Island City slips because of the tunnel work just to the south. The compressed air escaping from the four tubes had for months forced the mud and silt shoreward and the accumulation was becoming a menace to the ferryboats at low tide. The water alongside the Annex dock, the southernmost slip, had always been 17 feet deep at low tide but by 1908, a mud bank had formed. A big dredge was put to work on Mar. 30, 1908 in the center slip to clear out the bottom.

The ferry business reached its peak in 1905 with the purchase by the Long Island R.R. of two new double-end, steel, screw propeller ferryboats, the "Babylon" and the "Hempstead" for the 34th Street ferry service. These were ordered in September 1905 from Harlan & Hollingsworth and were intended to match the best and newest boats in the Hudson River service, being nonsinkable and fireproof. They were 188½ feet long, 17 feet longer than the 35-year old veteran "Garden City" then in use. The passenger accommodations were also double the old boats. Delivery was set for June 1, 1906 but they actually arrived in July.

The great days of the East River ferry traffic were numbered, however, for within a six-year period, three new bridges opened and these soon began to cut sharply into the team traffic that was the lifeblood of the ferries. The Williamsburgh Bridge opened in December 1903; the Manhattan Bridge roadways opened Dec. 31, 1909 and on Mar. 30, 1909 the Queensborough Bridge began to carry vehicles and pedestrians. The first contraction in the system came in 1907 when the Long Island R.R. decided to close the James Slip ferry. The ostensible reason was that extensive waterfront improvements being carried out along the East River waterfront by the city between the Battery and Grand Street, involved the tearing away of the James Slip piers to make way for a concrete sea wall all along South Street. There was a good deal of protest from manufacturing interests in Long Island and Greenpoint who sent teams over the ferry to reach downtown Manhattan. May 11 was to have been the last run but the service was grudgingly continued for the summer months and finally closed down on Oct. 1, 1907.

In February 1908 the railroad withdrew from service the two new doubledeck ferryboats, the "Babylon" and the "Hempstead" after less than two years. They had cost more to operate than the old-style boats, were longer and heavier and their double decks had never been put to use since no two-story ferry terminal had been built. The residents of Flushing carried a protest to the Public Service Commission, claiming that the smaller "Garden City" was the only boat on the 34th Street service and that only one boat was running on the Wall Street Annex line. The railroad explained that the opening of the IRT subway to Brooklyn had caused a change in the tide of travel, nearly all the commuters except those on the North Shore Branch taking the Brooklyn route, and for that reason one boat had been withdrawn from the Annex service. A year later the Long Island R.R. proposed to withdraw even this last boat, the "Sagamore", from the Wall Street route as of Oct. 1, 1908.

The situation was already bad for trucks, for the James Slip service had been the last to accommodate them, while the "Sagamore", a passenger steamer, could carry commuters only. The service did not pay and during 1908 only two trips were made in the morning and three in the afternoon. If the Annex boat stopped, the effect would be that passengers would no longer have any means of reaching any point in Manhattan south of 34th Street in contrast to passengers on the Erie, Lackawanna and Jersey Central who enjoyed frequent ferry service to downtown.

The road was summoned to a hearing before the Public Service Commission on Sept. 11, 1908 at which the railroad testified that the Annex service had been running for ten years and in all that time had not yielded a profit. In 1906 the loss had been $40,000 and in 1907, $45,000; in the current year 1908, the boat during August averaged only 250 passengers. The road had reached the point where it could no longer run trains or boats at a loss. The commuters countered that the ferry didn't pay because the service was not frequent enough and often irregular. The Public Service Commission did not see fit to interfere and on the evening of Sept. 30, 1908, the last Wall Street run was made.

The Long Island R.R. was not the only one to curtail ferry service. The Pennsylvania Railroad hinted that it was considering abolishing its own Annex boats between Fulton Street, Brooklyn, and Jersey City terminal. On Nov. 30, 1910 the Pennsylvania Railroad discontinued its boats over the strong protests of business houses who had been using the route for their trucks and automobiles.

The rapid disappearance of the railroad ferries created some anxiety about the fate of the 34th Street run but the company assured the public that it would not suspend service, provided the city took into consideration the drastic loss of traffic that would follow the opening of the Queensborough Bridge and the Penn Tunnels and possibly the Steinway Tunnel. The railroad had been paying the city $12,000 a year and if this were scaled down, the railroad would continue hauling the truck traffic of the Long Island City manufacturing plants.

Over the summer of 1910 the railroad, in order to decide what to do with the ferry, closely observed the volume of team traffic; it was found that the volume was great enough to require boats running at ten-minute intervals. This was practically the same service then being offered except in rush hour. The team traffic, of course, would not be in the least affected by the opening of the tunnels, and, as the Long Island City factory business increased, it was bound to expand.

Nevertheless, a few changes marked the passing of an era. On Oct. 20, 1910 the old James Slip ferry house at the foot of Borden Avenue, Long Island City, built by the East River Ferry Company in the 70's, was demolished; in the spring of 1910 the railroad sold the old ferryboat "Rockaway" and leased out three other old boats to other companies; the "Sag Harbor" was sold off in 1911. In December 1910 the City of New York chartered the newest boats, the "Babylon" and the "Hempstead" for service on the 39th Street, Brooklyn, line. Later, both boats were sold by the railroad to the Public Service Gas & Electric Co. of New Jersey, where they became the "Tenafly" and the "Hackensack."

By 1911 the passenger traffic on the ferry had fallen off considerably since trolley cars were now operating over the Queensborough Bridge. Another complaint to the Public Service Commission brought out the fact that raising and lowering the old wooden ferry bridges in the Long Island City slips was causing delays; the railroad moved two of the electrically operated ones from the Manhattan side. At the hearing some commuters charged that the railroad deliberately kept the train and boat schedules uncoordinated to force people to the Penn Station route which earned the railroad 95¢ a month more. An inspector confirmed that boats often arrived late for a train or pulled out just before a trainload of commuters was due to arrive.

With the decline of the ferry business the Long Island R.R. sold off the old "Flushing" in 1912 and the "Long Beach" in 1913. The last known investment in the ferry service was in 1912 when a new waiting room and ticket office was completed at East 34th Street to replace the one destroyed by the tunnel excavators. As a point of historical interest, the 34th Street ferry lasted far longer than anyone expected; the old route was not shut down until Mar. 3, 1925 when the old "Southampton" made the last run. A private operator, W. E. McGurk, founder of the Yellow Taxi service, took over from the Long Island R.R.; two new boats, the "Mount Hope" and the "Mount Holly" continued the service for a few more years.

In contrast to the ferryboats which had passed their peak by 1900, the steamboat business of the Montauk Steamboat Company boomed in the decade before World War I. In this golden age of excursion service the Montauk Steamboat Co. operated three routes:

1. Pier 13, East River, (between Wall Street & Old Slip) to Orient, Greenport, Shelter Island, Sag Harbor and Block Island

2. Pier 13 and Great Neck, Glen Cove, Sea Cliff, Glenwood and Roslyn. This service began in 1901
3. Locally between Sag Harbor, Greenport, Orient and New London

Although the Long Island R.R. started with only the "Shinnecock" and the "Montauk" in 1898, other boats were quickly acquired to produce a large fleet. In 1901 the Long Island R.R. purchased the Long Island & New England Steamboat Company and transferred its assets to the Montauk Steamboat Co. This company had maintained a line between Sag Harbor, Greenport, Orient and New London for a number of years until its boat, the "Manhanset" was taken over by the Montauk Co. The "Manhanset" was now sold off and a newer boat, the wooden steamer "Hingham" was bought for $32,500 and put on its route; the boat's name was changed to "Orient" and its hull lengthened 25 feet to increase her capacity. The "Montauk", the sister ship of the "Shinnecock" was than taken off from the New York-Greenport-Sag Harbor route and sold to the Algoma Railroad of Ontario. Another iron paddle-wheel ship, the "City of Lawrence" was chartered to run on alternate days with the "Shinnecock"; this boat was almost two and a half times the size of the "Montauk", had more capacity and was faster. Also in 1901 the road purchased the old "Nantasket" for $32,000 for passenger service between New York and the North Shore villages, and the freight steamer "Meteor" for $20,000 to alternate with the "Nantasket."

In 1903 the old paddle-wheel boat "Greenport" was purchased for service between Sag Harbor and Greenport; it had formerly been the "Sagadahoc" of the Eastern Steamship Company running between Boston and Bath, Me. and was 260 feet long, it could carry 1800 passengers, had 160 staterooms and could go 16 MPH. In 1904 the "Quaker City" was bought as a ferryboat for Wall Street–long Island City traffic, but was sold in 1905. In 1902 the Long Island R.R. bought for the first time a brand-new steel boat, the "Sagamore" at a cost of $50,899 as an additional ferryboat between Wall Street and Long Island City.

> In 1903 the Montauk Co. secured the contract from the United States government for carrying the mails between New London, Greenport, Sag Harbor, Plum Island and Fisher's Island. There were at that time about 500 soldiers and other employees at Fort Terry and the 13th Regiment of Brooklyn was also slated to train there during the summer months. The mail route was 41 miles long and the trip took about three

hours each way. The "Sag Harbor" and the "Meteor" were assigned to alternate runs. —Eagle, Apr. 11, 1903 6:1

The year 1905 marked the last year that the Long Island R.R. bought new vessels. The "Wyandotte", bought to take the place of the unsatisfactory "Quaker City", was purchased in Detroit, Mich. This was a single-screw steel double deck boat, large enough to carry 1000 people and with a speed of 17 MPH. It ran under its own power all the way from Detroit via the Great Lakes and St. Lawrence River, arriving in New York on June 8, 1905 and was put in service on the Annex run out of Wall Street. In May the road bought for $125,000 the large excursion steamer "Queen Caroline" from the Cape Ann R.R. where it had been running between Cape May, N.J. and Lewes, Del. The "Queen Caroline" was only three years old, 210 feet long, all steel and could make 18 MPH and was purchased expressly for the Greenport-Block Island-Fort Pond Bay service. The Long Island R.R. renamed her the "Montauk II".

The new boat left Greenport daily at about 8 A.M. shortly after the arrival of the steamers "Shinnecock" or "Greenport" which ran alternately overnight from New York. The steamer then made the run to Block Island in an hour and a half. She returned immediately from Block Island to Montauk in time to meet a fast express from New York and Brooklyn at 1:30 P.M. After taking this group to Block Island, the boat returned to Greenport in the late afternoon in time to catch another fast express for New York. This service competed with the New Haven's Shore Line Division which took five hours for the Block Island run from New York via Providence, R.I.

It is sad to record that the service given by these sleek and beautiful boats was run at a loss almost every year. The Montauk Steamboat Company lost money in 1905, $21,085 in 1907, $38,508 in 1908 "due to competition of other lines and a decrease in the excursion business"; $15,468 in 1909, $11,375 in 1910. After 1911 the ferry business fell away to nothing and the railroad was better able to withstand the small loss on the excursion boats. One sign of the times came as early as 1909 when the railroad cut back the full daily service usually given until November to Labor Day, leaving only one boat on the New York run and one for all the local East End runs. In March 1916 the "Sagamore" was sold off.

However, the railroad was unwilling to sacrifice completely the eastern Long Island excursion business and the "Wyandotte" and the

"Shinnecock" continued running until 1927 when the Rail Road sold off the White fleet. About 1914 the Navigation Laws were revised with stricter provisions on the size of crews and the equipment required for them. This plus an increase in wages and high costs of fuel made the boat business expensive and unprofitable. On top of that a new Federal regulation called the Panama Act prohibited railroads from owning and operating steamboats unless especially permitted to do so by the Interstate Commerce Commission. Local companies that had for years dominated the North Shore service to Roslyn, Glen Head and Sea Cliff began to go out of business; the Long Island R.R. inherited the business and continued the service to 1915 and then abandoned it. 1916 proved the last season for the Block Island service.

The changing economic conditions that drove the boats out of business were well described in an article in June 1916:

> "This year for the first time in the memory of the oldest inhabitant, there are no boats running regularly between any of the North Shore villages of Long Island and New York City. The Long Island R.R. has discontinued the running of its boats on the Glen Cove, Sea Cliff route, the steamboats "Huntington" and "Northport" have both been sold and the two routes have been given up. Nor is there a single sailing vessel running regularly between any of the villages and New York. Such a condition has not existed before in a century. It is a misfortune but is the result of causes for which there is no apparent remedy. The big auto trucks have taken over so much of the freight carrying business that they have seriously cut into the business not only of the steamboats but into the receipts of the Long Island R.R. as well. The sailing packets which 40 or 50 years ago used to take down from the Huntington Harbor docks every fall between two and three thousand barrels of potatoes, apples and turnips every week and thousands of bales of hay have been forced to retire because of the general giving-up of old-fashioned farming on the North Shore and middle of Long Island. Many of the farms have been sold to wealthy men who have converted them into beautiful estates and who are permitting thousands of acres to lie idle and grow up into a wilderness. Other tracts have been converted into market gardens and truck farms, the products of which are taken to the city in farm

> motor trucks in three hours over the improved highways of western Suffolk and Nassau and Queens Counties."
>
> Long Islander, Jun. 2, 1916

A few facts about the operation of the boats and the men who ran them have come down to us. The service between New York and Greenport was an overnight one, the boats taking about 19 hours to make the 120 mile trip; this gave a speed of about 17 MPH. The season usually was a long one, the boats starting their runs in April and ending in November. Some boats wintered in Greenport Harbor, others at Whitestone. The deck officers wore Navy blue uniforms with gold braid and a gold star for every ten years of service. The head of the Montauk Company used the title of captain on formal occasions; from 1898 to 1906 the head of the fleet was David Van Cleaf, who resigned in April 1906. Henry L. Des Anges was appointed to his place; he was then 44 years old and had an extensive railroad background. He had worked as a shopman for the Pennsylvania Railroad but had studied mechanical engineering at night and won a diploma from Cooper Union. For three years he worked for the W. R. Grace Steamship Lines on their railroad interests in Peru. Returning to the United States in 1889, he supervised the installation of compound engines on ferryboats for the Pennsylvania R.R. In April 1900 he took charge of the ferry operations of the Long Island Rail Road, and in 1902 of the River & Harbor Transportation Co., the subsidiary operating tugs and lighters. In 1915 Mr. Des Anges became superintendent of the whole Marine Division which he managed until his retirement in 1932.

Most eminent of all the operating personnel in the Long Island R.R. "Navy" was Capt. Andrew P. Sanden. Born in Stockholm in 1830, he came to New York in 1850 and entered the service of the East River Ferry Co.; he operated the first ferry boat to Long Island City when that service began on Apr. 20, 1854. From that date to Nov. 22, 1901 Capt Sanden continued as a pilot on the boats of the companies. He never had an accident and was the only man trusted to run a boat through dense fog and heavy ice jams. Pennsylvania Railroad rules forced his retirement at 70 after which he became a starter at Long Island City. At his funeral on May 18, 1909, all boats stopped running at 2 P.M for five minutes, a rare honor accorded previously only to Presidents Baldwin and Potter and never afterwards.

As with the operation of the railroad, so the Long Island R.R. marine operations had their occasional mishaps:

1900 Nov. 20: The "Sag Harbor" rammed by three-masted schooner whose bowsprit ripped away the women's cabin, roof and pilot house.

1904 Nov. 4: The "Garden City" hits Catharine St. ferryboat "Somerset" in dense fog. Both boats had stopped and merely bumped each other. Damage minor. The "Garden City" had already bumped into a float, a barge and a steamboat on the same trip!

1905 May 19: The "Rockaway" runs into the "Nassau" outside Long Island City slips during high wind and heavy tide. Some damage to each.

July 3: The "Long Beach" is struck in its paddle box by the Grand St. ferryboat "Virginia". Slight damage.

July 8: The port shaft of the "Manhattan Beach" broke in midstream on way to 34th St. The shaft, nearly a foot thick, snapped with a loud report which shook the boat from stem to stern. The vessel managed to make the Manhattan shore.

Oct. 15: The "Hudson City" with 1000 passengers aboard crashes into the bulkhead at the 34th Street slip with such force as to fling all the passengers into a heap. No injuries.

1906 May 22: The "Garden City" is disabled in midstream by a loosened bolt in the eccentric of one of the engines; drifted for an hour, and then towed by tugs "Montauk" & "Wrestler" to Long Island City.

1907 Feb. 11: The "Hudson City" rammed by the Sound freight steamer "John H. Starin" of the New Haven line. Some of the railing and a section of the women's cabin demolished. No injuries but much panic.

Mar. 13: The "Hempstead" in a dense fog ran into the "Flushing" in Long Island City slip while the latter was discharging passengers. Superstructure of both boats damaged and both boats put out of commission.

1908 Mar. 20: The "Long Beach" entered the Long Island City slip under full headway. Shock caused boat to rebound; passengers thrown in heap; two persons badly injured, many cut & bruised. Boat had to be sent to Whitestone to rebuild bow damage.

1909 Aug. 12: Fire flared up in the "Nantasket" as she was making her first stop at Great Neck. Some passengers were frightened and took the train home. Very slight damage and no explanation for fire released to press.

CHAPTER XVII
Fares and Fare Structure

THE variety of tickets available to the commuter and casual traveler of 75 years ago is so much greater and so different from that available today that a listing of the various offerings is necessary to an understanding of the fare structure.

1. Commutation; not just for 60 trips or a month but for 3 mos. 6 mos. or year
2. 10-trip ticket, mostly for use east of Greenlawn, Deer Park & Babylon.
3. 20-trip ticket; may be used by buyer or any member of his family or servant
4. 50-trip ticket
5. 500-mile book; cost $10, average 2¢ a mile
6. 1000-mile book;cost $20; may be used by buyer or any member of his family or servant. Average 2¢ a mile. No fewer than three coupons might be used on any one ride. Individual tickets in the mileage book were about an inch long and an eighth of an inch wide. The conductor had to know correct distances to tear out the tickets accurately. A fraction of a mile counted as one mile.

Up to 1905 the most recent extensive revision of the passenger tariff on the Long Island R.R. had taken place in 1881 and relatively minor adjustments had been made since. After the Pennsylvania take-over of 1900, however, careful accounting of expenses and income revealed that the steadily rising level of wages and maintenance had eroded the railroad's small profit margin and that the road was now carrying passengers, especially commuters, at a loss. The railroad at first tried to tighten up the regulations governing the use of some tickets in order to trim its losses. The first thing to be canceled was the commercial traveler's tickets (January 1902). These had been sold for some years to commercial houses for the use of their salesmen. The tickets were good for two rides

a day on any branch of the road no matter how long the distance. The tickets sold for $175 a year in advance and were good on the Main Line, Montauk and Wading River Branches.

The railroad next went to work on the commutation tickets. A regulation was issued requiring women commuters to prefix Miss or Mrs. to their names. This requirement stirred up a hornet's nest of opposition and was viewed as an affront to women since nothing was said about men. The railroad defended itself by saying that commutations were supposed to be used only by the person in whose name they were bought and that many persons were using only their initials in which case three or four members of the same family rode on the same ticket.

The next change was to insure that all current commutation tickets would expire on the first of the month and not at some odd date of the month. The notice explained the old and new practice:

> "Commencing on Jan. 1, 1903, all commutation and scholar's tickets will be issued only for a full month beginning on the first day. All persons holding tickets for any of the first five months expiring during December 1902 will be issued a ticket for the remainder of that month at pro rata of the next month in the series, which ticket will be considered as a full month in the series. To those holding tickets from the 6th to the 11th month inclusive of a series, a ticket will be issued pro rata as above mentioned, which ticket will not be considered as one of the yearly series. This gives the commuter the benefit of the reduction allowed under the sliding monthly scale of rates. To commuters holding the 12th month and those holding tickets for 3, 6 and 12 months will be issued a ticket for the remainder of that month at pro rata of 1/12 of the yearly rate, which ticket will be considered one of a new series."

The complicated wording of this notice becomes intelligible only if one bears in mind that yearly commutation tickets were sold on a graduated scale, not on a flat rate per month, i.e. a higher rate was charged for the first few months and a lesser rate for the last few. The railroad's reason for the change was that on crowded trains conductors were in practice unable to examine the dates of commutation tickets before reaching the first station at which passengers disembarked. By having all tickets expire on the first of the month, all that would be necessary would be to examine the month stamp on the face of the ticket.

The years 1903 and 1904 continued to show a loss and in 1905 the railroad determined on more drastic remedies. As of Jan. 1, 1905 the railroad discontinued the sale of all three, six or twelve month commutation tickets on the Port Jefferson Branch, the Main Line east of Medford and on the Montauk Branch east of Patchogue. East End commuters would hereafter buy tickets by the single month. These places were about 55 miles east of Long Island City and were considered as the limit of the suburban zone.

On the same day the railroad withdrew the issuance of 500-mile mileage books, leaving only the 1000-mile books available; this eliminated all intervillage excursion tickets, also any excursion tickets except to the Long Island City or Flatbush Avenue terminus. The railroad dropped its real bomb shell on January 28th when printed notices were sent out to all commuters giving a table of a general advance in rates to take effect on and after Feb. 1. The increase was mainly in the commuter rates which were to be increased about 20% and in some instances 30%. In some instances as on the Oyster Bay and North Shore Branches where a special single and excursion rate were in force because of competition, that was done away with and the single rate was adjusted to correspond with that on other sections of the road. A uniform rate of 3¢ a mile, then currently the rate for single-trip tickets was now established for all points on the island east of Jamaica. The new rates were as follows:

OYSTER BAY BRANCH:

The old single rate from Brooklyn or Long Island City for all stations on the branch from Mineola to Glen Cove had been 55¢, excursion $1; from Locust Valley to Oyster Bay 75¢, excursion $1.25. The new rates were:

Mineola	55	92¢	Glen Head	76	1.27
East Williston	59	99	Sea Cliff	80	1.34
Albertson	62	1.04	Glen Street	82	1.36
Roslyn	67	1.11	Nassau	84	1.39
Greenvale	73	1.21	Oyster Bay	99	1.65

NORTH SHORE BRANCH:

The increases were from 50 to 75% in single fares and excursion tickets:

Winfield	.07 & .12	to	.12 & .20
Woodside	.05 & .10		.09 & .15
Elmhurst	.09 & .16		.15 & .24

Corona	.12 & .20	.17 & .29
Flushing	.15 & .25	.23 & .39
Murray Hill	.20 & .30	.26 & .43
Broadway	.25 & .35	.28 & .46
Bayside	.30 & .45	.33 & .55
College Pt.	.20 & .30	.31 & .52
Whitestone	.25 & .40	.33 & .60

Twenty-trip tickets between Long Island City and Brooklyn and these important stations were increased as follows:

Jamaica	$3.86	to	$4.25	Rockville Centre	$7.78	to	$8.56
Queens	4.65		5.84	Freeport	9.13		10.01
Mineola	7.44		8.18	Amityville	12.62		13.88
Garden City	7.35		8.04	Babylon	14.74		16.21
Hempstead	8.01		8.81	Bay Shore	16.38		18.02
Sea Cliff	10.00		11.76	Islip	17.35		19.09
Glen Street	10.00		12.00	Patchogue	20.68		23.84
Nassau	10.00		12.25	Huntington	13.85		15.23
Oyster Bay	12.50		14.51	Flushing	2.25		3.44

The most marked increase was in commutation rates between Long Island City and Brooklyn for the 3 mos. 6 mos. or one year ticket:

	OLD RATE			NEW RATE		
	3 mos.	6 mos.	12 mos.	3 mos.	6 mos.	12 mos.
Jamaica	14.80	28.50	54.00	18.00	36.00	72.00
Hempstead	27.20	49.90	74.25	33.48	63.00	81.00
Sea Cliff	29.85	55.00	80.20	36.72	69.48	106.92
Glen Street	30.40	55.85	81.25	37.44	70.56	108.36
Oyster B.	33.95	60.70	88.85	41.76	76.68	118.44
Huntington	35.10	62.15	90.80	43.20	78.48	120.48
Freeport	28.95	52.30	77.35	35.64	66.06	103.14
Babylon	39.50	67.26	96.10	48.60	84.96	128.16

The reaction to this substantial increase in fares ranged from editorial disapproval and somber head-shaking to violent abuse and personal attacks on the railroad and on President Potter. Real estate agents and brokers feared the loss of cottage rentals to prosperous business men. Pres. Potter, in the months before his death, stoutly defended the necessity of the new rates. He argued that the road had been carrying commuters at an actual loss of six mills per passenger and that the four good months of summer business could not compensate for the loss of eight months of winter and spring operation. During the last fiscal year the

average earnings per passenger per mile amounted to 1.44¢ while the average cost of carrying each passenger one mile was 1.548¢ and this loss of .108¢ on each passenger had resulted in a deficit of $275,000. Potter cited a number of reasons why the Long Island R.R. had been losing money, some of them still valid today; he drew a picture of the financial situation of the road and the conditions peculiar to the Long Island R.R. better than anyone had presented before or since.

1. The Long Island R.R. has only a small freight business. There is no freight traffic from one point to another on Long Island, and on the whole road Brooklyn is the only large city.
2. There is no real large-scale manufacturing done on Long Island, depriving the railroad of any product to haul.
3. There are only two large-scale agricultural products shipped from Long Island, namely, potatoes and cauliflower, and these come all at once during the months of October & November, leaving nothing to haul during the other 10 months.
4. The railroad is unique among railroads in that its passenger earnings greatly exceed that of the freight earnings, 56% versus the NY Central's 30%, the Pennsylvania's 22%, the Erie's 18% and the New Haven's 11%.
5. The ideal passenger business on a railroad is the long haul but on the Long Island R.R. all the traffic consists of short suburban runs producing small revenue, high wear & tear, numerous costly stops, high fuel consumption. The average run is only 25 miles.
6. The equipment gets peak use during two daily rush hours and on a few holidays and for the rest of the time sits idle and earns no money. The Long Island R.R. with only 392 miles of track is forced to operate as many cars as the Illinois Central with 4000 miles of track or the Chicago, Burlington and Quincy with 8000.
7. The Long Island R.R. has historically been a seasonal railroad with only three months of profitable operation, yet it cannot close down for the winter like a summer hotel.
8. The Long Island R.R., like a Western road, must struggle to first develop its territory; great expanses through which it runs are empty or sparsely populated and originate no revenue.
9. The railroad in 1905 was paying out $250,000 more in wages than only two years before to the same number of employees.
10. The advance in coal prices and the pressure to burn anthracite only has greatly increased the cost of fuel.

No one had ever said it better yet to a large extent Potter's plea fell on deaf or indifferent ears. Potter's mistake was that he thought people cared about the railroad as he did, whereas in fact they were at best indifferent and often hostile; he tried to appeal to their sense of fair play, not realizing that most people are motivated by self-interest. Potter and A. L. Langdon traveled to various villages on Long Island addressing audiences and doing their best to explain to the people the need for more revenue. If the road tried to economize by cutting operating expenses, it would only result in poorer facilities for the passenger. Far from contracting services, the road in fact was planning the electrification of the western section, direct entrance into Manhattan and six million dollars' worth of grade crossing elimination.

As an outgrowth of the popular protest movement, the first Long Island commuters' association was formed in late March 1905. A meeting of delegates from the various civic societies of Queens and Nassau was held in Jamaica. Officers were elected and a name chosen, the "Long Island Transportation Association." The association's avowed purpose was to fight for reasonable rates of fare and adequate service.

The threat of legal intervention by some politicians in Nassau and Suffolk became a reality in late January 1905 when William G. Miller, Assemblyman for Nassau County, introduced a bill into the Legislature at Albany to reduce single-rate fares on the Long Island R.R. to 2¢ per mile, and 1½¢ per mile for commutation tickets. As if this were not threatening enough, Senator Keenan (Rep. N.Y.) and Assemblyman Sullivan introduced two more bills providing that the Long Island R.R. might not charge a greater amount of fare than the rate in force on Jan. 1, 1905. The Long Island Rail Road's right to charge 3¢ a mile was legally unassailable. The original charter of 1834, renewed in 1884, did not stipulate any rate of fare. The later-chartered railroads had been limited to 3¢ a mile and this had been the legal standard in New York State for many years. Whether a case could be made against the road if it should raise the rates above the current legal limit of 3¢ a mile was a question which had never been definitely settled in the courts, and, in fact, the Long Island R.R. by its new tariff, had only now reached but not exceeded the legal limit. There was thus no legal ground for bringing a test case against the Long Island R.R. in court. The commuters might give vent to their anger in indignation meetings but the railroad was on sound legal ground.

On Feb. 22 a big delegation of Long Islanders appeared at Albany consisting of representatives from Freeport, the Rockaways, Westbury,

Oyster Bay, Hempstead and practically all of the Queens County villages. The Long Island asked for and received permission to give its best counsel, Edward M. Shepard, time to prepare its case. At the March hearing Shepard admitted that some of the complaints against the company were justified but said that this could only be remedied by an increase in rates; he showed how comparisons with other roads in the metropolitan area were unfair because they had a great freight traffic and many large cities to draw on; he rehearsed the peculiar difficulties of the Long Island Railroad—seasonal traffic, peak hours followed by long idleness—and concluded with the rise in cost of supplies, labor and fuel. The opposing counsel attacked the service record of the Long Island R.R., then cited instances where legislation to reduce fare had doubled the patronage (N.Y. Central, N.Y. Elevated); he said the managers of the road had dabbled in real estate speculation and charged all betterments to operating expenses.

On April 6th Sen. Keenan's bill was reported out but thereafter a long delay ensued during which strong pressure was exerted, no doubt by the Pennsylvania Railroad to keep the bill bottled up. To defuse a little of the opposition to the new fare policy and create a better climate of public opinion the Long Island R.R., on Aug. 14, 1905 restored the sale of round-trip tickets between all points on the system but at a slight reduction from the new 3¢ per mile rate. This was a small concession at least and it came only when the summer was three-quarters past.

Almost a whole year passed and then in January 1906 the Assembly passed the Miller Bill. The railroad saw the result coming and in a last-ditch effort to win votes, announced that, as of Feb. 1, 1906, the 10–20–and 50-trip tickets would be restored, all offering passage at 2¢ a mile; on top of this, a special low-rate 20-trip ticket good only on the local electric train between Flatbush Avenue and Queens was issued, offering passage at less than 2¢ a mile.

The Miller Bill, thanks to the persistence of the Long Island representatives, was finally reported in the Senate. At the hearing Counsellor Shepard was strikingly candid. He admitted that the Long Island R.R. had a monopoly on Long Island, but asked why this was so. Because everyone else that had tried to run a road had gone bankrupt and indeed the Long Island R.R. itself had emerged from a massive bankruptcy 25 years before. Since then the railroad had paid no dividends in ten years and earned only about $22,000 in 1905 over operating expenses. The opponents of the railroad had made claims and guesses that the patronage would double with a 1¢ decrease in rates, but this was a pious

hope only. Counsellor Shepard then surprised everyone by announcing that the Long Island was prepared to make a gesture by restoring the 500-mile mileage book provided the Miller Bill failed of passage. This unlooked-for concession was a measure of how worried the Pennsylvania management really was, besides the personal appearance of President Peters at all the hearings.

Pres. Peters went even further and personally assured Assemblyman Miller that he would, on Oct. 1, 1906, put the commutation rates on a flat monthly basis in place of the present graduated basis, higher than the average for the first and second three-month periods and lower for the last six months. The yearly commuters who had paid the high rate for the first six months of the year would be allowed to continue to the end of the year or until the last or low six-months period had expired. For example, the graduated commutation fare between Far Rockaway and Long Island City had ranged from $11 during the summer months when traffic was heaviest to $5 in the winter when traffic was lightest. The new rate would be $7.50 for every month. Pres. Peters frankly admitted misgivings about granting the flat monthly rate because of the heavy financial loss on the summer commuters, estimated at $40,000, but agreed to try and see what the result would be. It was evident that by this time the Long Island R.R. had lost through successive concessions just about all the financial benefits it had gained since the rate increase; only the one-way tickets were still being sold at the 3¢ rate.

The Miller Bill moved to a final reading in the last week of May 1907. The railroad through its spokeman, P. H. Woodward, secretary to Pres. Peters, let it be known that if the Miller Bill passed, the railroad would be forced to curtail its services by cutting the number of trains and especially the number of fast expresses. He emphasized that the residents were already getting a 2¢ rate through their mileage books and trip tickets which were almost universally used.

To the railroad's vast relief, Governor Hughes vetoed the Miller Bill on June 10, 1907, giving as his reasons that its supporters had gathered no statistics to support their claims; that the bill was unjust; that it arose out of resentment & dissatisfaction rather than reason, and that transportation ought not to be crippled by arbitrary legislation. Probably one of the strong but unmentioned reasons for the veto lay in the fact that at that very moment in Albany enabling legislation for the new Public Service Commission which would supplant the old Board of Railroad Commissioners had just been passed by the Legislature. The new commission was expressly empowered to set the new rates of fare and to

make an investigation of the conditions existing as to each road independently of every other before fixing a rate. Since the Miller Bill would obviously usurp the power of the commission, it had to be vetoed as inconsistent with legislative policy.

Several minor changes of practice and policy took place during these pre-World War I years. In October 1907, in compliance with a new directive of the Public Service Commission, the Long Island R.R. posted in all its stations a schedule of transportation and the rates for everything from a ticket to Woodside to the cost of a special train of parlor cars from Long Island City to Montauk. In the perennial matter of commutation tickets left home by accident because a commuter changed his clothes, the railroad in February 1907 issued an order directing the commuter to pay full fare on the train, but the receipt was redeemable for the full amount on presentation of the commutation ticket at Long Island City. This privilege was accorded by no other suburban railroad at the time. Unfortunately, the privilege had to be canceled a year later in March 1908 when the company found the cost of refunding was more of an expense than the company received for each full fare.

In June 1909 the Public Service Commission ordered the railroad to cease collecting a 10¢ penalty between Brooklyn and Jamaica where passengers had neglected to buy a ticket and paid on the trains. A law of 1889 had permitted this except where the ride was within an incorporated city; Jamaica since 1898 was now within the city limits and so came within the exclusionary clause.

Another practice still traditional on the Long Island Rail Road came into vogue at this time. Beginning Jan. 1, 1909 commutation tickets appeared for the first time with two sets of numbers, the one intended to be punched west of Jamaica and the other east of Jamaica. The ever-rising number of passengers was making it difficult for the conductors to remember who had been punched and who had not. On the same Jan. 1, 1909 the railroad ruled that commutation tickets bought for Flatbush Avenue could not be used for a ride to Long Island City instead as had formerly been the case, even though the distances were identical—9.6 miles. The reason behind this restriction is difficult to guess today.

In Jan. 1911 the Long Island R.R. for the first time came up with a ticket printing machine. The pioneer model, introduced at the Flatbush Ave. station, was manufactured in France and was the only one of its kind in the United States. Albert Bierck, the chief auditor, happened to see it in use in France, had the manufacturer adapt it for Long Island R.R. use, and then had the prototype shipped here. The station and

kind of tickets were indicated on an elliptical disk at the top of the machine. A little steel pointer or indicator was pushed along to the name of the station for which the customer wished a ticket, a handle was pushed down, and an electric current did the rest. A series of electrotype blocks with the names of the stations arranged on an endless belt moved along to the block upon which was the name of the station indicated by the pointer. The machine printed the station, the date of issue, the rate of fare and a number and the class of ticket (single, excursion, half fare). Like all new inventions this one was pronounced a success but we hear nothing further of it.

The problem of dishonesty in ticket handling was a perennial one that bedeviled the Long Island R.R. as much in this era as it had in previous decades. An interview with the auditor in 1908 disclosed that the railroad estimated its losses from dishonesty on the part of patrons at $100,000 a year. The deceits practiced on the railroad were timeless in their technique and familiar to the road, but nonetheless hard to stop. There was the conductor who took up tickets from passengers and turned them over to accomplices who sold them to friends for re-use; the same conductor might permit a favorite commuter to buy a ticket for a five-mile distance and use it to travel through to Long Island City.

Conductors had been known to accept bribes from traveling salesmen to travel all over the line and to make the gesture of punching a piece of blank pasteboard. Passengers were even more adept than conductors at cheating the company. Reading the papers when the conductor came around or looking out of the car window was one of the oldest dodges to avoid a request for tickets. An equally hoary dodge was to buy a ticket for some station only about half the distance to the real destination; if discovered, the passenger could always put up a pretense of having been carried past his destination. A trial to the conductor was the indignant passenger who insisted on riding to Patchogue on a ticket to Babylon, claiming that the ticket agent at Long Island City or Brooklyn had accepted money for Patchogue but mistakenly issued a ticket to Babylon. The Long Island R.R., like many roads, had a conscience fund made up of money sent in anonymously by repentent passengers who wanted to clear their guilt.

Commutation tickets were a fertile source of trouble for the railroad. Unlike the mileage tickets which could be used by anybody, commutation tickets were supposed to be used by one person only but all too often the ticket would be passed about to other members of the family or even rented to strangers. The railroad tried to stop this by insisting on a

full name appearing on the ticket and by punching "male" or "female" on the face. Where an instance of serious abuse was suspected, the auditor of the railroad himself, Mr. Albert B. Bierck, personally investigated. In January 1909 the Brooklyn "Eagle" recounted an incident where Bierck interrupted the punching of a ticket proffered by a man on the way to Freeport. Bierck required the man to sign his name and when refused, asked to see any papers identifying him. When the man again refused, Bierck confiscated the ticket and ordered a full fare to be collected. In a loud voice Bierck then lectured the man on the importance of honest dealings in the hearing of the whole car, and when the train reached Freeport, got off with the humbled passenger. Mr. Bierck conducted the man to the station agent whom he interrogated closely. It developed that the nominal owner of the ticket could not be found in the village and the passenger finally admitted that he and others had often rented the ticket. When the reporter asked Bierck later how he had heard of the Freeport ticket, he revealed that the railroad used special agents and also relied on tips from other passengers.

Even with the railroad's best efforts, cheating with commutation tickets continued. In an effort to use every possible means to stem such losses, the railroad in July 1912 adopted the novel technique of applying for injunctions against four storekeepers of Bay Shore. These men had bought a one-month commutation ticket for $10.90 to Long Island City. They then rented out the ticket at $1 per round trip, netting them $19 profit each month on an investment of $11. The regular round trip fare to Bay Shore was $2.05. The judge granted the railroad's request for the injunction on the basis of a proved fraud.

Changing conditions on the railroad required changes in fare. The opening of the Penn Tunnels in 1910 presented the railroad with an immediate need for fare revision; trains running to the Penn Station instead of Long Island City ran a mile farther and took ten minutes longer; in addition, there was more wear and tear on the equipment and the crew worked additional time. There was more track to maintain and rent to pay to the Pennsylvania Railroad. In May 1910 the railroad announced that it would not increase its rates but would impose an additional charge of 95¢ a month on the commutations of those riding into Manhattan. This announcement brought out the usual protests from realtors and some riders but the railroad reminded passengers that they had previously paid 3¢ each way daily on the 34th Street ferry and would now save that. On Aug. 17, 1910 the railroad formally filed with the Public Service Commission the new tariff for the Penn Station. The

rate was set at 5¢ over the Long Island City fare; this was really only 2¢ more since the ferry had charged 3¢. The fare from Jamaica was 25¢ to Long Island City, 28¢ to East 34th Street and 30¢ to the Penn Station. Commutation rates were $6, $7.05 and $8 respectively; from Flushing the fares were 20¢, 23¢ and 25¢ and the commutation $5.10, $6.15 and $7.10.

In the early months of 1911 an agitation arose in East New York to reduce the fare on the local trains between Flatbush Avenue and the Queens County line at Railroad Avenue from 10¢ to 5¢. Nothing happened until the local Assemblyman introduced a bill into the Legislature at Albany to force a reduction. Governor Dix vetoed the bill because it infringed on the jurisdiction of the Public Service Commission, but he did direct the commissioners to hold hearings and take action. When the Long Island realized that the local residents, the politicians and even the State government were all determined to enforce their wishes, the road yielded. A year later the same dispute broke out again in a different form. The Long Island had reduced the fare on the local trains to 5¢ but continued to collect 10¢ on the expresses. A new agitation began to get the road to charge the same rate on all trains. The Public Service Commission investigated and determined that the Long Island R.R. ran 115 trains per day over the Atlantic Avenue Division between Flatbush Avenue and East New York and that 54% of them were expresses and 46% locals. Both types had the same running time and made the same stops. Because of the differential in fares, the local trains were very crowded but the expresses were not. At the various hearings prominent Brooklyn politicians urged a reduction but the railroad insisted it needed the revenue. The pressure from many vociferous local delegations continued and in April 1913 the railroad agreed on a compromise. The railroad would hereafter sell 20 trip tickets for $1 good on express trains between Flatbush Avenue and East New York. The Public Service Commission accepted this solution of the problem and dismissed the discrimination complaint.

One of the more curious issues arose as a result of the relocation of Jamaica Station in 1913. Because the main station was moved 1790 feet west, the distance to St. Albans station, the first stop on the Montauk Branch, was increased from 2.4 to 2.9 miles. This had the effect of advancing the price of 10-trip tickets from 50 to 70¢ and 20-trip tickets from $1 to $1.40. Many St. Albans people shopped in Jamaica and for them the new tariff rate meant an additional 2¢ in fare. What irritated the local residents most was that the railroad had not raised the price of

the 10 or 20 trip tickets to any other point east of St. Albans, although these distances had increased by the same proportion. In this case St. Albans was too small politically to mount an effective resistance and no change resulted.

In the years immediately before World War I, the strain on the Long Island Rail Road's finances increased; wage increases were granted in 1912 and 1913 to the firemen, enginemen and conductors, and the year 1914 was a disappointing one for revenues. The railroad had striven hard to cut down the annual deficit which was cut in half from $457,955 in 1911 to $282,690 in 1912. The Long Island was not the only road feeling the pinch of rising wages and the increasing costs stemming from the new government controls (full train crews). The New Haven, the Pennsylvania, the Central of New Jersey, the Erie and the New York Central all raised the rates on their trip tickets or mileage books and petitioned for a 5% raise on freight rates. The Long Island R.R. held off, probably with vivid memories of the commotion that the 1905 rate raise had caused.

In October 1914 the Public Service Commission denied the request of the roads for the 5% freight increase but did permit all the roads to apply for increases in commutation rates and family trip tickets. The Long Island joined in this application and hearings were held over the winter. The company submitted a number of tables to show that commutation rates for points fity miles and more out of New York City would be lower than those of other trunk lines, even after the advances were made. The railroad cited a proposed rate of 12.25 for Flowerfield just 51 miles out; this contrasted with Fairfield on the New Haven, $15.25; Princeton on the Pennsylvania, $15.70; Cornwall on the West Shore $13.76, Annandale on the Jersey Central $12.40 and Woodbury on the Erie $13.80. The railroad again reminded the Public Service Commission that its freight earnings brought in less than half its revenues. The "drummers" or traveling salesmen protested at the hearings that increased rates would hurt their business.

While the railroad waited for a decision from the Public Service Commission on the commutation tickets, it filed a new application in May 1916 for permission to increase the rate charged for mileage tickets, both 500 mile and 1000 mile from 2¢ to 2½¢ a mile. The Long Island estimated that the additional half cent would increase the income of the company at the current rate of travel by $31,000 and this could almost wipe out the persistent annual deficit of about $355,000. The railroad reminded the Public Service Commission that the Pennsylvania

and New York Central were already charging 2½¢ a mile on their mileage books. Operation of the Long Island R.R. was becoming increasingly expensive because of the full crew law, an increase in the number of gatemen at grade crossings, an enormous increase in real estate taxes and a continual increase in interest charges. The hearings dragged on through the summer and fall of 1916 and at last wound up in December. In March 1917 the Public Service Commission permitted the Long Island Rail Road to raise the rate on its 500 and 1000 mile mileage books from 2 to 2½¢ per mile effective April 1, 1917. In May 1917 the Public Service Commission granted the request of the railroad to advance the price on its 10–, 20– and 50-trip tickets effective May 28, 1917.

During 1917 some legal question arose as to the jurisdiction of the First and Second Districts of the Public Service Commission with respect to the Long Island Rail Road which had its lines in both districts. The First District had been created to govern the very complicated and numerous operations within the boundaries of New York City. The Second District supervised all the rest of the state. The upstate commission had granted the mileage increase in March 1917, but the First District, in August 1917, obtained jurisdiction over this area and declined to permit the Long Island Rail Road to charge the new rate. The result of this was that the Long Island Rail Road had to withdraw the mileage book increase it had been collecting since Apr. 1, 1917 and go back to the old rate, a serious financial setback. The Long Island management refused to accept this decision and continued to sell the 500-mile books at the $11.25 rate pending a decision on all of the cases for the increase of rates on other tickets sold by the company now before that body. The commission could have mandamused the company and held up the new rate but decided to wait until all the Long Island Rail Road fare matters should be decided. Four months later—Jan. 1, 1918—the Federal government took over the Long Island Rail Road along with all others and rate making became vested in the Director General of Railroads. On June 10, 1918 the railroad was awarded a 10% increase in the commutation rates and all mileage books and trip tickets were abolished in favor of a uniform 3¢ per mile for all kinds of transient travel. This increase in revenue along with a vast increase in riding marked a new turnaround for the Long Island Rail Road and the beginning of the post-war era.

CHAPTER XVIII

Freight, Baggage & Express

ALTHOUGH the transportation of passengers was the more visible and more publicized aspect of the Long Island Rail Road's activities, the railroad was no less heavily involved in the freight, baggage and express business. Baggage, properly speaking, consisted of the valises, suitcases and bulky trunks that old-time travelers habitually carried with them on long distances and for stays of extended time, if only because the convenience of drip-dry clothes and no-press shirts still lay far in the future. The pre-World War I woman wore a great many clothes that required a lot of attention and would have found our minimal and comfortable clothing unimaginable.

The second class of goods carried was express matter—packages that could be consigned to the Long Island Rail Road for delivery to a person in another town, the railroad serving as a sort of post office. (There was no parcel post before 1913.)

The third class of goods transported was freight, either agricultural produce or sea food or manufactured goods, nearly always in bulky form and requiring freight cars to move. Each of these three series required its own equipment, its own special employees and was governed by special rules and shipping rates.

In the earlier days on the Long Island Rail Road the handling of express had been taken care of by Westcott & Co. who had contracted for the business on five-year contracts. President Corbin in 1881 ousted the Westcott Co., and on Sept. 1, 1882 the Long Island Rail Road's own "Long Island Express Co." took over the business and the Westcott facilities at Long Island City. The rolling stock for the transport of baggage and express matter consisted of 109 wooden "combination" cars and 10 steel cars, cars divided into half passenger coach and half baggage compartment. In addition, there were 61 wooden and 30 steel all-baggage cars. Nearly all steam-hauled trains on the Long Island Rail Road had at least one combination and one baggage car in their consist; during the summer and on the big holidays of the year, the railroad resorted to the running of trains consisting of all baggage cars as second

or third sections of important runs. When the electric trains began running after 1905, steel motor combination cars and baggage cars were bought to deliver similar services to the electrified divisions.

Just about every station on the Long Island Rail Road had its own baggage and express building in charge of a baggage master. All of these places were the field offices of the main express office in Long Island City and Flatbush Avenue terminals, monster affairs that took in the material delivered to it and sent it on its way. In Long Island City the express office was a big two-story, iron-covered frame building 60 feet in length located on the west side of 2nd Street (Front), its rear facing the river and its front facing the passenger terminal. It so happened that the line of the East River tunnels passed directly beneath the express building and the building had to be marked for demolition. A new express depot was erected alongside the passenger station beginning in December 1903, on the corner of 2nd Street (Front) and 54th Avenue (Flushing). The new shed was two stories high for half its length and was sheathed with galvanized iron. It was a great improvement on the old depot as tracks were run directly into the ground floor so that baggage and express cars could be run in and out. The new building opened for business in the first week of May 1904.

With a spacious new terminal, the express department vastly expanded its operations. The company bought 75 more horses and by June 1905 employed 600 horses and 277 wagons and an army of 700 employees. The company as of May 1, 1904 opened eight new offices and instead of confining its services to downtown Brooklyn and its environs, the express extended its delivery limits to every part of Brooklyn and Manhattan. It now accepted packages in all parts of Manhattan south of 150th Street for all parts of Brooklyn down to Coney Island. The free-delivery zone was extended to 85 of the 130 stations on the line of the railroad.

A large and well-appointed new brick building equipped with the latest improved machinery for the building and storage of wagons and for repairs, 196 X 90 was built in the winter of 1903—04 on 51st Avenue (3rd) Long Island City, extending for 300 feet on the south side of the street and west of 5th Street (West). There was a blacksmith shop, wagon shop and paint shop. In the big new express building the express cars unloaded directly onto a long platform; here were placed several big scales for the weighing of goods to be shipped out or received where there was a doubt as to the correctness of the waybill received from the shipping point.

The company late in 1903 purchased a 15-acre farm at West Hempstead where a modern barn was built, amply supplied with sweet water, good drainage and heating. The company shipped here every winter about 75 of its broken down or crippled horses and by careful nursing restored them to health and strength and efficiency. There was a regular veterinary in attendance. It had been the custom previously to sell at a sacrifice from 80 to 100 of these express horses every fall to dealers for whatever they would bring and the company would then buy an equal number of green horses. It was found that one of the old horses, when restored to health by the freedom of a farm for a few months, was worth twice as much as a green horse who had to be broken into the work at a great loss in time and efficiency.

The express business expanded with such rapidity in just one year's time that an extension to the new building had to be erected in the spring of 1905. A large force of men worked day and night to complete the extension before the Fourth of July rush. The extension was 330 feet long ending in two stub platforms 190 feet long. The whole depot was now a huge platform 639 feet long and 61 feet wide, the largest express terminal in New York City. Thirty cars could now load simultaneously while at the same time 48 of the largest express trucks could be accommodated without undue crowding. Ninety-seven porters were assigned to the depot night and day during the summer months and a force of 160 wagon sorters, clerks, and car packers. This force was greatly increased temporarily during the Fourth of July three day rush.

We are fortunate in having a rare eye-witness account of what the holiday rush was like in an old-time railroad baggage terminal:

> "These are strenuous days for the baggage handlers and truckmen employed by the Long Island Express Co. The greatest flood of baggage that ever poured into the Long Island City station has been experienced during the last week and it's still high tide over there at the express sheds. With the passing of Labor Day the homeward rush from the country generally starts and then the "baggage smashers" begin to feel of their muscles and roll up their sleeves. But they have not had time to roll up their sleeves this week. If you take a look at the 650-foot long express platform over on Front Street, you can soon see why.
>
> Veritable mountains of trunks, suit cases of all shapes and sizes are piled up from one end of the huge shed to the other. The mountains are not very stable, however, they did not get

much more than piled up when crowds of strong-armed men pounce upon them and tear them to pieces. Heavy trunks go spinning along in all directions and land right side up without a bruise. Suit cases and lighter pieces fly through the air from one man to another and never touch the floor. It is a tribute to the efficiency of the express company's corps of workers that there is not a serious congestion in this vast baggage traffic. Despite the carloads of baggage that are being unloaded hourly from incoming trains at the platforms, the men keep up with the rush and manage to keep the stuff moving in a steady stream across the river to the 34th Street terminal, where dozens of express wagons are busy all day and part of the night distributing the pieces to their proper destinations. About 115 men are being kept at work night and day at the express sheds in handling the baggage this week. It is expected that the greatest rush will end with the week, for most people who have been sojourning on the island generally try to get back home before school begins. Extra baggage cars have been put on nearly all the incoming trains to accommodate the increased business. The other night one train with 11 baggage cars came in from the Babylon division.

In addition to this homebound baggage rush, the company has a very heavy oyster business to handle just now. This adds materially to the problem of keeping the express flood-gates open for no delay is permitted in the handling of the oyster shipments.

General Baggage Agent Chichester says that he is well pleased with the manner in which his department has handled the rush this year. Much of the success in avoiding the congestion that has annoyed other railroads this week is due to the excellent terminal facilities which the company now has here in Long Island City. The express sheds since their enlargement have the largest platform area of any station in or around New York. Fifty or 60 wagons can load at once at this platform.

A quite surprising bit of information was imparted by Mr. Chichester when he stated that his company is handling baggage routed from points on Long Island to destinations in all parts of the United States over nearly every railroad line in the country. The attraction of Long Island as a summer resort has brought people here from nearly every state in the union this

season, says Mr. Chichester. Some have even come from the Pacific Coast. Quite a number have been drawn here from Minneapolis and St. Paul and other points in the famous lake region which itself is a great summer outing section. Many people are just beginning to realize, apparently, that Long Island is the greatest summer resort in the country and that it is destined to become an even greater one as time passes."

Sept. 15, 1905

The other great baggage and express terminal on the railroad was located at Flatbush Avenue station in Brooklyn. The office building (built 1906–1907) occupied a two-story terra-cotta brick building behind the new passenger station at Fort Greene and Hanson Place. Along Hanson Place extended a raised concrete platform 156 feet long and 50 feet wide where baggage and express could be unloaded into rows of waiting wagons. The platform had a corrugated roof with numerous skylights and built into the platform were two weighing scales. Twenty feet below the platform and at track level were four tracks for baggage and express cars. Material from these cars could be loaded onto three great lifts and raised to the platform above.

Jamaica had a minimal express and baggage facility and designedly so; in September 1903, a special baggage and express train running between Brooklyn and Long Island City was put on to transport all express matter from the Flatbush Avenue station to Long Island City. This arrangement did away with the nuisance and loss of time transferring packages from the Brooklyn cars to the Long Island City cars at Jamaica station.

To a very large extent the express business on the Long Island Rail Road was killed off by the United States Post Office when it made the decision to change over from carrying letters only and to accept packages. On Jan. 1, 1913 the Parcel Post system went into effect, making it possible for the first time for merchants, manufacturers and farmers to send packages weighing up to 11 lbs. via the United States mails. Ironically, the Long Island Rail Road like all others in the country was required to transport these packages in its cars and so subsidize its own competition. It was impossible for the Long Island Rail Road to carry express matter at the cheap rates offered by the United States government, and as a result, the Long Island Rail Road sold what remained of its express business to the Adams Express Company. This commercial shipper had a well-established, much wider network in several states

and could afford a more satisfactory service in the matter of the transfer of parcels between points on Long Island and the eastern states. In a sense, the express business was not being sold to completely outside interests because the Adams Express Company was owned by the Pennsylvania Railroad and already operated big depots in Manhattan, Brooklyn and the Bronx. The phasing-out of the business of the Long Island Express Company and its transfer to Adams was effective June 1, 1913.

The freight business of the Long Island Rail Road was far larger than the express business and required a colossal investment in special locomotives, freight cars, freight yards all over the system, freight terminals and lighterage facilities; since the freight business was about 45% of the support of the road, both summer and winter, this investment was entirely justified. Because of the slowness and unpredictability of freight trains, almost every station on the Long Island Rail Road had a passing siding.

The biggest freight yards on the Long Island were concentrated in the metropolitan area on the western edge of the island:

1. Flatbush Avenue Terminal—package freight
2. Carlton Avenue yard, between Vanderbilt & Fifth Avenues; capacity 300 cars
3. East New York Exchange & Delivery Yard; 566 city lots; capacity 700–800 cars
4. Atkins Avenue Yard—south side of Atlantic Ave.
5. Varick Avenue Freight Terminal—Bushwick; 103 city lots; cap. 210 cars
6. Rockaway Avenue Freight Delivery Yard; 80 city lots; cap. 150 cars
7. Paedergat Basin Freight Delivery Yard; 75 city lots; cap. 180 cars
8. Vanderveer Park Freight Delivery Yard; 90 city lots; cap. 150 cars
9. Manhattan Beach Junction Freight Delivery Yard—East 16th St. & Avenue I; 150 city lots; cap. 300 cars
10. Parkville Freight Delivery Yard; 98 city lots; cap. 200 cars
11. Bath Junction Freight Delivery Yard—15th Avenue & 60th Street; 44 city lots; cap 60 cars
12. Fifth Avenue Freight Delivery Yard at 65th Street; 35 city lots; cap. 50 cars.
13. Bay Ridge Freight Terminal, 64th–65th Streets; 790 city lots; cap. 1200–1500 cars

14. Sheepshead Bay Terminal; 390 city lots
15. Bushwick Junction Freight Yard; 96 city lots; cap. 200 cars
16. Newton Creek bulkheads & piers; at Calvary Cemetery
17. Long Island City Delivery Yard; 109 city lots
18. Sunnyside Yard; 8712 city lots, 400 acres; cap. 1000 cars
19. Laurel Hill Yard—Maspeth
20. Holban Yard—Hollis; capacity 3000 cars

Small freight stations were maintained in Queens at Elmhurst, Corona, Flushing, Auburndale, Bay Side, Douglaston, Little Neck, College Point, Whitestone, St. Albans, Springfield, Rosedale, Hollis, Queens, Far Rockaway, Hammels and Rockaway Park.

The Flatbush Avenue package freight terminal, occupying the space behind the passenger station and an outgrowth of the Atlantic Avenue Improvement, was built by the Fort Bell Iron & Steel Co. and the contract was let in January 1907, with completion during the summer of 1908. There were three floor levels, the lowest underground and on a level with the passenger trains; a ground level, and most important, an elevated terminal, the whole structure sheathed in sheet steel siding and the roof pierced with skylights. The elevated level had six tracks, three on each side of a wide island platform, with two additional long platforms on the sides. Each track could accommodate ten cars, so that 60 freight cars could be loaded or unloaded at once. The floor trucks used for conveying the goods from freight car to elevator were fitted with ball-bearing hubs and axles and moved over the floor easily. Portable electric lamps installed every 40 feet made it possible to light up the freight car interior. Scales set in the floor enabled the truck operator to tell the weight of the goods at a glance; at the far end were cashier and accountants' offices.

The cases, barrels and bales of goods received for local delivery were lowered to the street level floor by means of six 6-ton elevators. There were also spiral chutes for heavy goods. On this street-level floor was a broad platform, 300 feet long and about 150 in width, truck high, and capable of storing tons of merchandise. Teams and wagons could drive up to this platform from cobble-stoned entrances leading into Atlantic Avenue, Fort Greene Place and Hanson Place.

Brooklyn during the busy season sent off more packaged freight than it received and an average of 40 car loads, of outbound manufactured products was shipped daily and 25 inbound car loads received each 24 hours. Nearly all of the freight was received at night after the passenger

traffic over the Atlantic Avenue tracks was practically over. Here were received potatoes, cauliflowers, cabbage and other farm products from all parts of Long Island and from New York State and New England. Here was also received flour, feed, bags of grain, sugar, wool, cotton, cement bags, dressed stone, glass, furniture, hardware and clothing. Shipped out from here were the products of Brooklyn's manufactories.

In the underground portion of the terminal were several short curved tracks which could accommodate freight cars with meat. These were unloaded and the carcasses were lifted on elevators to the beef houses on Fort Greene Place. Two of the elevators were equipped for handling horses and cattle. The fresh meat traffic for Brooklyn consumption was enormous. In 1909, 320 carloads were received every month from Chicago, St. Louis, Kansas City and Fort Worth by the 22 beef houses on Fort Greene Place and the immediate vicinity. Tuesdays and Fridays were the big days when 27 carloads regularly arrived creating such congestion that a squad of policemen had to be assigned to keep order.

The Carlton Avenue Yards have been mentioned in the chapter on the Atlantic Avenue Improvement. The mid-section, Carlton to Sixth Avenues, had been bought in 1888 but the extension of the yard along Atlantic Avenue east to Vanderbilt Avenue and west to Fifth Avenue was not consummated until July 1903, when the Long Island Rail Road bought for $500,000 the blocks adjoining the old yard. This gave the Long Island Rail Road an unbroken front along the south side of Atlantic Avenue of 2000 feet. There were buildings of all kinds on the property and these had to be either relocated or torn down.

The plan of the railroad was to excavate the old yard between Carlton and Sixth Avenue to a depth of 20 feet so that freight trains could emerge from the Atlantic Avenue tunnel and move out into the new yard. A different arrangement was conceived for the other new yard between Fifth and Sixth Avenues. Since the ground level sloped naturally from Sixth to Fifth Avenue, the railroad decided to excavate the Sixth Avenue end but allow the tracks to come to grade at Fifth Avenue. At the 5th Avenue end would be built freight houses. A cobble stone ramp would also lead down into the yard from Fifth Avenue at an easy grade so that wagons could load alongside the freight cars.

The first step in the creation of this big new freight yard was taken in the fall of 1905 when retaining walls were built around the sides of the old yard between Carlton and Sixth Avenues preparatory to digging it out. To utilize the new yard, meanwhile, between Fifth and Sixth, the railroad secured a permit to lay eight tracks across the surface of Sixth

Avenue and Carlton Avenue in June 1905. Many Brooklynites objected to the presence of these temporary tracks and a legal squabble arose when the borough president revoked the permit. When the Long Island Rail Road did not move at once, community groups agitated loudly. The railroad defended itself on the grounds of absolute necessity and needful to give Brooklyn better freight facilities. When the railroad secured a new permit from the Improvement Commission, the community group sued. On Dec. 8, 1905 the railroad won its case and the yard improvement thereafter went on unhindered.

During 1906 steam shovels scooped out these large yards and built a massive retaining wall 25 feet high on the Pacific Street side. During this same year the incline connection between the floor of the tunnel and the Fifth Avenue elevated road was changed to run through the freight yard entirely and to cross to the new express terminal at 5th Avenue.

The whole of 1907 and 1908 passed in excavating the immense yard 2250 feet long and 250 feet wide to a depth of 20 feet. Finally, in February 1909 the task was completed. The yard had a capacity for 250–300 cars and a storage capacity for 100 more. As laid out the yard had ten tracks between Sixth and Carlton Avenues and twelve between Carlton and Vanderbilt Avenues. A powerful traveling crane over 60 feet in length, spanning three tracks and with a capacity of over 25 tons greatly facilitated the transfer of heavy packages, big steel beams and other heavy articles from car to truck and did it much faster than by the old method of using skids and rollers. The driveways descended from the Carlton and Sixth Avenue entrances by an easy grade of less than 2% to the track level. This was possible thanks to the upward grade of the street.

In Long Island City the Long Island Rail Road had three freight yards quite apart from the Sunnyside Yard. The first was the waterside North Side Yard. This extended from 48th to 51st Avenues all along the East River front and inland to 2nd Street. In October 1914 the city, as part of the Steinway Tunnel opening, paid the railroad $230,000 for a piece of the yard and as compensation for the expense of removing, relocating and rearranging its tracks here. The Long Island, in return, got the right to lay additional tracks under Vernon, 11th Street and Jackson Avenue and to enlarge the waterside yard.

The second freight yard was an extensive tract between Borden Avenue and Newtown Creek from Vernon Avenue to Dutch Kills. This was purchased by the Long Island Rail Road in July 1901 for $115,000 and gave the railroad complete control of an unbroken strip over a mile in

length from the East River to Dutch Kills. On the other side of the Dutch Kills was another smaller freight yard with piers into Newtown Creek. Here the railroad handled heavy freight like brick, coal, lumber and ice.

The third Long Island City yard was the freight delivery yard on the east side of 21st Street (Van Alst) between Jackson and Hunter's Point Ave. This was laid out in 1907–08 and occupied 109 city lots. This yard formed a western branch of the Sunnyside Yards and was served equally by the Pennsylvania Railroad. Some mention should be made here of the Degnon Terminal, a private commercial enterprise but serviced by the Long Island Rail Road which had a track connection with the numerous branches of the Degnon system at the Montauk Cut-off at Skillman Avenue & Davis Street.

The other great western freight terminal of the Long Island Rail Road was at Bay Ridge. This yard started as a passenger terminus in 1872 and was greatly enlarged and improved in 1892 in connection with the New York Bay Extension Railroad scheme (see Vol. VI, chap. VII). The 1892 improvement saw the single track of the Bay Ridge Branch depressed from 7th Avenue to the bay; at 1st Avenue double track began and at the waterfront widened out into a twelve-track yard. In 1904–05 the Brooklyn Grade Crossing Commission was officially created by the Legislature to elevate the whole Bay Ridge and Manhattan Beach Branches and so to get rid of 160 present and potential grade crossings. As a part of this mammoth undertaking, the railroad decided to four-track the Bay Ridge Branch and to build from 7th Avenue west to the river a great depressed terminal and freight yard. Since the city would be obligated under legislative mandate to pay half the costs, it objected strongly to the great expansion of the railroad's plans, a difference that came to two million dollars over a simple elevation of the existing railroad. While these legal formalities were being adjudicated, the Long Island bought up two entire square blocks between 63rd and 64th Streets and from 2nd Avenue west to the river; also all the empty land between 64th and 65th Streets not already owned by the Sea Beach Railroad. These blocks were wholly unoccupied in 1904. The railroad then petitioned the Bay Ridge local board and the city to close 63rd and 64th Streets from 2nd Avenue to the river and First Avenue between 63rd and 66th Streets. In February 1905 the city countered with the suggestion that First Avenue because of its length and importance should be bridged with a viaduct. Hearings continued through May 1905; the railroad emphasized that the yard would bring Brooklyn into

direct communication with the great Greenville terminal via the car ferry and that it would mean cheaper coal, ice, lumber and all kinds of bulky and heavy products and would make a difference of from two to three days in the time of delivery over the method then necessary. The local board at Bay Ridge, impressed with the prospect of a million-dollar yard and the promise of a great and lasting improvement, gave its consent and the city went along. During 1906 and 1907 the huge yard was laid out and was completed by the spring of 1908.

Another very large freight yard acquired in connection with the Bay Ridge Improvement was the installation at East New York. In the fall of 1900 the Long Island Rail Road purchased seven blocks of ground adjoining the Manhattan Beach Branch on the west, running from Liberty Avenue on the north to almost New Lots Road and one block deep. Almost all this extensive tract was vacant at the time and the very few properties occupied were acquired by condemnation. This new yard was bought to be used as a distributing point for freight that arrived in cars at Bay Ridge from the Greenville Yards of the Pennsylvania Railroad.

At almost the same time the Long Island Rail Road laid out a second new freight yard on the south side of Atlantic Avenue between Montauk and Atkins Avenue. The land was purchased in 1901 and in January–February 1902 the railroad laid out eleven tracks from Atlantic Avenue south to Liberty Avenue. Within a year the yard was doubled in size by buying the block between Atkins and Berriman Avenues where seven additional tracks were put down. This yard was bought partly to handle the increased freight traffic in East New York and partly to serve as a storage depot for the immense amount of material used in the erection of the Long Island Rail Road elevated structure on Atlantic Avenue.

Beginning in November 1905 the Long Island Rail Road because of the densely-settled nature of the region in which the East New York yards were situated, undertook to depress the two Manhattan Beach tracks that passed through the yards to go under the street grade and at the same time to drop the whole yard level three feet to correspond with the new street grade. Since the blocks were long ones, each either 400 or 500 feet and there were ten of them from Liberty Avenue to New Lots Road, the excavation was a considerable undertaking. When the final grade crossing elimination on the Manhattan Beach Branch was undertaken at East New York in 1915–16, the yards below Liberty Avenue were fully depressed and the important cross streets, Liberty, Pitkin,

Belmont, Sutter, Blake, Dumont Avenues, were carried over the yards on bridges.

Two other important freight sites bear mention here and these were at the eastern end of the island. At Sag Harbor, the railroad in October 1900 built a dock "Long Wharf" just east of Main Street and extended a track over it to transfer freight with the steamboats of the Montauk Co. and other lines. At the same time the railroad secured the right to cross the foot of Main Street and lay tracks on the Maidstone Dock, a large private terminal. This became an important trans-shipment point for East End freight. The Long Wharf proved a maintenance problem for in July 1908, engine #32 toppled off the wave-undermined pier, and a similar accident occurred again in April 1911.

The other important East End freight center was at Riverhead. Riverhead had long been one of the principal freight and express stations on the road and nearly every year new long sidings were added to accommodate the increased volume of freight shipments. In October 1904 the railroad laid a siding 1500 feet long, large enough to accommodate 38 freight cars, on the north side of the track; this was in addition to another siding on the south side that held 36 cars. In June 1905 the railroad bought additional land between Osborn and Hallett Streets for new yard tracks and offices. A month later the railroad bought from the Corwin & Vail Lumber Co. more land on the west side of Griffing Avenue. In December 1905 the railroad began condemnation proceedings against the Howell Coal Company on the east side of Hamilton Avenue for additional space. Continued pressure from freight induced the railroad to buy a large plot between Osborn and Hallett Streets in August 1906 and to lay five long sidings on it. With other improvements contemplated the railroad proposed to increase its freight capacity to 300 cars. The enormous traffic during these years in potatoes and cauliflower from the east end made Riverhead the largest freight center east of Jamaica.

There appeared in the press during the years 1900–1916 scattered accounts of minor improvements in freight installations here and there over the island:

Hammels: Freight yard laid out on filled land at the wye at Hammels large enough for 100 cars—March to May 1905. All freight for the Rockaways was to be brought down here & distributed from a new freight house. The express business was to be centralized at Hollands in a new large office; out of this express terminal would operate 18 to 20 wagons and 40 horses.

Far Rockaway: New freight yard built March–April 1907 to eliminate the frequent closure of the Mott Avenue crossing; yard laid out south of tracks between Remsen & Leland Avenues. A new freight house 30 x 125 with platforms on all sides was built alongside the yard.

Sea Cliff: Old freight house 20 x 30 burned down Apr. 4, 1907; rebuilt on east side of track and north of the station.

Lawrence: During Feb. and Mar. 1913 a new freight house, 20 x 100, was built on Pearsall Avenue just north of the track to serve Cedarhurst and Lawrence. Additional sidings were laid out alongside the building.

The freight traffic on the Long Island Rail Road during the period before World War I was in its golden age, for it was as yet wholly free of truck competition. From the far east end of the island came a heavy flow of potatoes and cauliflower from the farms and oysters and fish from the sea; from the city came a return flow of brick, coal, lumber, cement, fertilizers and manufactured goods. Certainly, the freight that most attracted the attention of contemporaries and is best documented was the enormous cauliflower and potato trade of the north fork. September and October were the peak months for this produce. The cauliflower trade was especially well organized by the Long Island Cauliflower Growers Association. This was a voluntary group, organized about 1901 and which by 1908 had grown to the point where it was handling nine-tenths of the cauliflower crop. The association pooled the crops of all its members and then shipped it on its own "cauliflower trains". The association put a representative on board who checked on the shipment in transit; it also arranged for the supply of barrels for the crop and even sold to the farmer members the cauliflower seeds which were imported from Denmark. As the association grew, it created a demand in distant markets for cauliflower so that merchants in Philadelphia, Columbus, St. Louis, Chicago and New Orleans bought in the neighborhood of 350 carloads of Long Island cauliflower each year.

After 1910 special arrangements were concluded with the Pennsylvania Railroad for a preferential freight service.

The cauliflower trains on the Long Island Rail Road because of their length were a problem to handle. Sometimes this train got side-tracked too often by passenger movements and the crop arrived very late in the day at the market; then the cauliflower had to be sold at low prices. When this happened once or twice in 1905, the association complained and threatened to bring suit for losses; thereafter, the cauliflower train was given precedence over the passenger trains and arrived early. All the cauliflower trains went to Bushwick station; the dealer then had the expense of hauling the produce to the ferries. The ultimate destination of the crop was Washington Market in Manhattan from whence it was carried by wholesale and retail dealers to Manhattan and Brooklyn and also very largely trans-shipped to the big cities of the West: Buffalo, Cleveland, Chicago, St. Louis. In 1908 the dealers petitioned the railroad to send the trains to the Carlton Avenue yard but the heavy passenger movements over the two-track Atlantic Branch prevented this. In 1908 at least the farmer had an option in selling his crop; he could either take cash at the station from the association at its set price or he could take the chance of selling at the market price on Manhattan. Out of this, of course, came the shipping charges; the railroad, the wagon to the ferry and the ferry itself. Not all of the cauliflower crop went through the Cauliflower Association; some was sent to pickle houses; some was sent individually by express or regular freight.

We have a few scattered but very interesting statistics of the Long Island Cauliflower Growers Association from 75 years ago:

1902 September 29: 12 carloads containing 3255 barrels from:

Riverhead	1005
Aquebogue to Southold	1050
Calverton	800
Manor	400

1904 Oct. 2-8, 10: 15,595 packages from Manor to Southold price $1.75 a barrel

1905 Oct. 9–12	Shipped this Week	Season Total to Oct. 12
Manor	392 barrels & 314 crates	1871 barrels & 1216 crates
Calverton	483	3358
Riverhead	3395	14,757
Aquebogue	1220	3554
Jamesport	569	1208

Laurel	345	740
Mattituck	395	572
Cutchogue	114	133
Peconic	423	581
Southold	854	1188

Oct. 16 38 carloads shipped bringing $1 to $1.75 per barrel
Oct. 17 22 carloads shipped bringing $1 to $1.75 per barrel
Oct. 24 6500 barrels shipped; brought only half price—late arrival
Oct. 25 4500 barrels; brought $1.50 to $2.50 per barrel
Oct. 23–28 26,000 barrels shipped, of which 19,600 were by the Assoc.; brought 75¢ to $1.75 per barrel

1908 September 21–24:
Riverhead: 1900 barrels bringing $1.75 to $2.50 for "long trimmed"
Aquebogue: 800 barrels bringing $3 to $4 for "short trimmed"
One refrigerator car sent to Baltimore and one to Philadelphia

October 26–31 23,700 packages as follows:

Southold	3401
Peconic	1549
Cutchogue	393
Mattituck	1174
Laurel	1399
Jamesport	2753
Aquebogue	3576
Riverhead	4010 plus 4000 in refrig. car
Manor	1638

1912 August 29–Dec. 13
292,294 packages (mostly barrels) bringing $2 average price
402 refrigerator cars full

For the potato crop there was a "Long Island Potato Exchange", a cooperative association, like that of the cauliflower farmers. The association kept in close touch with market conditions, disposed of the members' crop, sold them fertilizer at favorable rates and dealt in seed potatoes. The press of the day has one lone notice: in the week of Aug. 16–18, 1906, 10,000 bushels of potatoes were hauled to market, bringing 50¢ a bushel.

We may conclude with the statistics of the Long Island Rail Road for the total of five classes of freight—agricultural, animal, mineral, forest and manufactures—by years:

1901	1,642,937 tons	8.6 % increase
1902	1,945,854 tons	14.54%
1903	2,104,598 tons	8.16%
1904	2,491,744 tons	10.97%
1905	2,745,622 tons	10.19%
1906	2,990,851	8.93%
1907	3,300,611	10.36%
1908	3,072,521	6.9 % decrease
1909	3,595,657	17.03% increase
1910	3,814,209	6.08%
1911	3,996,717	4.78%
1912	4,268,313	
1913	4,147,072	2.84% decrease
1914	4,480,231	8.03% increase
1915	4,443,333	.82% decrease
1916	5,134,838	15.56% increase

The general tendency of the freight tonnage, like that of passenger traffic, was to increase every year. The Long Island was to enjoy a healthy freight business for many more years to come; however, in the light of the conditions of our own day, it is interesting to read this comment appearing as early as October 1913:

> "The motor truck is a growing factor in short freight hauls and with the cheapening of fuel or the further improvement of the storage battery, will become a strong competitor with the railroad and the steamboat for merchandise transportation. Already a large number of deliveries of beef, fruits, groceries and other products are made in Huntington and scores of other Long Island villages by big motor trucks, carrying a load of from five to ten tons each. The trip is made in from five to six hours, much quicker than by railroad, and not having to be changed or shifted about in transit, goods are delivered in better condition than by any other method. The tendency is constantly to enlarge these trucks, some of them now carrying from 15 to 20 tons of coal, stone, lumber, brick, steel beams, lime, cement or sugar and flour several miles over good roads.

The auto is coming into more general use for the delivery of mails in cities since the inauguration of the parcel post."

—Oct. 31, 1913 Huntington "Long Islander"

CHAPTER XIX

Rolling Stock Changes

WHEN the Pennsylvania Railroad took over the Long Island Rail Road in 1900, the motive power of the latter was in thriving condition. The Long Island management over a period of seventeen years had made repeated purchases of new locomotives and had gradually retired the older and smaller engines. If the Corbin and Pratt managements could be faulted at all, it would not be in respect to quality, for the motive power of the 1880's and 90's compared favorably with anything on the Pennsylvania or New York Central; only in quantity was the Long Island deficient and this shortage of engines persisted through the first decade of the century. The motive power of 1900 consisted of only a few types; the classic American engine of the day, the 4-4-0, dominated the roster overwhelmingly with no less than 81 passenger engines of various ages plus twelve more assigned to the New York & Rockaway Beach R.R. The suburban passenger service with its short hauls and numerous stops, was monopolized by the little Forney 0-4-4T tank engines. The freight service of the road was taken care of by twenty-two 4-6-0's and thirteen 0-6-0 switchers. When necessary, the freight engines could perform "dual service," i.e. they could and often did haul passenger trains.

The process of modernization had begun well before the Pennsylvania take-over. The Corbin management itself had been faced with the problem of aging rolling stock from a previous regime and had gradually weeded out many of the older, smaller engines. By 1900 there remained only a handful of 4-4-0 locomotives and only ten 0-4-4T and 0-4-0T engines built before 1880, the oldest dated back to 1864, the youngest 1879. The Pennsylvania management in 1901 marked the aged 4-4-0's for early extinction and to clear them from the working roster, renumbered the lot to a special "500" series; within five years they were all gone.

An important Pennsylvania innovation on the Long Island was the assignment of class letters and class numbers to all locomotives, a long-standing custom on the parent road. These were as follows:

B 0-6-0's
D 4-4-0's
E 4-4-2's
G 4-6-0's
H 2-8-0's
S 2-6-2T's

From 1901 onward all the Long Island locomotives received these letters followed by a number to designate a sub-class.

Some time during 1903—probably the fall—the Pennsylvania began to transfer a few of its own locomotives to the Long Island Rail Road to relieve the local shortage. The loss of the Long Island records in this instance as in so many others, prevents us from knowing the full extent of the transfers but it is certain that three passenger 4-4-2 Camelbacks came over as LIRR #198-200 and four 2-8-0 Consolidations as LIRR #160-163. During the following years additional Pennsylvania motive power appeared for short periods and then returned to the parent road, but we have no surviving records unless these engines became involved in accidents. In this way we hear of #2418 on Aug. 28, 1905 and #1780 on Aug. 7, 1906.

Because of the immense size of the Pennsylvania Railroad and its constant need for large numbers of engines, that great corporation found it worthwhile to build its own engines at its great Altoona, Pa. locomotive shops; there were two plants in the same town, Altoona and Juniata and each used its own series of construction numbers. Altoona and Juniata existed as locomotive builders concurrently from 1891 when Juniata opened to 1905 when Altoona gave up construction for repairs only. After the purchase of the Long Island Rail Road by the Pennsylvania, the parent road began to include the Long Island in its locomotive building projects, and in this way many new passenger and freight engines came to Long Island from Altoona beginning in 1905. It would be wrong to conclude that all the new engines of both roads were Pennsylvania-built; the fact was that the traditional private locomotive builders—particularly Baldwin and to a lesser extent Brooks and Schenectady—continued to supply rolling stock over many years.

Since there was no physical connection between the Long Island Rail Road and the Pennsylvania before 1910, whenever new or rented engines had to be transferred to Long Island, it was necessary to lead the engines onto floats and to ferry them from the Pennsylvania depot in Jersey City to the Long Island Rail Road freight dock at 49th Avenue

(old 5th St.) They were then hauled to the Morris Park Shops on their own wheels for conditioning.

The nature of Long Island Rail Road passenger service largely determined the type of engine in use. Very early in the century—1905—the railroad embarked on electrification and in a decade just about the whole western end of the system was electrically operated, dispensing with the need for small suburban engines built for the wear and tear of constant stopping and starting. The Long Island's main interest in locomotives after these first few years was in furnishing fast service to more distant parts, particularly the East End. Speed and lightness became the main desideratum, for the railroad prided itself on its fast expresses and name trains connecting with the white fleet at Greenport, Montauk and Sag Harbor. To satisfy this need, the Pennsylvania installed 4-4-2 Atlantic-type engines with Camelback cabs and large 76" drivers. The first one of these new engines went into service in May 1901 and newspaper reports credit them with drawing up to eleven cars, including four or five parlor cars, at speeds of 75 to 80 MPH. Speeds during the 1890's had rarely exceeded 60 MPH at best. Engines of this type had just been installed on the Philadelphia & Reading and were being adopted by the Lehigh Valley and the New York Central for their fastest express service.

The Long Island Rail Road must have had second thoughts about the Atlantics or decided that the standard 4-4-0, abundantly purchased during the 1880's and 90's, would do as good a job. The Pennsylvania was itself using these in its fast Atlantic City service where eight and ten car trains made the run at 60 MPH. As a result of this decision to return to the traditional 4-4-0's, eighteen more were ordered from Baldwin (81-100) and thirty-one assigned from Juniata (201-231).

For the freight service speed was again the consideration; some of the products demanded quick delivery if only because they were perishable like oysters and fish; others were sensitive to price fluctuations depending on the hour of the day delivered, and this was true of cauliflowers and asparagus. An early morning delivery insured good prices; a late one brought poor returns for the market by noon time was then sated. To get the necessary speed, the Pennsylvania equipped the Long Island Rail Road with a fleet of 4-6-0 Ten Wheelers, dual service Camelbacks which became the mainstay of the freight service. Beside the Ten Wheelers but occupying a very secondary role were a dozen 2-8-0 Consolidation types (#151-155 & 159-170).

For the humbler duties of yard switching the Long Island Rail Road had thirty 0-6-0 switchers (#170-199 and four 0-8-0's #251-254). Fourteen of these went back to the railroad of the 1890's; the remainder were newer purchases from Baldwin and Schenectady. Most of these engines shifted passenger and freight cars in the Long Island City yards, the Morris Park Shops, the yards at Jamaica and Flatbush Avenue, and the Holban Yard.

The scrapping of old and worn-out locomotives was first undertaken during the Pennsylvania management in 1905 when the Atlantic Avenue electrification permitted the retirement of 28 old Forney tank engines from the suburban service. Most of these were sold off to southern lumber companies and to small rural railroads. In 1906 five more old engines were reported sold or broken up; in 1908 one locomotive was disposed of, and in 1909 no less than thirty-one. These latter were probably the 500's and the remaining old tank engines. The last housecleaning appears to have occurred in 1911 when 13 old engines were reported sold or scrapped. Occasionally, the railroad rebuilt a few of its locomotives for miscellaneous use; we know that in 1907 eight passenger locomotives were reported "rebuilt to freight class" and one to a switcher; again in 1910, a passenger locomotive was down-graded to freight class.

The advancing technology in the manufacture of steam locomotives in these early years of the 20th century was reflected in the Long Island engines. The most visible change was the sudden popularity of the Camelback or Mother Hubbard type of locomotive. Most LIRR engines built in the early part of the 1898-1917 period were Camelbacks. The ICC eventually banned further construction of such engines on the grounds of impaired visibility and the likelihood of certain death for the crew in the event of a boiler explosion; however, such engines continued in use on the Long Island Rail Road until the general demise of steam.

The forced conversion of locomotives from the use of soft coal to mixed coal and finally anthracite greatly increased the cost of operation and stimulated a strong effort on the part of the railroads for greater efficiency and reduced consumption of fuel. The biggest technical advance was the introduction of superheaters about 1910. The superheater in effect used the steam twice and required double cylinders. Instead of the old square-topped single cylinder, new and refitted engines received piston-valve cylinders which were round topped, or, as on E-51's, sloping. On most roads the valve gear was changed from Stephenson to Walschaerts types, but on the Long Island Rail Road, the engines changed

over to superheaters retained their Stephenson gears. The Long Island began to convert its older engines from single cylinder using saturated steam to double cylinders (superheater) in 1914; however, not all the old engines were altered. The use of the superheater produced a considerable saving in coal and water. Both the Pennsylvania and the Long Island indicated engines fitted with superheaters by the small letter "S" added to the class designation, e.g. E-51s.

There was also a later change in fireboxes. Most Long Island Rail Road engines had round-top fireboxes; when the Pennsylvania came in later, many engines with Belpaire fireboxes became common, e.g. the D-16's, H-3's, G-5's.

An interesting general class that takes in the various changes, both mechanical and in appearance over the years, is the G-53 type, 4-6-0's. The first ten were Camelbacks with no superheaters or piston valves; the next four were the same but with a single cab; the last had a single cab, piston valve and Walschaerts gear. The basic general specifications over the years were unchanged but the weight increased.

The size of wheels on Long Island Rail Road engines remained fairly constant; because of the relatively frequent stops, big wheels such as 80" drivers were never used with the single exception of the three ex-PRR #198-200. Only in later years, well after World War I, did the Long Island receive or rent Pennsylvania passenger engines with 80" wheels.

Purchases of steam locomotives, when looked at statistically during these early years of Pennsylvania Railroad management, are relatively few and are largely confined to the first six years:

1901	6	1906	25	1910	0	1914	0
1902	12	1907	5	1911	6	1915	0
1903	12	1908	0	1912	0	1916	4
1904	20	1909	0	1913	6	1917	6
1905	13						

The electrification of the Atlantic Branch and Rockaway Branch stimulated an early attempt on the part of the Long Island Rail Road to experiment with electric engines as a means of hauling freight into Flatbush Avenue and the Carlton Avenue Yards. The Pennsylvania in its Altoona Shops built twin 1600 HP electric engines, strong enough to outpull any two steam locomotives. These were numbered 10,001 and 10,002. On Jan. 28, 1906 they were delivered at Long Island City and hauled to Morris Park for equipping. Although both engines later made experimental runs over the road, no further models were made. During

1908 the Pennsylvania Railroad tested out three model electric engines on the Central Extension track east of Garden City; some of these were equipped with third-rail pick-ups and others used pantographs for current collection from overhead wires, e.g. 10,003. Years passed again and no electric engines for the Long Island Rail Road appeared.

In 1916, as a result of repeated complaints about smoke in the tunnels to Flatbush Avenue, the Public Service Commission forbade daytime steam freight movements on the Atlantic Branch. The Long Island Rail Road, because of the European War, could not develop and purchase an electric freight engine in time to substitute for the steam engines then being operated. The problem was eventually solved by the introduction of Pennsylvania Railroad DD-1's, built at Juniata in 1910—1911. These engines, beginning in September 1910, began to haul Long Island Rail Road trains from Woodside to Penn Station on a regular basis, and, years later, were sold to the Long Island Rail Road (1927—1942).

When the Pennsylvania Railroad took over the Long Island Rail Road, one of the first reforms was a classification of the passenger coaches into "classes" or letter-number groups that identified a car by its use. In practice these developed as follows:

P	passenger car
MP	motor passenger car
MB	motor baggage
MPB	motor, passenger & baggage
MPBM	motor, passenger, baggage & mail
T	trailer car

Numbers were added to specify particular groups of cars by body length. In this way two of the best known car types on the Long Island Rail Road, MP 41 and MP 54, meant in full translation "motor passenger, body length 41 feet or 54 feet." The passenger and locomotive roster of the Long Island Rail Road had been before 1900 a haphazard affair; as new equipment was bought, it received the next available block of numbers regardless of the type of vehicle. This system made no provision for the scrapping of older cars, and since the scrapping or perhaps sale was often indiscriminate, blocks of numbers dropped out of the roster, leaving odd gaps. When large numbers of locomotives began to be retired in the 90's, the Long Island Rail Road decided to throw out the whole roster and start all over again as of October 1898. In this way the old locomotive roster was modernized, but the railroad missed its

chance to restrict certain blocks of numbers to particular types of engines, a practice which would have been ideal and logical. Unfortunately, no renumbering of the passenger cars was ever attempted, and as a result, when old cars were retired, new ones were fitted into gaps in the old roster, creating duplication and confusion for the railroad historian, and very possibly, the employees of that day.

At the turn of the century the standard passenger coach on the Long Island Rail Road was of fairly uniform appearance; the body was of solid wood construction with open platforms at either end enclosed by a rather frail iron railing; the roof was the so-called deck or monitor type, raised the length of the car and sloping at either end; all along the deck and on either side were louvers or ventilators that could be opened or closed at will. There were usually 16 to 19 windows, sometimes at regular intervals and sometimes in groups of four or five with a wider panel between. Exterior ornamentation on the cars gradually became less elegant as time passed; the use of battens to form paneling or medallions went out of fashion by the late 1880's. Getting into the cars was always difficult for ladies; one had to climb two or three rather high steps to reach the platform. Car exteriors were commonly painted and then varnished and lettering was still an art much practiced and appreciated. Elegance and finish marked the car builder's art and reflected the taste of the day in dress and the home. The stark design and sterile utility of today's rolling stock would have evoked abhorrence in our grandfather's day.

The interiors of Long Island Rail Road coaches varied considerably; day coaches had reversible seats on each side of a long aisle running the length of the car. Seats could be finished in rattan or upholstered in red plush. The "name" trains to the east end of the island always used red plush. The use of contrasting woods in car interiors was much admired, often dark mahogany alongside oak or maple; seat fittings were brass or in some parlor cars, nickel. Lighting was furnished by Pintsch gas lamps until almost World War I days; a special plant in Long Island City charged the tanks under the cars. During the 80's steam heat was introduced for the comfort of the passengers by means of pipes and hoses running through the cars. Branch pipes conducted hot water from the locomotive boiler to the window area and under the seats making winter riding pleasant.

By the turn of the century the oldest cars in steam passenger service were generally twenty years old or less; roughly 77 dating from the 1880's and 106 from the 1890's. The only exceptions to this were a small

group of coaches made for the Central Railroad of Long Island in the early 70's. The exceptional quality and workmanship of these cars gave them a durability and solidity that enabled them to last till at least as late as 1905. A newspaper tribute of July 1903 lauded these cars for their comfortable riding qualities. Over the years the cars became longer; cars made in the 1880's were 58 feet on the average; cars of the 90's 62-64 feet. The take-over by the Pennsylvania Railroad made almost no change in the steam passenger car fleet. The old wooden cars continued not only to be used but additional ones were bought, not unlike those of the 90's. In 1902 the American Car & Foundry Company delivered 16 wooden day coaches and 10 wooden "vestibuled" cars (259-274 & 300-309). The Pennsylvania diverted a few of its own wooden cars in the following years (310-313) and charged a rental for them. As late as 1906 twelve wooden parlor cars were bought and some wooden baggage & mail cars as late as 1908. Not until 1911 did the Pennsylvania finally get around to installing steel cars on the long lines of the Long Island Rail Road, six years after all-steel cars had set the standard on the electric lines. Beginning in 1911 thirty steel coaches went into service (314-343); fifteen more in 1912 (344-358) and twelve additional in 1914 (359-370). Once these 57 steel cars were available, the Long Island Rail Road began gradually to phase out the handsome wooden fleet that had been the hallmark of the railroad for half a century. In 1908 twenty-six old coaches were scrapped; twenty-two more in 1909 and no less than ninety-six in 1910. The retreat from varnish and craftmanship was complete when the Long Island Rail Road took delivery of the bare and starkly utilitarian arch roof trailer coaches during 1915-1917 (907-996). These 90 steel cars spelled the final doom of the wooden fleet.

There were various pressures to get rid of wooden cars aside from the Pennsylvania's pride in setting the standard for the rest of the world; an important one was the Pennsylvania Tunnels. Wooden equipment was considered unsafe for tunnel operation and it was the desire of the railroad to run steam passenger coaches through to the Penn Station so that passengers could make a through ride without change. When steel coaches became available, electric locomotives picked up east end trains at Woodside and later Harold Tower; later this change of power was made at Jamaica. The other pressure was the Public Service Commission which viewed wooden coaches as a fire hazard and a danger in collisions. The fire hazard was a small one; no passenger had ever set a coach afire in 75 years of operation and no passenger had ever lost his life in the flames of a burning car, although stoves and external fires had

occasionally destroyed rolling stock. The collision hazard was a more valid one; no wooden coach could withstand impact and telescoping like a steel one.

The idea for the electric car fleet goes back as far as 1901, the year that the Pennsylvania Railroad decided that the building of the tunnels was really feasible because electric locomotives and multiple-unit electric cars had been demonstrated as entirely practical for steam railroad use. Well before the tunnels were opened, the Pennsylvania Railroad decided to equip the whole Long Island suburban area with electricity as a giant testing ground and showcase for the installations and rolling stock of the new system.

The use that the first electric cars were to be put to determined their shape and size and equipment. Readers of chapters 4 and 5 will recall that the initial purpose of the first electrics was to run in joint service with the Interborough Rapid Transit cars in the Manhattan subway. Cars of both systems would run from the Bronx through Manhattan and then by a tunnel to the Flatbush Avenue station and then out on Atlantic Avenue to Jamaica. The Long Island Railroad electrics were accordingly required to be virtual duplicates of the first IRT equipment and so it turned out.

These first electrics, classified as MP41's and numbered 1000-1133 were only 51 ft 4 in. long, were relatively narrow, 8 ft. 8 in. and almost a foot lower than the later cars, 12 ft. 1 1/2 in. They were designed by George Gibbs, the same electrical engineer who designed the IRT cars. The platforms had to be modified by the addition of a set of steps so as to allow loading from both high-level and ground-level platforms. All the cars were manufactured at the Berwick Shops of the American Car & Foundry Company and were delivered bare of electrical equipment. The motors, controllers and wiring were installed at the Locust Avenue Shops of the Long Island Rail Road in Springfield during the spring of 1905. Each motor car, fully equipped weighed 80,000 lbs. and was capable of maintaining a maximum speed of 55 MPH and a schedule speed of 25 MPH, allowing for stops 1 1/4 miles apart. The couplers were the Van Dorn type. Servicing of these cars and their successors was performed at Rockaway Park, Dunton and Morris Park.

Operation of these "Gibbs Cars" was in trains of two to eight cars; the older, side-door wooden rapid transit cars were used with the new cars as trailers until outlawed by the Public Service Commission in 1914. The exterior of the new cars was painted Tuscan red and lettered and numbered in gold; on the inside, the windows, end panels and

mouldings were painted dark green with gold striping, the headlinings light green with gold striping; the seats and seat backs were rattan covered. The MP-41's had four cross seats in the center on each side, and longitudinal seats at each end, with a total seating capacity of 52.

The Gibbs Cars of 1905 were adequate enough for the Rockaway summer excursions and for the Rapid Transit service along Atlantic Avenue between Flatbush Avenue and Queens Village, but in anticipation of the opening of the Penn Tunnels and the extension of suburban electrification to Hempstead, Long Beach and some of the Montauk Branch, additional cars had to be ordered from American Car & Foundry in 1908, 1909 and 1910.

The new steel cars differed from the older Gibbs cars in many important details of design and equipment. The new cars had 54 foot bodies (excluding platforms) compared to the 41 foot body of the MP-41's. The new cars represented the newly-established Penn Railroad standard for suburban passenger service. Although the new cars were a foot and three inches wider and a foot higher than their predecessors, there was no problem of clearance encroachment. The considerable difference in couplers and platform height also prevented the use of old and new cars in the same train in normal operation. All the seats in the newer cars were steam railroad style, reversible and running the full length of the car on either side of a center aisle; 72 passengers could be accommodated in the 32 double seats and four single corner seats.

The vestibules also incorporated newer features. The side doors slid back into pockets in the side of the car body and were opened and closed manually by the Gibbs mechanical door-opening device as in the older cars. The new cars had trap doors like the older ones for high-level and ground-level loading. The end windows were round resembling portholes. Double sliding doors opened in the bulkhead to give access to the car. The couplers were MCB type with spring buffer plates so that they could be operated in trains with standard coaches; the cars were also equipped with WH automatic air couplers.

The interiors of the newer cars were finished much like the older in dark green with pale green headlining and plain gold striping. The seats were upholstered in rattan. The lighting was more elaborate than in the older MP-41's. These longer cars featured chandeliers or "electroliers" of heavy bronze; these were later largely changed over to reflectors with a nest of five lamps for brighter but less elegant illumination. Nearly all the cars were fitted with a toilet room at one end with a dry hopper. The

weight of these newer MP-54 cars was considerably more than that of the MP-41's:

	MP-41	MP-54
Weight of body	44,424	54,332
Weight of trucks	23,284	33,168
Weight elec. equip.	14,430	19,600
Total Weight	82,138	107,100

The two motors in all these newer cars were again standard Penn Railroad suburban, Westinghouse 308's.

All of the 275 passenger cars of the pre-war vintage series 1401-1676 were very similar in their external appearance, being uniform in length, width and height; all were easily identifiable by the deck or monitor roof with louvers that could open or close as desired to let out smoke or foul air and to draw in fresh air. All were painted Tuscan red with "Long Island" in gold block letters on the letterboard and with thin gold striping along the body. Headlights and marker lights were fixed on the sloping ends of the roof at each end.

One of the most interesting series of passenger cars on the Long Island was the somewhat short-lived battery cars. About 1910 the street railway industry and the steam roads faced a common dilemma in dealing with short or declining routes whose traffic was so light that it was obviously uneconomical to incur the expense of installing electric rails and electric cars. To abandon such lines aroused a public outcry and involved lengthy hearings before the Public Service Commission; to continue current service either invited ridicule in the case of horse cars, or created large loss in the case of steam trains. When Thomas Edison came out with the improved wet-cell battery about 1905, strong enough to power a light rail vehicle and rechargable at small expense, both the street railroads and the Long Island Rail Road seized on the opportunity to convert their marginal lines.

The Edison cell was quite different from the automobile battery with which most of us are familiar today; it weighed only half as much; it used nickel-steel and iron for plates; the electrolyte was water and potash instead of sulphuric acid; it emitted almost no gases; it could be charged, discharged or overloaded at a very high rate without injury or deterioration in its life; it improved in efficiency with use and had a useful life of four years; the batteries did not require rebuilding and cleaning.

The first railway car ever operated with storage batteries was built by Ralph H. Beach and placed in experimental operation on the Public Service Railway in November 1909. In 1910 similar cars were placed on the 28-29th Streets Crosstown line in New York. On Apr. 1, 1911 the Long Island Rail Road began operating a single-truck Beach-Edison car with Continental trucks on the two-mile Bushwick Branch between Bushwick Station and Fresh Pond station. This was the first storage battery car used on a steam railroad in the United States. The car was delivered by the Erie Railroad to Long Island City from which it ran on its own power to Fresh Pond. This car #1 was built to carry 26 passengers but during the month carried as many as 59 and on a road with a slight grade and at 24 MPH. Since stops were very few, power consumption was unusually low. By April 1, 1913 the car had covered over 60,000 miles and had saved the company $21 a day over the former steam engine and coach. So far as is known, battery cars maintained Bushwick service until May 1924.

The most spectacular operation of storage battery cars on the Long Island Rail Road took place on Sept. 24-25, 1912, when a three-car train of interurban-looking cars built for the United Railways of Havana, Cuba, made a publicity run from Penn Station to Long Beach and back. The train carried 136 passengers at 27 MPH, after which, having proved its worth, it was shipped off to Cuba.

The battery cars took over as their own the West Hempstead Branch of the Long Island Rail Road from Valley Stream to Mineola. This branch, built by Austin Corbin in 1893 out of personal motives like the Wading River Extension and no less a financial loss, hardly justified the running of a steam locomotive and train of cars, and in 1913 the Long Island Rail Road decided to put on two battery cars #2 and #4. Rather surprisingly, they were equipped for multiple unit control. These cars made about 30 MPH on their dozen or so trips per day and when coupled together during rush hour, operated to capacity. The little cars made regular connections at Valley Stream, Country Life Press and Mineola. In 1926 the storage battery cars were retired and the branch electrified.

Perhaps the only other experimental operation worth mentioning in the pre-World War I period was the gasoline car put on the Long Island Rail Road by a private Pennsylvania company in April 1906. The body was a small passenger car designed for either steam or trolley roads and powered by a 150 HP six-cylinder automobile engine. Like all such

experiments it was pronounced a success but was turned down by Pres. Peters as being unsuitable to Long Island Rail Road conditions.

CHAPTER XX

Towers, Signals and Interlocks

BY 1900 the western end of the Long Island Rail Road had been so extensively equipped with efficient switch towers and interlocking plants that safe train operation was largely assured even on occasions when close headways became necessary. Some sort of interlocking was maintained at all the junctions and at the main terminals. More than 60 signal towers at various points along the right of way controlled the semaphores and switches and sometimes the crossing gates.

After the Pennsylvania take-over of 1900, the existing signal system was extended and enlarged particularly along those routes where electric operation was contemplated. The first such improvement came in January 1901 when a block signal system was mapped out for the Rockaway Beach line between Ozone Park and Broad Channel. Between January and June 1901 seven signals were installed along the trestle and four from the shore to Ozone Park. During the summer of 1902 the work of installing semaphore signals on the line between Rockaway Beach and Valley Stream was completed. The signals were spaced 800 feet apart because of the heavy train operation on the peninsula.

Just a year later in the summer of 1903 the automatic block signal system was extended from Winfield Junction to Jamaica, giving a continuous automatic block signal system between Long Island City and Floral Park. The new system took the place of the old wooden signal towers and man operators. The towers of the new system were of iron and had electric equipment in their base. The running rails acted as the wires and the train completed the circuit; the train kept the circuit closed and the signal red until it passed out of the block. The semaphore had red, amber and green discs at one end which lighted up at night.

During the same busy summer of 1903 the electric automatic block signal was extended along the Montauk Branch from Valley Stream to Bellmore, and along the Oyster Bay Branch.

After this initial effort the company made no further extensions for three years at least; in 1907 the company in its Annual Report spoke of

"rebuilding interlocking plants at many points" which probably means making all the interlocks mechanically harmonious and to the same modern Pennsylvania standards. Individual towers and signals were reported built at intervals during these first few years: four steel signals along the Montauk Branch east of Freeport in May 1900, no doubt in preparation for the 1903-1904 interlocking to that point; a replacement tower at Dutch Kills Street, Long Island City, for one that burned on Feb. 20, 1903; a new tower at the south end of the Hammels wye in April 1905 with 38 levers to control the three-way steam traffic and the trolley cars from Beach 84th Street.

Some time in 1906 or early 1907 the Long Island Rail Road abandoned the old custom of numbering the various signal towers on the road, probably because the system permitted no addition or deletion without disrupting the number sequences; instead, the railroad began to assign two letters to each tower, the letters being in most cases suggested by the name of the locality.

One of the rare but serious accidents involving signals occurred in Jamaica just west of the station on June 6, 1905 when the steel signal bridge that spanned ten tracks collapsed suddenly while under reconstruction. New supports and braces were being put in at the time when the whole bridge swayed and fell, killing two men and injuring three; because of its central position, the bridge was replaced immediately.

In April 1909 a new tower at Hicksville was completed in connection with a new station building and a realignment of all the tracks and wye. In the same year the railroad reported completing the automatic block signal system on the whole Far Rockaway Branch. In the spring of 1911 the railraod installed interlocking switches and safety signals between Hicksville and Syosset in connection with the opening of the double track between these points on March 17, 1911.

A freak accident on Dec. 28, 1912 put the entire interlock at Jamaica station out of commission; heavy rain and melting snow penetrated a weak spot in the cable insulation of a power cable and the great heat from the resulting short circuit melted the compressed-air chamber that furnished the power for moving the interlocking switches from JC tower. All traffic was halted for an hour and hand switching had to be used.

Beginning in 1910 the railroad resumed its campaign to extend the automatic safety signal and switching apparatus. By the end of 1913 the system had been extended on the Montauk Branch as far as Oakdale; on the Main Line to Hicksville and the whole Long Beach Branch. During

1914 and 1915 the automatic block was extended eastward to Patchogue; then, beginning in 1916, work started again to continue the system through Bellport and Moriches to Eastport. The annual report for 1916 mentioned that "during the past three years the absolute manual controlled block has been gradually extended to cover all single-track operations."

Certainly the most distinctive tower on the system and the one that attracted the most press coverage because of its difficulty in functioning for half a year was Tower A at Vernon Avenue in the Long Island City yard. The first that we hear of this facility was when the Long Island Rail Road filed with the Building Department plans for a four-story steel tower, 48 X 21, just west of the Vernon Avenue entrance to the yard in April 1904. On a level with the third floor was a balcony on the north side of the building from which the man in charge could obtain an unobstructed view of the entire yard. The Long Island City yard had been greatly enlarged in 1903 to 22 tracks across and the number of switches had greatly increased. In the past all switching had been done by hand levers worked by 105 switchmen. This new tower would supersede the old one at 11th Street and its mechanical power would be supplied by compressed air. Construction was started in May 1904 and went on through the summer. By 1904 the Long Island City terminal was the only large terminal in the country that was not being operated by an interlocking plant.

The railroad planned to put its new tower into use on Nov. 6; as completed, it was then the second largest in the country after the one at St. Louis, Mo. It required three directors, nine lever men and a telephone boy. The Long Island Rail Road was very proud of its new acquisition and released a detailed and interesting description of it to the press which gives us today, 75 years later, a rare and precious glimpse into how the Long Island Rail Road actively controlled its train movements, and an idea of the technology of 1905:

> "The machine comprising the network of levers is contained in a glass case 42 feet long, similar to a rectangular showcase. There are 86 levers operating 58 single switches and 28 double slips with movable frog points, 3 single slips with movable frogs and one bar lever for operating a detector bar. There are also 56 levers operating five 2-arm and one 1-arm high signals and 76 dwarf signals and 11 suspended signals, and 25 extra levers that can be used for special emergencies that might arise.

A substantial working track model, in polished brass, a complete miniature of the entire yard, with switch numbers painted plainly on rimmed card discs attached at the proper locations and blocks denoted by miniature red signals attached to steel fingers and situated above the machine, shows each move made by the leverman as he throws the lever from left to right to operate switches or signals in the yard.

The levers are connected by 835 electric wires with an auxiliary air reservoir at each switch and the power furnished by the electric current moves a valve which admits the air at either end of the cylinder which in turn moves the switches or signals in the yard. In this way the entire yard system is controlled.

The starting signals at the depot are governed by indicators. The conductor, when ready to start his train, drops a key in the indicator of the track on which his train is standing. This notifies the train director in the tower that he is ready to start. The latter has his leverman set up a route as soon as it is convenient and safe for that train to start. The conductor and engineer both are notified by a return ring which the director gives and by a clear signal ahead of the engine that the track is clear for him to proceed.

As to incoming trains the yard tower is notified by track circuits through indicators that a train is approaching and the operators at this tower know at all times the location of a train in the yard, although they may not be able to see it. After the train comes within the interlocking section, it is entirely in control of the train operator in the tower. A train can under this system be carried into the Long Island City yard over 24 switches and signals governing them by a consecutive movement of the levers in the machine in the tower while it is on its route from one end of the yard to the other, and no train either way, east or west, can go against that movement, owing to the interlocking in the machine.

One of the most interesting features of this machine is what is known as the return indication. The leverman, in throwing the small lever from right to left, can throw it only half way until the indication or electrical contact is made at the switch, showing that the switch is over and locked, after which he completes the throwing of the lever, then gives the signal for that

> route. This cannot be done until that switch is clean over. Therein lies the main safety feature of the system."
>
> Eagle, Oct. 30, 1904 20:3

On the morning of Nov. 6, 1904 the new tower went into operation with the result that incoming and outgoing trains straggled in from 10 to 60 minutes late. Superintendent Addison explained that the levermen had been practicing for three weeks but that the new system was awkward for both the towermen and the engineers. The following day things were no better. Incoming trains were delayed from 5 to 30 minutes and hundreds of impatient passengers walked from the stalled trains alongside the tracks to the ferry. In the evening rush hour trains left from two to four hours late and many had to be canceled altogether. At Jamaica two to three thousand passengers crowded the platforms, waiting for trains from Long Island City that never came.

On Nov. 9, the terrible crush of passengers and long lines of stalled trains created such a furore in the press and near riots on the trains that the railroad capitulated and hastily called back to work 40 of the 105 switchmen to hand-throw the switches. The railroad was embarrassed but the onset of the Aqueduct racing days and special trains to the track on top of the regular movements forced the railroad to back down or face chaos. Supt. Potter explained that the towermen, though proficient in practice school, lacked confidence in actual operation and that the tower would remain out until they were letter-perfect. He explained that inaugurating such systems had everywhere been attended with delays and difficulty for some weeks and that the Long Island Rail Road was no exception. Two weeks later a force of men was set to work installing electric lights on poles all over the yard to make the whole yard visible to the tower.

All during the winter of 1904–05 the disgraced tower operators strove to perfect their skill with the new machine and the railroad announced a limited reactivation in April 1905 for the North Shore Branch only; if this worked well, then the other divisions would be brought in. Further delays occurred in modifications of the machine and the training of new men. On May 11, 1905, a Sunday, the new machine took over the switching, but as the day advanced, the delays grew and stalled trains began to choke the tracks. Crowds, headed for the beach, began to pile up in the station and passengers on inbound trains got out of the cars and picked their way over rails and cinders to the ferry.

By Tuesday, May 13th, things were little better; the delays of from 20 minutes to two hours being ascribed to timidity on the part of the train engineers and towermen becoming confused. The railroad management did not retreat this time in the face of delays; they felt that the change had to come while the road was in operation. Within the next few weeks the operators gained such confidence that delays became a thing of the past. The Long Island revealed the cost of the new interlocking signal and switching system in the Long Island City yard came to $476,000, a huge sum of money in that day. However, it was the best and newest of its kind in the country worked more smoothly than was possible under the old hand-switch system. Ironically, this largest and most complex of all the towers was one of the most short-lived. Within five years most of the traffic moved to the Pennsylvania Station and the great tower was razed as an anachronism.

It might be appropriate in closing to list the towers in operation in the middle of this pre-World War I period, namely, November 1909:

Tower A	*Long Island City Yard*
YD	Long Island Crossover
WJ	Woodside Junction
JA	Jamaica Block
AC	Jamaica Cross Switches
JT	Jamaica Air Tower
JE	Jamaica East End
RJ	Rockaway Junction
IS	Hollis
HQ	Cabin Hempstead Turnpike
QU	Queens
BE	Cabin Bellerose
FK	Floral Park
MT	Mineola
HX	Hicksville
GE	Cabin Glen Cove, Glen Street
HC	Hempstead Crossing
HM	Hempstead
Tower B	*Long Island City Yard*
DB	Dutch Kills Drawbridge
BX	Blissville
LH	Laurel Hill
MV	Mt. Olivet

MX .....Metropolitan Avenue
BJ .....Bushwick Junction
DF.....Fresh Pond Junction
GW.....Glendale
JD .....Glendale Junction
HB .....Cabin Holban Yard
SP .....Springfield Junction
VA .....Valley Stream
PT.....Lynbrook
OA .....Oakdale
EX.....Flatbush Avenue Express Yard
FT.....Flatbush Avenue
VD .....Vanderbilt Avenue
NO .....East New York
PR.....Cabin Pennsylvania Avenue
CN .....Chestnut Street Junction
WT .....Woodhaven Junction
MP .....Morris Park
SJ.....Jamaica South Street
SM .....Cabin Laurelton
RK .....Ozone Park
LK .....Ozone Park, Liberty Avenue
WD.....West end of Trestle
HJ .....Hammels Junction
FX.....Fairview Avenue
HU .....Hammels Wye
FW .....Far Rockaway
MY .....Myrtle Avenue
CY.....Cabin Cypress Avenue
LM .....Liberty Avenue-Manhattan Beach

CHAPTER XXI

Labor Relations

LABOR relations during the decade and a half from the turn of the century to World War I were relatively tranquil compared to our own day and are characterized largely by isolated strikes of minor employees triggered by some particular set of circumstances and several near-strikes on the part of major employees narrowly averted by timely pay raises. Although the power of the unions had expanded steadily with the expansion of the railroad industry itself, the union was still a small factor in the life of the average railroad employee. Paternalism in the industry was still strong; a great railroad like the Pennsylvania did recognize a moral obligation to its employees which was evidenced in the personal interest the bosses both at the top and at the bottom showed for the individual worker, and the employee in turn repaid this concern by his strong sense of loyalty. To work for the railroad was a source of pride and honor and when a man retired, he often bequeathed to the railroad the most valuable possession he owned—his son to follow in his footsteps. Career employees were exactly that—they worked sometimes 50 and even 60 years for the road and regarded the railroad as theirs; a man might spend more hours in one week with his particular engine than he did with his own wife, and a conductor viewed his "run" in the same light. This feeling of possession for something on the railroad translated itself into a care and conscientiousness for company property unknown today. The engineer lovingly oiled "his" engine and privately enjoyed the little quirks of her operation; the station master planted flower beds and watered grass because his fellows saw the depot as his and judged him by its appearance.

Employees viewed the superintendent as they would their fathers; they came for private advice in times of domestic trouble and many superintendents consciously tried to live up to this image. Superintendent and later president Potter is a case in point; he was everywhere on the road and knew everyone by name; he could do any man's job and his subordinates knew it. He could reprimand a man without demeaning him and his soft reproof lashed the conscience more effectively than any

ranting or profanity. The private floral tributes and the painting donated to his widow from the collected small change of hundreds of men is a tribute that today would be unthinkable. The reciprocal good will between the employee and the commuter was another bright spot of this now-lost age. We read stories of gold watches presented to conductors by their riders, of pins or a purse from time to time in gratitude for some special service.

There is a danger in viewing the railroad in retrospect, of seeing it in too rosy colors, but there was undeniably a personal element, a sense of belonging, of responsibility, of pride in being a railroad man that is gone today, perhaps the greatest loss the Long Island has suffered. The contemporary attitude of "me vs. them", "what's in it for me?" and "It's not my job" would have been incomprehensible to the trainman of 1905. The personal touch between the top management and the lowest workman was observed at Christmas time by a now-forgotten custom. President Peters opened his office the day after Christmas in Long Island City and streams of employees from trackman to superintendents came into the place to shake hands and exchange a few words with the boss. Peters gave every man a cigar and each lady a box of candy. Peters did not have the knack of remembering hundreds of names as did Potter but he tried to compensate by cordiality and simplicity. By 1914 it became necessary to hold three receptions, one at Flatbush Avenue, one at Long Island City and one at Penn Station.

Another small benevolence on the part of the railroad was the YMCA. The first railroad "Y" was set up in Jamaica in 1903. The company bought the William Broedel mansion near Union Hall Street in Dec. 1901 for $3000, and it became the official "Y" in 1903 after remodeling. In 1908, Mrs. Russell Sage, widow of the railroad magnate, donated a $100,000 building in Long Island City for the use of the men, and the railroad helped with the expense of programs. In March 1911 the "Y" in Penn Station opened, this time thanks to the largesse of that road and elaborately finished with game rooms, library, showers, bunk rooms, gymnasium and auditorium.

There is no question that the moral tone of the age accounted in large part for stable labor relations of 1900–1916. A man expected to work hard because all his family and friends had always done so. The Protestant ethic that was the creed of the country taught that hard work led to prosperity and prosperity was the visible sign of God's favor. The man of 1905 lived in an era of low expectations also; there was no TV to goad him into constant dissatisfaction with his lot and to instill in him a

yearning for a scale of living beyond his reach. The working man lived humbly—even deprived by our standards—but he had the verities that elude us today: a stable family life, an economy that changed very slowly and an unbounded confidence in a better future for his children and his country.

For the first five years of this century wage rates remained stable. When there was discontent on the part of Rapid Transit conductors in 1901, because their hours were longer and the work harder, the men received compensatory time of half a day off a week rather than increased wages. The first round of pay increases appears to have come in 1906 when the railroad reported to its stockholders that adjustments in compensation for 8000 men cost the railroad $250,000 a year. In 1907 the company granted a slight increase in wages to its station agents, station employees, telegraph operators and clerks, the same affecting 250 men, effective Sept. 1, 1907. The company reported an additional expense of $253,602 this year for advances in rates of pay. At the beginning of 1908 the trainmen got a rise of 10%; somewhat over 100 men were affected and the effective date was Feb. 1, 1908.

Two years passed and in January 1910, following much rumor, President Peters released this statement: "Following its usual practice of distributing its surplus among its employees, the Long Island Rail Road has decided to distribute this year $260,000 in equalizing the pay of its employees below the $5000 annual pay scale. There will be no general increase. In July 1907 the road made advances amounting to $400,000. The year 1909 has been prosperous for the Long Island Rail Road and the management thought it proper to increase the wages of the men. This applies to all branches of the service. The men will receive the increase in their next pay checks which will be handed out this week."

In the years immediately before the war, questions of wages ceased to be local concerns and became more and more a regional pattern for large numbers of railroads. Thus, in Nov. 1913 a salary increase of 7% was awarded to the conductors and trainmen of the Eastern railroads by the Board of Arbitration sponsored by the government. For the Long Island Rail Road it meant an annual expenditure of about $120,000 for about 2000 men. This was the first occasion when the initiative for setting pay scales came from outside the Long Island and it marked the end of one aspect of the old paternalism. The Pennsylvania Railroad, at least, went on record for opposing the increase on grounds that sound familiar to us today: that standardization of pay scales is uneconomic; that such increased cost of living as has occurred was not sufficient to

justify the increase demanded; that statistics proved that risk and hours of labor have alike decreased, and that it could not be proven that responsibility had increased.

In May 1914 the general agreement of 1913 was spelled out after a series of conferences between the general manager and a committee of men. On both steam and electric lines conductors were to be paid $4.50 per day; 45¢ per hour overtime and 29/10¢ per mile of runs. The mileage for one day was set at 122 miles or less on steam and 132 miles or less on electric divisions. All conductors were to have a 28-day guarantee for every calendar month. Crews on short turn-around runs, no single trip of which exceeded 84 miles, should be paid overtime for all time on duty or held for duty in excess of eight hours. Other crews should be paid for overtime on a speed basis of 20 MPH; computed from the time required to report for duty until released at the end of the last run. This agreement was the last until war conditions changed American life.

As can be seen, the railroad was conscious of the importance of pay in its relations with its employees and was willing to make many concessions even in the face of many years of deficit operation and chronic failure to pay dividends. Unrest on the road was exceptional and when it did occur, it was likely to happen only in the lowest echelons and in isolated places. The most frequent source of trouble was the Italian trackman; these workers were often immigrants, spoke no English and were recruited by a "padrone" or patron who hired them and negotiated everything for them, taking a "cut" in return for his services. The Italians possessed little or nothing and put up with scanty food, box car accommodations and long hours of toil that no native American would tolerate. When harsh weather conditions like prolonged cold and rain added to his miseries or he ended up with too little pay for too long absence from home, he would finally rebel and lay down his tools. Labor organization was unknown among the Italian trackmen since the unions looked down on their foreign speech and ways and this left them at the mercy of their foreman who quickly replaced grumblers and troublemakers. Strikes occurred in April 1903 when the men were at work filling in the wye at Hammels. In March 1905, 200 Italians engaged in grading and digging on the Montauk line struck when an order was issued not to work on stormy days. The men had been receiving $1.20 a day and had been working every day regardless of the weather and they resented this loss of a day's wages since it had been happening too often. The matter was solved by discharging the dissatisfied and the rest accepted the order.

The first dissatisfaction among the operating personnel come in June 1907 and resulted in the increases mentioned earlier. This press release came from conferences between the Brotherhood of Railroad Trainmen and General Manager McCrae:

> "It is all settled for the best. Our men appreciated the fact that the Long Island Rail Road has made very large increases in its rates of wages in the last 18 months and have agreed to withdraw their demands for an increased rate of pay at this time. As a result, we expect to sign for an agreement this afternoon that will become effective January 1, 1908 and to remain in effect one year, which will not increase the present daily rate, but will provide for payment of overtime on a more equable basis than at present. There have also been a number of minor changes made in the rules and regulations by which trainmen are governed. So far as we are concerned, the railroad company is entirely satisfied with the settlement and the men are too. . . the details are too complicated for publication but include a partial mileage basis."

Interestingly, the increase was granted "to meet the increasing cost of living," the first emergence of this phase so familiar to us today.

The awards granted to the trainmen stirred dissatisfaction among the firemen and oilers on the 34th Street ferry and on the seven tugboats and three Annex boats. The firemen had had their rate of pay increased about a year earlier. The boatmen walked off the job, demanding an increase from $65 a month to $70. The Long Island Rail Road fired several men and brought in others from Whitestone to man the boats.

The next more serious disturbance came in November 1910 when the expressmen went out in Long Island City and stayed out for a week. One hundred and fifty wagons ran out of the express depot daily but the 200 wagons of the company in Brooklyn were not affected. The company ran one wagon over to Manhattan daily as a feeler, but as the drivers and helpers were roughly handled by the mob, the company stopped its attempt. In the end the railroad agreed to advance the wages of the men on Dec. 1, 1910 and to cut down the working time to an average of 11 hours a day.

In April 1910 despite the 5% increase granted to all employees the previous January, some of the pilots and deckhands of the tugboats, stirred up by the general tugboat strike in New York harbor then prevailing, sent in their resignations as a pressure tactic for more money.

The railroad, angered at the action so soon after an increase and resentful of the disloyalty, surprised the men by accepting their resignations.

In January 1913 the Brotherhood of Railroad Trainmen called for a fireman's strike on 54 railroads east of Chicago including the Long Island Rail Road. The Pennsylvania planned to operate with extra trainmen usually employed in the summer. After a month of negotiations on a national scale, the Brotherhood and the railroads agreed to accept the decision of a Board of three arbitrators, one of whom was W. W. Atterbury, a Long Island Rail Road director, and so the strike was averted.

After a few years of labor peace the Italian trackmen working on the concrete elevations at Jamaica struck in 1913 and about 400 of them marched to Richmond Hill, preceded by an Italian bearing a red flag. A platoon of mounted policemen met them at Jamaica Avenue and 125th Street and a pitched battle ensued in which stones were thrown and shots fired. The laborers, who were getting $1.50, finally won an increase of 25¢ from the railroad and peace returned.

The economic effects of World War I were beginning to make themselves felt in 1916 when the next disturbance occurred. American industry was increasingly busy turning out war materiel for the Allies and blue collar workers found it easy to get work. The resulting shortage of labor was reflected on the Long Island Rail Road. In January 1916, about 200 Italian trackmen engaged in the work of elevating the track east of Jamaica from Hollis to Queens, laid down their tools on the 25th and demanded 25¢ a day increase. Again a worker unfurled a red flag and the whole group set out to march to Bushwick Junction and Winfield where 250 more Italians were doing similar work. The railroad, fearing trouble, stationed railroad police all along the right of way. This time the strikers were organized under the International Labor Union, and a mediator from the State Department of Labor was present. The railroad compromised finally, offering $2 a day for a ten-hour day and after a week a few men trickled back to work.

In the midst of this trouble the baggage handlers at Long Island City went out on Jan. 25, 1916; these men received 18¢ an hour but now demanded 25¢. This was refused by the company and a counter-offer of 20¢ an hour was made. The strikers waited a week before deciding to accept the increase, but meanwhile so much freight had accumulated that the railroad hired 75 new men. When the regulars announced themselves ready to return, their jobs were filled.

Renewed pressure was put upon all the eastern roads in March 1916 by the enginemen, conductors and firemen for increased wages and time and a half for overtime. The answer, released to all the personnel of the Eastern roads, was drafted by General Manager McCrae of the Long Island Rail Road and expressed a refusal to further increase wages, but offered mediation on working conditions as they affected compensation. This proved unsatisfactory to the national leadership and a strike call was sounded for Sept. 4, 1916. On Sept. 2, the Senate of the United States passed the Adamson Eight-Hour Day bill and President Wilson signed it into law. Three hours after Congress had acted, the heads of the four great railroad employees' brotherhoods canceled the strike orders. The legislation was a landmark in the history of the American labor movement, but the American railroads, faced with hiring many new crews, ruefully calculated that the bill would cost them $60 million a year. Within seven months the nation was at war and the picture completely changed.

CHAPTER XXII

The Long Island Rail Road in the Farm Business

STRETCHING eastward from Farmingdale all through the center of the island and extending 45 miles out to Riverhead are the vast pine barrens and scrub oak wastelands of Long Island. From time immemorial this immense tract of thousands of acres lay unchanged, a region of loose sand drifted from place to place by every wind, the scanty soil sustaining only the most rugged vegetation, the marvel of colonial observers and the despair of later settlers. To the north and south along the Sound and Great South Bay thriving farms and prosperous villages grew up early but the great tract inland for more than two centuries lay unwanted and largely in its primeval state. At intervals in the 19th century a few individuals and groups attempted systematic development of the barrens at random sites but none of these attempts achieved real success and settlements like Brentwood, Ronkonkoma, Medford and Yaphank remained rural hamlets with a handful of residents till well into the present century.

Unfortunately for the Long Island Rail Road, almost half its Main Line passed through the midst of these barrens devoid of any settlement and empty of all natural resources. No passengers rode out to this wilderness and no freight emerged from it. The situation put the Long Island Rail Road in the position of many Western railroads that had miles of track but little or no profit from it. As early as the receivership days of Colonel Sharp in the 1870's, the railroad offered one-time reduced transportation and free baggage hauling to all newly-arrived immigrants who would settle out on the island. The handful that took advantage of this offer were swallowed up in the wilderness and were of no lasting profit to the railroad.

It remained for President Peters, who came to the presidency of the railroad in April 1905, to see the island with the fresh eyes of a stranger and to attempt a fresh approach. Peters conceived the idea of founding several model farms to demonstrate conclusively that the barrens were not inherently unproductive, for in those places where the water table was only a few feet below the surface or where a little irrigation was

practiced, agricultural operations could be successfully carried out even on the most sandy land. In most places the trouble was that the normal four feet of annual rainfall passed through the soil, technically called Norfolk coarse sandy loam, leaving insufficient moisture on the surface for the needs of growing crops. What was needed was an expert appraisal which would make a careful scientific study of waste lands and then report in detail on what was feasible and what crops were best suited to the island's peculiar conditions.

Peters noted that scores of small farms worked by industrious Poles and Bohemians north of Baiting Hollow and in spots through the middle of the island were made to produce marvelous crops of potatoes, cauliflowers, tomatoes and melons. Much of the land improved by these hard-working farmers produced in normal years a crop that paid for the entire cost of the land, clearing and cultivation and put the owner financially on his feet. It was estimated that there were then in Suffolk County at least 300,000 acres of unimproved land capable of cultivation; of so little value had the land been held that 41,000 acres were left off the assessment rolls, yet the bulk of it lay only 60 miles from New York City. The Long Island Rail Road now proposed to demonstrate that these neglected lands were capable of producing with careful labor as large crops as the lands around Southold and Riverhead. Such cultivation would boom Long Island beyond the dreams of any developer and could produce $100,000,000 in crop value, more than the assessed valuation of the entire county. Prosperous villages would grow up and the railroad would be assured of a freight traffic requiring four tracks to Brooklyn. Peters envisioned three demonstration farms, #1 on the Wading River Branch in the Norfolk sandy loam area; #2 somewhere on the Main Line in a scrub oak region; and #3 in open grassy meadow somewhere on the Hempstead Plains.

Not everyone shared Peter's optimistic view. It was the belief of a great number that the destiny of Long Island was not in the direction of a multiplicity of truck farms at all, but rather that bit by bit the movement toward big country estates would advance inland as the more desirable Sound and bay sites were taken, and over a period of years convert the barrens into one unbroken line of estates. In this way barren land then going from $5 to $20 an acre would sell in time for $2000 an acre.

Peters first tried to interest the existing farmers' clubs, some 20 to 30 in number and to seek their advice; he also bought multiple copies of

pamphlets of the Department of Agriculture on crop and fruit growing and distributed them widely.

Peter's first move seems to have been the purchase in July 1905 of the Sidney Terry farm at Wading River, containing 350 acres of good farm land and some large buildings, as a country estate where he could observe closely the model farm he had in mind. The next step was the purchase of land for the first demonstration farm itself. Peters chose 17 acres of the wildest, least promising land he could find, thickly overgrown with scrub oak and pitch pine, located just south of the railroad track and along the east side of Randall Road, 1450 feet short of the end of track at Wading River station.

Peters realized that the manager of the experimental farm would have to be a combination of scientist, farmer, journalist, lecturer and business man and he was fortunate in locating the right man for the job, Hal B. Fullerton. Fullerton was born in Cincinnati, Ohio, on Aug. 14, 1857 and attended the Boston School of Technology, where he majored in chemistry. He then went west and worked in oil prospecting, and later in Texas in the cotton seed oil business. After a time he returned north and went into the textile business in New England. Later he came to New York and President Baldwin hired him in 1897 as an advertising agent for the Passenger Department, writing newspaper articles and giving stereopticon lectures. Fullerton arranged the spectacular bicycle race with Mile-a-minute Murphy on June 30, 1899 as a publicity stunt. After Baldwin's death Peters asked him, in the light of his broad experience, to take on the job of convincing farmers that Long Island was a good place to farm. Fullerton met his wife, Edith Loring, while both were attending a school in Mexico. Residing in Brooklyn at first, the couple moved to Huntington when the first daughter was born, and here Fullerton set up his headquarters. Fullerton had the right combination of missionary zeal, energy and showmanship that the job required; after a short study of the soil and the water at Wading River, he declared that only work and common sense were needed for success.

To publicize the new farm experiment about to start, President Peters, in August 1905, invited a number of editors and representatives of fruit & agricultural journals to tour some of the fine farms in the vicinity of Calverton, Baiting Hollow, Roanoke and Riverhead. Peters wanted the experts of the trade papers to see what could be accomplished. Most had never seen this area and were astonished at how rich,

prolific and profitable the farmers were. The railroad officials also entertained a number of the officials of the Long Island Cauliflower Association, who showed the journalists the acres and acres planted to cauliflowers and how $300 to $400 could be earned from one acre. The journalists returned to Brooklyn on a special train and each man took back with him a giant cauliflower head as a souvenir of his tour.

A second tour with Hal Fullerton as host inspected the newly purchased 17-acre experimental farm on Sept. 6, 1905. They watched the dynamiting of oak stumps and learned that $30 worth of powder and four days of work would clear the whole tract. The party then toured President Peters' own farm before returning to the city.

Fullerton was at a major disadvantage beginning the farm in the late fall and he hired 25 men immediately to get the ground cleared of stumps and plowed and harrowed. He proposed to use seven acres of the plot for the homestead lot, a portion to be used for a grove of native oaks and hickories and fruit orchard, and a row of forest trees along the north border for a wind break. Trees, Fullerton believed, made a farm more attractive and more valuable. Fullerton and his men lived in an old caboose fitted up with bunks and cooking was done outdoors. Later on a modest house was erected with a stable for cows and horses. To make the experiment practical and economical as a poor immigrant would have to do, Fullerton planned to avoid any expensive methods and to keep a strict log of all expenses.

Although the land cost $10 an acre, it cost about $50 an acre to clear it and plow and harrow. It was the experience of all that worked such sandy loam that it would richly repay heavy fertilization. Probably $50 an acre could be profitably expended for early crops and half of that for late potatoes, cauliflower and cabbage. Norfolk loam tended to warm up readily under the rays of the earliest spring sun and produced much earlier crops than the clayey sections farther west and was most admirably adapted to melons, tomatoes, cabbage, cauliflower, asparagus, berries, early potatoes, beets, turnips, radishes and other root crops. To solve the problem of irrigation, Fullerton proposed to use driven wells.

By the end of the year Fullerton had a crop of 3 1/2 acres of rye, a one-acre orchard of fruit trees and an acre of berries. A four-room portable house bought second-hand had been set up and occupied by a housekeeper and a condemned box car had been converted into a bunk house for the Italian workmen and a second such car into a chicken house. Clearing had cost $60 an acre including the wages of three men; the dynamite cost $27.75 per acre; the box cars $10 each. Fourteen

Italians worked for $1.50 a day. Ten tons of stable manure came to $26 per acre and the seed rye cost $12.72. Water came from a 5000-gallon tank; the tower, tank, pump and engine came to $450 and the driven well $309. Numbers of investors went over the farm carefully and a few sales of land resulted.

In the spring of 1906 the site of experimental farm No. 2 was purchased, this time a tract of 80 acres three miles east of Medford, between milepost 57 and 58, two-thirds of the way to Yaphank.

Before taking charge of this new farm, Hal Fullerton and his wife Edith collaborated on the production of a book "Lure of the Land", wherein the whole story of their efforts on the Wading River farm, "Peace and Plenty", was recounted. The book appeared in January 1907.

With the beginning of spring 1907, Fullerton set off about 10 acres for his second experiment. The scrub oak was cleared off and the farm divided off into potatoes, berries and alfalfa. The summer of 1907 witnessed the first good crops at the new farm: beans, limas, corn, watermelons, cantaloupe, squashes, cabbage, cauliflower and rhubarb. The only insecticides used were tobacco dust and ashes. Fullerton's big surprise was a heavy crop of alfalfa as fodder for horses, swine and cows. The animals relished it and the crop proved resistant to drought and flood and it could be harvested three times a season.

In the summer of 1907 all the extra land at Medford not used for the farm- some 70 acres- was put up for sale by the railroad with the restriction that not less than five nor more than ten acres be sold to actual settlers. Beginning in 1907 Fullerton began writing for and editing a farmer's magazine entitled, "The Long Island Agronomist". It appeared every two months at first from 1907 to 1909 and then twice a month beginning in 1910; small at first with only four pages, it later expanded to 12 pages and gave all kinds of advice to farmers. The magazine was printed by the Long Island Rail Road and distributed free.

After the first two or three seasons the two farms required less daily supervision and Hal Fullerton was able to devote more time to lecturing, showing slides, preparing press releases and conducting tours of the farms for numerous visiting groups. In April 1909 the railroad bought Fullerton a Winton automobile so that he could travel more easily between his home and office in Huntington and the two farms under his supervision.

When the freight statistics for 1908 were issued, Fullerton had the satisfaction of learning that scores of enterprising market gardeners had

been induced to come in from other states and settle on the so-called wild lands. The agricultural output for 1908 rose 13,800 tons over 1907, a tribute to Fullerton's efforts.

In December 1909 the book "Lure of the Land" went into its second edition thanks to the heavy demand for it. The many photos and the engrossing text made the book popular not only on Long Island but throughout the country.

Inspection of the two farms could be a popular outing for urban students of domestic science. On May 17, 1910 a special train of three day coaches and a club car carrying 149 students and 16 instructors from Pratt Institute in Brooklyn came out to Medford for a conducted tour of the farm by Hal and Edith Fullerton. The party toured every corner of the farm, listened to the explanations of Mr. & Mrs. Fullerton and returned to Brooklyn in the early evening, tired but impressed by what they saw.

During the 1910 season the Medford farm was extended to include a complete dairy operation, where the value of alfalfa and other green foods could be tested on the best of butter-making cows. In September 1912 the Brooklyn Institute of Arts and Sciences toured the Medford farm with Mr. & Mrs. Fullerton acting as guides. The visitors marveled at the grape arbors heavy with Concords, Niagaras, Brightons and Delawares. Mrs. Fullerton herself had just won a gold medal at the Syracuse State Fair and the Medford farm had just that month taken 82 premiums at the Riverhead Fair.

The first curtailment of the Long Island Rail Road's farm sponsorship program came in April 1913 when "Peace and Plenty", the Wading River farm, was put up for sale. The reason given out was that "Peace and Plenty" had proved beyond all doubt what it was set up to demonstrate and that the Fullertons could now concentrate their efforts on Medford without the need of frequent 30-mile jaunts to Wading River. In May 1914 the "Long Island Agronomist" came out with a notice on the top of the front page reading: "This is the last free number." It was not long after this hint that the "Agronomist" ceased publication altogether with the November 1914 issue, a victim to the railroad's financial losses that year.

A newspaper reporter, sent out in March 1916 to Medford to interview Mr. Fullerton as to whether the farm had really induced any appreciable settlement of the barrens, received a suprisingly detailed answer. Mr. Fullerton said that he had kept an accurate record of the

number of families who were induced to settle on Long Island as farmers and gardeners as a result of the work of stations 1 and 2. He said he had available the names of 4700 such families who had settled in one place or another on the barrens—a tribute to the railroad's investment and one man's tireless efforts.

The work at Medford continued on all during the great war and as late as 1924 Fullerton received press coverage for his promotion of the sugar beet industry on Long Island. In 1927 Hal Fullerton reached the mandatory retirement age of 70 and was feted for his years of work at a testimonial dinner in September. The Long Island Rail Road closed the Medford farm in 1927 on the eve of the great depression. Fifty years later, there appeared in the "Daily News" of July 2, 1978 an account of a reporter's pilgrimage to the site of the former Medford farm. The reporter was able to discover only one relic of Fullerton's work surviving today, a twenty-foot high stand of bamboo growing midway between Medford and Yaphank stations, near the corner of Long Island Avenue and Manor Road. The Medford Farm site is still a farm but it has lost its old claim to distinction.

Accident List

1900	*July 20:*	Fifth Avenue elevated train is stopped by a burnt-out fuse; struck truck in rear by LIRR Jamaica-bound steam train.
	Oct. 16:	Engine #123, drawing eight freight cars, while running southbound into Nassau station, plows into rear of southbound four-car passenger train. No injuries.
	Oct. 17:	Camelback #60 on westbound morning mail train suffers cracked driving wheel.
	Nov. 9:	Engine #62 blows out left cylinder head at Gaston Avenue, Arverne; limps to Long Island City.
	Nov. 19:	Three empty coal cars in a train derail west of Woodside and roll down gully.
1901	*Feb. 5:*	Engine and one car of East New York-Long Island City Rapid Transit train derail at Fresh Pond Junction. No injuries.
	May 3:	Eight cars of a 35-car eastbound Amagansett freight wrecked one-eighth of a mile west of Patchogue depot. $15,000 damage, due to broken flange on a box car truck.
	May 9:	Engine #71 of the Patchogue Accommodation train breaks both driving rods; makes Patchogue safely.
	May 31:	Freight engine #110 derailed by broken truck.
	Aug. 18:	Crowded train on way to 39th Street Ferry from Manhattan Beach runs head-on into a crowded 15th Street trolley at Avenue D & Gravesend Avenue; two killed; 45 injured.
	Oct. 10:	Regular Wading River freight, stopping at Mineola, struck by special freight train in dense fog.
	Dec. 23:	One of the rear driving wheels of freight engine #38 breaks off at the axle near Hempstead.

1902 Feb. 4: At Brentwood this morning freight train jumps track at St. Joseph's Siding near Brentwood.

Apr. 2: Open switch at Babylon station causes eastbound train terminating run at Babylon to crash into departing train at 9:42 PM. Much damage to engines.

May 25: Engine #41, pulling train of express & freight cars & two cars of horses derailed at 11 P.M. at Manhattan Terrace tunnel at Avenue J, wrecking tender and engine.

June 4: Vandals break open a switch near Hewletts and train rushes at 40 MPH onto siding; narrow escape.

July 7: Atlantic-type freight engine #6, hauling the Babylon freight to Jamaica, derailed at Baldwins by a spread rail.

July 24: Eastbound way train crashed into three gondola cars at the rear end of the Babylon freight train at Clear Stream Siding east of Springfield at 4:30 P.M. No injuries.

Aug. 26: Engine #26, drawing the 11:40 train from Port Jefferson, blows a cylinder head at Woodside station at noon.

Nov. 25: Freight train backing onto siding at Riverhead to allow westbound express to pass, breaks in two. Four cars run away and topple over.

Dec. 7: Engine #2 of the eastbound Amagansett Express, as it was entering Patchogue depot, crashed into the rear car of the belated Patchogue Express as it was switching from main track to siding to clear line. No injuries.

Dec. 9: Engine #57, drawing westbound Port Jefferson Express, breaks an axle just east of Jamaica station, derailing forward truck.

1903 Feb. 24: As engine #13, drawing eastbound Amagansett Express freight passed east of Bellmore, the journal on the front axle of a coal car broke at 3 A.M.

Mar. 4: Cross pipe on air valve of parlor car #787 of the Patchogue Express breaks, leaving train without air brakes.

May 5: Four freight cars of a 15-car eastbound freight train jump the track and tear up the rails and block both tracks of the North Shore Branch at Winfield Junction at 4:30 A.M.

June 16: While engine #193 was pulling a long freight train up the incline at Atlantic & Snediker Avenues, East New York, one car derailed and blocked the line.

July 1: The 15th box car in a train of 28 freight cars derails at Williams & Atlantic Avenues, East New York, and topples to the street below.

July 14: Switch engine #192 pushing a coach on a flying switch movement in Long Island City yard; the coach derails; engine strikes it and also derails; brakeman caught between two and is crushed.

Aug. 19: Freight engine #112, backing to avoid an open switch at Riverhead station, derails.

Sept. 10: Camelback freight engine #6, drawing 20 potato cars, breaks a spinaker strap between Riverhead and Aquebogue.

1904 Jan. 13: The tender, baggage car, parlor, smoker and one coach on the eastbound Amagansett Express jump the track at Belmont Junction due to a washout, blocking the line for hours.

May 17: Engine #81, drawing the eastbound mail train, derailed at Mattituck because of spreading of the rails, followed by three of the four cars. No injuries.

Aug. 31: Man in a fit of temper flings a Belgian block on the track at Atlantic & Sixth Avenues. The express from Rockaway strikes the block which rips the firebox from under the locomotive.

Aug 31: Six-car train from East New York to Sheepshead Race Track frightens horses pulling a lumber truck; planks sideswipe the fifth car, smashing windows and scratching sides; the train following smashes into a wagon at same street.

Sept. 6: Forward trucks of tender on westbound train due at Amityville at 5:07 P.M. derail, tearing up ties and crossing planks through the station.

Sept. 18: Engine #66 from Port Jefferson drawing five coaches is about to enter the Long Island City yard when it is struck by camelback #49 and four passenger coaches bound for Oyster Bay on a hand-thrown switch near Borden Avenue. Combo #565 badly damaged.

Oct. 1: Engine and four cars coming into Flatbush Avenue run into open switch at Atlantic & Carlton Avenues and smash into a stationary drill engine, badly damaging it. Some passengers bruised.

Oct. 12: As the westbound Amagansett Express was about to cross the Shinnecock Canal Bridge, the left cylinder head of the engine blew out and struck the rear axle of parlor car #782, cracking it in several places. The brakeman of the disabled train tried to flag the following 2nd section, but the prevailing easterly storm had soaked the rails and engine #96 skidded down the slope, telescoping the rear passenger coach, which in turn, telescoped the next two. Half dozen passengers bruised.

Dec. 2: Switch engine #188 sinks into newly-made excavation in Long Island City yards; #308 pulls it out.

Dec. 12: Two trains consisting of an engine, caboose & snowplow were at work at Carlton Ave., Central Islip during a blinding snowstorm; plow #212 had just stopped to get the engine hot when #19 rammed its plow into the caboose of the forward train.

Dec. 18: Eastbound train derailed east of Little Neck by spread rail.

Dec. 30: Train from Patchogue runs into rear of a stopped Hempstead steam train at Jamaica yard during fog.

1905 Jan. 7: Greenport mail train loses brakes while trying to stop at Riverhead and runs past station a quarter mile.

Feb. 2: One car on the Patchogue Express develops a cracked wheel and is stopped just in time.

Mar. 17: Drill engine #97 derails in Long Island City passenger yard.

Mar. 22: Workmen on a hand car at Vesta & Liberty Avenues, East New York, crash into side of passing trolley; men injured but no deaths.

Mar. 26: Whitestone train, approaching Flushing Bridge, fails to notice danger signal and is thrown by derail onto side track, and brought to a stop just short of the creek and off the rails.

Apr. 3 One coach of a Hempstead-bound train entering Jamaica station splits a switch and is nearly toppled over.

Apr. 9 Freight cars, while being shunted about in Jamaica yard, derail and bump into block signal bridge, knocking out all signals.

May 1: Oyster Bay-bound train crashes into Rockaway freight in the Jamaica yard. Caboose and box car smashed & some freight cars derailed.

May 15: A 10-car Belmont Park race train, drawn by engine #55, ran into a misplaced switch 100 yards west of Woodhaven Junction at 1:15 P.M. and was wrecked. The engine was thrown on its side and the two forward cars were telescoped. Only 40 of 900 passengers injured.

May 18: Engine #64 crashes into a caboose and several freight cars left on the main track at Bay Shore station; caboose wrecked and others damaged.

May 28: As the eastbound Oyster Bay train was approaching Glen Head depot a freight train on the siding backed onto the main track in front of it. The caboose was smashed and passengers shaken up.

Jun. 10: Port Jefferson-bound train runs into an open switch at Old Northport Junction and strikes a fertilizer car chained to the track. Car smashed up and passengers thrown from seats.

Jun. 30: Southbound train from Oyster Bay crashes head-on into late northbound train at Glen Street, Glen Cove, station.

Jul. 9: Incoming Patchogue train of 10 cars is side-swiped by an eastbound drill engine, and engine, combo and parlor car are derailed in Long Island City yard. Some passengers bruised.

Jul. 15: A broken journal on a box car of the eastbound Greenport freight causes three cars to derail at Bethpage Junction and block traffic; the weight of 40 tons of iron in each car tore up the rails.

Aug. 6: First accident with electric train. Eastbound electric train rounds curve at Hammel and sees steam train stopped in Hollands station. Brakes fail and electric plows into rear coach.

Aug. 9: Tender and combo car on eastbound Rockaway Beach train from Long Island City splits switch and derails at Ozone Park.

Aug. 16: An MP-41 electric car jumped a switch in the yards at Rockaway Park and two cars derail. Woodwork under cars rested on third rail and took fire.

Aug. 21: While a freight train was switching near Whitestone station, a passenger train came along and crashed into the freight engine. Several cars derailed and three men injured.

Aug. 24: Train on Long Beach Branch running tender first and hauled by engine #35 is wrecked by a track-gauge left on the rails at Jekyll Island station by section crew.

Aug. 28: Wildcat Pennsylvania RR engine #2418 struck a hand car 3 1/2 miles east of Islip depot, almost killing the men on it.

Sept. 2: Engine backing out of the Long Island City yards runs into a passenger coach being backed into the yard; engine & coach derailed and coach damaged.

Sept. 22: Eastbound passenger & baggage train, standing at Sayville station, run into by a westbound freight train. Both engines damaged; forward coach and baggage car splintered.

Oct. 26: Runaway engine #306 southbound on Vesta Ave., East New York, heads towards passenger train, stopped in East New York depot. Alert towerman throws block signal & derail in nick of time, and engine plows to within six feet of passenger train.

Nov. 28: Riverhead Express westbound plows into rear of freight train also westbound on same track at Whitepot; five rear freight cars and caboose set on fire and passenger engine #94 derailed.

Dec. 5: While the Patchogue freight westbound was a quarter mile east of Speonk depot, a work train crashed into its rear. Caboose and one freight car burned.

Dec. 13: Freight car #3134 loses its brakes at Hempstead station, crashes through bumper and beams and comes to a stop half its length into the platform.

Dec. 23: During switching of freight cars at Roslyn, 25 cars were left on the main track, while the engine, tender and four empties moved off toward a siding. Suddenly, the 25 cars started to roll amd smashed into the empties and the engine, derailing and wrecking them.

Dec. 27: Patchogue Freight eastbound crashes into westbound passenger train quarter mile west of Babylon station at a single track section over a bridge. No injuries.

1906 Mar. 11: Half open switch between Lynbrook and South Lynbrook derails engine #37 and several cars.

May 31: Engine #26 loses brakes and crashes through bumper block into Long Island City station area.

Jun. 11: Wildcat engine #310 from Port Washington meets westbound passenger train on a curve east of Manhasset station and they crash on the brink of a gorge. Both engines wrecked and smoker telescoped.

Aug. 7: Freight engine #1780 shifting freight cars about at Bay Shore station, fails to get off eastbound track in time and eastbound engine #200 and four cars crash head-on into it. Freight engine and four cars wrecked; three seriously injured.

Oct. 2: Steam train, Far Rockaway bound, stalled on trestle south of Broad Channel by broken piston rod. An electric train from Flatbush Avenue was brought to a halt behind the steam train. Then a Rockaway Beach-bound steam train, failing to see the stalled electric train, crashed into the rear car, crushing the end. Six persons injured.

Nov. 9: Eastbound Amagansett Express, consisting of engine #228, baggage car, a parlor & three coaches, collides with westbound Oyster Bay train, made up of engine #100, two baggage cars & three coaches just east of Dunton station. Both engines wrecked; two injured; tender and two baggage cars smashed.

Nov. 19: Northbound passenger train consisting of engine #69 with three cars plows into rear of freight train on the main track at Vesta Avenue & New Lots Road. Caboose destroyed.

Nov. 19: Electric locomotive #10001, making experimental runs on Far Rockaway Branch, smashes into a freight train standing in Woodmere station during thick fog.

1907 Feb. 17: Electric train derails at Woodhaven Junction.

Mar. 15: As the Amagansett Express, drawn by engine #4, ran eastbound through Penny Bridge station, the tire on the rear driving wheel came off and struck a gateman, seriously injuring him.

Mar. 25: Freight train at Riverhead backs into two standing freight cars with such force that they smash through bumper block, damage themselves beyond repair & damage their loads of lumber & potatoes.

Mar. 30: Some gas in the Pintsch gas plant at 23rd Street & Borden Avenue explodes and ignites storage tanks till brought under control.

Apr. 29: Engine #95, hauling eastbound express, loses the tires of one of its driving wheels between Rockville Centre and Baldwin but is safely stopped.

May 30: Racing train pulling into Belmont Park station creates panic when forward trucks of forward car jump the tracks and rip up a hundred feet of station planking.

Sept. 26: Westbound mail train, coming off siding at Northport, derails. Pres. Peters' private train hauls stalled cars to Long Island City.

Oct. 2: Boys place a piece of steel on track at junction on Flushing Meadows; engine #40, drawing two-car Whitestone Express, is derailed and topples over. Engineer killed.

Nov. 14: Hot coals from passing train fire trestle between The Raunt and Goose Creek, burning out about 200 feet.

1908 May 8: Eastbound Greenport freight loses its brakes and smashes into engine of westbound freight at Mattituck station. Slow speed makes for very small damage.

Jun. 22: Train coming into Long Island City from Huntington loses brake rod and all air pressure; engine reversed and hand brakes set, but engine smashes bumper block and shed and almost reaches station building.

Jun. 29: Sag Harbor Express delayed at Richmond Hill station an hour by defect in front trucks.

Jul. 1: Object on third rail breaks shoe of electric car and sends shower of sparks against a car near Ozone Park station. Much panic.

Jul. 25: Eastbound electric train on Atlantic Avenue elevated structure at Utica Avenue develops a fire in car #1025. No damage.

July. 27: Rear car of express derailed at Freeport when switch is thrown before it clears siding.

Jul. 27: Engine #23 falls into cove at Sag Harbor by the collapsing of the tracks on Long Wharf.

Oct. 17: Experimental electric engine on Hempstead Plains test run derails and topples over just east of Hempstead Crossing.

Oct. 27: A westbound freight train smashes into the 'scoot' drawn by engine #67 at Jamesport station; both engines pushed in a foot; no injuries.

1909 Jan. 30: Eastbound freight derails at Winfield Junction; locomotive and several cars go off.

Jun. 13: Whitestone train on way to Long Island City derails at Woodside at entrance to Sunnyside Yard and engine topples over.

Jun. 22: Night Main Line freight westbound fails to clear track at Penny Bridge and Ronkonkoma Express hits it. Forward trucks of express engine derailed; two gondolas smashed.

Sept. 28: Westbound train at Setauket loses brakes and instead of going on siding runs on into eastbound Wading River mail train. Both engines derailed; 10 seriously injured.

Dec. 26: Motor car used to sprinkle calcium chloride on third rail fails to see electric train at Valley Stream because of heavy snow and darkness and crashes into it.

1910 May 2: Westbound freight train from Port Jefferson derails at Setauket.

Aug. 19: Two cars on westbound freight derailed by the spreading of a switch just east of Southold station; tracks torn up and furrow plowed in dirt.

Aug. 20: Gas pipe explosion starts extensive fire in Long Island City express shed; major fire spreads and minimum of ten cars burned; many require rebuilding; much express matter destroyed.

Aug. 31: Last car of a three-car electric train derailed at Valley Stream by spreading of rail. Track torn up.

Nov. 4: One steel motor car running westbound to Jamaica at night in rain is rammed by freight running east on same track; one man killed; four seriously injured.

1911 Jan. 16: Two cars of an electric train jump the track in front of the Ramblersville station.

Jan. 24: Baggage car jumped a switch just west of Jamaica station during morning rush hour, tying up lines.

Mar. 26: Freight train from Far Rockaway reaches Hewlett when one car splits switch, topples over on third rail and catches fire. Line blocked; no injuries.

Apr. 11: The Riverhead freight engine splits a switch at Manorville, tearing up track; the tender falls on its side, knocking over a standpipe and spilling all the water in it.

Apr. 22: Engine derails on Long Wharf at Sag Harbor when track collapses underneath it.

May 30: Special train of empty parlor cars and the Amagansett Freight collide at Sayville. Five freight cars wrecked.

Jun. 5: Engine of morning Sag Harbor shuttle breaks a flange entering Bridgehampton station; one truck derailed, and the engine, after bumping over ties, climbs over the tender and smashes into the baggage car; both slide down embankment; one seriously injured.

Jun. 17: Wading River Express strikes auto in Westbury killing two men; then is put on siding at Wading River for night. Later, a seven-car train strikes the darkened train, smashing both engines and derailing six cars; 10 injured.

Aug. 30: Wading River freight, in switching cars at Hicksville station, wrecked two cars and blocked line.

Sept. 3: Steam train from Long Island City, losing its brakes, plunges into rear of electric train at Holland's station; one serious injury.

1912 Jan. 7: Milk train of two cars smashes into steel car in Hempstead station with such force that the steel car is shot out of the station area, crosses Fulton Street, rams a taxicab, snaps off a light pole and comes to rest in the front porch of a house. Two killed.

Aug. 8: Montauk train when a mile west of Southampton develops a hot box in second parlor car. Axle breaks and forward wheels tear up roadbed. Much excitement but no damage.

Sept. 8: Ronkonkoma-bound train strikes open switch at speed at Floral Park station and lurches onto Hempstead Branch. Tender and smoking car overturned and yards of third rail ripped up. No injuries.

Oct. 7: Seven-car train of MP-41's develops a short circuit in car #1011, the shoe box of which falls off on the elevated structure at Ralph Avenue. Flames & flashes create excitement but no injuries.

Dec. 18: Engine #208 derails on wye east of Babylon. No injuries.

1913 Apr. 8: Four freight cars derail near Hillside station while backing onto a siding.

Sept. 22: Towerman allows electric train bound for Whitestone to enter single track while westbound train approaches; crash occurs on curve 800 feet east of College Point station; three killed and 20 injured. No manual block system on this branch.

Nov. 12: Pay car derails on the crossover switch on elevated structure at Pennsylvania Avenue, East New York, delaying rush hour traffic.

Dec. 20: College Point train wrecked at Myrtle Avenue, Flushing; cars go through open switch and sideswipe freight cars.

1914 May 27: Seven-car electric train for Rockaway develops short circuit on incline from tunnel to Nostrand Avenue and a jet of flame bursts from under car. Whole train evacuated.

Nov. 14: Train consisting of a sweeper and three trolley cars being returned to the Huntington R.R. from Morris Park shops derails at 222nd Street, Queens Village, ripping up third rail. Three trolleys saved but sweeper burned up.

1915 Feb. 3: Westbound local electric jumped the track at Clarenceville and tore up 100 feet of third rail.

Mar. 23: Freight engine shifting cars near McNeil Blvd., Far Rockaway, sideswipes a box car, derailing it.

Jun. 5: Three rear cars of a freight train, backing down the Old Northport Branch, jump the track and topple over embankment.

Sept. 1: Amagansett Express crashes into rear end of Speonk local half a mile west of Eastport, telescoping rear car.

Sept. 21: Rear truck of last car of a freight jumps track just west of Bridge Street crossing on Whitestone Branch.

Nov. 26: During heavy fog two electric trains collide at Jamaica station followed by a second minor collision. Four seriously hurt–10 injured.

1916 May 27: Wading River train runs onto a siding full of empty cars 300 feet east of Hillside station. Rear car telescoped and 14 passengers slightly injured.

Nov. 26: Collision at Jamaica; 14 hurt.

Passenger Cars

1–50 *Jackson & Sharp 1875, 1877 & 1879;* 50 coaches; 51'11" length; seating 58. All retired before 1913 except
17 scrapped before 1906
28 to Maintenance of Way 103 in Aug. 1891
34 became baggage-express 691 on Jun. 27, 1906

51–66 *Jackson & Sharp 1879;* 16 coaches; 56' length; seating 62. All retired by 1913.

67–86 *Bowers, Dure & Co. 1882;* 20 closed cars; 56'10" length; seating 60. delivered Apr. 1-15, 1882. All retired before 1913.

87–98 *Gilbert & Bush 1883;* 12 coaches; 60'½"; seating 62. All sold Jan. 1, 1917 to Georgia Car & Locomotive Co. except 87 which became MW work caboose 108 in Dec, 1916. Scrapped before 1924.

99–111 *Jackson & Sharp 1883;* 25 coaches; 58'6" length; seating 62. Ordered Nov. 1882; delivered before Sept. 1883
99 to MW work caboose 126 on May 20, 1912; scrapped before 1924.
100 Retired between 1915 and 1927
101–111 sold to Georgia Co. Jan. 1917.

112–131 *Gilbert & Bush 1888;* 20 coaches; 58'3" length; seating 62; 16 windows. Ordered Feb. 1888; received June 1888.
112–121 sold to Georgia Car & Locomotive Co. Nov. 1924
122,126,129,130 sold to Georgia Co. Sept. 1925
123,124,125,127 sold to Georgia Co. Oct. 1925
128,131 sold to Georgia Co. Aug. 1925

132–151 *Pullman Car Co. 1890;* 20 coaches; 58'3" length; seating 62. #136 scrapped Sept. 1, 1915
132, 133, 134, 140, 141, 143, 144: sold to Georgia Co. Aug. 1925
135, 142, 145, 148, 149, 150, 151: sold to Georgia Co. Sept. 1925
137, 138, 139, 146, 147: sold to Georgia Co. Oct. 1925

152–167 *Jackson & Sharp 1891;* 15 coaches; 58'2" length; seating 62. Ordered May 1891; delivered July 1891.
158 scrapped Oct. 20, 1913
156 sold to Georgia Co. July 1917

160, 161, 162, 166 sold to Georgia Co. Aug. 1925
152–155, 157, 159, 163–4, 167 sold to Georgia Co. Sept. 1925
165 sold to Georgia Co. Oct. 1925

168–177 *Jackson & Sharp 1893;* 10 closed cars; 64'9" length; seating 72. All sold to Georgia Car & Locomotive Co. Dec. 1925

178–228 *Pullman Car Co. 1894;* 51 coaches; 64'6' length; seating 72. Ordered Jan. 1892 & May 1893; delivered April & May 1894.
181 scrapped Jun. 13, 1906
178,179,182,183,185,186,188,190,193,197,199,200,202,206 sold to Georgia Car & Locomotive in June 1927
203, 226 sold to Georgia Co. Dec. 1927
189, 195 sold to Georgia Co. Sept. 1928
207, 208, 209, 211–219, 221, 223, 225, 227, 228 sold to Georgia Co. July 1927
184 to MW 124 in Dec 1927
187 to MW 104 in Dec 1927
191 to MW 181 in Dec 1927
192 to MW 136, no date
194 to MW 101 in Dec 1927
196 to MW 121 in Dec 1927
198 to MW 118 in Dec 1927
201 to MW 114 in Dec 1927
204 to MW 137 in Dec 1927
205 to MW 305 in Dec 1927
210 to MW 117 in Dec 1927
220 to MW 131 in Dec 1927
222 to MW 301 in Dec 1927
224 to MW 302 in Dec 1927

229–258 *Wason 1899;* 30 coaches; 65'0" length; seating 72. Ordered Feb. 1899; delivered Apr.–July 1899. 19 windows.
234 scrapped June 13, 1906
230,231,236,239 sold to Georgia Car & Locomotive Co. July 1927
229, 232, 235, 237, 238, 240: sold to Georgia Co. Dec. 1927
245, 246, 248–258: sold to Georgia Co. Feb. 1928
233, 241: sold to Georgia Co. Apr. 1928
242, 243, 244, 247: sold to Georgia Co. Sept. 1928

259–274 *American Car & Foundry Co. 1902;* 16 coaches; 60'11" length; seating 62.
260 to MW 119 in Nov. 1927
261 to MW 180 in Nov. 1927
264, 271 scrapped July 29, 1907
263, 267 sold to Georgia Co. June 1927

259, 262, 265, 266, 270, 272–274 sold to Georgia Co. Apr. 1928
268,269 sold to Georgia Co. Sept. 1928

300–309 *American Car & Foundry Co. 1902;* 10 vestibuled coaches; 62'6' length; seating 62; called 'PK' coaches by crews; assigned by PRR to LIRR.
301 sold to Georgia Co. June 1927
300,302,303,304,305 converted to MW in June 1927
306, 309 converted to MW in Dec. 1927

310–311 *Penn R.R. 1906;* two vestibuled coaches; 54'9¼' length; seating 62. The Annual Report of 1906 says 'Built to replace two destroyed by fire.'
310 to MW 133 in Dec. 1925
311 to MW 125 in Dec. 1925

312–313 *Penn R.R. 1907;* two vestibuled coaches; 54'9¼' length; seating 62.
312 to MW 129 in Jan. 1925
313 sold to Georgia Car & Locomotive Co. June 1927

The following are New York & Rockaway Beach R.R. coaches, originally numbered 101–152 in 1880. Renumbered by LIRR in 1887 to 177–228, but lettered always "New York & Rockaway Beach." All transferred to LIRR roster in 1898 and renumbered 401–452 to avoid duplication.

177–187 (401–411) *Jackson & Sharp 1880;* 11 coaches; 61'4' length; seating 66. Renumbered 401–411 in 1898. On Jan.1, 1920 all 400's were preceded by a zero.
401–403 Retired 1916
0404 to MW 116 on Sept. 11, 1922
0405 to MW 102 on Jun. 14, 1923
0406 to MW 112 on Jun. 14, 1923
0407 to MW 141 on Jun. 26, 1923
0408 retired Jan. 1927
0409 to MW 140 on Jun. 15, 1923
0410–0411 Retired Jan. 1927

188–207 (412–431) *Harlan & Hollingsworth 1880;* 20 coaches; 61'0' length; seating 60. Renumbered 412–431 in 1898. On Jan. 1, 1920 all 400's were preceded by a zero.
0412 retired 1922
0413 scrapped Nov. 1922
0414 to MW 113 on Jun. 14, 1923
0415 to MW 143 on Jun. 14, 1923
0416 to MW 105 on Jun. 14, 1923
0417 scrapped July 1925
0418 retired Aug. 20, 1910
0419 to MW 115 on Jun. 14, 1923

0420 to MW 142 in Dec. 1923
0421 to MW 300 in June 1924
0422 sold to Georgia Co. July 1924
0423 retired Mar. 1927
0424 retired Dec. 1923
0425 to MW 123 in May 1923
0426 to MW 144 in June 1924
0427 retired June 1924
0428 became office in L.I. City yard 1920
0429 retired Jan. 1927
0430 retired Nov. 1924
0431 sold to Georgia Co. July 1924

208–217 (432–441) *Bowers, Dure & Co. 1880;* 10 coaches; 60'2" length; seating 62. Renumbered 432–441 in 1898. On Jan. 1, 1920 all 400's were preceded by a zero.
0432 retired May 1923
0433 retired June 1920
0434 to MW 134 in June 1920
0435 retired June 1924
0436 to MW 132 in May 1923
0437 to MW 130 in June 1919
0438 sold to Georgia Co. June 1924
0439 sold to Georgia Co. July 1924
0440 retired June 1919
0441 to MW 127 in June 1919

218–228 (442–452) *Gilbert & Bush 1880;* 11 coaches; 60'8" length; seating 62. Renumbered 442–452 in 1898. On Jan. 1, 1920 all 400's were preceded by zero.
0442–1444, 0447,0449–0450, 0452 sold to Georgia Co. in July 1924
0445 retired Dec. 1922
0446 to MW 128 on Jun. 14, 1923
0448 to MW 138 on Jun. 14, 1923
0451 retired Oct. 14, 1922

229–243 (453–467) *Gilbert & Bush 1888;* 15 coaches; 61'4" length; seating 62.
453–455, 457–467 sold to Georgia Car & Locomotive Co. July 1924
456 sold to Georgia Car & Locomotive Co. Jan. 1927

244–253 (468–477) *Jackson & Sharp 1893;* 10 coaches; 64'5" length; seating 68. All sold to Georgia Car & Locomotive Co. Dec. 1925

The following begin the steel passenger cars:

314–343 *American Car & Foundry 1911;* 30 closed cars; first steel non-electric 17 windows; class P-54A; sliding end doors and diaphragms

344–358 *American Car & Foundry 1912;* 15 closed cars; class P-54A; sliding end doors and diaphragms.

359–370 *American Car & Foundry 1914;* 12 closed cars; class P-54A; sliding end doors and diaphragms

COMBINES

493–498 *Builder & date uncertain;* 6 combines used on N.Y. & Rockaway Beach R.R.; 52'4" length; seating 34; all retired before 1913.

501–520 *Pullman 1898;* 20 combines; 66'6" length; seating 46.

501 retired before 1915

502 retired between 1915 and 1924

503–505, 507–509, 511, 513, 515, 517–520 sold to Georgia Co. Oct. 1926

506 rebuilt to coach 73 between 1915 and 1925; retired Dec. 1926

510 rebuilt to coach 75 between 1915 & 1925; to MW 297 in June 1925; sold to Georgia Co. March 1927

512 sold to Moscow, Camden & St. Augustine R.R., Texas, 1927

514 rebuilt to coach 76 between 1915 & 1925; sold to Georgia Co. Jun. 1927

516 rebuilt to coach 74 between 1915 & 1925; to MW 296 in June 1925; sold to Georgia Co. March 1927.

521–530 *Wason 1899;* 20 combines; 66'6"; length; seating 46. All except 562

561–570 were rebuilt to passenger coaches in 1916.

521 to 72	561 to 54
522 to 71	562 scrapped before 1913
523 to 70	563 to 55
524 to 69	564 to 56
525 to 68	565 to 57
526 to 67	566 to 58
527 to 66	567 to 59
528 to 65	568 to 60
529 to 64	569 to 61
530 to 63	570 to 62

All sold to Georgia Co. Dec. 1926

531–553 *Builder & Date uncertain;* 23 combines; 52'3" length; seating 38. All retired by 1913.

554 *Jackson & Sharp 1889;* 68'2" length; seating 42. Rebuilt to coach 47 between 1913 & 1915. Retired Dec. 1925

555–556 *Pullman 1890;* two combines; 68'6" length; seating 42. Both rebuilt to coaches between 1913 and 1915 and both retired Dec. 1925 555 became coach 48; 556 became coach 49.

557–560 *Jackson & Sharp 1891;* four combines; 68'3½" length; seating 42. All rebuilt to coaches before 1915 and all retired Dec. 1925.

557 to coach 50 559 to coach 52

558 to coach 51 560 to coach 53

571–573 *Pullman 1902;* three vestibuled combines; 67'8" length; seating 48; all rebuilt to coaches between 1913 and 1925 and sold to Georgia Co. July 1927.

571 to coach 275; 572 to coach 276; 573 to coach 277

574 (609) *Penn R.R. 1907;* one 6-wheeled vestibuled combine; length 69'4"; seating 48. The Annual Report of 1907 refers to this car as a 'replacement'. Renumbered about 1914 to 609

600–602 *Pullman 1902;* three vestibuled combines; 69'4" length; seating 48. All sold to Georgia Car & Locomotive Co. Oct. 1926.

603–608 *Penn R.R. 1905;* six 6-wheeled vestibuled combines; 69'4" length; seating 48. Sold to LIRR 1905; all sold to Georgia Co. as follows: 603–605 in Oct. 1926; 606 in April 1928; 607–608 in Dec. 1927

610–618 *Penn R.R. 1908;* nine 6-wheeled vestibuled combines; 69'4" length; seating 48. Sold to LIRR in 1909. All converted to maintenance of way in 1927 except 614 which was sold to Georgia Co. Dec. 1927

610 to MW 292 615 to MW 319

611 to MW 293 616 to MW 316

612 to MW 294 617 to MW 317

613 to MW 295 618 to MW 318

976–977 Builder & date unknown; two combines for use on the Rapid Transit and elevated. 42'0" length; seating 32. May have been ex-Rapid Transit coaches 842 and 876

619–623 *American Car & Foundry 1911;* five steel combination cars. Class PB-54.

624–626 *American Car & Foundry 1914;* three steel combination cars; class PB-54A.

627 *American Car & Foundry 1917;* one steel combination car; class PB-54B.

Remarks: 1908– 11 passenger & baggage cars "disposed of"

1909– 3 passenger & baggage cars broken up

1910– four combination cars badly burned in Long Island City yard fire of Aug. 20, 1910, but pronounced "rebuildable". One combination steam coach was converted into baggage motor car #517 on the Huntington trolley line in March 1910

BAGGAGE AND EXPRESS CARS

499–500 Builder & date unknown; 45'4" length; all retired before 1913.

641–650 *American Car & Foundry 1916;* 10 steel baggage cars; 40' length; B–40

651–676 (old) Builder & date unknown; 51'9" length; all scrapped probably 1908–09.

651–670 (new) *American Car & Foundry 1914;* 20 steel baggage cars; class B-40

677–679 *Gilbert & Bush 1884;* 52'5" length
677–678 scrapped probably 1908–09
679 sold to Georgia Car & Locomotive Co. June 1927

680 *Ohio Falls Car Co. 1895;*67'11". Called "horse palace car" because it was used to transport the carriage horses of wealthy men to their summer estates on the island. Burned up in Long Island City yard fire of Aug. 20, 1910.

681–690 (old) Builder & date unknown; 42'0" length; all scrapped probably 1908–09 or burned in L.I. City yard fire of Aug. 20, 1910.

682–691 (new) *American Car & Foundry 1910;* 10 steel baggage cars; class B-62

691 *Jackson & Sharp 1875–79;* length 51'11"; passenger car 34 was converted to baggage car 691 on June 27, 1906. Disappeared before 1913.

675–678 Eleven milk cars, all converted from Box cars in Aug. 1915.

680–681 Fitted with insulated interiors for transport of milk cans; had end doors.
671 from box 3333; scrapped Aug. 1929
672 from box 3350; to MX 254 before 1922
673 from box 3352; to MW 241 before 1924
674 from box 3353; to MW 242 before 1924
675 from box 3354; scrapped about 1929
676 from box 3355; transferred to freight car in 1928

677 from box 3356; scrapped 1930–32.
678 from box 3408; scrapped about 1930
680 from box 3434; scrapped 1930–32
681 from box 3260; scrapped 1929–32.

692–701 *Pullman 1902;* five 6-wheeled baggage cars; 67'8" length
692–698 retired Oct. 1928 700 retired May 1928
699 retired before 1913 701 retired Oct. 1928

702–705 *Penn R.R. 1907;* four 6-wheeled baggage cars; 64'3" length; sold to LIRR 1907; all retired Dec. 1928.

706–714 *Penn R.R. 1908;* nine 6-wheeled baggage cars; 64'3" length; sold to LIRR 1908; all retired Dec. 1928; the last wooden cars on LIRR.

Remarks: 1908– 15 baggage-express cars disposed of
1909– 13 baggage-express cars broken up
1910– 5 baggage cars reported totally burned up in L.I. City yard fire of Aug. 20, 1910. Two cars "rebuildable".

MAIL CARS

721–724 Builder unknown 1883; four mail cars; 57'5" length
721 sold Feb. 1911; 722 retired Apr. 1915; 723–724 sold Sept. 1909

725 Builder unknown 1884; 52'6" length; Retired Apr. 1915.

726–727 *Bowers, Dure & Co. 1889;* 68'0"
726 sold Feb. 1912 727 sold Aug. 1910

728 *Pullman 1890;* 64'8" length; sold Feb. 1912

729 *Pullman 1890;* 57'5" length; sold May 1908

730 *Pullman 1894;* 68'2" length; sold to Georgia Co. Aug. 1924

731–732 *Ohio Falls Car Co. 1895;* 68'0" length
731 sold Aug. 1910; 732 sold to Georgia Co. Aug. 1924

733 *Pullman 1898;* 68'10" length; sold to Georgia Co. June 1927

734–735 *Pullman 1902;* 67'9" length
734 sold to Georgia Co. Aug. 1924; 735 same June 1927

736 LIRR rebuilt 1906; sold to Georgia Co. Aug. 1924

737 *Penn R.R. 1907;* sold to LIRR 1907; retired Dec. 1928

738 *Penn R.R. 1908;* sold to LIRR 1908; retired Dec. 1928
737 & 738 last wooden cars on LIRR along with 706–714.

739–743 *American Car & Foundry 1911;* five steel mail-baggage cars; monitor roof; class BM-62

744–747 *American Car & Foundry 1914;* four steel baggage-mail cars; monitor roof; class BM-62A

Remarks: 1908- one baggage-mail car disposed of
1909- two baggage-mail cars broken up
1910- one mail car badly burned in L.I. City yard fire of Aug. 20, 1910 but rebuildable.

PARLOR CARS

751–774 *Pullman 1892;* 24 parlor cars with 6-wheeled trucks; 58'5" length; 30 revolving seats.
751, 753, 755–769 retired before 1913
752, 754 retired between 1913 & 1915
770, 771, 773, 774 club cars 1913–1915; then converted to regular coaches sold to Georgia Car & Locomotive Co. Dec. 1925
772 converted to coach after 1915; then sold to Georgia Car & Locomotive in Dec. 1925

775–780 *Pullman or Jackson & Sharp;* date unknown; six 6-wheel parlor cars; 58'5" length; 30 revolving seats; all converted to coaches 1911– 1916.
776–778 scrapped before 1914
775 sold to Georgia Car & Locomotive Co. Dec. 1925
779 sold to Georgia Car & Locomotive Co. Dec. 1925
780 sold to Georgia Car & Locomotive Co. June 1927

781–788 *Barney & Smith 1899;* eight 6-wheeled parlor cars; 72'7" length; 45 revolving seats. All converted to coaches 1911–1916; all sold to Georgia Car & Locomotive Co. June 1927.

789–796 *Pullman 1902;* eight vestibuled 6-wheel parlor cars; 78'8" length; 41 revolving seats; all converted to coaches 1911–1916.
789–791, 793, 795 sold to Georgia Co. June 1927
792 to MW 214 in June 1927
794 to air-brake car 26 in June 1927
796 to MW 205 in July 1927

797–808 *Penn R.R. 1906;* twelve vestibuled 6-wheel parlor cars; 57'5" length; revolving seats; received May 1906 from PRR for Shelter Island and Block Island Expresses.
797, 799 scrapped 1915

798 sold to Central Islip State Hospital in 1919, for use as hospital car between L.I. City and Central Islip. Used till 1929.

800–808 scrapped between 1913 and 1915

809–818 *American Car & Foundry 1911;* ten steel parlor cars; high monitor roof; large square windows in the end sheets; cost $15,000 each. Class PP-70

816–818 rebuilt by LIRR into 50-seat club cars in June 1925; new class P-70.

CLUB CARS

819–826 *American Car & Foundry 1913;* eight steel club cars; low monitor roof; 50 wicker chairs facing the aisle; class PP-70; porthole windows in the end sheets.

827–828 *American Car & Foundry 1916;* two steel club cars; low monitor roof; 50 wicker chairs facing the aisle; class PP-70; porthole windows in the end sheets.

830–833 *American Car & Foundry 1917;* four steel club cars; low monitor roof; 50 wicker chairs facing aisle. Class PP-70. Porthole windows in the end sheets.

1677 *Club car "Rockaway"; American Car & Foundry 1914;* 64'5 1/4' length; 9'11 1/4' width; 13'0' height; seating 44. (Electric trailer) Had controls but no motors; hinged end doors

389 Nassau *American Car & Foundry 1913;* monitor roof, steam club car, wicker chairs facing the aisle; two toilets; water cooler, hinged door ends. Class P-54F. Named the "Nassau"; converted in 1917 to a 66-seat coach with two and two plush seating.

391 *American Car & Foundry 1916;* club car "Oyster Bay"; same furnishings as the "Nassau". Class P-54G

390 *American Car & Foundry 1915;* club car "South Shore". Class LP-70A Monitor roof, steam club car; wicker chairs facing the aisle; two toilets, water cooler; hinged door ends; water raising system; window screens in summer. Converted in 1917 to 91-seat coach, class P-70L with two and two plush seating.

RAPID TRANSIT CARS
(for Brooklyn-Hillside & Brooklyn-Rockaway)

801–826 *Jackson & Sharp 1877 & 1879;* 26 coaches; 43'5" length; seating 48. Sold in 1906; already out of use "several years".

827–851 *Gilbert & Bush 1888;* 25 coaches; 46'5" length; seating 48. All except 829 and 842 to the Transit Equipment Co. of NY, a Brooklyn Rapid Transit Co. subsidiary
829 converted to club car in 1901; in 1908 converted for "MU" operation with MP-41 cars with vestibules, couplers, jumpers and head-end controls. Scrapped Aug. 1924.
842 may have been built to elevated baggage car 976

852–876 *Pullman 1898;* 25 coaches; with center doors; 46'7" length; seating 56. All sold in 1917 (except 876) to the Washington, Baltimore & Annapolis R.R. where they became 301–324.
876 may have been rebuilt to elevated baggage car 977; all converted to electric operation in 1905 at Morris Park Shops for use with MP-41's. Vestibules, couplers, jumpers added. Used in the middle of a train only as trailers since they lacked head-end controls.

877–906 *Wason 1899;* 30 coaches with center doors; 46'7" length; seating 56. Built for the Jamaica-Brooklyn Bridge service; all altered 1905 in Morris Park Shops for use as trailers with MP-41 cars. All sold 1917 to the Washington, Baltimore & Annapolis R.R. where they became 325–354
On Nov. 12, 1913 the Public Service Commission ordered the LIRR to use these wooden cars only to maintain schedules
Sept. 15, 1914 Use forbidden altogether
Dec. 1, 1914 LIRR having refused to accept order, new date is set.
Dec. 17, 1914 actual date LIRR discontinued use of these cars

BATTERY CARS

1 *Federal Storage Battery Car Co. Aug. 1911;* arch roof; four wheels; seating 26. Edison-Beach Manufacturing Co. installed

electric wiring and storage batteries. Used on the Bushwick Branch between Bushwick station and Fresh Pond station from April 1, 1911 to about 1913. Then it went to the West Hempstead Br. but it rocked so badly that the crews got seasick and it had to be replaced by #2 and #4. Car #1 came originally with a street railway type single truck. Some time later it was rebuilt in Morris Park shops with continental-type trucks like #2 and #4 and the body was rebuilt below the window sills with straight-side, narrow vertical strips. Scrapped Dec. 30, 1926.

2(combine), 4(coach)

Brill Car Co. Sept. 1914; arch roof; four wheels; equipped with link and pin couplers and MU jumpers for MU operation. Beach Co. installed electric wiring and storage batteries. Cross seating back to back. Used on the West Hempstead Branch from 1914 to May 1926. Both scrapped July 30, 1927.

MISCELLANEOUS CARS

A Builder & date unknown; 53'0" length; destroyed by fire in Morris Park Shops Dec. 29, 1904. In November 1901 the LIRR was reported "building a private presidential car for President Theodore Roosevelt to be used on his trips from Washington to his home at Oyster Bay. to furnish a retreat from sightseers."

B Pay car; builder and date unknown; 51'0" length; seating 11. Destroyed by fire in Long Island City yard fire of Aug. 20, 1910.

E Hospital car, builder & date unknown; 52'1" length; made from a combine in January 1901 to carry insane patients to Kings Park.

Destroyed by fire in Long Island City yard fire of Aug. 20, 1910.

3 (8) Pay car, Penn R.R. 1910. A replacement for "B". Renumbered to 8 during World War I. Sold Nov. 1924.

39 (100) Business car; Pullman Car Co. Aug. 1909; 51'11" length; Probably a replacement for A. It had observation platform. Renumbered to 100 on Nov. 23, 1925. Sold to the Penn R.R. 1929.

600 Business car. Probably Pullman 1902; a combine used by General Superintendent J. A. McCrae, fitted up elegantly enough to be used by Pres. Theodore Roosevelt's party to the funeral of Secretary Hays in July 1905. The LIRR report for 1909 mentions that "one officer's car was destroyed and replaced."

200 (2000) Business car; Jackson & Sharp, date unknown; 62'6" length; seating 26. Used by President Potter and President Peters for inspection trips all over the LIRR and is known to have made trips over other railroads. Renumbered to 2000 in 1906 and 2200 in 1925. Scrapped between 1935 and 1938.

"Central Islip" Hospital car, built May 1911 from a Pullman parlor car to transport insane persons; fitted up according to plans of the State Commission. Put into service July 12, 1911.

Electric Cars

1000–1133 American Car & Foundry 1905; 134 steel passenger cars; type MP-41 51'4" length overall; 8'8" width; 12'1 1/2" height; 82,138 lbs. weight; monitor roof with sloping ends; two WH 113 motors; seating 52. Closely modeled on IRT cars to permit joint service in the Manhattan subway.

1200–1204 Wason 1905; five wooden baggage & express cars; type MB-45; 52'8" length overall; 9'11" width; 13'0" height; 76,444 lbs. weight; monitor roof with sloping ends; two WH 113 motors. Large square end windows; side doors; used between Brooklyn & Jamaica. Retired June 1934. MCB couplers, used to tow regular steam baggage cars.

1205–1208 American Car & Foundry 1910; four steel baggage cars; type MB-62 64'5 1/4" length overall; 9'11 1/2" width; 13'0" height; 129,650 lbs. weight; monitor roof with sloping ends; four WH 308 motors.

1209–1210 American Car & Foundry 1910; two baggage & mail cars; type MBM-62; 64'5 1/4" length overall; 9'11 1/2" width; 13'0" height; 112,600 lbs. weight; monitor roof with sloping ends; four WH 308 motors. Mail section added in 1925 and two motors removed.

1211–1214 American Car & Foundry 1910; four steel baggage cars; type MB-62; 64'5 1/2" length overall; 9'11 1/2" width; 13'0" height; 111,000 lbs. weight; monitor roof with sloping ends; four WH 308 motors. Modified in 1925 to two-motor cars; class then changed to MB-62A.

1215–1219 American Car & Foundry 1910; five steel baggage cars; type MB-62; 64'5 1/2" length overall; 9'11 1/2" width; 13'0" height; 129,650 lbs. weight; monitor roof with sloping ends; four WH 308GL motors

All five cars were converted to steam in the 1920's; then 1215 and 1216 were converted back to electric, while 1217–1219 remained as steam cars. Baggage cars 1215–1219 had electric markers and headlights but were used in steam service, the motor trucks being switched and put under five cars in the 1205–1214 series which made them 4-motor cars & they were used for pulling steam baggage & express cars.

1348–1349 American Car & Foundry 1912; two combination cars; type MPB-54; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 108,700 lbs. weight; two WH 308 motors; seating 52. Green plush seats; hinged doors. Originally Pennsylvania Railroad 4513–4514; came to LIRR Feb. 1923.

1350–1364 Standard Steel 1910; fifteen steel combination cars; type MPB-54; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 105,250 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 51.

1365–1369 American Car & Foundry 1912; five combination cars; type MPB-54; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 108,700 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 51.

1370–1381 American Car & Foundry 1913; combination cars; type MPB-54; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 111,000 lbs. weight; monitor roof with sloping ends; seating 53; two WH 308 motors.

1382–1384 American Car & Foundry 1913; three passenger-baggage-mail cars; type MPBM-54; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 115,300 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 32.

1385–1399 American Car & Foundry 1914; fifteen passenger-baggage cars; type MPB-54. 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 110,900 lbs. weight; monitor roof with sloping ends; two WH-308 motors; seating 53.
#1391 has been preserved by the LIRR as a museum car.

1401–1420 American Car & Foundry 1908–09; twenty passenger coaches; type MP 54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 104,400 weight; monitor roof with sloping ends; two WH 308 motors; seating 69. #1409 was wrecked in 1949 in a crash in the Sunnyside Yards. The first five cars were delivered in November 1908.

1421–1450 American Car & Foundry 1908; thirty passenger coaches; type MP-54; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 104,200 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 72. Cost $18,500. No toilets in this group; had baggage racks.

1451 American Car & Foundry 1906; type P-58. This car was always a steam car and, strictly speaking, does not belong in this list of electric cars; for the sake of completeness in numbers it is inserted here. This car was delivered as #1401, a model car, in December 1906, and was put into steam service on Dec. 13 on the Block Island Express for a trial run. On Dec. 17, 1907, it was renumbered to #1451 to vacate 1401 for new MU's on order.

#1451 had a monitor roof, square windows in the end sheets, wooden side doors and seated 72. Later became club car "Smithtown", then club car 179, then coach 179.

1452–1551 American Car & Foundry 1910; 100 passenger coaches; type MP-54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 104,400 lbs. weight; monitor roof with sloping ends. Two WH 308 motors; seating 69.

#1482 wrecked in Feb. 1950 in Rockville Centre gauntlet track wreck.

#1516 wrecked in Nov. 1950 in Kew Gardens crash.

#1523 wrecked in Nov. 1950 in Kew Gardens crash.

1552–1601 American Car & Foundry 1911; 50 passenger coaches; type MP-54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 109,400 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 69.

1602–1621 American Car & Foundry 1912; 20 passenger coaches; type MP-54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 111,200 lbs. weight. Monitor roof with sloping ends; two WH 308 motors; seating 69.

1622–1636 American Car & Foundry 1913; 15 passenger coaches; type MP-54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 111,000 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 69. #1632 is preserved by the LIRR as a museum car.

1637–1676 American Car & Foundry 1914; 50 passenger coaches; type MP-54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 110,350 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 71.

1778–1783 American Car & Foundry 1912; six passenger coaches; type MP-54A; 64'5 1/4' length overall; 9'11 1/2' width; 13'0' height; 106,000 lbs. weight; monitor roof with sloping ends; two WH 308 motors; seating 68. Transferred from the Pennsylvania Railroad in 1923 to the Long Island R.R. Original numbers:

202 to 1778; 204 to 1779; 206 to 1780; 203 to 1781; 205 to 1782

201 to 1783. These cars had green plush seats and hinged doors.

Note for most MP-54 & MP-54A: (unless otherwise noted)

Interior: 2 and 2 rattan seating; 1 toilet; double sliding end doors; no baggage racks.

Exterior: porthole windows in end sheets; square windows in storm doors; crank operated manual side doors; small round headlights; identification lights.

ELECTRIC TRAILERS

907–926 Standard Steel 1915; twenty arch-roof steel M. U. trailer cars; 64'5 1/4' length over couplers, 9'10 7/16' width; 13'0' height, seating 80; 63,000 lbs. weight. Class T-54

927–951 Standard Steel 1916; twenty-five arch-roof steel multiple unit trailer cars; 64'5 1/4' length over corners; 9'10 7/16' width; 13'0' height, seating 80, 63,100 lbs. weight, class T-54A.

952–996 *Pressed Steel 1917;* 45 arch-roof steel multiple unit trailer cars; 64'5 1/4' length over couplers; 9'10 7/16' width; 13'0' height; seating 80; class T-54A.

The Locomotive Renumbering of Oct. 1, 1898

New Number	Type	Builder	Date	Order Number	Cycle & Stroke	Old Number
1	4-4-0T	Schenectady	May 1866	422	14 X 22	54' 35
2	4-4-0	Danforth & Cooke	1864	?	15 X 20	54' 46
3	4-4-0	Brooks	Aug. 1873	200	15 X 22	60' 12
4	4-4-0	Brooks	Nov. 1873	217	15 X 22	60' 13
5	4-4-0	Grant	1870	?	15 X 22	60' 41
6	4-4-0	Schenectady	Jul. 1870	641	15 X 22	60' 44
7	4-4-0	Rhode Isl.	May 1871	266	15 X 22	60' 7
8	4-4-0	Schenectady	Dec. 1870	681	15 X 22.	60' 45
9	4-4-0	Rhode Isl.	Apr. 1872	267	15 X 22	60' 9
10	4-4-0	Brooks	Apr. 1873	178	16 X 22	60' 15
11	4-4-0	Rhode Isl.	May 1872	269	16 X 22	60' 11
12	4-4-0	Schenectady	Jun. 1874	965	16 X 24	60' 48
13	4-4-0	Schenectady	Jun. 1874	966	16 X 22	60' 49
14	4-4-0	Brooks	Apr. 1873	177	16 X 22	60' 14
15	4-4-0	Schenectady	Apr. 1873	881	16 X 24	60' 32
16	4-4-0	Schenectady	Sept. 1875	993	16 X 24	60' 50
17	4-4-0	Schenectady	Sept. 1875	994	16 X 24	60' 51
18	4-4-0	Baldwin	Mar. 1879	4551	16 X 24	60' 73
19	4-4-0	Baldwin	Mar. 1879	4553	16 X 24	60' 74
20	4-4-0	Baldwin	Mar. 1879	4556	16 X 24	60' 75
21	4-4-0	Baldwin	May 1879	4627	16 X 24	60' 76
22	4-4-0	Baldwin	May 1879	4629	16 X 24	60' 77
23	4-4-0	Baldwin	July 1878	4388	17 X 24	60' 70

New Number	Type	Builder	Date	Order Number	Cycle & Stroke		Old Number
24	4-4-0	Baldwin	July 1878	4389	17 X 24	60'	71
25	4-4-0	Baldwin	May 1879	4631	17 X 24	60'	78
26	4-4-0	Baldwin	May 1879	4633	17 X 24	60'	79
27	4-4-0	Rogers	Apr. 1882	2972	17 X 24	67'	80
28	4-4-0	Rogers	Apr. 1882	2973	17 X 24	67'	81
29	4-4-0	Rogers	Apr. 1882	2974	17 X 24	67'	82
30	4-4-0	Rogers	Apr. 1882	2984	17 X 24	67'	83

Note: It seems probable that "500" series numbers were assigned in 1901–1903 to locomotives #1–24. It is certain, at least, that 3 became 503, 9 became 509, 12 became 512 and 18–24 became 518–524. All are off the roster June 5, 1906.

31	4-4-0	Rogers	Apr. 1882	2986	17 X 24	67'	84
32	4-4-0	Rogers	Apr. 1882	2987	17 X 24	67'	85
33	4-4-0	Rogers	Apr. 1883	3238	17 X 24	67'	86
34	4-4-0	Rogers	Apr. 1883	3240	17 X 24	67'	87
35	4-4-0	Rogers	Apr. 1883	3244	17 X 24	67'	88
36	4-4-0	Rogers	Apr. 1883	3246	17 X 24	67'	89
37	4-4-0	Rogers	Apr. 1883	3248	17 X 24	67'	90
38	4-4-0	Rogers	May 1883	3259	17 X 24	67'	91
39	4-4-0	Rogers	May 1883	3260	17 X 24	67'	92
40	4-4-0	Rogers	May 1883	3262	17 X 24	67'	93
41	4-4-0	Rogers	May 1883	3263	17 X 24	67'	94
42	4-4-0	Rogers	May 1883	3264	17 X 24	67'	95
43	4-4-0	Rogers	June 1888	3955	17 X 24	67'	111
44	4-4-0	Rogers	June 1888	3956	17 X 24	67'	112
45	4-4-0	Rogers	June 1888	3957	17 X 24	67'	113
46	4-4-0	Rogers	June 1888	3958	17 X 24	67'	114

New Number	Type	Builder	Date	Order Number	Cycle &	Stroke	Old Number
47	4-4-0	Rogers	June 1888	3959	17 X 24	67'	115
48	4-4-0	Rogers	June 1888	3960	17 X 24	67'	116
49	4-4-0	Rogers	June 1888	3961	17 X 24	67'	117
50	4-4-0	Rogers	Apr. 1889	4131	17 X 24	60'	118
51	4-4-0	Rogers	Apr. 1889	4132	17 X 24	60'	119
52	4-4-0	Rogers	May 1889	4135	17 X 24	60'	120
53	4-4-0	Rogers	May 1889	4136	17 X 24	60'	121
54	4-4-0	Rogers	May 1889	4139	17 X 24	60'	122
55	4-4-0	Rogers	May 1889	4140	17 X 24	60'	123
56	4-4-0	Rogers	May 1889	4145	17 X 24	67'	124
57	4-4-0	Cooke	June 1890	2004	17 X 24	67'	125
58	4-4-0	Cooke	June 1890	2005	17 X 24	67'	126
59	4-4-0	Cooke	June 1890	2006	17 X 24	67'	127
60	4-4-0	Cooke	June 1890	2007	17 X 24	67'	128
61	4-4-0	Cooke	June 1890	2008	17 X 24	67'	129
62	4-4-0	Cooke	Apr. 1891	2102	17 X 24	67'	130
63	4-4-0	Cooke	Apr. 1891	2103	17 X 24	67'	131
64	4-4-0	Baldwin	June 1893	13475	18 X 24	67'	1
65	4-4-0	Baldwin	May 1893	13453	18 X 24	67'	2
66	4-4-0	Baldwin	May 1893	13454	18 X 24	67'	3
67	4-4-0	Baldwin	May 1893	13455	18 X 24	67'	4
68	4-4-0	Baldwin	May 1893	13456	18 X 24	67'	27
69	4-4-0	Baldwin	Jun. 1893	13499	18 X 24	67'	28
70	4-4-0	Baldwin	Jun. 1893	13500	18 X 24	67'	29
71	4-4-0	Baldwin	Jun. 1893	13501	18 X 24	67'	30
72	4-4-0	Baldwin	Jun. 1893	13502	18 X 24	67'	31

New Number	Type	Builder	Date	Order Number	Cycle & Stroke	Old Number
73	4-4-0	Baldwin	Jun. 1893	13510	18 X 24	67' 37
74	4-4-0	Baldwin	Jun. 1893	13511	18 X 24	67' 38
75	4-4-0	Baldwin	Jun. 1893	13512	18 X 24	67' 39
76	4-4-0	Baldwin	June 1893	13513	18 X 24	67' 40
77	4-4-0	Brooks	Mar. 1898	2933	18 X 24	67' 6
78	4-4-0	Brooks	Mar. 1898	2934	18 X 24	67' 8
79	4-4-0	Brooks	Mar. 1898	2935	18 X 24	67' 33
80	4-4-0	Brooks	Mar. 1898	2936	18 X 24	67' 34
81	4-4-0	Brooks	Mar. 1898	2937	18 X 24	67' 42
101	4-6-0	Rogers	Jul. 1886	3677	18 X 24	54' 101
102	4-6-0	Rogers	Jul. 1886	3678	18 X 24	54' 102
103	4-6-0	Rogers	Jul. 1886	3674	18 X 24	54' 98
104	4-6-0	Rogers	Jul. 1886	3675	18 X 24	54' 99
105	4-6-0	Rogers	Jul. 1886	3676	18 X 24	54' 100
106	4-6-0	Rogers	1884	?	18 X 24	54' 96
107	4-6-0	Rogers	1884	?	18 X 24	54' 97
108	4-6-0	Cooke	May 1891	2104	18 X 24	60' 132
109	4-6-0	Cooke	May 1891	2105	18 X 24	60' 133
110	4-6-0	Cooke	May 1891	2106	18 X 24	60' 134
111	4-6-0	Cooke	May 1891	2107	18 X 24	60' 135
112	4-6-0	Cooke	May 1891	2108	18 X 24	60' 136
113	4-6-0	Baldwin	Jan. 1892	12456	18 X 24	60' 137
114	4-6-0	Baldwin	Jan. 1892	12453	18 X 24	60' 138
115	4-6-0	Baldwin	Jan. 1892	12457	18 X 24	60' 139
116	4-6-0	Baldwin	Jan. 1892	12454	18 X 24	60' 140
117	4-6-0	Baldwin	Jan. 1892	12463	18 X 24	60' 141
118	4-6-0	Baldwin	Feb. 1892	12472	12 X 24	60' 142

New Number	Type	Builder	Date	Order Number	Cycle & Stroke	Old Number
119	4-6-0	Baldwin	Feb. 1892	12473	12 X 24	60' 143
120	4-6-0	Baldwin	Feb. 1892	12480	12 X 24	60' 144
121	4-6-0	Baldwin	Feb. 1892	12483	12 X 24	60' 145
122	4-6-0	Baldwin	Feb. 1892	12490	12 X 24	60' 146
176	0-6-0	Schenectady	Mar. 1889	2845	18 X 24	51' 16
177	0-6-0	Schenectady	Mar. 1889	2846	18 X 24	51' 17
178	0-6-0	Schenectady	Mar. 1889	2847	18 X 24	51' 18
179	0-6-0	Schenectady	Mar. 1889	2848	18 X 24	51' 19
180	0-6-0	Schenectady	Mar. 1889	2849	18 X 24	51' 20
181	0-6-0	Schenectady	Jun. 1891	3457	18 X 24	51' 21
182	0-6-0	Schenectady	Jun. 1891	3458	18 X 24	51' 22
183	0-6-0	Schenectady	Jun. 1891	3459	18 X 24	51' 23
184	0-6-0	Baldwin	Jul. 1893	13570	18 X 24	51' 24
185	0-6-0	Baldwin	Jul. 1893	13571	18 X 24	51' 25
186	0-6-0	Baldwin	Jul. 1892	12722	18 X 24	51' 147
187	0-6-0	Baldwin	Jun. 1892	12723	18 X 24	51' 148
188	0-6-0	Baldwin	Jun. 1892	12724	18 X 24	51' 149
201	0-4-4T	Baldwin	May 1879	4649	12 X 14	40' 105
202	0-4-4T	Baldwin	May 1879	4652	12 X 14	40' 106
203	0-4-4T	Baldwin	May 1879	4653	12 X 14	40' 107
204	0-4-4T	Baldwin	May 1879	4655	12 x 14	40' 108
205	0-4-4T	Baldwin	May 1879	4656	12 X 14	40' 109
206	0-4-4T	Baldwin	May 1879	4657	12 X 14	40' 110
207	0-4-4T	Baldwin	May 1892	12700	15 X 20	51' 150
208	0-4-4T	Baldwin	May 1892	12701	15 X 20	51' 151
209	0-4-4T	Baldwin	May 1892	12702	15 X 20	51' 152

New Number	Type	Builder	Date	Order Number	Cycle & Stroke	Old Number
210	0-4-4T	Baldwin	May 1892	12703	15 X 20 51'	153
211	0-4-4T	Baldwin	May 1892	12707	15 X 20 51'	154
212	0-4-4T	Baldwin	May 1892	12708	15 X 20 51'	155
213	0-4-4T	Baldwin	May 1892	12709	15 X 20 51'	156
214	0-4-4T	Baldwin	May 1892	12718	15 X 20 51'	157
215	0-4-4T	Baldwin	May 1892	12719	15 X 20 51'	158
216	0-4-4T	Baldwin	May 1892	12720	15 X 20 51'	159
217	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	160
218	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	161
219	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	162
220	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	163
221	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	164
222	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	165
223	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	166
224	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	167
225	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	168
226	0-4-4T	Rhode Isl.	1893–4	?	21 X 18 44'	169
227	0-4-6T	Rogers	June 1883	3269	14 X 18 48'	61
228	0-4-6T	Rogers	June 1883	3273	14 X 18 48'	62
229	0-4-6T	Rogers	June 1883	3275	14 X 18 48'	63
230	0-4-6T	Rogers	June 1883	3281	14 X 18 48'	64
231	0-4-6T	Rogers	June 1883	3284	14 X 18 48'	65
Note: Engines #227–231 were renumbered about 1905–6 to #327–331						
296	4-4-0T	Rogers	Sept. 1868	1548	13 X 22 60'	5
297	4-4-0T	Schenectady	Jun. 1866	426	15 X 22 48'	36

New Number	*Type*	*Builder*	*Date*	*Order Number*	*Cycle & Stroke*	*Old Number*
298	0-4-0T	Baldwin	Jul. 1877	4116	9 X 12 36'	298 "Manhattan"
299	0-4-0T	Baldwin	Jul. 1877	4117	9 X 12 36'	299 "Oriental"
300	0-4-0T	Baldwin	Jul. 1877	4119	9 X 12 36'	Shop Drill, "Pop"

Note: #298–300, originally LIRR #1–3, the "Brooklyn", "Flatbush" and "Bedford".

301	4-4-0	Rogers	May 1880	2589	16 X 24 60'	6
302	4-4-0	Hinkley	1879	?	16 X 24 60'	2
303	4-4-0	Hinkley	1879	?	16 X 24 60'	3
304	4-4-0	Rogers	1879	?	16 X 24 60'	4
305	4-4-0	Rogers	1879	?	16 X 24 60'	5
306	4-4-0	Rogers	June 1880	2602	17 X 24 60'	8
307	4-4-0	Rogers	May 1880	2590	17 X 24 60'	7
308	4-4-0	Baldwin	May 1893	13440	18 X 24 60 9/16	1
309	4-4-0	Baldwin	May 1893	13441	18 X 24 60 9/16	9
310	4-4-0	Baldwin	May 1893	13442	18 X 24 60 9/16	10
311	4-4-0	Baldwin	June 1893	13473	18 X 24 60 9/16	11
312	4-4-0	Baldwin	June 1893	13474	18 X 24 60 9/16	12

Roster of Locomotives 1901–1917

PASSENGER

4-4-2 *Atlantic type, passenger engines; 19 1/2 X 26 cyl.; 76' drivers*

1	E-51	Baldwin Apr. 1901	18937	Later E-51S	Retired Jul. 3, 1929
		From 1922 to Feb. 1924 named Edwin W. Hulse			
2	E-51	Baldwin Apr. 1901	18938	Later E-51S	Retired 1928
3	E-51	Baldwin May 1902	20488	Later E-51S	Retired Apr. 3, 1929
4	E-51	Baldwin May 1902	20496	Later E-51S	Scrapped Mar. 1928
198	E-1	Juniata June 1899	585	Ex-PRR 698 Dec. 1903 Retired 1911	
199	E-1	Juniata June 1899	586	Ex-PRR 700 Dec. 1903 Retired 1911	
200	E-1	Juniata June 1899	587	Ex-PRR 820 Dec. 1903 Retired 1911	

2-6-2T *Suburban passenger tank engines*

20	S-51	Baldwin Mar. 1904	23929	Sold to CNJ 220, class J-1C c.1911
21	S-51	Baldwin Mar. 1904	23940	Sold to CNJ 221, class J-1C c.1911
22	S-51	Baldwin Mar. 1904	24008	Sold to CNJ 222, class J-1C c.1911
23	S-51	Baldwin Apr. 1904	24056	Sold to CNJ 223, class J-1C c.1911
24	S-51	Baldwin Apr. 1904	24082	Sold to CNJ 224, class J-1C c.1911

4-4-0 *Passenger locomotives*

25	D-51	Baldwin May 1879	4631	Retired by Jan. 1912
26	D-51	Baldwin May 1879	4633	Retired by Jan. 1912
27	D-52	Rogers April 1882	2972	Retired by June 5, 1906
28	D-52	Rogers April 1882	2973	Retired by Jan. 1912
29	D-52	Rogers April 1882	2974	Retired by Jun. 5. 1906
30	D-52	Rogers April 1882	2984	Retired by Jun. 5, 1906
31	D-52	Rogers April 1882	2986	Retired by Jan. 1912
32	D-52	Rogers April 1882	2987	Retired by Jan. 1912
33	D-52	Rogers April 1883	3238	Retired by Jan. 1912
34	D-52	Rogers April 1883	3240	Retired by Jan. 1912
35	D-52	Rogers April 1883	3244	Retired by Jan. 1912
36	D-52	Rogers April 1883	3246	Retired by Jan. 1912
37	D-52	Rogers April 1883	3248	Retired by Jan. 1912
38	D-52B	Rogers May 1883	3259	Retired by Jan. 1912

39	D-52B	Rogers May 1883	3260	Retired by August 1914
40	D-52A	Rogers May 1883	3262	Sold to Vitagraph Co. for movie wreck 1914
41	D-52A	Rogers May 1883	3263	Retired by 1906
42	D-52A	Rogers May 1883	3264	Retired by Jan. 1912
43	D-53	Rogers June 1888	3955	Retired by Apr. 1917
44	D-53A	Rogers June 1888	3956	Retired by Apr. 1917
45	D-53	Rogers June 1888	3957	Retired by Jan. 1912
46	D-53	Rogers June 1888	3958	Retired by Apr. 1917
47	D-53A	Rogers June 1888	3959	Retired by Apr. 1917
48	D-53B	Rogers June 1888	3960	On scrap track Mar. 1913
49	D-53A	Rogers June 1888	3961	Retired by Apr. 1917
50	D-53A	Rogers Apr. 1889	4131	Retired by Apr. 1917
51	D-53A	Rogers Apr. 1889	4132	Retired by Apr. 1917
52	D-53	Rogers May 1889	4135	Retired by Apr. 1917
53	D-53	Rogers May 1889	4136	Retired by January 1912
54	D-53A	Rogers May 1889	4139	Sold to Pathe for movie wreck c.1914
55	D-53B	Rogers May 1889	4140	Retired by April 1917
56	D-53	Rogers May 1889	4145	Retired by April 1917
57	D-53	Cooke June 1890	2004	Retired by April 1917
58	D-53B	Cooke June 1890	2005	Retired by April 1917
59	D-53	Cooke June 1890	2006	Retired by April 1917
60	D-53	Cooke June 1890	2007	Retired by January 1912
61	D-53	Cooke June 1890	2008	Retired by January 1912
62	D-53	Cooke Apr. 1891	2102	Retired by January 1912
63	D-53	Cooke Apr. 1891	2103	Retired by April 1917
64	D-54	Baldwin Jun. 1893	13475	Retired by April 1917
65	D-54	Baldwin May 1893	13453	Retired by April 1917
66	D-54	Baldwin May 1893	13454	Retired by April 1917
67	D-54	Baldwin May 1893	13455	Retired by April 1917
68	D-54	Baldwin May 1893	13456	Retired by April 1917
69	D-54	Baldwin Jun. 1893	13499	Retired by April 1917
70	D-54	Baldwin Jun. 1893	13500	Retired by April 1917
71	D-54	Baldwin Jun. 1893	13501	Retired by April 1917
72	D-54	Baldwin Jun. 1893	13502	On scrap track Mar. 1913
73	D-54	Baldwin Jun. 1893	13510	Retired by Apr. 1917
74	D-55	Baldwin Jun. 1893	13511	Retired by Apr. 1917
75	D-55	Baldwin Jun. 1893	13512	Scrapped May 15, 1924
76	D-55	Baldwin Jun. 1893	13513	Retired by April 1917
77	D-55A	Brooks Mar. 1898	2933	Retired by April 1917
78	D-55A	Brooks Mar. 1898	2934	Scrapped Oct. 27, 1925
79	D-55A	Brooks Mar. 1898	2935	Retired by April 1917
80	D-55A	Brooks Mar. 1898	2936	Retired by April 1917
81	D-55A	Brooks Mar. 1898	2937	Retired by April 1917
82	D-56	Baldwin May 1903	22179	Retired by Dec. 1, 1930. Later D-56S
		Named "Walter Read" 1922, then transferred to #84		
83	D-56	Named May 1903	22182	Retired Jan. 23, 1930. Later D-56S

84	D-56	Baldwin May 1903	22190	Retired Jul. 30, 1930.	
		Named "Walter Read" from 1922 to about 1926			
85	D-56	Baldwin May 1903	22191	Retired Jan, 23, 1930	Later D-56S
86	D-56	Baldwin Jan. 1904	23570	Scrapped April 1928	
87	D-56	Baldwin Jan. 1904	23571	Retired Feb. 6, 1930	Later D-56S
88	D-56	Baldwin Jan. 1904	23604	Retired Aug. 15, 1930	
89	D-56	Baldwin Jan. 1904	23611	Retired about 1930	Later D-56S
90	D-56	Baldwin Jan. 1904	23612	Retired July 3, 1929	
91	D-56	Baldwin Jan. 1904	23642	Retired Feb. 6, 1930	Later D-56S
		Named "Charles McKeever" 1922 to about 1926			
92	D-56	Baldwin Jan. 1904	23647	Retired Feb. 6, 1930	Later D-56S
93	D-56	Baldwin Feb. 1904	23663	Retired Jul. 3, 1930	
94	D-56	Baldwin Feb. 1904	23664	Retired May 1, 1930	
95	D-56	Baldwin Feb. 1904	23665	Retired Apr. 3, 1930	Later D-56S
96	D-56	Baldwin Feb. 1904	23686	Retired Nov. 28, 1928	
97	D-56	Baldwin Feb. 1904	23687	Retired Oct. 3, 1929	Later D-56S
98	D-56	Baldwin Feb. 1904	23696	Retired Feb. 6, 1930	Later D-56S
99	D-56	Baldwin Feb. 1904	23697	Retired Jan. 7, 1929	Later D-56S
100	D-56	Baldwin Feb. 1904	23698	Retired Nov. 2, 1930	Later D-56S
201	D-16B	Juniata Sept. 1905	1358	Retired June 1928	Later D-16SB
202	D-16B	Juniata Sept. 1905	1359	Retired Aug. 5, 1929 Later D-16SB	
203	D-16B	Juniata Sept. 1905	1360	Retired Oct. 1928	Later D-16SB
204	D-16B	Juniata Sept. 1905	1361	Retired Dec. 1928	
205	D-16B	Juniata Sept. 1905	1362	Scrapped Aug. 1927	
206	D-16B	Juniata Sept. 1905	1363	Scrapped Dec. 1925	
207	D-16B	Juniata Sept. 1905	1364	Retired Aug. 1, 1930 Later D-16SB	
208	D-16B	Juniata Sept. 1905	1365	Retired Dec. 1928	Later D-16SB
209	D-16B	Juniata Sept. 1905	1366	Retired Dec. 1928	
210	D-16B	Juniata Sept. 1905	1367	Retired Aug. 1928	
211	D-16B	Juniata Jan. 1906	1432	Scrapped Apr. 1928	
212	D-16B	Juniata Jan. 1906	1433	Retired May 3, 1934 Later D-16SB	
		Named "Seaman Burchell" 1922 to about 1926			
213	D-16B	Juniata Jan. 1906	1434	Scrapped June 1928	
214	D-16B	Juniata Jan. 1906	1435	Retired Aug. 1928	Later D-16SB
215	D-16B	Juniata Jan. 1906	1436	Retired Nov. 1, 1931	
216	D-16B	Juniata Feb. 1906	1437	Scrapped Apr. 1928	
217	D-16B	Juniata Feb. 1906	1438	Scrapped Nov. 1925	
218	D-16B	Juniata Feb. 1906	1439	Scrapped Dec. 1925	
219	D-16B	Juniata Feb. 1906	1440	Scrapped May 1928	
220	D-16B	Juniata Feb. 1906	1441	Scrapped June 1928	
221	D-16B	Juniata Feb. 1906	1442	Scrapped March 1928	
222	D-16B	Juniata Feb. 1906	1443	Scrapped May 1928	Later D-16SB
223	D-16B	Juniata Feb. 1906	1444	Retired Aug. 1, 1932 Later D-16SB	

		Named "Thomas Kelly" 1922 to about 1926			
224	D-16B	Juniata Feb. 1906	1445	Retired Sept. 1928	Later D-16SB
225	D-16B	Juniata Feb. 1906	1446	Scrapped Aug. 1927	
226	D-16B	Juniata Feb. 1906	1447	Retired Jan. 1, 1929	Later D-16SB
227	D-16B	Juniata Feb. 1906	1448	Retired May 1, 1929	
228	D-16B	Juniata Feb. 1906	1449	Retired Aug. 9, 1934	
229	D-16B	Juniata Feb. 1906	1450	Retired May 3, 1934	
230	D-16B	Juniata Feb. 1906	1451	Scrapped Aug. 1927	
231	D-16B	Juniata Feb. 1906	1452	Retired June 6, 1929	
301	D ?	Rogers May 1880	2589	Ex-New York & Rock. Beach Retired Jun. 5, 1906	
302	D ?	Hinkley 1879	?	Ex-NY & Rock. Beach Retired Sept. 1905	
303	D ?	Hinkley 1879	?	Ex-NY & Rock. Beach Retired Sept. 1905	
304	D ?	Rogers 1879	?	Ex-NY & Rock. Beach Retired Jun. 5, 1906	
305	D ?	Rogers 1879	?	Ex-NY & Rock. Beach Retired Jun. 5, 1906	
306	D ?	Rogers June 1880	2602	Ex-NY & Rock. Beach Retired Jun. 5, 1906	
307	D ?	Rogers May 1880	2590	Ex-NY & Rock. Beach Retired Jun. 5. 1906	
308	D-54A	Baldwin May 1893	13440	Ex-NY & Rock. Beach Retired by Apr. 1917	
309	D-54A	Baldwin May 1893	13441	Ex-NY & Rock. Beach Retired by Apr. 1917	
310	D-54A	Baldwin May 1893	13442	Ex-NY & Rock. Beach Retired by Apr. 1917	
311	D-54A	Baldwin Jun. 1893	13473	Ex-NY & Rock. Beach Retired by Apr. 1917	
312	D-54A	Baldwin Jun. 1893	13474	Ex-NY & Rock. Beach Retired by Apr. 1917	

The "500" series were older engines numbered below #24, renumbered about 1901–1903 to make room for new equipment. Because of the destruction of old Long Island R.R. records, this section is incomplete; some data are based on photographs.

503	Brooks	Aug. 1873	200	Ex. 3
509	Rhode Island	Apr. 1872	267	Ex. 9
512	Schenectady	Jun. 1874	965	Ex. 12
518	Baldwin	Mar. 1879	4551	Ex. 18
519	Baldwin	Mar. 1879	4553	Ex. 19
520	Baldwin	Mar. 1879	4556	Ex. 20
521	Baldwin	May 1879	4627	Ex. 21
522	Baldwin	May 1879	4629	Ex. 22
523	Baldwin	Jul. 1878	4388	Ex. 23
524	Baldwin	Jul. 1879	4389	Ex. 24

0-4-4T *Forney tank engines. See Vol. VI, pp. 242–3 for disposition. Sold 1905–6*

201	Baldwin		May 1879	4649	Ex. 105
202	Baldwin		May 1879	4652	Ex. 106
203	Baldwin		May 1879	4653	Ex. 107
204	Baldwin		May 1879	4655	Ex. 108
205	Baldwin		May 1879	4656	Ex. 109
206	Baldwin		May 1879	4657	Ex. 110
207	Baldwin		May 1892	12700	Ex. 150
208	Baldwin		May 1892	12701	Ex. 151
209	Baldwin		May 1892	12702	Ex. 152
210	Baldwin		May 1892	12703	Ex. 153
211	Baldwin		May 1892	12707	Ex. 154
212	Baldwin		May 1892	12708	Ex. 155
213	Baldwin		May 1892	12709	Ex. 156
214	Baldwin		May 1892	12718	Ex. 157
215	Baldwin		May 1892	12719	Ex. 158
216	Baldwin		May 1892	12720	Ex. 159
217	Rhode Island	1893–4		Order No. unknown	Ex. 160
218	Rhode Island	1893–4		Order No. unknown	Ex. 161
219	Rhode Island	1893–4		Order No. unknown	Ex. 162
220	Rhode Island	1893–4		Order No. unknown	Ex. 163
221	Rhode Island	1893–4		Order No. unknown	Ex. 164
222	Rhode Island	1893–4		Order No. unknown	Ex. 165
223	Rhode Island	1893–4		Order No. unknown	Ex. 166
224	Rhode Island	1893–4		Order No. unknown	Ex. 167
225	Rhode Island	1893–4		Order No. unknown	Ex. 168
226	Rhode Island	Oct. 1894		3006	Ex. 169

0-4-6T *Tank Engines. All renumbered about 1905–1906*

227	Rogers	June 1883	3269	Renumbered 327	Retired by 1912
228	Rogers	June 1883	3273	Renumbered 328	Retired by 1912
229	Rogers	June 1883	3275	Renumbered 329	Retired by 1912
230	Rogers	June 1883	3281	Renumbered 330	Retired by 1912
231	Rogers	June 1883	3284	Renumbered 331	Retired by 1912

Miscellaneous Engines

296	4-4-0T	Rogers	Sept. 1868	1548	Retired by 1906
297	4-4-0T	Schenectady	Jun. 1866	426	Retired by 1906
298	0-4-0T	Baldwin	Jul. 1877	4116	Retired by 1906
299	0-4-0T	Baldwin	Jul. 1877	4117	Retired by 1906
300	0-4-0T	Baldwin	Jul. 1877	4119	Retired by 1906
321	0-4-0T	Rhode Isl.	1894	?	Rebuilt Morris Park 1907 and scrapped Aug. 1927

4-6-0 Ten-wheelers; dual service; 20 X 26 cyl. 68" drivers

5	G-54	Baldwin	May 1901	18961	Later G-54 & G-54SB	Scrapped Mar. 1928
6	G-54	Baldwin	May 1901	18962	Later G-54 & G-54SB	Scrapped Jan. 23, 1936
7	G-54	Baldwin	May 1901	18963	Later G-54SA	Scrapped Mar. 1928
8	G-54A	Baldwin	May 1902	20413	Later G-54SA	Retired Jan. 27, 1929
9	G-54A	Baldwin	May 1902	20414	Later G-54SA	Retired Apr. 3, 1929
10	G-54	Baldwin	May 1902	20415	Later G-54B & G-54SB	Retired Nov. 7, 1929
11	G-54	Baldwin	May 1902	20416	Later G-54B & G-54SB	Retired May 1, 1930
12	G-54	Baldwin	May 1902	20485	Later G-54B & G-54SB	Retired Mar. 2, 1931
13	G-54	Baldwin	May 1902	20489	Later G-54B & G-54SB	Scrapped Apr. 1928
14	G-54	Baldwin	June 1902	20547	Later G-54B & G-54SB	Retired Dec. 1, 1930
15	G-54	Baldwin	June 1902	20548	Later G-54B & G-54SB	Retired Jul. 3, 1930
16	G-54A	Baldwin	June 1903	22278	Later G-54SA	Retired 1930
17	G-54A	Baldwin	June 1903	22300	Later G-54SA	Retired 1930
18	G-54A	Baldwin	June 1903	22301	Later G-54SA	Retired May 1, 1929
			Named "James Eichorn" from 1922 to about 1926			
19	G-54A	Baldwin	June 1903	22302	Later G-54SA	Retired Dec. 1, 1930
101	G-51	Rogers	July 1886	3677		Retired by Jan. 1912
102	G-51	Rogers	July 1886	3678		Retired by Jan. 1912
103	G-51	Rogers	July 1886	3674		Retired by Aug. 1914
104	G-51	Rogers	July 1886	3675		Retired by Jan. 1912
105	G-51	Rogers	July 1886	3676		Retired by Jan. 1912
106	G-51	Rogers	1884	?		Retired about Aug. 1911
107	G-51	Rogers	1884	?		Retired about Jan. 1912
108	G-51A	Cooke	May 1891	2104		Retired by April 1917
109	G-51A	Cooke	May 1891	2105		Retired by Jan. 1912
110	G-51A	Cooke	May 1891	2106		Retired by Jan. 1912

111	G-51A	Cooke	May 1891	2107	Retired by Jan. 1912
112	G-51A	Cooke	May 1891	2108	Retired by Jan. 1912
113	G-52	Baldwin	Jan. 1892	12456	Retired by April 1917
114	G-52	Baldwin	Jan. 1892	12453	Retired by Nov. 1925
115	G-52	Baldwin	Jan. 1892	12457	Retired by April 1917
116	G-52	Baldwin	Jan. 1892	12454	Retired by 1906
117	G-52	Baldwin	Jan. 1892	12463	Scrapped Jul. 13, 1925
118	G-52A	Baldwin	Feb. 1892	12472	Retired by April 1917
119	G-52A	Baldwin	Feb. 1892	12473	Retired by April 1917
120	G-52A	Baldwin	Feb. 1892	12480	Scrapped Jul. 17, 1925
121	G-52A	Baldwin	Feb. 1892	12483	Retired by April 1917
122	G-52A	Baldwin	Feb. 1892	12490	Scrapped Aug. 1925
123	G-53	Brooks	Jun. 1899	3229	Retired Sept. 4, 1929
124	G-53	Brooks	Jun. 1899	3230	Retired Jan. 23, 1930
125	G-53	Brooks	Jun. 1899	3231	Retired Jan. 7, 1929
126	G-53	Brooks	Jun. 1899	3232	Retired Apr. 3, 1929
127	G-53	Brooks	Jun. 1899	3233	Retired Oct. 1925
128	G-53A	Brooks	Jul. 1907	43571	Retired Aug. 15, 1930
129	G-53A	Brooks	Jul. 1907	43572	Retired Sept. 1928
130	G-53A	Brooks	Jul. 1907	43573	Retired Jan. 31, 1929
131	G-53A	Brooks	Jul. 1907	43574	Scrapped Apr. 1928
132	G-53A	Brooks	Jul. 1907	43575	Retired May 20, 1929
133	G-53B	Brooks	Apr. 1911	49862	Retired Dec. 1, 1930
134	G-53B	Brooks	Apr. 1911	49863	Retired Jun. 7, 1929
135	G-53B	Brooks	Apr. 1911	49864	Retired Oct. 1, 1930
136	G-53B	Brooks	Apr. 1911	49865	Retired May 1, 1930
137	G-53SC	Schenectady	Apr. 1913	53009	Retired Jun. 7, 1929

138	G-53SC	Schenectady	Apr. 1913	53010	Retired Sept. 4, 1929
139	G-53SC	Schenectady	Apr. 1913	53011	Retired Nov. 7, 1929
140	G-53SC	Schenectady	Apr. 1913	53012	Retired Aug. 15, 1930
141	G-53SD	Brooks	May 1917	57011	Retired Jan. 28, 1949
142	G-53SD	Brooks	Apr. 1917	57012	Retired Apr. 15, 1948
143	G-53SD	Brooks	Apr. 1917	57013	Retired Jan. 28, 1949
144	G-53SD	Brooks	Apr. 1917	57014	Retired Jun. 30, 1949
145	G-54SD	Brooks	Apr. 1917	57015	Retired Jun. 30, 1949
146	G-53SD	Brooks	Apr. 1917	57016	Retired Jun. 30, 1949
2-8-0	*Consolidation type*				
151	H-51	Brooks	Dec. 1898	3101	Scrapped Mar. 1928
152	H-51	Brooks	Dec. 1898	3102	Scrapped May 1928
153	H-51	Brooks	Dec. 1898	3103	Scrapped Sept. 1928
154	H-51A	Baldwin	Jun. 1903	2275	Retired Dec. 1, 1930
155	H-51A	Baldwin	Jun. 1903	2276	Scrapped Mar. 1928
159	H-3B	Juniata	Mar. 1893	209	Originally P.E. 2062; PRR 1724, LIRR 170 Scrapped Dec. 1922
160	H-3A	Juniata	May 1892	90	Originally PRR 1505; scrapped May 27, 1924
161	H-3A	Juniata	Dec. 1892	165	Originally PRR 1539; scrapped Dec. 1922
162	H-3A	Baldwin	Dec. 1892	13081	Originally PRR 1568; scrapped Jul. 9, 1924
163	H-3A	Baldwin	Dec. 1892	13115	Originally PRR 1586; scrapped Jun. 4, 1924
164	H-3B	Juniata	Dec. 1893	290	Originally NCR 186 & 3186, PRR 4186 Scrapped May 28, 1924
165	H-3A	Juniata	Mar. 1892	60	Originally PRR 1492; scrapped July 1915
166	H-3	Altoona	Oct. 1887	1204	Originally P & E 2039, PRR 1701 Scrapped Dec. 1921

167	H-3	Altoona	Dec. 1888	1358	Originally PRR 1019, P & E 2117, PRR 1779 Scrapped July 1915
168	H-3	Altoona	Dec. 1887	1229	Originally PRR 1181, P & E 2118, PRR 1780 Scrapped Dec. 1921
169	H-3B	Juniata	Jan. 1894	291	Originally NCR 187 & 3187; PRR 4187 Scrapped Dec. 1925
170	H-3B	Juniata	Mar. 1893	209	Originally P & E 2062; PRR 1724; LIRR 159 in 1912; scrapped Dec. 1922

Note on 159–170: There are actually eleven locomotives involved, but twelve numbers used. #170 was renumbered to 159 in 1912 to make room for a new 170 delivered in 1913.
160–162 received from the Pennsylvania RR Oct. 26, 1903
163 received from the Pennsylvania RR Oct. 27, 1903
164–170 received from the Pennsylvania RR Oct. 27, 1905
P & E refers to Philadelphia & Erie Division of PRR
NCR refers to Northern Central Ry.- numbered one on up; in 1897, three thousand was added to the numbers. In 1903 it became PRR, and numbered in four thousand series

0-8-0 *Switchers*

251	C-51S	Schenectady	Dec. 1916	56452	Retired Jan. 28, 1949
252	C-51S	Schenectady	Dec. 1916	56453	Retired May 14, 1949
253	C-51S	Schenectady	Dec. 1916	56454	Retired Jan. 28, 1949
254	C-51S	Schenectady	Dec. 1916	56455	Retired Feb. 25, 1949

Note: #255–269, class C-51SA were built by Pittsburgh, Schenectady and Richmond in 1918, 1922 and 1924

0-6-0 *Switcher*

170	B-53SB	Baldwin	Mar. 1913	39421	Retired Dec. 1, 1930
171	B-53SB	Baldwin	Mar. 1913	39422	Retired Feb. 2, 1931

172	B-53	Baldwin	Apr. 1906	28013	Scrapped Apr. 1928
173	B-53	Baldwin	Apr. 1906	28023	Scrapped May 1928
174	B-53	Baldwin	Apr. 1906	28024	Retired Nov. 2, 1930
175	B-53	Baldwin	Apr. 1906	28025	Retired May 1, 1932
176	B-51	Schenectady	Mar. 1889	2845	Scrapped Jun. 21, 1924
177	B-51	Schenectady	Mar. 1889	2846	Scrapped Jun. 12, 1924
178	B-51	Schenectady	Mar. 1889	2847	Scrapped Aug. 1925
179	B-51	Schenectady	Mar. 1889	2848	Scrapped Oct. 27, 1925
180	B-51	Schenectady	Mar. 1889	2849	Retired between Aug. 1914 and Apr. 1917
181	B-51	Schenectady	Jun. 1891	3457	same
182	B-51	Schenectady	Jun. 1891	3458	same
183	B-51	Schenectady	Jun. 1891	3459	same
184	B-52	Baldwin	Jul. 1893	13570	same
185	B-52	Baldwin	Jul. 1893	13571	Scrapped May 22, 1924
186	B-52	Baldwin	Jun. 1892	12722	Retired between Aug. 1914 and Apr. 1917
187	B-52	Baldwin	Jun. 1892	12723	Scrapped June 18, 1924
188	B-52	Baldwin	Jun. 1892	12724	Scrapped June 13, 1924
189	B-52A	Baldwin	Mar. 1899	16565	Scrapped Aug. 1927
190	B-52A	Baldwin	Apr. 1901	18928	Scrapped Dec. 1925
191	B-53	Baldwin	June 1902	20594	Retired Jan. 7, 1932
192	B-53	Baldwin	June 1902	20595	Retired Jan. 2, 1930
193	B-53	Baldwin	May 1903	22264	Retired Nov. 1, 1931
194	B-53	Baldwin	May 1903	22265	Retired Apr. 3, 1929
195	B-53	Baldwin	Jul. 1905	26112	Retired Nov. 2, 1930
196	B-53	Baldwin	Jul. 1905	26113	Retired Sept. 1928

197		B-53	Baldwin	Aug. 1905	26127	Retired Aug. 1928
198		B-53A	Baldwin	May 1911	36558	Retired Mar. 3, 1929
199		B-53A	Baldwin	May 1911	36559	Retired Sept. 1, 1930

ELECTRIC LOCOMOTIVES

322	0-4-0	Morris Park Shop	Dec. 1915	Am. Mil. truck with a cab on it. Scrapped Mar. 1928
323	AA-1	Altoona Shops	Aug. 1905	EL #1, originally PRR 10001, 3950 & 8; #323 purchased May 26, 1916. Known unofficially as "Phoebe"

Station Supplement

The definitive list of stations appears at the end of volume VI. The stations listed here are those newly opened between 1901 and 1916 or rebuilt during that time. In summary, these are as follows:

1901	Auburndale	
	Rockville Centre	Oct. 14, 1901
	Speonk	Dec. 1901
1902	Copiague	
	Woodmere	
	Rugby	June 12, 1902
	Oyster Bay	July 1902
	Wardenclyffe (Shoreham)	
1903	Port Jefferson	July 25, 1903
	Brentwood	Nov. 10, 1903
	Lakeview	
	Bayport	Aug. 10, 1903
	Steeplechase	April 1903
	Water Mill	Aug. 1903
	Long Island City	Apr. 27, 1903
1904	Pinelawn	
1905	Westhampton	
	Quogue	
	Hewlett	
	Sayville	
	Nostrand Avenue	Aug. 29, 1905
	Warwick Street	Aug. 29, 1905
1906	Broadway-Flushing	Sept. 1, 1906
	Locust Valley	Dec. 1906
	Lawrence	Aug. 1906

	Cedar Manor	
	Locust Manor	
1907	Laurelton	April 1907
	Nassau Boulevard	
	Suffolk Downs	
	Golf Grounds	
	Flatbush Avenue	Apr. 1, 1907
1908	Higbie Avenue	
1909	Malba	
	Floral Park	
	Long Beach	June 1909
	Huntington	Oct. 1909
	Hicksville	Oct. 30, 1909
	Kew Gardens	
	Plandome	
	Manhattan Beach	Nov. 1909
	Bellerose	
	Stewart Manor	
1910	Riverhead	Jun. 2, 1910
	Sag Harbor	
1911	Forest Hills	Aug. 5, 1911
	Hillside	May 15, 1911
	Aquebogue	
	Greenlawn	Sept. 1911
	Amagansett	
	Merillon Avenue	
	Brooklyn Manor	Jan. 2, 1911
	Nassau: name changed to Glen Cove on June 28, 1911	
	Inwood	Dec. 3, 1911
	Woodhaven	
	Union Course	wider platforms jutting into street area.
	Autumn Avenue	
1912	Arverne	
	Bayshore	Jul. 17, 1912
	Holtsville	May 1912
1913	Hempstead	Feb. 1913
	Jamaica	Mar. 9, 1913

	Grand Street	
	Country Life Press	
	Cedarhurst	
	Flushing-Main Street	Oct. 4, 1913
	Good Ground (Hampton Bays)	
	Union Hall Street	
	Malverne	Feb. 1913
	Howard Beach	Apr. 1913
1914	Hunter's Point Avenue	July 1, 1914
	Dunton	
	Murray Hill	July 1914
1915	Woodside	Oct. 17, 1915
	Oceanside	
1916	High Bridge (Westbridge)	June 28, 1916
	Baldwin	Dec. 1917
	South St.	Jul. 16, 1916

MAIN LINE

Hunter's Point: The Long Island City terminal of the 1890's burned down on the night of Dec. 18, 1902. The new building was built on the site of the old one at the corner of Borden Avenue & 2nd St. and closely resembled its predecessor; two stories high with waiting room and entrances on the first floor and offices on the second. Work began Jan. 24, 1903 and the building was opened to the public Apr. 27, 1903 before it was fully finished. At the same time the railroad decided to enlarge the yards by acquiring all the private property south of the tracks to 54th Avenue, fully doubling the old yard area. The commercial structures were demolished by July 15, 1903. In Dec. and Jan. 1904 a 100 foot extension was built on the south side of the station and south of that a two-story structure with galvanized steel walls was erected for the Long Island Express Co. In June 1906 the company put a 2nd floor on the station extension to gain sorely needed office space, making the whole facade on 2nd Street uniform and 400 feet long to within 40 ft. of 54th Avenue.

Hunter's Point Ave: Built expressly to permit commuters to change to the IRT trains at Hunter's Point Ave. station a block away. The LIRR opened the station July 1, 1914 but the subway station did not

open till Feb. 15, 1916. High level wooden platforms reached by a staircase to Hunter's Point Ave.

Woodside: The relocation of the tracks to an embankment and elimination of the reverse curve forced abandonment of the old site and depot. The new station at 61st St. & Roosevelt Avenue opened Oct. 17, 1915. The old station was demolished Nov. 17, 1915.

Grand St: The LIRR opposed this station but strong local pressures in Elmhurst and Maspeth and orders from the Public Service Commission forced its establishment in 1913, after much delay, just west of Grand Street. Abandoned 1925. Wooden platforms but no station building.

Matawok (Forest Hills West): A short-lived station immediately east of the junction of the Main Line and Rockaway Beach line. Station at 66th St. Built for the Matawak Land Co. which was developing Forest Hills West. 400 foot wooden platforms with access by means of two spans over the Main Line and seven spans over the Rockaway Line. Opened June 25, 1922 and abandoned July 1925.

Forest Hills: Station built to serve the Forest Hills development of the Cord-Meyer Co. and the Sage Foundation. Platforms with ornamental iron work and connected with the Forest Hills Inn. Opened August 5, 1911

Kew Gardens: Maple Grove station, a stopping place largely for cemetery visitors, had been about 500 feet south of Kew Gardens Road (old Newtown Rd.). The new station was moved 600 feet south down Lefferts Ave. to the new alignment of the Main Line tracks during the summer of 1908. The golf course, owned by Alrick Manh, was cut up and developed into a new high-class residential area, Kew Gardens. The new Kew station was built in the summer of 1909.

Westbridge: This station was the result of Richmond Hill pressure on the Public Service Commission during 1913 and 1914; the order for a station came in March 1916. The railroad suggested the name Westbridge which was accepted by the residents. Opened June 28, 1916.

Jamaica: Work began on the big new station July 26, 1910. The five station platforms are 1000 feet long. The Jamaica station building is 70 X 174 and was originally intended to be twelve stories high. The finished building is four stories high with a "temporary" roof. Material is largely glazed terra cotta and tile over a steel skeleton. Constructed by the Northeastern Construction Co. after plans of Engineer J. Savage. Opened March 9, 1913

Union Hall St.: The removal of the new Jamaica station 1790 feet west of the old location seriously inconvenienced the heart of the village. To compensate for the loss, the LIRR opened Union Hall St. station between New York Avenue and Union Hall St. There was a small brick building on the north side and a wooden island platform in the cut, access to which was secured by a staircase leading to the iron bridge crossing the tracks.

Hillside: Built to serve local residents and particularly Jamaica Estates, who financed the new building and its approaches. Depot was one story of brick and terra cotta with limestone trim and blue slate roof. Station constructed in the summer of 1910; opened May 15, 1911.

Bellerose: A new 1½ story red brick station with sloping roof and decorative Dutch-style pediments on the east and west ends. Erected in the summer of 1909 at a cost of $12,000.

Floral Park: New station built summer of 1909; one-story brick with porches on either end.

Merillon Ave.: Opened in 1911 for the use of residents in west Garden City. Gravel platforms; no depot building.

Hicksville: In 1908 the LIRR resolved to improve Hicksville with a new depot, new freight yards, double tracks and an interlocking system. New land was needed on the south side, some of which had to be acquired by condemnation. The new station was built May–Oct. 1909, west of Jerusalem Ave. and 800 feet west of the old site. The building was of brick with a shingle roof, 30 X 60 feet with a concrete platform 600 feet long. Opened Oct. 30, 1909.

Pinelawn: Pinelawn Cemetery was opened in 1903 and was at that time the largest cemetery in the world; the cornerstone of the station-administration building was laid by Episcopal Bishop Burgess Sept. 15, 1903. The large marble, two-story building was long and narrow and contained a chapel, restaurant, bell tower and administrative offices. Opened 1904. Burned down April 1928.

Brentwood: Original station burned down April 1903. New station completed on Nov. 10, 1903. Building was of brick, one-story and with porches on either side.

Holtsville: A one-story frame building with sloping roof and two pillars on either side on the porches. Erected May 1912 and burned down January 4, 1914.

Riverhead: A handsome new depot was built just west of the old one; Dutch colonial style and built of brick and stone; 22 X 69 with long shed platforms at either end; the interior had a large waiting room,

fountain, open fireplace, settees, baggage room; 2nd story furnished living quarters. Opened June 2, 1910.

Aquebogue: A new frame station was built in 1911 on the south side of the track opposite the old station. Work began March 1910 and was completed over the summer. An acre of land on the east was bought and filled in to provide a 1400 foot passing track.

ATLANTIC BRANCH

Flatbush Ave.: Built at the corner of Hanson and Ashland Places & Flatbush Ave. Designed by Charles Jacobs and J. V. Davies, the East River tunnel engineers. Mr. H. F. Saxelbye was the architect and P. J. Carlin & Co. were the contractors. The exterior was of rough red brick with buff brick and terra cotta facings. Main entrance at Hanson & Ashland Places with additional entrances and exits on Flatbush Ave. Main waiting room 73 X 90' 8', surmounted by a skylight. The various offices were arranged on a balcony around the waiting room. At the east end were the stair-cases to the underground platforms and Station "L" of the Brooklyn Post Office. Opened Apr. 1, 1907.

Nostrand Ave.: Elevated station between Nostrand Ave. and New York Ave.; concrete platforms; ticket agent at west end of each platform. Opened Aug. 29, 1905.

Warwick St.: Elevated station between Warwick and Cleveland Streets. Wooden island platform divided longitudinally by a board fence. Opened Aug. 29, 1905.

Autumn Avenue, Union Course and Woodhaven: New stations had to be constructed in February and March 1905 because of the four-tracking on this stretch, completed Apr. 28, 1905

Dunton: The elevation of the Jamaica yards and tracks realignment forced the shift of the station from its original site at the junction of the Montauk and Atlantic Branches to 130th St. Concrete high-level platforms were built on each side; no depot building. Plans filed Sept. 1913; opened 1914.

South St.: The residents urged the railroad to put up a station because it was a mile walk to the new Jamaica station and half a mile to the old Beaver St. station. The Public Service Commission ordered the LIRR to open a station by Nov. 1, 1914; the company strongly resisted on the ground that service would be slowed; again the PSC ordered a station by Mar. 31, 1915 and again the LIRR appealed and

carried its case to the Appellate Court where it lost. Station reluctantly opened July 16, 1916; a depot was opened on Nov. 15, 1917. Torn down 1922.

Laurelton: In Dec. 1905 and Jan. 1906 the LIRR bought from Fred A. Phelps a strip 50 X 336 along the north side of the railroad from Higbie Ave. to the public school and a strip 25 X 951 on the south side in order to widen the right of way. From Philippine Gross the LIRR bought a block 188 X 345 at the junction of the two divisions for a station site. In Jan. 1907 the Laurelton Land Co. put up $8000 for a depot just east of 207th St. to sell building sites on their 300 acre tract. Station was 135 X 35 including covered extensions; exterior wall dark yellow rough brick; exterior woodwork of hard pine in natural finish; roof dark green Vermont slate. Work began Nov. 12, 1906; station opened April 1907.

MONTAUK BRANCH

Rockville Centre: New station erected in the summer of 1901, the first on the railroad in the Spanish style. Designed by B. L. Gilbert; dimensions 50 X 25; wooden frame, covered outside with rough cement stucco; cost $6000. Building opened Oct. 14, 1901.

Baldwin: In 1916 the railroad planned a new depot of Gothic design. Caretto & Foster were the architects; dimensions 53 X 20; slate roof on a steel frame, supported by polished chestnut posts; exterior Spanish brick and stucco and terra cotta trim; erected on south side of tracks on site of the old station. The second floor contained living quarters for the stationmaster. Opened December 1917.

Copiague: Site donated by Scudder Jarvis, built just east of the Great Neck Road; opened 1902. In June 1913 the Italians of North Copiague tried to get the name changed to Marconiville, but the south end resisted and the attempt failed.

Bayshore: During July & August 1911, the railroad agreed to build a new station only if the village raised a $20,000 loan at 4% interest for three years. Under the leadership of W. W. Hulse the money was raised, but the railroad did not accept the loan. In the spring of 1912 the railroad erected a handsome two-story Dutch colonial building on the north side of the tracks and an unusually large waiting room on the south side. Station opened with much local celebration on July 17, 1912.

Sayville: The building of a new station, first discussed in 1900, was delayed at least three years by a dispute between Sayville and West Sayville residents as to a proper site, Green Ave., Greeley Ave. or Railroad Ave. The station was finally built at Greeley Ave. in the Spanish style; white stucco with red tile roof; cost $12,000. Dimensions 24 X 48; architect Bradford L. Gilbert. Opened 1905.

Bayport: In June 1901 a mass meeting was held to discuss a new site for a depot. In Sept. 1901 Mrs. Gillette and J. A. Wood together donated 1200 feet of land from Snedecor Ave. west to Oakwood; this was about 1100 feet west of the old depot at Bayport Ave. The new site pleased the oyster shippers and wealthy summer residents who furnished almost all the trade. New building brick covered by concrete; dimensions 80 X 25; cost $8000. Opened Aug. 10, 1903.

Speonk: The original station was struck by lightning June 22, 1901 and destroyed. A railroad coach served as a temporary depot. A new wooden depot, 18 X 30 was erected in the fall of 1901 and opened in December 1901 or January 1902.

Westhampton: F. A. M. Burrell, a summer resident, sent in a petition to the LIRR for a new station in the spring of 1905. Construction was begun in September and the building was opened before the end of the year. The dormer windows built on all four sides of the roof gave this building a unique appearance.

Quogue: A new station was built during the summer of 1905 and opened by the end of the year. The grounds were laid out in the spring of 1906.

Hampton Bays: A movement for a new station began in 1908. In the spring of 1913 the railroad began the erection of a large, two-story Dutch colonial depot and the new building was opened during the summer. Name changed from Good Ground in June 1922.

Suffolk Downs: A very small station was established at Peconic Road in 1907 as a signal stop only. The roof extended beyond the little building on both sides, supported by two pillars at each end. Removed 1927.

Golf Grounds: A very small building with a roof projecting out on both sides; opened in April 1907 as a signal stop; used intermittently to 1939. The old location at Tuckahoe Road is now the site of the new Southhampton College station.

Water Mills: A new station was built on the east side of Deerfield Road and south of the track. Work was begun in November 1902 and completed in August 1903. The designs were prepared by a Mr. Keem.

for a building in the Italian villa style with extensions on the east and west.

Amagansett: The original substantial station of 1895 was destroyed by fire on Aug. 15, 1910. A handsome two-story Dutch colonial building was erected in the summer of 1911.

Sag Harbor: In January 1902 the freight house was moved to the north side of the tracks and the depot moved back from Main St. parallel with the track. The old station was in the midst of a renovation in Oct. 1908 when Mrs. Russell Sage, widow of the railroad financier, and Mrs. Aldrich contributed $2500 for a wholly new building. Mrs. Sage's mother came from Sag Harbor. A handsome two-story brick station with terra-cotta trim was built during 1909 and opened in 1910.

WADING RIVER BRANCH

Huntington: The LIRR bought a two-acre triangular plot on the east side of New York Ave. from John Mullen in March 1906 for $5000. Plans were prepared by the architect, Luther Birdsall, for a two-story building 28' X 78'8' with extensions on either side and platforms 300 feet long. At the same time the railroad depressed New York Ave. and extended the trolley to Amityville. Work begun November 1908; station opened October 1909. Cost $13,500.

Greenlawn: On Sept. 27, 1910 fire destroyed the old Greenlawn station. A new station was erected about 200 yards east of the old one during the summer of 1911. Opened October 1911.

Port Jefferson: In Jan. 1903 Postmaster Charles A. Squires sold to the Port Jefferson Co. the land on the east side of Route 112. Dean Alvord and Clinton Rossiter, moving spirits behind the Port Jefferson Co., owners of Belle Terre, purchased the site and donated it to the railroad, while the railroad paid for and built the new station after the plans of Pettit & Green of New York. Building of red brick with white joints and stucco panels between the windows. Fluted columns support the projecting roof. Opened Sat. July 25, 1903. Old building used for freight; destroyed 1963.

OYSTER BAY BRANCH

Nassau: A movement to change the name of Nassau to something more closely associated with the village began in March 1911. On June 28,

1911 Nassau became Glen Cove and the station at Glen Street became Glen Street-Glen Cove.

Locust Valley: In July 1905 plans were made for a new station and freight house. Work began about Oct. 1, 1905 and the new station was opened Oct.–Nov. 1906. Made of pressed brick with terra cotta trimmings and red-tiled roof; trimmed inside with Flemish oak.

Oyster Bay: A new and imposing terminal station was built in the spring of 1902. The main building was 32 X 68, the exterior of cement in which oyster shells were embedded. The weather shed was 400 feet long supported by 20 pillars. Interior of colonial style, finished in forest green, with a large fireplace and tiled hearth. Opened August 1902.

HEMPSTEAD BRANCH

Stewart Manor: New one-story station with brick base and stucco walls, green tiled roof, built 1909.

Nassau Blvd.: The Garden City Estates, centered on Nassau Blvd., built the station 1907 to develop the area and sell lots. Red brick with projecting roof at each end of building; ornamental campanile on roof; broad brick-paved plaza in front.

Country Life Press: Small brick station erected in 1913 for the convenience of Doubleday & Co. employees and to transfer between Hempstead Branch and West Hempstead Br. The station was later the trolley terminus of the shuttle. Station named after the magazine "Country Life."

Clinton Road: Large handsome brick station built on the west side of Clinton Road in 1915. Used only by the shuttle trolley to Meadowbrook, troop trains in World War I and the later MP-41 shuttle.

Hempstead: In July 1903 the old station was damaged by fire and flooding; the Board of Trade began to press the LIRR for a new station beginning in 1905. On Dec. 13, 1910 the railroad committed itself to a new depot. There was delay in 1911 over the closing of Centre Street. Late in 1912 construction was begun and the new station opened in Feb. 1913.

WEST HEMPSTEAD BRANCH

Lakeview: A new station is mentioned as being erected in 1903. The late president of the LIRR, Austin Corbin, owned almost all the land in the area.

Malverne: A new concrete building, about 30 X 70, on a parked plaza 100 X 500 was opened in February 1913; at the same time the old name of the station, Norwood, was changed to Malverne by general order.

LONG BEACH BRANCH

Oceanside: A modern brick station with red terra cotta roof and white colonial columns was erected in the spring of 1915.

Long Beach: The Railroad with the cooperation of the Public Service Commission and the Estates of Long Beach relocated the station 1000 feet north. A new station of red brick and stucco was built on Park Avenue between Centre St. and Park Place. Opened June 1909.

MANHATTAN BEACH BRANCH

The Brighton Beach and Manhattan Beach Grade Crossing Elimination Project in 1908 and 1909 caused the abandonment of the old roadbed from Manhattan Beach Junction south to Sheepshead Bay. Since the much-reduced traffic did not justify station buildings, small lean-to's with gravel platforms were put up in 1909 at the station sites.

Rugby: Wood, Harmon & Co. who developed Rugby, built a station at Remsen Avenue for their development; Rugby centered on Church and Utica Avenues, Brooklyn. The building was built in the bungalow style, 31½ X 24 and with living apartments upstairs. Opened June 12, 1902.

Manhattan Beach: A new substantial brick terminal building, rectangular with sloping roof and decorative roof brackets, was erected west of West End Avenue and north of Oriental Blvd. Work began September 1909; completed November 1909.

NORTH SHORE BRANCH

Flushing-Main St: The old station was abandoned Nov. 11, 1912. A new two-story station of brick and concrete was erected on the new

embankment during the summer of 1912, with an entrance on Grove Street. Cost $25,000. Opened Oct. 4, 1913.

Murray Hill: Old brick station demolished Oct. 15, 1912; a new station was erected over the tracks during 1912 at a cost of $20,000. Opened July 1914.

Broadway: In October 1905 work got under way on a brick station in the triangle east of the intersection of Northern Blvd. and Crocheron Ave. Opened Sept. 1, 1906. Cost $10,000. This station was elevated to the level of the embankment in 1913.

Auburndale: The area around the station was developed in 1901 and a wooden frame depot erected during the summer.