D-108

CENTRAL RAILROAD OF NEW JERSEY

SUBURBAN COACH No. 1157

HISTORIC STRUCTURE REPORT

Part I

#969

NATIONAL PARK SERVICE
Steamtown National Historic Site
Scranton, PA 18501

Prepared by
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April 1993

United States Department of the Interior
National Park Service
Steamtown National Historic Site

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Introduction

This report is the first of a two-part study prepared by Steamtown National Historic Site (NHS) on Central Railroad of New Jersey (CNJ) suburban coach No. 1157. The objective was thorough documentation of the car's construction and operating history, in preparation for its restoration by Steamtown National Historic Site.

Part one covers the history and physical configuration of the car. Documentation includes car and corporate histories, specifications, evaluation of the car's current condition, component analyses, paint analysis, and restoration recommendations. Part two of the study will document the restoration of the car.

Coach No. 1157 operated on the Central Railroad of New Jersey for almost forty years, and has been a component of the Steamtown collection for an additional twenty-five years. Now approaching seventy years of age, No. 1157 has suffered some effects of hard service and neglect, but is in overall good condition.

The majority of the car's original fabric is intact. The few modifications made to the car over the years can be identified and corrected. To that end, car No. 1157 is a worthy candidate for preservation and full restoration.

Coach No. 1157 is eligible for the National Park Service List of Classified Structures and the National Register of Historic Places.

Administrative Data

Management Data

Central Railroad of New Jersey No. 1157 is a seventy-two-foot, all-steel suburban coach, manufactured in March 1927 by Bethlehem Shipbuilding's Harlan Plant for use on the railroad's extensive commuter lines in the vicinity of New York.[1] The car is currently in visitor shuttle service in the Steamtown National Historic Site yard, operating between the visitor center and roundhouse. Number 1157 has been a component of the Steamtown collection since 1978.[2]

Proposed Use

The National Park Service will restore the car to correct Central Railroad of New Jersey steam-era appearance and operating condition. Upon completion of repairs, No. 1157 will be operated in shuttle service at the park.

Planning Background

Steamtown National Historic Site was established by Public Law 99-591 on 30 October 1986. The final Steamtown National Historic Site Comprehensive Management Plan was released seventeen months later, in March 1988. The Railroad Yard Design Program/Interpretive Concept for Steamtown National Historic Site was approved in August 1989.

The Task Directive for this report was approved May 1992.

Proposed Treatment and Justification

Coach No. 1157 is representative of steam-era anthracite passenger railroading. In its previous configuration it did not fit the interpretive theme of Steamtown NHS; a wide range of inaccurate appearance and restorative treatments were applied to No. 1157 during the course of its service. The modifications that have been identified are listed in chapters three and four of this document.

Number 1157 will be fully returned to its correct steam-era appearance and operating condition, except where safety considerations

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[1] Arthur E. Owen, Central Railroad of New Jersey passenger car summary. This unpublished list was prepared during the 1940s by the Chief Engineer of the CNJ. It was updated through the 1960s by railroad historian Warren Crater and is now held by Chris Baer.

[2] Acquisition documentation is provided in Appendix 1.

dictate otherwise. Restoration actions taken with the car will be documented in the completion report.

Recommended Treatment for Materials Collected in Preparing This Report

All materials collected for this report, including photographs, drawings, field notes, and other research materials will be turned over to the park's archives for placement in appropriate files.

Source Materials

Several individuals, institutions, and organizations were contacted for information, and generously made available documentary materials regarding the Central Railroad of New Jersey and the Harlan & Hollingsworth Corporation. Steamtown NHS appreciates the assistance of:

Chris Baer - Hagley Museum and Library, Wilmington, DE

Carl Rose - Anthracite Railroads Historical Society, Bridgeport, PA

Dale Woodland - Anthracite Railroads Historical Society, Bridgeport, PA

Physical History and Analysis

Railroad History

The Central Railroad of New Jersey (CNJ) operated for nearly 130 years between Jersey City, NJ, the coal fields of eastern Pennsylvania, and the Jersey Shore. One of the famous northeastern "anthracite railroads," the CNJ was developed to haul coal and industrial products to and from New York Harbor. Equally important to the Central were its extensive passenger and commuter operations in northern New Jersey, where hundreds of trains carried thousands of people on a twice-daily basis.[3] It was for this passenger business that combination cars like No. 303 were built.

The Central was one of the smaller railroads of the region, and for most of its corporate history it was the object of much contention. Hostile competitors such as the Reading Company; Lehigh and Hudson River Railway; Lehigh and New England Railroad; Delaware, Lackawanna and Western Railroad; and the Lehigh Valley Railroad, surrounded the Jersey Central, and over the years it was frequently owned or controlled by these neighbors. The Central's operations were often performed under bankruptcy proceedings or other forms of financial duress. The ultimate disposition of the Central was a function of its traffic base; the railroad was built on coal and passenger service, and, when these two pillars collapsed, the railroad had nowhere to go but down.

The Central Railroad Company of New Jersey was formed in 1849 through the merger of the Elizabeth and Somerville and the Somerville and Easton railroads. The Elizabeth & Somerville was incorporated in 1831, and by 1846 had laid track between Elizabeth and Elizabethport, NJ. The Somerville & Easton was incorporated in 1847 and was built west from Somerville.

Following the establishment of the CNJ, the railroad was pushed to the Delaware River, arriving at Phillipsburg in 1852. By 1864, a series of branches were constructed to the towns of Flemington, Newark, Perth Amboy, and Wharton. That same year, the Central built into Jersey City, thus acquiring important ferry connections to New York City.

The Lehigh and Susquehanna Railroad, completed in 1866 between Phillipsburg, NJ, and Wilkes-Barre, PA, by the Lehigh Coal and Navigation Company, was leased to the Central in 1871. This acquisition took the CNJ across the Delaware River and into the middle of the Pennsylvania anthracite coal fields. This line was later extended north to Scranton by the CNJ subsidiary Wilkes-Barre & Scranton Railroad. In 1879 the Central acquired another railroad,

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[3] William L. Rohde, "Coal and Commuters," Railroad Magazine, March 1946, 10.

the New Jersey Southern, and gained access down the length of New Jersey to the Delaware Bay near Cape May.

The acquisition of the New Jersey Southern effectively completed the Central Railroad of New Jersey. The mainline stretched from the profitable coal fields of Pennsylvania, through the greater New York City area, and south through the Garden State. Entering the 1880s, the Central was well positioned to haul both freight and passengers.

The CNJ came under the control of another railroad for the first time in 1883, when it was leased by the Philadelphia and Reading Railroad (P&R). Following the 1887 financial collapse and reorganization of the P&R, the Central resumed its independent status. Four years later the revitalized P&R again assumed control of the CNJ through stock acquisition. At approximately the same time, the Philadelphia & Reading came under the influence of the Baltimore & Ohio Railroad (B&O). The two properties provided the B&O with access to both the highly profitable coal fields of the northeast and the docks of New York Harbor.

The Philadelphia & Reading collapsed again in 1893, resulting in the termination of its lease of the Central and a foreclosure sale of its assets. The Reading Company purchased the majority of the P&R's equipment and property in 1894, and continued operations. In 1901, the Reading Company purchased controlling interest in the CNJ, and operated the railroad as an independent subsidiary. The Central of New Jersey remained a component of the Reading through 1948.

The Central prospered through the early years of the twentieth century. By the mid-1920s, the railroad had acquired or built more branch lines, and was blessed with plenty of passenger and coal traffic. At the end of the decade the Central was ranked as the nation's fifth largest hard coal hauler. Anthracite and bituminous coal accounted for twenty-six percent of the Jersey Central's total revenue.[4] New York harbor served as both terminus and source of much additional business; to receive and transfer coal and other freight across the harbor, the CNJ operated a sizable fleet of ferries and car floats from Pier 18.

During the first half of the century passenger service brought in a reasonable amount of the revenue.[5] The CNJ operated several name trains, such as the Queen of the Valley, the Harrisburg Special, the Mermaid, the Philadelphia Flyer, and the world famous Blue Comet. The operation of these crack trains, along with regular passenger and commuter service, resulted in more than 300 trains in

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[4] Ibid., 20.

[5] Ibid.

daily operation. In addition, the Central regularly scheduled special excursion trains to destinations such as Atlantic City, NJ; Lakewood, NJ, "In the Jersey Pines;"[6] Lake Hopatcong, NJ;[7] Mauch Chunk, PA; and the Pennsylvania State Fair in Bethlehem.[8]

While the Jersey Central enjoyed general good health into the late 1920s, there were signs that the American railroad industry was in decline. The Central was subject to the effects of reduced traffic and increasing costs as much as its larger neighbors.

The commuter operations servicing New York City and northern New Jersey proved to be a hindrance for the CNJ, as the equipment rapidly wore out and the cost of maintaining service rose. In 1924 the Central bought fifty steel coaches, six steel combines, ten steel baggage cars, and two car floats for New York City service. The following year twenty 2-8-2 Mikados, five all-steel combination cars, two steel club cars, and twenty-three steel coaches were added. Notably, the first successful American diesel-electric locomotive, Alco/General Electric/Ingersoll Rand No. 1000, went into service on the CNJ that same year.[9]

Notwithstanding the railroad's best efforts, revenue on all of its passenger routes fell. By 1926 passenger service income had dropped to 15.73% of operating revenue, a decrease of $201,395,720, or 2.08%, from the previous year. The downward trend was inexorable, fueled by increasing competition from buses, trucks, and automobiles.[10] The railroad struggled on, and continued to move a large portion of the populace of northern New Jersey on any given weekday.

The decline in the Central's freight revenues produced an even greater financial blow. All commodities fell following the 1929 stock market crash, including the lifeblood of the CNJ, anthracite coal. Truck companies took away most of the railroad's express revenue after 1932.[11] By 1939, the CNJ faced insurmountable deficits, and on 30 October the railroad filed under Section 77 of the

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[6] Elaine Anderson, The Central Railroad of New Jersey's First 100 Years - A Historical Survey (Easton, PA: Center for Canal History and Technology, 1984), 126.

[7] Ibid., 122.

[8] Ibid., 145.

[9] Ibid., 164.

[10] Ibid.

[11] Ibid., 187.

Bankruptcy Act. Trustees were appointed and in place on 8 January 1940.[12]

World War II provided a brief respite. Traffic levels rose in both freight and passenger service, as people and large amounts of war goods were transported, while the coal industry experienced a revival. The Central of New Jersey and its neighbor urban railroads benefitted. As an example of the returning prosperity in passenger service, the following midday commuter traffic was noted by Bob Malinoski on 4 January 1942, at the Central's Plainfield, NJ, station:

> 10:45. No. 477 stopped and the power was a real novelty, camelback 4-4-2 592. There were only a few of this class running. Only a combine and two coaches were coupled onto the P-6s...11:49. Eastbound suburban train 476 came in with 4-6-0 camelback 632, class L-3s. Three coaches and a baggage car made up the train...12:46. No. 478 in with camelback 784, class L-8s, the latest series of camelback ten-wheelers. Three coaches and a combine trailed...1:19. No. 481 westbound for Raritan had camelback ten-wheeler 775 with a combine and three coaches...2:00. No. 480 arrived with the 592 coming back after taking 477 west. This was one of the oldest engines in service on the CNJ, outshopped by the Brooks works in 1901. Three coaches and a combine made up the train... 2:35. Local 485 for Raritan had an example of the CNJ's first series of Pacifics, the 824, of class G-1s. The four coaches were no challenge...3:15. 775 coming back off 481 now on No. 482 with just two coaches and a combine...4:04. No. 277 was headed for Hampton with camelback ten-wheeler 765 of class L-7s with five coaches...4:38. No. 484 returning with the 824 and usual short train of three coaches and a combine...5:01. No. 771 arrived with the 592 for the third time seen this day. Three coaches and a combine trailed...[13]

That was just during the day. Twelve minutes after Train No. 771 pulled out, "rush hour" officially commenced throughout the system. During a typical evening's service at the Jersey City terminal, nine trains would depart every sixteen minutes from 5:15 P.M. until 6:30 P.M.[14] These trains, carrying government personnel, defense workers from Long Island, businessmen, and other commuters would fan out to the various communities of northern New Jersey. Afterwards the engines and equipment would retire for the night, in preparation for the early morning commuter runs.

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[12] Ibid., 195.

[13] Paul Carleton, The Jersey Central Story (River Vale, NJ: D. Carleton Rail Books, 1976), 164-166.

[14] Ibid., 167.

The resurgence of commuter traffic was partly attributable to the CNJ's passenger fare, a full twenty percent lower than the fares of its competitors.[15] However, the twenty percent difference in pricing resulted in losses as the war wound down. Twenty-seven million passengers rode in 1943, declining to twenty-five million in 1944. By the end of the war, the Jersey Central was losing about $3.7 million annually on its $36 million investment in commuter service.[16]

Contributing to the deteriorating situation was the pressure imposed on the railroad by the New Jersey state tax system. The tax rate, among the highest in the nation, was based on rail mileage in the state, coupled with overall operating income. For the CNJ, which operated one-third of its mileage outside of New Jersey, the resultant annual tax bordered on the confiscatory. In 1937, the combined federal, state, and local corporate tax was equivalent to $19.42 on each share of CNJ stock.[14]

During World War II the state demanded $30 million in back taxes, for the period 1932 to 1940.[15] A portion of this amount was state tax on the Central's profits from its Pennsylvania operations, which were also taxed by the state of Pennsylvania. In an attempt to lessen its tax load, the CNJ established the Central Railroad of Pennsylvania as an independent subsidiary in 1946; the state of New Jersey responded by filing suit in Federal court. Following years of litigation, the state won, and retained the right to claim taxes on the entire Central Railroad of New Jersey system. The Central of Pennsylvania merged back into the CNJ in 1952.[16]

The years after World War II were hard for the Central. By the end of the 1940s, the small profit in the freight business was far outweighed by burgeoning passenger service losses. Still, the railroad was able to free itself of direct Reading control in 1948, and, on 1 October 1949, the Central finally emerged from bankruptcy.[17]

The railroad's return to fully independent and solvent status was accompanied by sweeping changes to its public image. Locomotives and rolling stock received new colors, and "Jersey Central Lines"

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[15] Rohde, "Coal and Commuters," 15.

[16] Ibid.

[14] Anderson, First 100 Years, 188.

[15] Rohde, "Coal and Commuters," 27.

[16] Gerard E. Bernet, Jersey Central Diesels (Halifax, PA: Withers Publishing, 1990), 8.

[17] Anderson, First 100 Years, 215.

replaced the familiar "Central Railroad of New Jersey." A new "Statue of Liberty" emblem replaced the historic circular logo.[18] The "new" Jersey Central later advertised itself as "The Big Little Railroad."[19]

Unfortunately, financial realities continued to dictate the course of the railroad. After World War II, the Jersey Central suspended the majority of its remaining interstate passenger trains, and concentrated on its suburban operations; by the early 1950s, commuter trains made up 75% of the remaining passenger business.[20] The twice-daily trains were powered by an eclectic mix of steam and diesel locomotives, including a few of the Central's surviving camelbacks, operating out of Jersey City.

Steam operations on the CNJ were concluded in July 1954; by that time, the railroad's traditional freight base was once again in decline. Like the Lehigh Valley, the Lackawanna, and other neighbors, the Jersey Central was unable to find a commodity to replace anthracite coal. Much of its less-than-carload (LCL) commercial traffic was lost to other forms of transportation. The Central faced en masse obsolescence of its equipment, deterioration of its physical plant, and dropping revenues.

The situation worsened through the 1960s. In 1964, the state of New Jersey began subsidizing commuter service, and by 1966 the tax situation had been mollified to some extent.[21] In 1965, the Central and the Lehigh Valley Railroad consolidated their lines along the Lehigh River in Pennsylvania. Both railroads were under severe financial duress, and the selective abandonment and consolidation of portions of each railroad's line enabled some savings.[22]

In spite of these efforts, on 22 March 1967 the Central of New Jersey again filed bankruptcy.[23] A plan to incorporate the CNJ in a proposed merger with the Chesapeake & Ohio and Norfolk & Western railroads collapsed in 1970 with the bankruptcy of the Penn

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[18] Ibid., 201.

[19] Ibid., 214.

[20] Ibid., 212.

[21] George Drury, The Historical Guide to North American Railroads (Waukesha, WI: Kalmbach Books, 1991), 58.

[22] Ibid.

[23] Ibid.

Central.[24] The Jersey Central's neighbor railroads, the Erie Lackawanna, Reading Company and the Lehigh Valley, were all in serious financial trouble, and, as in dominoes, the collapse of one railroad effected the others. Despite desperate attempts at improving the Central's financial situation, and increased assistance from the state in the form of equipment and subsidies, the "Big Little Railroad" was going down with the others. In 1972, the remaining Central lines in Pennsylvania were turned over to the Lehigh Valley.

The Central Railroad of New Jersey ceased to exist as an independent corporate entity on 1 April 1976. The quasi-government owned Consolidated Rail Corporation (Conrail) assumed ownership of the Central's freight and commuter operations. On 1 January 1983, Conrail transferred the former CNJ commuter routes to NJ Transit Rail, the operating component of the New Jersey Department of Transportation.

The physical remnants of the Central Railroad of New Jersey still in use in 1993 are tracks and a few buildings on the former Raritan Valley, North Jersey Coast, and Hoboken-Jersey City lines. The surviving employees have long since retired or moved to other railroads, and the memories of the "Big Little Railroad" are fading.

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[24] Ibid. A merger of Chesapeake & Ohio and Norfolk & Western railroads was proposed as a counter-balance to the merger of the New York Central and Pennsylvania railroads as the Penn Central.

Manufacturer's History

Suburban coach No. 1157 was manufactured in March 1927 at the Harlan Plant of the Bethlehem Shipbuilding Corporation, in Wilmington, DE. The manufacturer, formerly the Harlan & Hollingsworth Corporation, had a long history of innovation in the steel railroad car and ship building industries, dating from the 1836 partnership of Mahlon Betts and Samuel N. Pusey.

In 1835 Betts, Pusey, and expert cabinetmaker Samuel Harlan, Jr., toured the facilities of several other railroad car manufacturers in New England. At that time, passenger cars were literally stage coaches modified for use on the primitive railroads of the day. The three men determined that they could produce a better product, and acquired land in Wilmington for that purpose. Their intended customer was the newly formed Philadelphia, Wilmington and Baltimore Railroad, which conveniently ran near their property.[25]

Their first shop was a three-story building erected at the corner of Front and Tatnall Streets in Wilmington, near the Christiana River. The blacksmith shop was in the basement, and car construction activities took place on the upper floors. The floor of the second story had several large trap doors through which the completed cars were lowered for truck installation, painting, and finishing. The dimensions of the building limited cars to fifty feet in length, but for the time this was adequate. Upon completion, the cars were moved outside, turned on a transfer table, and delivered to the Philadelphia, Wilmington and Baltimore.[26]

Samuel Harlan ably served as a manager and agent for the growing company and, on 1 January 1837, was made a full partner. As Betts, Pusey & Harlan, the organization continued to advertise its car building services. By 1838 the company had constructed sixty-seven eight-wheel cars and 109 four-wheel cars of various types.[27] Two years later the landmark "Tioga" was turned out, a first-class coach thirty-two feet long, with continuous framing, solid bracing, double uprights, stationary sash, and Venetian blinds. The final price for the car was $2,040, considered high for the period. Cost notwithstanding, the quality of the "Tioga" established Betts,

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[25] George A. Richardson, "History and Development of Passenger Car Building," Railway Review, 14 June 1924. Reprint (Bethlehem, PA: Bethlehem Shipbuilding Company, n.d.) Not paginated. The Philadelphia, Wilmington & Baltimore was formed in 1838 to serve those three cities. In 1902 it became part of the Pennsylvania Railroad

[26] Ibid., n.p.

[27] Ibid., n.p.

Pusey & Harlan as one of the leading manufacturers of quality passenger cars.[28]

As railroad cars grew in length the company required more shop space. Early in 1841 Betts, Pusey & Harlan moved to a new site at the foot of West Street on the Christiana River. During the move and expansion, the firm hired additional craftsmen, including Elijah Hollingsworth, a former Baldwin Locomotive Works machinist and shop foreman. Samuel Harlan bought out Pusey's interest in the concern, and on 28 February 1841 the organization became Betts, Harlan & Hollingsworth.[29]

The larger facility on the river enabled the company to expand into marine engine work and ship construction. In 1843 the Delaware River steamboat Sun was refitted. The following year two ships, the Ashland and the Ocean, were constructed in rented launching berths. With the exception of the short-lived experimental 1826 steamer York, these were the first iron hull steamships to be built in the United States.[30] The nation's first iron hull, screw-driven steamer, the Bangor, was also completed and delivered in 1844.

In response to the steady growth in passenger car, shipbuilding, and marine component business, the shop complex was enlarged and a large brick office building was erected at the plant entrance. Over the years additional structures were added, including boiler and engine houses, varnish rooms, finishing shops, and dry docks.

With Mahlon Betts' retirement in 1849 the firm assumed the name of Harlan & Hollingsworth. During the Civil War, the company built combatants for the U.S. Navy, including the monitors USS Saugus, Napa and Patapsca.[31] Postwar the company became one of the nation's major shipbuilders, and turned out several hundred hulls through the remaining years of the century.

The Harlan & Hollingsworth Corporation was formed on 14 March 1867, in order to more efficiently manage and operate the car building and marine construction businesses. By 1882 the corporation was successfully converting to steel construction of its ships. The first steel-hull vessel in the United States, the side-wheel cargo

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[28] Ibid., n.p.

[29] "Predecessor and Subsidiary Companies, Harlan & Hollingsworth Corporation" (Wilmington, DE: Hagley Museum and Library, n.d), 178. Accession 1699, Manuscripts Collection, Hagley Museum and Library, Wilmington, DE.

[30] Ibid.

[31] Chris Handley, telephone conversation with author, 26 June 1992.

steamer Olympian, was launched in 1883. Harlan & Hollingsworth also constructed private steam yachts, such as William B. Astor's Nourmahal, as an important and profitable specialty.[32]

The same design and manufacturing processes were applied to the company's railroad cars. In 1884, Harlan & Hollingsworth was one of the first manufacturers in the United States to build passenger cars incorporating steel components.[33]

Elijah Hollingsworth died in 1866, and Samuel Harlan died in 1883. They left behind a strong, progressive corporation, with an excellent record of innovation and quality. The physical plant was fairly substantial; corporate president W.G. Coxe described it as

> ...occupying fifty-eight (58) acres of ground within the city limits of Wilmington. The ship yards, facing on the Christiana, have 2500 ft. of improved waterfront, and have electrically operated shear-legs capable of lifting 75 tons.[34] The three (3) Carshops are 78' by 334', 80' x 116', and 250' x 110'. The trackage of these combined shops will allow the laying-down of 435 cars at one time.
>
> The West Mill and Car Department Joiner Shop is 160' x 160', a brick building, the tools of which are two-thirds electrically driven. The remainder of the tools are served by a Corliss engine, the steam of which is generated from the refuse of the various joiner shops. The number of men employed is normally in the excess of 2,000. The tracks of the Pennsylvania, Baltimore & Ohio, and Philadelphia & Reading Railroads are connected directly with our system.
>
> The plant under its present condition, is capable of turning out about $1,108,000.00 worth of new ships, and $1,200,000.00 worth of car work per annum.[35]

Additional details on the railroad car facilities were provided in a later report. Car Shop No. 1 had fifteen tracks and was equipped

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[32] "Predecessor and Subsidiary Companies."

[33] John H. White, Jr. The American Railroad Passenger Car, Pt. 1 (Baltimore: Johns Hopkins University Press, 1978), 124.

[34] A device used to lift heavy weights, having two or more spars joined at the top and spread at the base, with the tackle suspended from the top. These devices are common to shipyards.

[35] W.G. Coxe, letter to J.A. McGregor, 18 June 1906. Accession 1699, Manuscripts Collection, Hagley Museum and Library, Wilmington, DE.

for working on cars up to fifty feet in length. The building was a large roundhouse, and well known in its own right.

Car Shop No. 2, a rectangular building measuring 112 feet by 300 feet, was equipped for working on four seventy-foot and thirty-two sixty-foot cars. Car Shop No. 4 measured 196 feet 3 inches by 350 feet 9 inches, and was equipped for working on twenty-four seventy-foot cars and thirty-one sixty-foot cars. A small portion of the building was used for building life boats. Other facilities consisted of car press, shear and punch shop buildings, the sand blast department, a light metal shop, an auxiliary paint shop, a storage shop and the truck shop. The upholstering shop was equipped with twenty-four sewing machines.[36]

By the turn of the century, Harlan & Hollingsworth was known for both its accomplishments and its well equipped industrial facility on the Christiana River. Contemporary financiers noticed the corporation and, in 1902, Harlan & Hollingsworth became one of several component companies of the newly-formed United States Shipbuilding Corporation. The consortium quickly collapsed under the weight of its acquired debt; in 1905, Bethlehem Steel Corporation was formed from the wreckage.

One year later Bethlehem Steel expressed an interest in acquiring Harlan & Hollingsworth, whose corporate charter expired effective 14 March 1907. While initial negotiations were cordial, Bethlehem shortly announced its intention to acquire the Wilmington-based manufacturer and dissolve it as an independent entity. After much legal maneuvering, Harlan & Hollingsworth was fully acquired by Bethlehem Steel's subsidiary, Bethlehem Shipbuilding Corporation, in 1911. The company maintained its independent identity until 31 October 1917, when it was fully merged into Bethlehem Shipbuilding as the Harlan Plant.[37]

Manufacturing continued at the plant on the Christiana. Harlan's placement on a narrow bend of the river limited the length of the ships that could be built, and over time the company constructed fewer major vessels. Dry-dock services assumed greater importance, and the company maintained an extensive business in marine repair and boiler work. Thirty seven vessels were repaired on the site in 1911 alone. Harlan also launched a series of fireboats, tugboats and car floats for several railroads, including the Delaware,

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[36] Bethlehem Ship Repair Facilities. (Bethlehem, PA: Bethlehem Shipbuilding Company, Ltd., 1924), 91. Accession 1699, Manuscripts Collection, Hagley Museum & Library, Wilmington, DE.

[37] Richardson, "History and Development," n.p.

Lackawanna and Western Railroad; the Erie Railroad; and the Southern Railway.[38]

While shipbuilding assumed less importance with the company, the car department remained "very well occupied", with multiple foreign and domestic orders. The No. 3 Car Shop was completed and a large number of steel underframe passenger cars were constructed.[39] In 1924 Harlan expanded into contract cabinet and mill work, utilizing the company's expertise in woodworking.

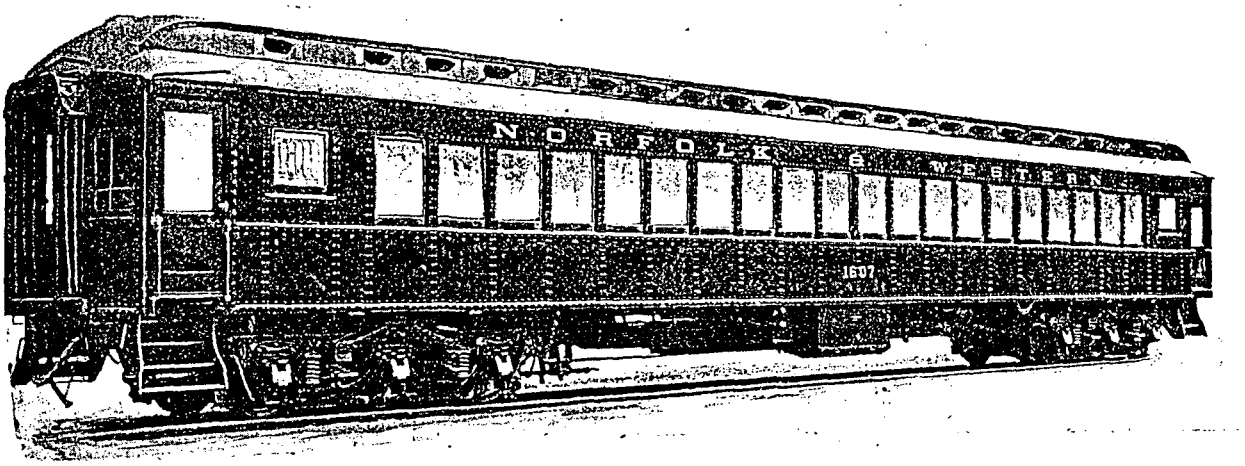

Fig. 1. Heavyweight steel passenger coach built by Bethlehem Shipbuilding Corporation's Harlan Plant for the Norfolk and Western Railroad. Roy V. Wright, ed., Car Builder's Cyclopedia of American Practice 10th ed. (New York: Simmons-Boardman Publishing Company, 1922), 314.

The last commercial vessel built by Harlan was launched in 1926, ending over eighty years of ship construction on the site. Afterwards, the shipyard was strictly concerned with boiler work and other maritime repair services. With the cessation of shipbuilding, the Harlan plant was transferred from Bethlehem Shipbuilding Corporation to the Bethlehem Steel Corporation.

Railroad car construction continued through 1939, and the plant maintained its well-deserved reputation for quality all-steel

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[38] Annual Report of the Harlan & Hollingsworth Corporation for the Fiscal Year Ending December 31, 1911. (Wilmington, DE: Harlan & Hollingsworth Corporation, 1912). Accession 1699, Manuscripts Collection, Hagley Museum and Library, Wilmington, DE.

[39] Ibid.

passenger cars. However, over the years Bethlehem Steel shifted more and more work to its other facilities, and portions of the Harlan plant were shut down. After 1939 Harlan was used solely as a fab- rication site; in 1940, Bethlehem dropped the Harlan name, and renamed the facility the Wilmington Plant.

In April 1942 the U.S. Navy awarded a contract to the Wilmington Plant for the construction of 400 LCM-3 class landing craft, popularly known as "Mike Boats." Following the completion of this last contract, Bethlehem Steel sold the complex, reportedly at a loss.[40]

As of mid-1992, the former Harlan & Hollingsworth plant on the Christiana River is all but abandoned. An industrial hardware company occupies the former Blacksmith Shop and Tool Room, while an automobile repair company now works on Hyundais at the former Car Shop No. 1 roundhouse. The impressive old central office of this once proud corporation now stands silent watch over the plant entrance on West Street.

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[40] 1943 Annual Report of the Bethlehem Steel Corporation. (Bethlehem, PA: Bethlehem Steel Corporation, 1944), 9. Accession 1699, Manuscripts Collection, Hagley Museum and Library, Wilmington, DE.

Building Techniques

During the twentieth century, Bethlehem Shipbuilding and its contemporaries used semi-production line methods for the construction of their freight and passenger cars. A typical manufacturing site for these companies included individual car shops, where various aspects of the car assembly process were performed, the requisite yard tracks for moving the cars from stop to stop, and specialty shops where foundry, component, and trim work was done. With a few minor variations, these same features were found throughout the industry.

The car building process was described in some detail in a 1924 Railway Age article, using Bethlehem's Harlan Plant as the example.

> The erection of the cars starts in No. 3 shop. There are from 18 to 35 positions according to the design of the car. A position a day is aimed at and there is room for 24 cars. In general, riveting positions alternate with erecting positions.
>
> In position No. 1 the sub-assembly of the center girder is completed. The girder is placed on cambering blocks and the rivets are driven with an overhead riveting machine. This leaves the camber with a permanent set. The side pieces are also placed in this position.
>
> Position No. 5 is given over to the body assembly and here the side posts, lower body sides, etc., are attached. The upper body sheets are attached in position No. 6 and lined up for an absolute line-up with the aid of turnbuckle tie rods. In position No. 7 the cars are checked for lineup and the riveting completed.
>
> On leaving No. 3 shop, the cars go to a modern, concrete sand blast house where they are sandblasted over the entire outside with air at 40 lbs. pressure. A slight vacuum is maintained inside to keep the dust out and improve working conditions.
>
> After sandblasting the cars go to the finishing shop. Work here is also done in positions, although they are not as clearly defined as in the erection shop. Pipe fitters put in all pipes and the inside finish men apply:
> (1) Insulation
> (2) Wood furring
> (3) Inside steel finish.
>
> The electricians do their work in between these jobs. After this the plastic floors are laid.

> From the finishing shop the cars go to the No. 1 shop which is now used as a trim and paint shop and is one of the oldest buildings in the plant. All varnishing is done here and forced ventilation is provided. In this same shop seats, desks, racks and miscellaneous trim are placed in position. Following final inspection, the car is ready for delivery to its railroad.[41]

At the height of its operations Harlan & Hollingsworth could steadily turn out one car a day.

Car Type

Central Railroad of New Jersey No. 1157 is a suburban coach, a common type of passenger car. It was built in March 1927. Three years after No. 1157 went into service, there were a total of 63,900 passenger cars of all types in use in the United States; of these, 25,100 were coaches.[42]

No. 1157 is notable as a surviving example of the suburban coach and early all-steel passenger car construction. As such, it is an important representative of an era of industrial growth, when the craftsmanship of an earlier time slowly gave way to mass produced or "cookie cutter" products.

The all-steel car marked a pivotal change in railroad technology. During the first decade of the twentieth century, the railroads, aided by manufacturers such as Harlan and Hollingsworth, replaced the traditional wooden car materials with steel. The manufacture of steel cars required concurrent changes in repair techniques and car systems, such as heating, cooling, air brakes, and passenger accommodations. These technological changes swept through the railroad industry.[43]

The switch in materials from wood to iron and steel was common in several industries, including shipbuilding and railroad car construction. Steel cars were easier to maintain than wood cars, and were more fire resistant (car No. 1157 retains its wood interior). They were presumed to be more crashworthy, and not as susceptible to "telescoping" as wood cars, although this proved to be false. The advantages of steel cars were many, and above all they

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[41] Richardson, "History and Development," n.p.

[42] White, Passenger Car, part 2, 658.

[43] John P. Hankey, "The End of Innocence," Locomotive & Railway Preservation, January-February 1991, 40.

symbolized the modern, efficient mode of passenger service that the railroads strived to offer.[44]

The public, always interested in technological advances, applauded the idea of the all-steel car. Their acceptance convinced the railroads and helped overcome the objections of the railroad craftsmen of the Master Car Builders Association. These men had been schooled in car building as a craft, not as a manufacturing process applied scientifically. Building wooden cars required time, patience, and small groups of craftsmen possessing skills handed down from father to son. Steel cars required mass production techniques that were available only to companies with an industrial (vice craft) background. Most successful car builders of the twentieth century possessed this industrial manufacturing background, including Harlan and Hollingsworth. Few traditional craft-oriented wood car builders survived the transition.[45]

The all-steel coach was offered by several manufacturers from about 1905 to 1955. After 1955, the decline of passenger service forced a reduction in the number of manufacturers, and hence, in the number of cars built.[46] During the 1960s, the number of railroads actively offering passenger service declined, leading to the establishment of the government-operated National Railroad Passenger Corporation, better known as Amtrak, in 1971. In 1993 the majority of passenger car construction is in the form of commuter service light rail vehicles. With the exception of Morrison-Knudsen, the manufacturers are all foreign.

Most of the classic all-steel suburban coaches have been removed from service and sent to the scrap yard. The number of those remaining in existence is declining, as they are replaced by more contemporary passenger cars. Their type will not be seen again.

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[44] Ibid.

[45] Ibid.

[46] White, Passenger Car, part 1, 117.

Car History/Period of Construction

Central Railroad of New Jersey No. 1157 was a component of the CNJ's mid-1920s purchase of 115 all-steel seventy-two-foot coaches from the Bethlehem Shipbuilding Corporation. The cars were constructed in four groups, with minor layout and dimensional differences: 1155-1168, 1182-1186, 1188-1192 and 1194, and 1195-1204.[47] By 1931, the CNJ had a total of 544 seventy-two-foot coaches in service, comprising nine series of cars, built by constructors Harlan & Hollingsworth/Bethlehem Shipbuilding, Pressed Steel Car Company, American Car and Foundry Company, Standard Steel Car Company, and Pullman.

Car No. 1157 was built in March 1927. According to Bethlehem Steel records, the car was one of 183 all-steel passenger cars built at the Harlan Plant that year; the total included coaches, baggage, mail, express, and combination cars.[48] This was the largest number of cars built by the company since 1914; the number was not exceeded in the remaining twelve years of Harlan Plant operations.

During its years of revenue service on the Central, No. 1157 probably worked the railroad's commuter lines between New York City, Jersey City, Newark, Bound Brook, Flemington, and other cities. No documentary evidence has been found that would indicate which specific routes the car worked.

The date of the CNJ's retirement of No. 1157 is unknown; the car became part of the Steamtown collection in 1978.[49] Following its transfer to Steamtown USA, coach No. 1157 was utilized in local excursion service. The car is currently operated as part of the yard shuttle between the park visitor center and the roundhouse.

Steamtown National Historic Site was created by the United States Congress on 30 October. On 20 March 1989, the Steamtown collection, including former CNJ coach No. 1157, was transferred from the Steamtown Foundation to the National Park Service.

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[47] C.R.R. of N.J. Diagrams of Passenger Car Equip't. (Elizabethport, NJ: Central Railroad of New Jersey, c. 1931), 32.

[48] "Summary of cars built at the Bethlehem Shipbuilding Corporation Wilmington Plant, 1905-1942." Accession 1699, Manuscripts Collection, Hagley Museum and Library, Wilmington, DE.

[49] See Appendix 1, page 61.

As-Built Specifications - Car No. 1157

Reporting Marks: CNJ | AAR Class: PB

Type of Car: Suburban Coach | Number of Cars: 25

Passenger Capacity: 78

Builder: Bethlehem Steel/ Harlan Works[50] | Date Built: March 1927

Light Weight (lbs): 119,200

Length-Interior: 62′ 2 7/8" | Exterior: 72′ 5 1/2"

Width-Interior: 9′ 1/2" | Exterior: 9′ 10 1/2"

Height-Interior: 9′ 5" | Exterior: 14′ 2"

Door Openings: Side- height: 80" width: 34 1/4"
End - height: 80" width: 27"

Type of Construction: All steel, with wood interior paneling

Underframe

Construction:	steel
Sills:	steel
Needle beams:	steel
Body bolsters:	riveted steel
Body center plates:	steel
Body side bearings:	Miner H-45-X
Buffer:	Miner Friction B-10-X
Draft gear:	Miner Friction A-5-P-X

Platforms

Construction:	steel
Type:	riveted components
Decking:	steel, diamond tread
Steps:	pressed tin, patterned
Risers:	pressed tin
Couplers:	Sharon

Car Body

Construction:	riveted steel
Body hand rails:	steel, 1/2"
Windows:	wood sashes
Doors:	steel
Roof:	steel
Clerestory:	steel

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[50] The Harlan Plant was transferred from Bethlehem Shipbuilding to Bethlehem Steel prior to the construction of No. 1157.

Roof jacks:	two; toilet compartment ventilators
End sills:	cast steel

Interior

Flooring:	Flexolith on Keystone
Window blinds:	roll-down, National Lockwasher Co.
Clerestory	
length:	62′
width:	6′
height:	18"
windows:	none fitted
Headlining:	Agasote
Partitions:	wooden; each end, floor to ceiling, 5′ from car ends
Toilet:	porcelain toilet, drop-through, each end
Seats:	36 H&K Neverbreak pressed-steel
Lighting:	electric
Water cooler:	each end, wall-mount
Basket racks:	84", metal Rod, McCarthy type

Trucks

Type:	Harlan & Hollingsworth, Commonwealth design, four-wheel cast steel
Wheelbase:	8′
Truck center plates:	roller
Truck side bearings:	roller, Miner H-45-X
Springs:	
bolster -	center-mounted triplicate elliptical
equalizing -	single coil (two each side)
Pedestals:	Harlan & Hollingsworth, cast
Wheels:	36" cast
Brake beams:	Davis

Brakes

Type:	Westinghouse UC-type
Brake stands:	ratchet, Lindstrom-type
Truck brake:	Clasp

Finish

Exterior:	Primed and painted
Interior:	
walls:	varnished mahogany
ends:	varnished mahogany
Ceiling:	varnished mahogany w/ painted Agasote

EXTERIOR DETAILS

Roof - The car was built with a clerestory roof and rounc bullnose-style ends.[51] The use of window in the clerestory clined after the 1910 introduction of the Garland ventilator, sc can be assumed that No. 1157 had no windows in its clerestory.

The car was equipped with Garland A-1 car top ventilators, th per side. The rounded ends of the main roof were fabricated 1 copper sheet.

The rounded ends of the main roof were fabricated from cop sheet. At some point during the car's service a protective covering was applied to the roof.

Doors - The original doors on No. 1157 were steel, with orr cast iron door handles.

Diaphragms - The car was equipped with two fold U-shaped c phragms, with channel iron reinforcement, manufactured by Curtain Supply Company of Chicago, IL, under the "Rex" br name.[53] Each diaphragm was equipped with an iron face plate.

Body - The body of the car was made from riveted steel pla Cast iron flag holders were placed at the four corners of the c

UNDERBODY DETAILS

Frame - The car had a steel underframe, with side and framing and platforms.

Draft gear - The buffers and draft gear utilized springs friction devices to serve as shock absorbers between the frame the coupler. This served to reduce violent coupling motions made for smoother acceleration and deceleration while the train en route.

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[51] White, Passenger Car, Part 1, 29.

[52] Ibid., part 2, 407.

[53] Roy V. Wright, ed., The Car Builder's Cyclopedia of Ameri Practice. 10th ed. (New York: Simmons-Boardman Publishing Compa 1922) 439; The Pocket List of Railroad Officials 71 (New York: Railway Equipment and Publication Company, 1912), 282.

Car No. 1157 was equipped with buffers and draft gear manufactured by the W. H. Miner Company of Chicago, IL. The buffers were Miner Type B-10-X, with 5 1/2" of travel. The draft gear were Miner Type A-5-P-X, with 2 1/2" of travel.

Power supply - Passenger car electrical systems were developed to provide power for onboard lighting, and later, air conditioning. The earliest battery-powered systems were installed in 1881; by 1900 many American railroads were using truck-mounted, belt-driven generators to provide power while the car was in motion. By 1915 most generators were mounted on the car frame, greatly enhancing their reliability. Batteries provided power to the car when the train was at rest or at low speed.[54]

Direct Current (DC) power was provided to No. 1157 by an underbody belt-driven generator tied into the battery system. The generator cut in when the train reached 30 MPH, providing power to the car and recharging the car's batteries. The generator was a Gould Type "BB," mounted via a Gould Adapter-Type Body Suspension. The Gould Coupler Company's main offices were in New York, NY; the Depew, NY branch built the electrical equipment. Generator capacities ranged from 1-4 kilowatts.

The car battery and lighting systems were manufactured under the Exide brand name. Exide 16-cell batteries provided power to the car when it was at rest. Power was distributed to the car by an underbody electrical conduit. The electric circuit breaker box was located in a wall panel in the "B" end toilet compartment.

Inter-car electrical connector plugs were mounted in the vestibule, below the end doors. The plugs were connected between the cars to provide electrical continuity throughout the train.[55] If one car's generator dropped off line or the batteries failed, the other cars would continue to provide electricity to the affected car.

Brakes - Car No. 1157 was equipped with a Westinghouse UC air brake system, described as the "standard" for passenger car equipment in the 1922 Car Builders' Cyclopedia.[56] Components included a Type Q brake cylinder, U-12 universal valve, as well as service, auxiliary, and emergency reservoirs. The car was fitted with Clasp truck brakes, mounted on mechanically actuated Davis Brake Beams.

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[54] White, Passenger Car, part 2, 424-426.

[55] A steam-powered generator provided electrical power to the locomotive.

[56] Wright, Cyclopedia, 790.

The hand brakes were actuated by brake stands, mounted in both vestibules.

No. 1157 was equipped with a valve-actuated emergency brake system. The car's valves were mounted in the upper portion of the toilet compartments at both ends of the car.

Trucks - The original trucks supplied with car No. 1157 were four-wheel cast steel, Commonwealth design, manufactured by Harlan. The side bearings were Miner roller-type H-45-X. Axle type was 5 1/2" X 10" (journal size).

Each truck was equipped with a two crosswise-mounted triplicate full-elliptical springs. A single coil spring was mounted to the end plate on either side of the elliptical spring, for a total of five springs per truck.

Each pedestal had raised lettering:

BETHLEHEM SHIPBUILDING CORPORATION LTD
HARLAN PLANT
WILMINGTON DELAWARE

Car No. 1157 was equipped with Miner Safety Locking Pins for truck mounting. The access port was in the deck of the car. The locking pins ensured that the trucks would remain attached to the car in the event of a derailment. Cars without locking pins used safety chains, attached from the truck to the car body, for the same purpose.[57]

Couplers - Car No. 1157 was delivered with Sharon couplers, manufactured by the National Malleable Castings Company of Cleveland, OH. The couplers were top-lift design (the locking pin was withdrawn from the top, enabling coupling and uncoupling). Coupler length from the anchor to the knuckle was 30 1/2".[58]

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[57] Willard Sturdevant, conversation with author, March 1992.

[58] Wright, Cyclopedia, 590.

INTERIOR DETAILS

Fig. 2. Interior view of a CNJ passenger coach compartment, showing parcel racks, floor material and walkover seats, 14 April 1932. Photograph No. 30 from the Reading Company Collection, Pictorial Collections and Audiovisual Services Department, Hagley Museum and Library.

Seats - Thirty-six H&K Neverbreak pressed steel car seats were installed, eighteen per side. No. 1157 had standard walkover seats, with seat backs that could be slid across the cushion to change the direction of seating. "H&K" was the brand name for Hale & Kilburn Corporation of Philadelphia, PA.[59]

The upholstery material for CNJ passenger cars was a dark, black-green mohair fabric.

Heating System - The car was equipped with a steam vapor heating system manufactured by the Vapor Car Heating Company of Chicago,

[59] Ibid., 1186.

IL. The steam vapor system was the most widely used method of car heating during the early part of the twentieth century.[60]

Steam was piped from the locomotive to all of the cars through metal couplers. The steam entered the top end of a vapor regulator, mounted underneath the car, where it was reduced to atmospheric pressure. The steam was then circulated through the car's underseat piping, at a temperature of 212 degrees. Once the steam had completed its circuit of the car, it was returned to the lower portion of the vapor regulator, where the remaining vapor and water were vented to the atmosphere.[61]

Car No. 1157 was fitted with Vapor Car No. 440 vapor regulators.[62] Steam flow into the interior of the car was regulated by No. 122 cut-out valves, four of which were mounted on the floor at the "B" end of the passenger compartment. Two valves each were mounted under the thirteenth seat, each side.[63]

Toilet - Car No. 1157 was equipped with two toilets. The commodes were porcelain Eckert #40 dry hoppers, mounted directly to the floor of the car, with wood seats and covers.[64] Dry hoppers discharged directly onto the track. The windows were translucent glass for privacy.

The car's circuit breaker and electrical distribution box were mounted on the forward wall of the "B" end toilet compartment.

The CNJ referred to the onboard toilets as "saloons."[65]

Lounge - Seats, measuring 19" W X 56" L, were mounted lengthwise opposite of the toilet compartments.

Baggage racks - The McCarthy-type baggage racks were constructed of steel tubes and measured 12 W" X 84 L."

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[60] Ibid., 863.

[61] Ibid.

[62] Ibid., 876.

[63] Ibid., 873.

[64] C.R.R. of N.J., 32.

[65] Ibid, 27.

Ceiling - The passenger compartment ceiling was Agasote, a brand name product of the Pantasote Company, New York, NY.[66] Agasote was a wood fiber material with insulating qualities, capable of being sanded to a smooth finish. After application and preparation, the ceiling was painted.

Car ends - The vestibules were equipped with Edwards trap doors, manufactured by the O.M. Edwards Company, Inc., of Syracuse, NY.[67] The doors were raised to allow passenger boarding; once boarding was completed, or, if the passengers were coming into the car from a raised platform, the trap doors were lowered. The doors were locked in the down position by trap door locks.

A metal-frame water cooler was installed at each end of the car, adjacent to the toilet door.

The passenger compartment car ends had two wood partitions, separating it from the lounge/toilet areas. The partitions and walls were surfaced with inlaid mahogany. The car number was centered over the doorway, with safety or informative messages to either side.

On the "A" end, passenger compartment:

1157
Passengers
Must Not Put Their Heads or Arms Out the Window
Personal Injury or Loss of Life May Result
From Neglect of This Notice

Spitting Forbidden

Women
Women

On the"B" end, passenger compartment:

1157
Passengers
Must Not Put Their Heads or Arms Out the Window
Personal Injury or Loss of Life May Result
From Neglect of This Notice

Spitting Forbidden

Toilet

---

[66] Wright, Cyclopedia, 963.

[67] Ibid., 32.

The messages were lettered in Roman style gold leaf. The large capitals were one inch tall, and the small capitals were one-half inch tall.

Side walls - The side walls were finished inlaid mahogany; the style of inlay matched end walls. The wall panels fit over side framework of the car, and could be easily removed for maintenance.

The floor-mounted heating pipes and safety covers ran the length of the walls.

Lighting - The car had six ceiling-mounted electric lights in the passenger compartment, with an additional light of the same style in each toilet/lounge area.

Two countersunk electric lights were placed in each car vestibule. The type was similar to Safety Car & Heating Company style No. 9060.[68]

Windows - The car had twenty O.M. Edwards wooden-sash windows on each side. The toilet compartment windows were probably translucent engraved glass.

Each passenger window was fitted with a roll-down window shade with the mechanism hidden behind a wooden panel. The shades were manufactured by the National Lockwasher Company of Newark, NJ.[69]

Flooring - The floor was Flexolith, mounted on Keystone. Flexolith was a fiber composition material, with plastic-like qualities that hardened to the consistency (if not weight) of concrete. Flexolith was manufactured by Tuco Products Corporation, New York, NY.

Keystone was the brand name for a corrugated metal floor panel developed by the Berger Manufacturing Company. The two material gave the car a sturdy, yet lightweight, floor that withstood constant daily use by passengers.

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[68] Ibid., 733.

[69] C.R.R. of N.J., 32.

Maintenance and Repairs

No Central of New Jersey maintenance records have been located for car No. 1157.

Maintenance work performed on the car by the Steamtown Foundation and Steamtown National Historic Site is documented on shop maintenance forms. The records indicate that maintenance and repair activities took place in 1974, 1990, and 1991.

One inspection report for Steamtown Foundation passenger car No. 1157 was dated 22 September 1974. The following components were maintained, adjusted, or repaired:

Adjusted brakes
Adjusted slack adjuster
Repaired train line cut-out cock leak
Loosened stiff front & back signal line valves
Repaired leaky front signal valve
Tightened loose brake pipe bracket
Tightened loose "B" end train line-signal line bracket
Replaced missing bolt on the "B" end hand brake-steam valve link bracket
Tested and lubricated front and back handbrakes
Tightened loose back steam connector bracket
Righted right side back coupler carrier iron down
Righted right and left side front coupler carrier irons
Checked north and south drawbars, pins, and draft gear[70]

Additional work performed during 1990 and 1991 was documented in Steamtown National Historic Site car maintenance/repair records.

July 1990 -
COTS[71]
Replaced handbrake arm handle, "B" end

August 1991 -
Repair car body door sill, "B" end [72]

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[70] "Inspection Report Car #717 [CNJ 1157]." Steamtown NHS Library, Steamtown USA File, Cabinet 1, Drawer 2. Coach No. 1157 was renumbered 717 by the Steamtown Foundation.

[71] COTS stands for "Clean, Oil, Test & Stencil," a standard car maintenance procedure.

[72] "Original Record of Repairs, Car No. 1157." Locomotive Shop Foreman's files, Maintenance Division, Steamtown NHS, Scranton, PA. The maintenance was conducted by Car Mechanic Willard Sturdevant.

Modifications

Documentary evidence indicates that no modifications were made to the car during its service on the Central Railroad of New Jersey.[73]

[73] Owen, CNJ car list.

Architectural & Restoration Data

Physical Studies

Suburban coach No. 1157 has been part of the Steamtown collection for approximately twenty-five years. During this time the car has been subjected to lengthy periods of inactivity, exposure to the elements, neglect, and deferred maintenance.

Pursuant to Steamtown National Historic Site's intention to restore the car, a thorough examination of the car's current condition and restoration activities was begun in February 1992.

Component Analysis

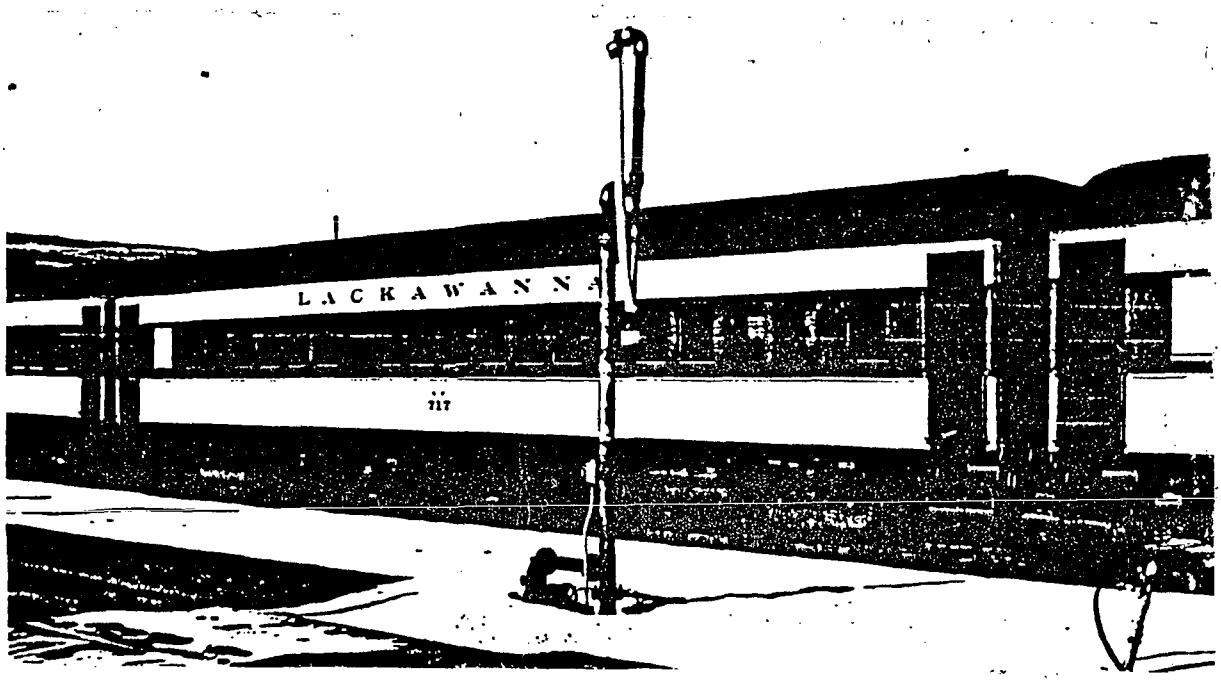

Fig. 3. CNJ coach No. 1157 prior to restoration. Gordon Chappell, Flanged Wheels on Steel Rails: The Railroad Cars of Steamtown. Draft. (Denver: National Park Service, 1991), 35.

Modified Specifications - Steamtown NHS, 1992

The following are changes or modifications made to coach No. 1157 prior its acquisition by the National Park Service:

Underframe - no modifications

Platforms -	
Steps:	mix of steel and pressed tin
Car Body -	
Doors:	one wood, three steel
Roof jacks:	removed
Interior -	
Window blinds:	several missing
Trucks -	
Type:	Commonwealth, four-wheel cast steel
Wheelbase:	8'
Springs:	
bolster:	center-mounted triplicate elliptical
equalizing:	single coil (two each side)
Pedestals:	cast; mix of Pullman and Harlan
Wheels:	cast; 36"
Brakes -	no modifications
Finish -	original except where noted in the text

EXTERIOR DETAILS

Car body - The car body has serious end and side panel rust, particularly on the lower portions of the structure and at overlapping panels. Multiple rivets were worn or completely missing.

A ghosting on the body adjacent to the doors, "A" end left side, "B" end right side, indicate the former location of builder's plates. The discolored areas are approximately 5 inches by 12 inches in size. The disposition of the plates is unknown.

Roof - The ventilator side panels were rusted through in multiple locations.

Diaphragms - The car diaphragms were removed due to their deteriorated condition.

Doors - The left door on the "B" end of the car was replaced with an incorrect door of wood construction. The door is fitted with an ornate cast iron door handle similar to those on the other doors.

UNDERBODY DETAILS

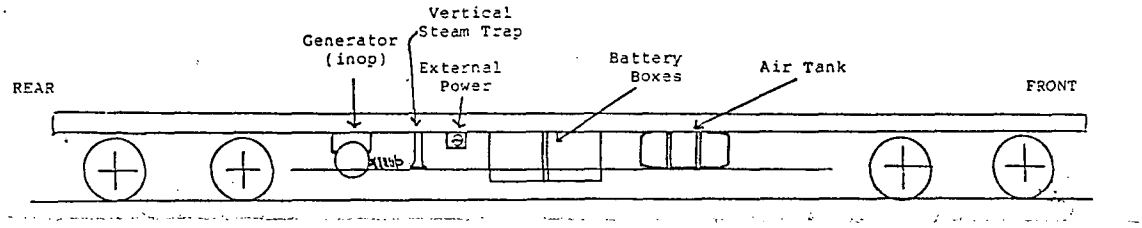

Fig. 4. Underbody equipment on coach No. 1157, right side. Illustration by author.

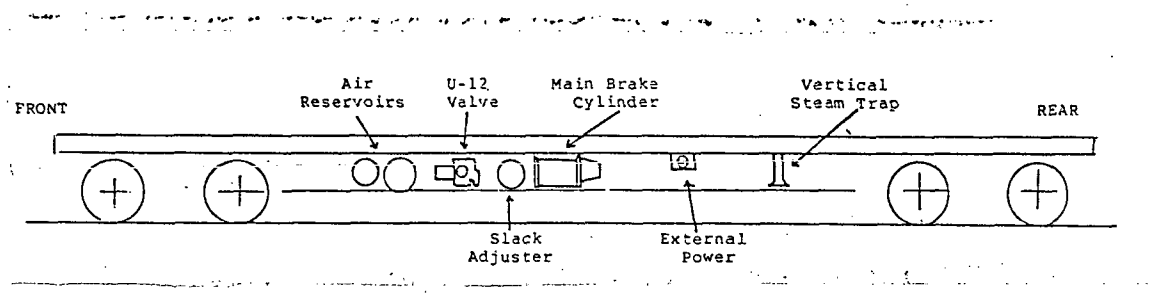

Fig. 5. Underbody equipment on coach No. 1157, left side. Illustration by author.

Frame - The frame appears to be in good condition.

Power supply - The car's original generator is still fitted to the car, but is inoperative. All generator wiring has been cut and the generator is disconnected from the car's power system.

A 110 volt alternating current generator was formerly mounted in one of the underbody storage boxes for electrical power during excursions. This generator has been removed and the car is now without power.

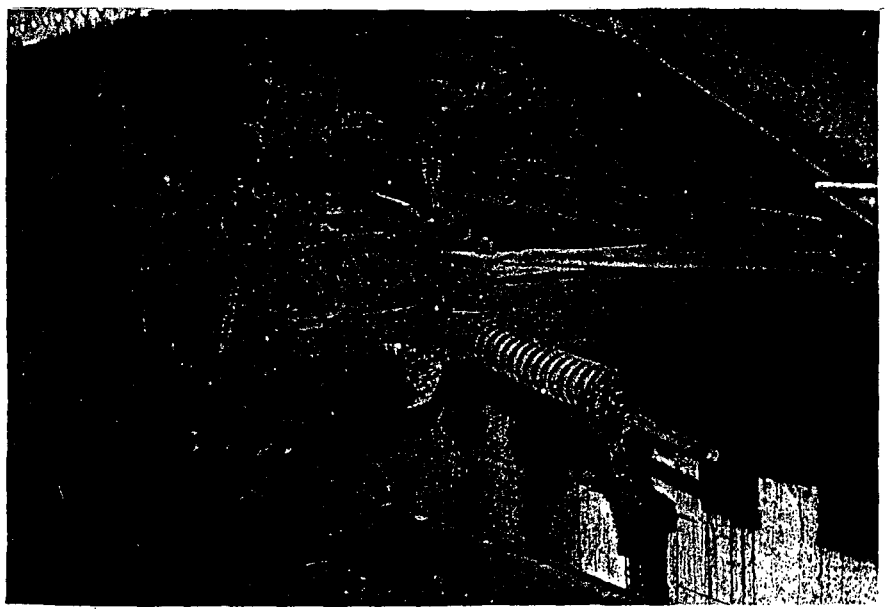

Fig. 6. Installation of Gould Type "BB" Generator on coach No. 1157. Photograph by author.

Two additional Pyle-National inter-car connector plugs were mounted at the top of the vestibule doors. The original lower plugs, used to connect the cars for lighting purposes, were removed. The "A" end has two plugs; the second is a Steamtown Foundation-installed audio plug for the train public address system. The public address system is currently inoperative.

Brakes - The brake system is intact, containing a mixture of Westinghouse and New York Air Brake Company components (these are interchangeable). Westinghouse components predominate.

The emergency brake is operative.

The brake systems will be thoroughly checked during the restoration/maintenance process.

Trucks - Railroads regularly changed trucks, using whatever was available when it came time to overhaul the car and its running

gear. As a result, cars rarely have their original trucks installed.

Fig. 7. Central Railroad of New Jersey/Commonwealth four-wheel passenger car truck, installed on coach No. 1157. Photograph by author.

The trucks currently on coach No. 1157 are Commonwealth-style cast trucks manufactured by Pullman Standard of Chicago, IL. The trucks are equipped with friction bearings.

Cast lettering on the pedestals reads:

3591	PS13256
40	CRR-NJ

Three are blank and one is a Harlan product.

The Harlan & Hollingsworth trucks marked for coach No. 1157 are currently under CNJ suburban coach No. 1022.

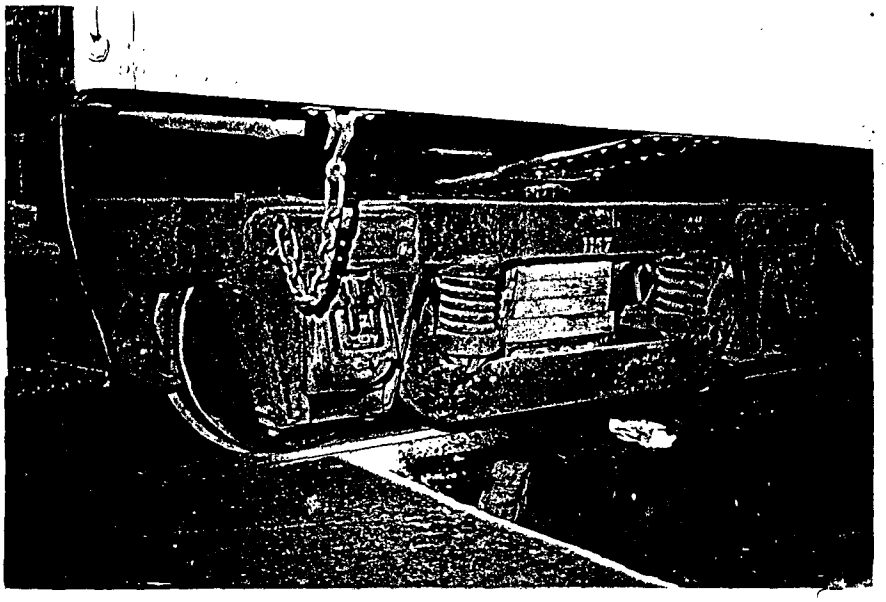

Fig. 8. Correct Harlan & Hollingsworth passenger car truck for coach No. 1157, currently installed on CNJ coach No. 1022. Photograph by Kenneth Ganz.

Couplers - The car's Sharon couplers are not certified for common-carrier use by the Federal Railway Administration. See page 59.

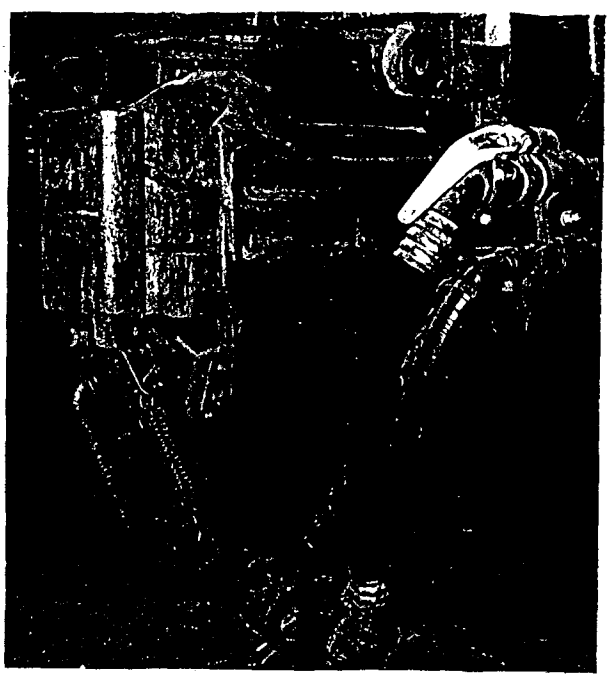

Fig. 9. Sharon-type coupler installed on coach No. 1157. Photograph by author.

INTERIOR DETAILS

Seats - The Hale and Kilburn seats currently fitted to the car are correct. This type seat is interchangeable between passenger cars; there is no indication that these are not the original seat frames.

The seats are currently upholstered in black naugahyde.

Heating system - The steam heating system is operational. All cut-off valves and vapor regulators are intact and functional. The only apparent non-original equipment are the inter-car flexible steam couplers.

The interior steam plumbing is painted the same shade of red as the floor.

Toilet - No substantial changes have been made to the toilet. The windows are transparent glass that has been painted over. The paint is flaking in large areas.

Baggage racks - Intact, in place, and in good condition.

Ceiling - At some point during the car's Steamtown Foundation service the ceiling panels in No. 1157 were painted Old English Ivory. The paint is a color brand name of Kyanize Paint, Inc. of Everett, MA.

Investigation of No. 1157 and other Central of New Jersey passenger cars in the Steamtown collection has revealed the presence of detailed gold leaf scroll work, applied to a base coat of light green and Pullman green (Figure 10).

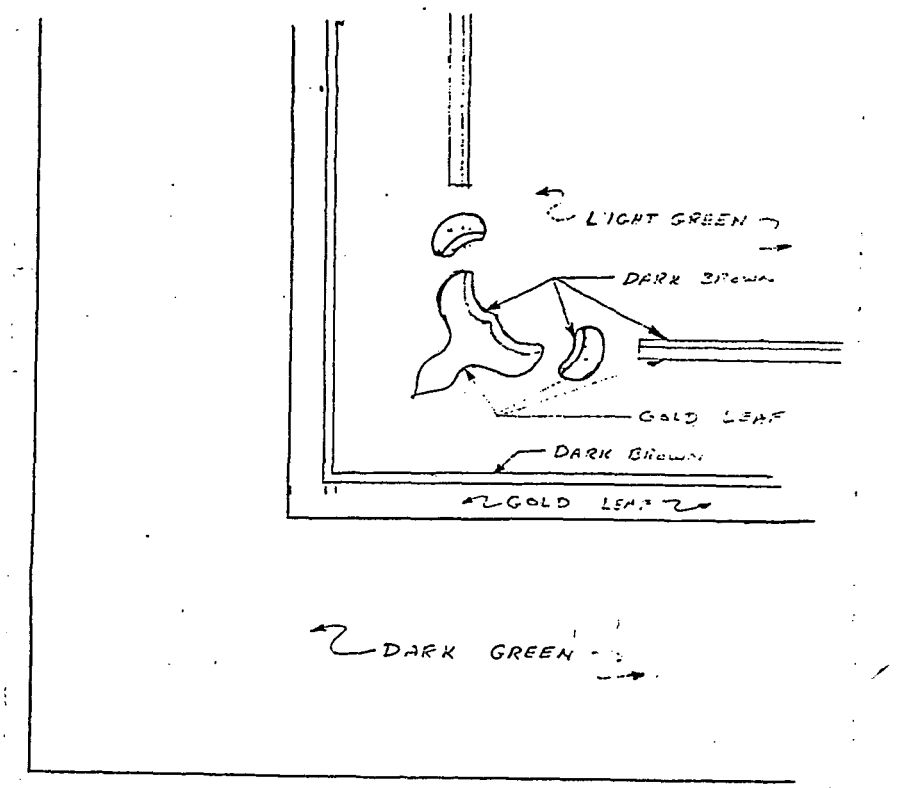

Fig. 10. Sketch of gold leaf detailing found on the interior roof panels of Central Railroad of New Jersey coaches in the Steamtown collection. Drawing by Willard Sturdevant.

This decorative detailing is underneath the Old English Ivory and other layers of paint on the ceiling panels of No. 1157. It should be restored.

Vestibule - The vestibule areas are intact and in good condition.

Interior ends - The upper portions of the passenger compartment end panels are in excellent condition. At the "A" end, the original informational messages have been disturbed:

Passengers
Must Not Put Their Heads or Arms Out the Window
Personal Injury or Loss of Life May Result
From Neglect of This Notice

The portion of the message to the right has been obscured, as indicated by "¦". Both "WOMEN" have been obscured. A contemporary no smoking sign and a loudspeaker are mounted on the partition.

The lounge area retains its lengthwise-mounted seat. Steamtown Foundation car number "717" is placed over the door in 1 3/4" red lettering, Gothic style.

The water cooler frame is intact but rusty. The water cooler has been removed.

At the "B" End of the passenger compartment:

```
                    Passengers                 |
Must Not Put Their Heads or Arms Out th|e Window
   Personal Injury or Loss of Life May |  Result
          From Neglect of This Notice  |
```

As at the "A" end, a portion of the message has been obscured, as indicated by the "¦."

A contemporary no smoking sign was added by Steamtown USA. A fire extinguisher was mounted on the "B" end vestibule wall by the National Park Service.

The lounge area has its lengthwise seat intact. The Steamtown Foundation car number "717" is placed over the door in 1 3/4" red lettering, gothic style.

The water cooler frame is intact. Plastic coolers are installed at both ends for passenger use during the excursion season.

An electric wall switch was installed on the lounge side of the partition, over the door. The switch, which is inoperative, was apparently part of the public address system.

Side walls - The oak lower side walls are intact and in good condition, suffering only from normal wear and tear.

Lighting- The six passenger compartment lights have globes similar to Safety Car & Heating Co. model No. 51855, a twelve inch Opal Bowl.[74] These globes match the type globes found in other CNJ passenger cars in the Steamtown collection, and are believed to be original equipment (Figure 11).

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[74] Wright, Cyclopedia, 937.

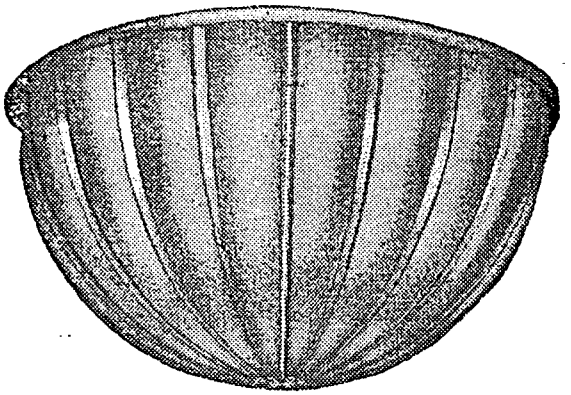

Fig. 11. Safety Car & Heating Company model No. 51855. Wright, Cyclopedia, 10th ed., 937.

The original vestibule lights are intact.

Windows- Roll-down window shades are hidden behind wooden panels. The window shade is missing on the following windows (from the "A" end):

Right - 2,4,9,12,14,17,18,19
Left - 17,18,20

Deck - The floor of 1157 is in reasonably good shape, with some gouges and nicks.

Paint Schemes

Railroads were as conscious of their public image as any other major industry. To that end, the paint and markings applied to locomotives and rolling stock over any period were designed to appeal to the passenger and freight customer, and to give the image (if not the reality) of a solid, profitable, progressive company. As the corporate image and prospects changed, the markings were modified.

The CNJ went through four unique paint schemes during its lifetime: early steam, late steam, diesel, and finally, a design for shared operations with the New Jersey Department of Transportation.

While the changeovers were primarily image driven, the company's perennially depressed economic status played an equal part in determining what equipment was painted. For example, the CNJ's financial problems prevented the railroad from standardizing its equipment. As a result, many marking combinations appear in photographs, oftentimes on the same train.[75]

By plan or necessity, the Jersey Central used a number of passenger colors, including Pullman Green, Sea Mist Green, dark blue-green, dark green, light green, blue, and olive. Trim also varied, as did the presentation of the road's name and letter style. There was much mixing and matching of schemes throughout the railroad's life.

Original Scheme

An 1855 photograph of CNJ coach No. 159 shows an all wooden car painted in dark green. Roman style lettering, approximately twelve inches tall and centered over the windows, displayed the initials of the company:

C.R.R. of N.J.

The car number was approximately eight inches tall, centered on the body below the windows (Figure 12).

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[75] Kenneth Ganz and Thomas Campion. Interim Stabilization Report (study, Steamtown NHS, 1991), 1. Several of these reports were prepared in early 1991 for locomotives and passenger cars in the Steamtown collection.

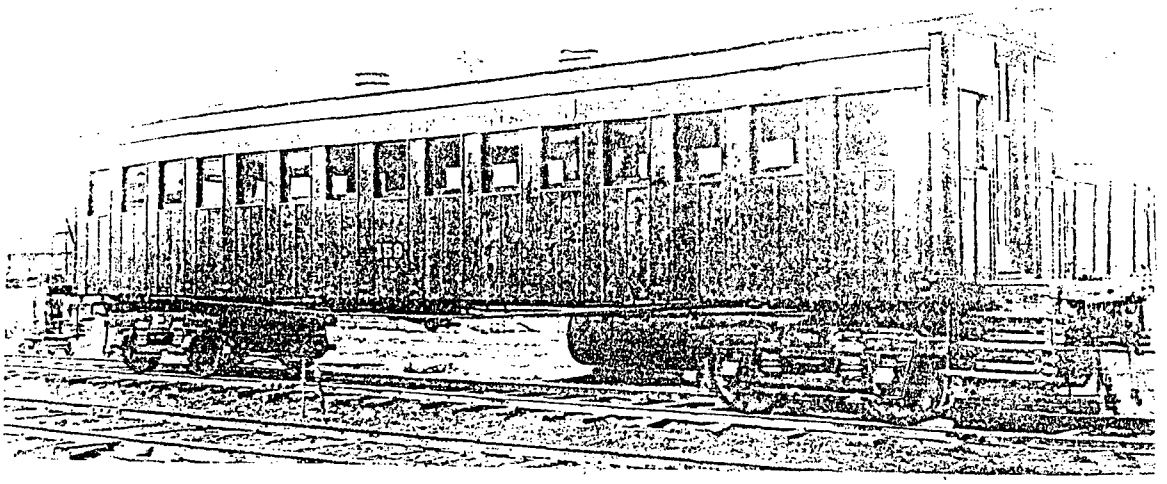

Fig. 12. Example of the first Central Railroad of New Jersey passenger car paint scheme, as depicted by coach No. 159. From John White, Jr., The American Railroad Passenger Car, pt. 1 (Baltimore: Johns Hopkins University Press, 1978), 26.

During this period, CNJ locomotives were painted black, with either block Gothic "C.R.R. OF N.J.," or the round CNJ herald.[76] These markings remained in service through the mid-1930s, at which time the CNJ introduced its second paint scheme.

Second Scheme

During the mid-1930s the Jersey Central adopted its second scheme. The railroad began to spell out its name on the passenger cars, and attempted to create a "standard" shade of Pullman Green paint. Cars during this period were delivered from the manufacturer completely painted green - including roof, trucks, and vestibules.[77]

According to Anthracite Railroads Historical Society member Carl Rose, the cars were repainted by CNJ shop personnel during their first overhaul with a black roof and dark olive green trucks, to the following specifications:

> Body - Pullman shade, as per sample submitted by the railroad company.
>
> Roof - The roof was painted with three coats of K&S Preservative for Metal Roofs.

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[76] Gerard E. Bernet, Jersey Central Diesels (River Vale, NJ: Withers Publishing),164; Anderson, First 100 Years, 149.

[77] See Appendix 2.

Frame - One coat Sherwin-Williams Kromik primer and one coat Metalistic Black were applied.

Trucks - The trucks were primed and painted with carbon black, then topped with one coat Sherwin-Williams olive green.

According to Mr. Rose, the formula for Pullman Green varied from railroad to railroad. During periods of tight finances the shops were known to stretch the available green paint by mixing in black, producing a darker shade.

Additional details on the second scheme were provided by former Steamtown Foundation contractor Ed Blossom. He indicated that carbon black served as a cheap primer, under a coat of dark olive green. Boiled linseed oil was mixed with carbon black, applied, and then dried.

Lettering consisted of the full "Central Railroad of New Jersey," five inches high by thirteen to seventeen inches wide, Extended Railroad Roman style, in imitation gold. The car numbers were in the same style, five inches high by five inches wide, placed below the second window, centered top to bottom, at both ends of the car.

Finally, photographic references indicate that the handrails were painted the body color (Figure 13).

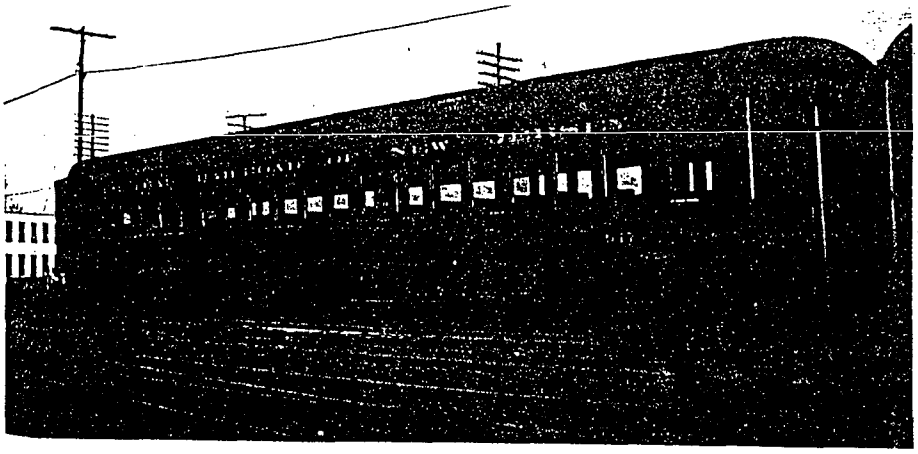

Fig. 13. Central Railroad of New Jersey suburban coach No. 947, in the railroad's second passenger paint scheme. Central Railroad of New Jersey photograph, collection of Willard Sturdevant.

This second scheme is the period chosen for the restoration of coach No. 1157.

Third Scheme

During the late 1940s and early 1950s, the CNJ again changed paint scheme on its passenger cars and locomotives. The equipm was repainted in a bluer shade of green, and the railroad's "Statue of Liberty" emblem was placed at the lower corners of e car. The lettering style was changed to Spartan Bold, five inc tall by five inches wide, and reading "Jersey Central Line Coach No. 1157 received the new lettering and the "Liber heralds.

A photograph of CRP Railway Post Office No. 66 depicts a variat of the third scheme (Figure 14.) The lettering for the Jer Central Lines remain, but the "Statue of Liberty" logo is abse The car number is centered on the body, below the lower win line, and the CRP initials are centered above the numbers.

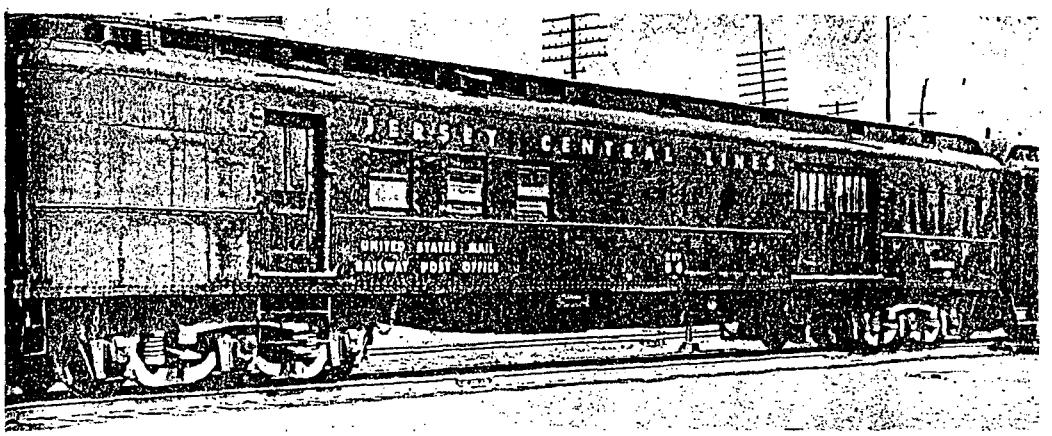

Fig. 14. The third Central Railroad of New Jersey pa scheme, minus the "Statue of Liberty" markings, on Cent Railroad of Pennsylvania Railway Post Office car No. Railroad Magazine, January 1968, 19.

Fourth Scheme

Photographs of early 1970s CNJ consists document a fourth paint scheme. The new markings were applied to suburban cars assigned to joint CNJ-New Jersey Department of Transportation commuter operations.

The cars were dark blue, with a broad yellow letter board. A thin yellow stripe (approximately two inches wide) was painted below the window line, encircling the body.[78] The car number was centered at mid-body. The CNJ liberty head emblem was applied at the left corner of the car; "Central Railroad of New Jersey" replaced "Jersey Central Lines" on the circular emblem (Figure 15).

A circular red and black New Jersey Department of Transportation arrowhead emblem was placed at the opposite end of the car. Lettering consisted of "CNJ" in Spartan Bold, approximately twelve inches in height, at the left end above the windows.

Fig. 15. Joint-use Central of New Jersey/New Jersey Department of Transportation coaches display the fourth scheme while operating near Bound Brook, NJ. From William J. Brennan, Jersey Central Lines In Color (Edison, NJ: Morning Sun Books, 1991), 62.

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[78] Chris Baer, conversation with author, 15 March 1993.

Interior Colors

Seafoam green has been found in the interior of several former Jersey Central cars in the Steamtown collection; it is believed that this color was applied when the CNJ went to its third scheme.

Otherwise, minimal documentation has been found to indicate the proper interior colors of CNJ passenger cars. See page 56 for a discussion of the interior of the passenger compartment of No. 1157.

Paint Analysis

Limited paint analysis has been performed on coach No. 1157. The following information has been derived from observance of the car's exterior and interior.

Exterior

The paint layers found on the exterior of the car, by sanding, in April and May 1992 (listed from top to bottom):

1 - Gray and yellow detailing applied over maroon; painted and lettered for the Delaware, Lackawanna & Western by Steamtown U.S.A.
2 - Maroon (Munsell 5R 2/6); lettered for the Canadian Pacific (CP) only on the right side by Steamtown U.S.A.
3 - Dark green, lettered "Jersey Central Lines" in imitation gold
4 - Primer gray
5 - Dark green (Munsell 5GY 2/1), lettered "Central Railroad of New Jersey" in imitation gold (slightly brighter than Munsell 2.5Y 8/8.)
6 - Primer gray

The car was painted two different shades of Pullman green by the Central, consistent with the second and third paint schemes. The car retained its CNJ diesel-era markings for two years after its transfer to the Steamtown Foundation.

In 1980, maroon paint was applied, with six inch high extended Railroad Roman lettering for the Canadian Pacific. In the spring of 1986, following its move to Scranton and the former Delaware, Lackawanna & Western yard, the car was repainted to Lackawanna diesel-era maroon and gray with yellow striping. This paint scheme was applied in recognition of the Lackawanna and Steamtown's operations out of that railroad's former yards.[79] All of the passenger cars assigned to the foundation's excursion train received similar treatment. These markings are inaccurate not only for the steam-era Central Railroad of New Jersey, but also for the steam-era Lackawanna.

Former Steamtown Foundation officer Fred Bailey has stated that Steamtown regularly repainted passenger cars in whatever paint that was on hand. At one time there was a large amount of blue paint at the site, so several of the cars were painted blue (coach No. 1157

[79] Willard Sturdevant, conversation with author, 1 April 1993.

Evaluation of the Proposed Use On the Integrity of the Car

In early June 1992 Steamtown NHS placed No. 1157 in daily yard shuttle service, with twice-weekly runs to the Scranton Iron Furnaces. In the future the car may be employed on mainline excursions.

Ongoing use of the coach by Steamtown National Historic Site will have an impact on the integrity of the car. Normal wear and tear will occur through usage. Any routine mechanical difficulties will be documented and corrected during scheduled off-season maintenance. Any degradation of the structure will be documented and mitigated when feasible.

Restoration Recommendations

As a surviving example of a steam-era coach, Central Railroad of New Jersey No. 1157 is a suitable candidate for restoration. The car has had minimal exterior physical modifications which can be easily corrected. Interior modifications were also limited.

Several factors were considered in the process of selecting a restoration period for coach No. 1157: the degree to which loss or alteration of existing historic fabric resulting from the restortion can be tolerated; the amount of historical documentation available to support various restoration alternatives; the cost of restoration; and how well the restoration would fit the interpretive themes of the park.

One of the four major interpretive themes of Steamtown is to develop and present "the history of railroads in the steam era (1850-1950), with emphasis on the northeastern United States."[80] Coach No. 1157 fully fits the interpretive theme. It retains sufficient physical integrity to warrant its restoration to 1930s-1940s condition and appearance.

The 1992 repairs and repainting of the car were performed with the intent of arresting decay of the car and preventing further damage. At some future point, car No. 1157 will require a complete mechanical overhaul and full restoration. This should include the rebuilding of the running gear and other mechanical components. Repairs, stabilization, and restoration should be performed with

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[80] Steamtown National Historic Site, Pennsylvania, Railroad Yard Design Program/Interpretive Concept (Denver: National Park Service, Denver Service Center, 1989), 3.

the intent of cutting out and repairing deteriorated components of the car, and preventing future damage.

The ceiling panels should be carefully stripped to reveal their decorative designs. The original two-tone green and gold detailing should be restored.

Sharon-type couplers are not certified by the Federal Railroad Administration for common-carrier use. As a museum/excursion operation, Steamtown NHS is exempt. However, for visitor safety reasons, the Sharon-type couplers on No. 1157 should be replaced by AAR type D or E couplers.

Upon the completion of the interior and mechanical restoration, No. 1157 should once again receive the second Central Railroad of New Jersey passenger paint scheme of the mid-1930s to the early 1950s, as described on pages 50-52. The Pullman green and gold passenger scheme was the CNJ's standard livery for approximately twenty years. It is a classic steam-era design, and strongly evocative of the Central at the height of its prosperity.

Appendix 1 - Legal Documentation

One item of documentation has been identified that indicates the date No. 1157 was sold to Steamtown U.S.A.

The Steamtown Foundation's Depreciation Schedule of 1988, also known as assessed property list, was developed in preparation for the transfer of the foundation's locomotives and rolling stock to the National Park Service. Coach No. 1157 is listed as a 1978 acquisition from the Green Mountain Railroad with a 1988 value of 0 dollars.

No other material has been identified.

	BAG CAR #351	5251	1972	1,100.00			1,100.00	
	LOCO #1246	1246	1973	20,000.00			20,000.00	
	LOCO #1293	1293	1973	20,000.00			20,000.00	
	CABOOSE	29	1974	500.00			500.00	
	VTR BOXCAR #526	526	1974	618.00			618.00	
	VTR BOXCAR #503	503	1974	618.00			618.00	
	LIRR #7018	7018	1974	936.00			936.00	DUO
	LIRR #7045	7045	1974	936.00			936.00	
	LIRR #7091	7091	1974	936.00			936.00	
	LIRR #7082	7082	1974	936.00			936.00	
	LIRR #7099	7099	1974	21,174.27			21,174.27	
	LIRR #7127	7127	1974	936.00			936.00	
	LIRR #7128	7128	1974	936.00			936.00	
	LIRR #7436	7436	1974	936.00			936.00	
	LIRR #7468	7468	1974	936.00			936.00	
	LIRR #7483	7483	1974	936.00			936.00	
ERIE LACK. RR	EL #2 — NRS	3	1974	3,326.20	ERIE # 2633		3,326.20	
ERIE LACK. RR	EL #3 — NRS	3	1974	3,326.20	2628 + 2607		3,326.20	
ERIE LACK. RR	EL #4 NRS	4	1974	3,326.20			3,326.20	
CENTRAL RR-NJ	CNJ #1006 — NRS	1006	1974	3,155.20			3,155.20	
CENTRAL RR-NJ	CNJ #1009	1009	1974	3,155.20			3,155.20	
CENTRAL RR-NJ	CNJ #1021	1021	1974	3,155.20			3,155.20	
CENTRAL RR-NJ	CNJ #1023	1023	1974	3,155.20			3,155.20	
CENTRAL RR-NJ	CNJ #1152	1152	1974	3,155.20			3,155.20	
~~PAUL FULLER~~	~~1927WHITCB LOCO — SOLD~~		1974	1,400.00			1,400.00	
PUB SVC NJ	LOCO #6816 — NRS	6816	1974	.00			.00	
RUTLAND RR	WOOD BOXCAR #8194 — NRS	8194	1974	.00			.00	
RUTLAND RR	WOOD BOXCAR #8195 — NRS	8195	1974	.00			.00	
~~PAUL FULLER~~	~~1 USED 1926LOCO — SOLD~~		11/ 5/75	700.00	— PLYMOUTH		700.00	
KEN BUNNELL	~~1 HOVING LOCO — SOLD~~		11/15/75	300.00			300.00	— UNKNOWN could BE (GLASS AMUSEMENT) PART ENGINE
~~BUNTRAL RR-NJ~~	LINE CAB. #580 — NRS	580	12/ 4/75	2,372.00			2,372.00	
LURIA BROS	CNJ DERRICK CRANE #5 — NRS	5	03/01/76	6,000.00			6,000.00	
LURIA BROS	CNJ IDLER #92082 — NRS	92082	03/01/86	6,193.55			6,193.55	
	EL BUS CAR #3 — NRS	3	4/31/77	36,278.18			36,278.18	
J. JACOBSON	V. & N #1100 — NRS	1100	03/01/86	3,200.00			3,200.00	
NR BAUMAN	~~NU #126 CABOOSE LO~~	126	5/02/78		16,500.00		16,500.00	CAN'T FIND LETTER
CAN PACIFIC	MI-3 TENDER — NRS		10/31/78	3,801.00			3,801.00	How much to Engine/ Part Ties
T. RAILWAY	CABOOSE #7 — NRS	7	1978	500.00			500.00	
GREEN MTN RR	COACH #717 — NRS — CAN	717	1978			.00	.00	
GREEN MTN. RR	BXCAR #4269 — NRS	4269	10/83	CVR #3067	750.00		750.00	
~~MITRACK~~	~~LOCO #00 1 SOLD~~	1	2/83	5,000.00			5,000.00	
GREEN MTN RR	BOXCAR #358 — NRS	358	12/31/83	700.00			700.00	
GREEN MTN RR	BOXCAR #362 — NRS	362	12/31/83	700.00			700.00	
GREEN MTN. RR	BOXCAR #363 — NRS	363	12/31/83	700.00			700.00	
GREEN MTN RR	BOXCAR #366 — NRS	366	12/31/83	700.00			700.00	
GREEN MTN RR	BOXCAR #381 — NRS	381	12/31/83	700.00			700.00	
NJ TRANSIT	MU CAR (#3215) #315 — NRS	315	12/19/84	3,713.00			3,713.00	
NJ TRANSIT	MU CAR (#3220) #320	320	12/19/84	3,713.00			3,713.00	
NJ TRANSIT	MU CAR (#3230) #330	330	12/19/84	30,276.00			30,276.00	
NJ TRANSIT	MU CAR (#3233) #333	333	12/19/84	3,713.00			3,713.00	
NJ TRANSIT	MU CAR (#3234) #334	334	12/19/84	33,302.00			33,302.00	
NJ TRANSIT	MU CAR (#3235) #335	335	12/19/84	33,302.00			33,302.00	
NJ TRANSIT	MU CAR (#3243) #343	343	12/19/84	5,150.00			5,150.00	
NJ TRANSIT	MU CAR (#3246) #346	346	12/19/84	33,303.91			33,303.91	
NJ TRANSIT	MU CAR (#4337) #681	681	12/19/84	5,150.00			5,150.00	
NJ TRANSIT	MU CAR (#4357) #705 NRS	705	12/19/84	3,713.00			3,713.00	
~~D & H~~	~~DIESEL LOCO SOLD-RS-3~~	4075	12/19/84	12,000.00			12,000.00	
N & W — SOLD	DIESEL LOC GP-9 — NRS	2514	04/15/85		20,000.00		20,000.00	
N & W — SOLD	DIESEL LOCO SW-8 — NRS	3132	04/15/85		15,000.00		15,000.00	
OHIO — JISCO	LOCO #3 — DPLOD — NRS	3	01/31/86	12,316.00		.00	12,316.00	
NL & W	LOCO #565 — NRS	565	03/31/86	1,095.00			1,095.00	
HARSH AIR BRK	HREX #7005 — NRS — FRACT	7005	07/31/86	4,000.00		.00	4,000.00	
DLAIRVILLE EASTMIKADO	#1271 — NRS —	1371	CNR 1987	103,061.33		.00	103,061.33	
VARIOUS	FP7-A-E7 DIESEL #638 MILW PTA	638 — NRS	1987	6,222.63		.00	6,222.63	
VARIOUS	FP7-A-E7 DIESEL #637 MILWAUK	637 — NRS	1987	33,755.64		.00	33,755.64	
~~VARIOUS~~	~~DETROIT&MACKINAC CAR SOLD~~	1070	1987	4,859.75		.00	4,859.75	
~~VARIOUS~~	~~DETROIT&MACKINAC CAR SOLD~~	1076	1987	4,859.75		.00	4,859.75	
~~VARIOUS~~	~~SD 24 DIESEL #880 SOLD~~	880	1987	13,250.00		.00	13,250.00	
~~VARIOUS~~	~~SD 24 DIESEL #885 SOLD-630~~	885	1987	13,250.00		.00	13,250.00	
VARIOUS	E7 DIESEL #639 KCS NRS	639	1987	10,000.00		.00	10,000.00	
VARIOUS	EL BAG CAR #489011 NRS	489011	1987	1,101.00		.00	1,101.00	
VARIOUS	BUFFET LOUNGE CAR791 NRS	791	1987	57,861.70		.00	57,861.70	
D L & W	~~MU CAR #3015 — NRS~~				BOSTON + MAINE #686 — PASSENGER			
LIRR	~~PASS #2046 — NRS~~				BOSTON + MAINE #2066 — "			
LIRR	~~PASS #7078 — NRS~~							
GWRR	~~ENGINE CHECK #6705 — NRS~~							
~~NYW~~	~~MUSEUM TENDER #1878~~							
	TOTALS			629,956.64	487,722.56		1,117,679.20	
D+H	~~RAILROAD SNOW PLOW #26037~~							

GL ACCT NO. 1650

STEAMTOWN FOUNDATION
DEPRECIATION SCHEDULE

DESCRIPTION MOTOR VEHICLES

PAYEE/DONOR	DESCRIPTION	RLTY	LIFE	DATE ACQUIRED	BASIS	ACCUM DEPREC 10/31/86	1987 DEPREC	ACCUM DEPREC 10/31/87	
	MICH TRAC SHOVEL	GL	10	5/15/73	3,500.00	3,500.00	.00	3,500.00	M Off BL
	MICH BUCK LOADER	GL	12	4/16/82	23,000.00	8,626.00	1,917.00	10,543.00	
	~~77 CHEVY PICKUP~~	GL	3	SOLD 7/85	833.00	417.00	278.00	695.00	Sold — Mike
①	~~85 CHEVY PICKUP~~	GL	5	1/85	9,915.76	2,974.58	1,983.00	4,957.58	SOLD
	HIGHRAIL TRUCK	GL	3	X 1/86	4,200.00	700.00	1,400.00	2,100.00	
②	~~GOLF CART~~	GL	3		2,135.00	356.00	712.00	1,068.00	SOLD
①	~~1984 PORK LIP~~								SOLD

ENTER

APPENDIX 2 - Written Statement of Willard Sturdevant
Car Mechanic, Steamtown NHS

While removing paint from the roof and sides of coach 1157 I found Pullman Green paint as the first layer of paint on top of the primer coat on the metal. I also found Pullman Green as the first layer of paint, after primer, on the truck side frames.

When cars and locomotives were built they would be painted for the railroad that was buying them and place into service as delivered from the factory. The CNJ coaches were painted Pullman Green; roofs, sides and frames including trucks when delivered and placed into service as soon as they received them without repainting them, as cars and locomotives were sent to the shop for repairs, repainting sometimes would be done at that time. The roofs, as far as I can tell, did not get painted black until the CNJ repainted the coaches to a later paint scheme which was the early diesel era paint scheme; black roof, Pullman Green or Deep Sea Green sides and black frames & truck frames.

In all of the old black & white photos that I have seen, there is no difference in the shades of darkness to tell if the roofs were black, from what I have found on the cars, seen in old photos and know from reading books on railroads, I am positive that the coaches were delivered Pullman Green from roof to trucks and that's how they were placed into service, with no changes being made until the early 50's.

Willard Sturdevant
Railroad Car Mechanic

Bibliography

Primary Sources

Archives

Bethlehem Steel Corporation/Harlan & Hollingsworth Papers. Manuscripts Collection, Hagley Museum & Library, Wilmington, DE.

Owen, Arthur, E. Central Railroad of New Jersey passenger car summary. Personal copy, Chris Baer. Research Collections, Hagley Museum & Library, Wilmington, DE. Photocopy. n.d.

Steamtown Foundation Depreciation Schedule. Superintendent's files, Steamtown National Historic Site, Scranton, PA.

Steamtown Foundation files. Steamtown NHS Library, Steamtown National Historic Site, Scranton, PA.

Steamtown NHS Original Record of Repairs. Locomotive Shop Foreman's files, Steamtown National Historic Site, Scranton, PA.

Sturdevant, Willard. Written statement, 13 May 1992. Steamtown NHS Library, Building Files, "CNJ Coach No. 1157."

Printed Publications

Bethlehem Shipbuilding Corporation, Ltd. Bethlehem Ship Repair Facilities. Bethlehem, PA: Bethlehem Shipbuilding Company, Ltd., 1924.

Bethlehem Steel Corporation. 1943 Annual Report of the Bethlehem Steel Corporation. Bethlehem, PA: Bethlehem Steel Corporation, 1944.

C.R.R. of N.J. Diagrams of Passenger Car Equip't. Elizabethport, NJ: Central Railroad of New Jersey, ca. 1931.

Harlan & Hollingsworth Corporation. Annual Report of the Harlan & Hollingsworth Corporation for the Fiscal Year Ending December 31, 1911. Wilmington, DE: Harlan & Hollingsworth Corporation, 1912.

U.S. Department of the Interior. Steamtown National Historic Site Pennsylvania, Railroad Yard Design Program/Interpretive Concept. Denver: National Park Service, Denver Service Center, 1989.

Wright, Roy V., ed. Car Builder's Cyclopedia of American Practice. 10th ed. New York: Simmons-Boardman Publishing Company, 1922.

Interviews

Ahrens, Chris. Locomotive Shop Foreman, Steamtown NHS. Conversations with author, March-June 1992.

Baer, Chris. Assistant Curator, Hagley Museum and Library. Conversation with author, 15 March 1993.

Blossom, Ed. Private car repair contractor. Telephone conversation with Chris Ahrens, 29 April 1992.

Bailey, Fred. Former Assistant General Manager, Steamtown Foun- Foundation. Telephone conversation with author, 20 March 1992.

Grill, Carl. Car Mechanic, Steamtown NHS. Conversation with Ella Rayburn, Curator, Steamtown NHS, 20 May 1992.

Handley, Chris. Site manager, USS Cairo Museum, Vicksburg National Military Park, MS. Telephone conversation with author, 26 June 1992.

Louderback, Art. Archivist, Historical Society of Western Pennsylvania. Telephone conversation with author, 16 June 1992.

Rose, Carl. Historian, Anthracite Railroads Historical Society. Telephone conversation with the author, 28 April 1992.

Sturdevant, Willard. Car Mechanic, Steamtown NHS. Conversations with the author, March 1992-April 1993.

Swanson, Carl. Editor, Passenger Train Journal. Telephone conversation with author, 11 March 1992.

Woodland, Dale. Anthracite Railroads Historical Society. Telephone conversation with author, 10 April 1992.

Photographs

Author. CNJ four-wheel passenger car truck on coach No. 1157. Scranton, PA: Steamtown National Historic Site, April 1992.

------. Gould type "BB" generator on coach No. 1157. Scranton, PA: Steamtown National Historic Site, April 1992.

------. Photograph of Sharon passenger car coupler on coach No. 1157. Scranton, PA: Steamtown National Historic Site, April 1992.

Central Railroad of New Jersey. Suburban coach No. 947. Scranton, PA: collection of Willard Sturdevant, n.d.

Reading Company. Interior of a CNJ passenger compartment. Reading Company Collection, Pictorial Collections and Audiovisual Services Department, Hagley Museum and Library, Wilmington, DE. n.d.

Ganz, Kenneth. Harlan & Hollingsworth cast-steel passenger car truck. Scranton, PA: Steamtown National Historic Site, July 1992.

Secondary Sources

Anderson, Elaine. The Central Railroad of New Jersey's First 100 Years - A Historical Survey. Easton, PA: Center for Canal History and Technology, 1984.

Bernet, Gerard E. Jersey Central Diesels. Halifax, PA: Withers Publishing, 1990.

Carleton, Paul. The Jersey Central Story. River Vale, NJ: D. Carleton Rail Books, 1976.

Drury, George H. The Historical Guide to North American Railroads. Waukesha, WI: Kalmbach Books, 1991.

Drury, George H. The Train Watcher's Guide to North American Railroads. Waukesha, WI: Kalmbach Books, 1984.

Ganz, Kenneth and Thomas Campion. Interim Stabilization Report. Scranton, PA: Steamtown National Historic Site, 1991.

Hankey, J.P. "The End of Innocence." Locomotive & Railway Preservation (January-February 1991): 40-41.

Pocket List of Railroad Officials 71. New York: The Railway Equipment and Publication Company, 1912.

Richardson, George A. "History and Development of Passenger Car Building." Railway Review, 14 June 1924. Reprint. Bethlehem, PA: Bethlehem Shipbuilding Company, n.d.

Rohde, William L. "Coal and Commuters." Railroad Magazine, March 1946.

White, John H., Jr. The American Railroad Passenger Car. 2 pts. Baltimore: Johns Hopkins University Press, 1978.