

ON THE LEVEL

STORY
EDITION



THE CANAL SOCIETY OF NEW JERSEY

Rockaway Foundry Casts Cable Drum for Inclined Plane 12 East

In late 1846, the newly reorganized Morris Canal Company began making plans to enlarge the canal to increase its capacity. As a part of this plan, Chief Engineer William Talcott redesigned the inclined planes to accommodate boats carrying heavier cargoes. Plane 6 West was rebuilt as a prototype and successfully tested in 1848. Most of the western division planes were rebuilt in the winter of 1850-1851. When Plane 12 East in Newark was scheduled to be rebuilt, the Freeman Wood Foundry in Rockaway was selected to make the large casting that would be required.



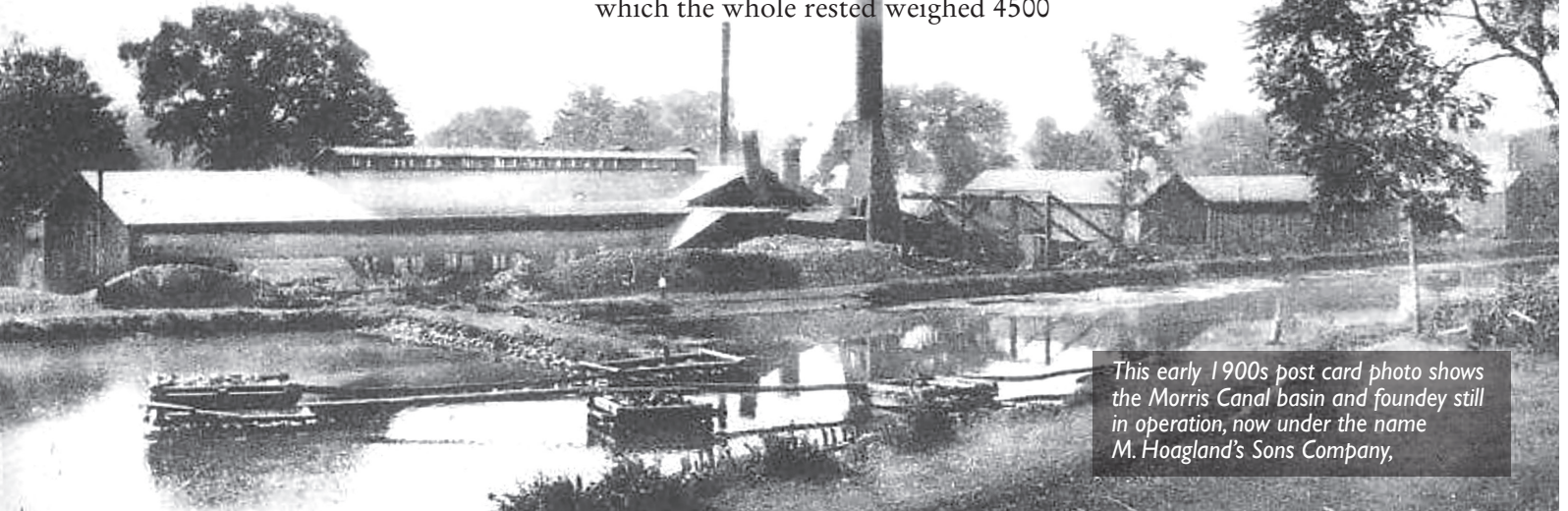
December 16, 1851

In one respect our quiet village may claim preeminence in his state, as today having produced the largest casting ever run in New Jersey. A drum 12 feet in diameter, eight feet high and on an average three-eighths inches thick, designed for the new inclined plane in Newark, has been successfully cast in the

foundry of Freeman Wood, Esq. The labor necessary for the work can be inferred from the fact that nine thousand bricks and more than nine tons of iron, in the shape of bed, parting and top plates, snugs, clamps, bolts etc., were used in construction the truly monstrous mold. The cope or outside of the mold, was made to part in the middle in order to be more easily raised out of the hole in which it was made. These alone weighed twelve tons, when raised in order to prepare the interior of the mold, called the core. The bed plate on which the whole rested weighed 4500

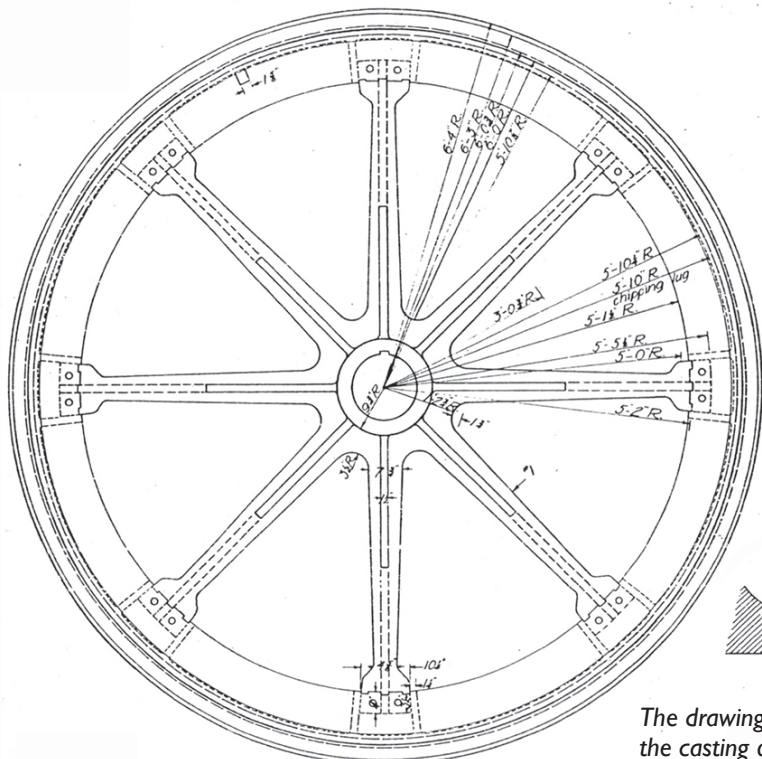
pounds, the bottom, parting and top plates weighed more than a ton each, and forty clamps used to grip the interior immovably fast, and solid, made some 2400 pounds more. When the core was finished and dried it was swung into place, and the whole bolted, and clamped in the strongest manner. Then the space outside the mold was filled and stamped as hard as a brick, in order to prevent the least yielding under the tremendous pressure of ten tons of liquid iron poured quickly into it.

(Continued on page 2)

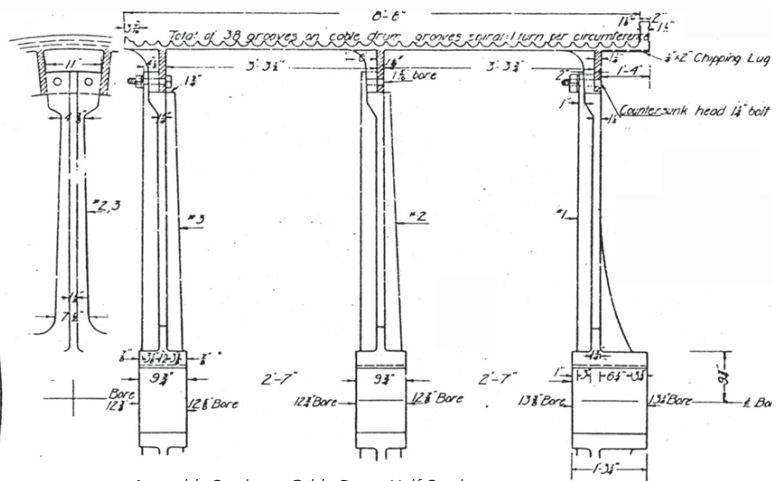


This early 1900s post card photo shows the Morris Canal basin and foundry still in operation, now under the name M. Hoagland's Sons Company.

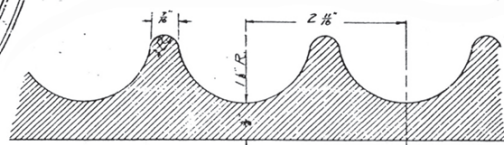
Casting the Cable Drum



Assembly Drawing of Cable Drum



Assembly Section - Cable Drum Half Section



Detail of Cable Grooves

The drawing above shows the complete canal drum assembly. This article describes the casting of the 12-foot diameter rim of the drum with its grooved outer surface around which the cable would be wound. The spokes that connected the rim to the shaft on which the drum would turn were bolted to flanges in the casting.

(Continued from page 1)

This morning the two cupola furnaces were put in blast, and in just two hours and three quarters, ten and half tons of iron were melted and placed

in a huge receiver or reservoir, and ladle, the first holding near seven tons, and the other near four. The receiver was connected with a trough made of molded sand, running the entire circle

of the mold, from which trough there were forty holes leading into the mold itself. When the moment of pouring such a quantity of liquid metal arrived, you may be sure it was one of intense

The Union Foundry

In 1845, the partnership of James Fuller and Mahlon Hoagland built a foundry along the east side on the upper canal basin in Rockaway. Freeman Wood later joined the partnership and, operating under his name, the company made castings for a wide range of clients. In 1850, as the company was preparing to make castings for the new Morris Canal inclined planes, a fire destroyed the works. The foundry was rebuilt and, according to this late-1851 article, was soon back in op-

eration, filling orders for the canal company.

When Fuller left the company, Hoagland continued under the name Union Foundry and Machine Works. Among their accomplishments were hundreds of tons of castings for New York's Crystal Palace exhibition building, which opened in 1853.

Hoagland's sons continued the business until after the First World War. The Borough of Rockaway took over the property to satisfy unpaid taxes and razed the build-

ings in the 1930s. The Rockaway Borough Police Department building and Halsey Park now occupy the site.

A small stone storage building on Maple Avenue is the only remaining structure of the foundry complex. Only fragments of the cable drum castings survive as samples of their work. ■

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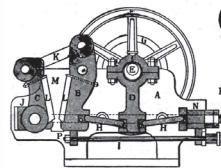
SCREENS, Etc.

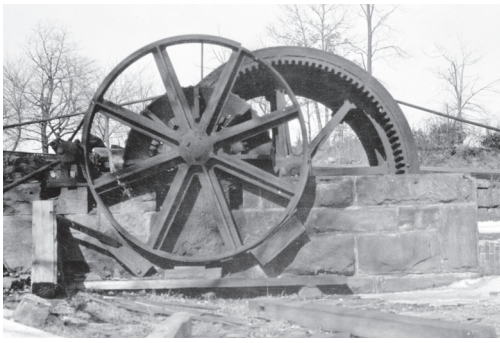
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In this canal abandonment photo an inclined plane brake wheel, gearing and cable drum can be clearly seen.

interest. The two reservoirs began to discharge their contents simultaneously, and in an instant from each of the sixteen air holes on the top burst out brilliant gas lights, while from a thousand crevices in the bricks, comprising the center or core, broke out streams of blue flame. It was a most beautiful sight, and crowd sent up three merry, hearty cheers, to the enterprise of the proprietor, the skill of the workmen, and the success of both.

The drum will weigh nearly nine tons, and with the segments, arms, and shaft, will reach some twenty tons. We feel proud that Rockaway has the honor of such work, and confidence that this will not be the last of its kind. Indeed, another drum of the same kind is to be cast immediately. In fact, there is nothing we cannot cast now, and we are not too far from the sea-board, you might hear of our casting those immense bed-plates, weighing only forty tons which bear the weight of our Ocean Streamers!

Mr. John Thompson, a Scotchman [sic], is the ingenious workman who has achieved this success for his enterprising employer, and no one could look at his handiwork to that gigantic mold without admiration. We are flat, flat, flat, as the iron business in general, but in this work today, we are head and shoulders above all our enterprising sister towns in the Jerseys, are we not? A large number of ladies and gentlemen were the excited spectators of the scene. ■

Truly Yours
Correspondent of the
Newark Sentinel, Rockaway, NJ.

CANAL BOATS COLLIDE

Weekly State Gazette, Trenton – May 14, 1903

The Delaware & Raritan Canal was built to dimensions that allowed it to accommodate both mule-drawn canal boats and larger steam-powered vessels involved in the coastal trade. To make time, these faster moving boats could travel at night if they obeyed the rules for displaying proper running lights.

The Bergetta, one of Excise Commissioner Charles H. Gallagher's canal boats, ran into another canal boat at the Terra Cotta basin near the Maddock's pottery last night about 9:00, and was stove in the bow of the Bergetta, from which she shortly afterwards sank. The boat was submerged to her deck. Fortunately she carried no cargo.

Captain Frakenheld of the Bergetta told the 'State Gazette' last night that the boat with which they collided carried no lights. He said he could not see the other boat because of the absence of her lights and it was too late to avoid a collision.

The captain said his own boat showed the usual lights; green in the bow and white in the stern, and he thought the crew of the other boat, when they saw Bergetta approaching, should have shouted a warning.

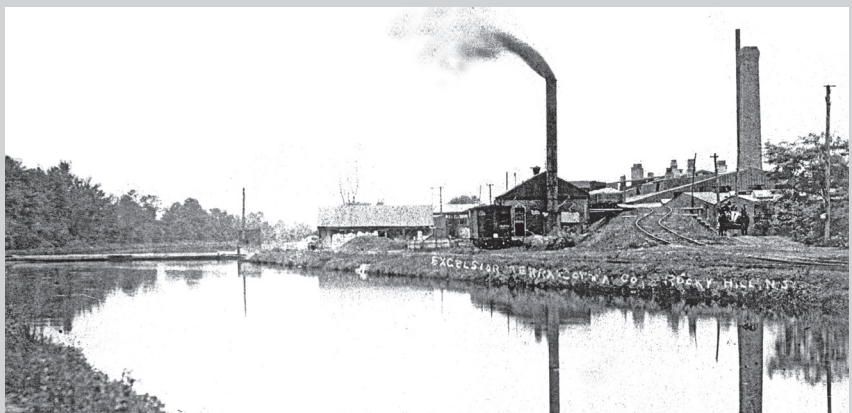
After passing the Terra Cotta basin, the damaged boat continued her journey up the canal until she had passed the Greenwood Avenue bridge. The boat commenced to fill rapidly after the collision, and with difficulty she was taken that distance. When it was seen she was going to sink, she was run close to the bank so as to be out of the way of passing boats.

The damage, it is believed, will not be great. The hold will be pumped out this morning and the hole patched up.

The Bergetta left Philadelphia yesterday morning at 7 o'clock on her way to the Coalport. James Dillon of this city, a deckhand on the boat, said that the whole fault of the accident rested with the unknown boat which had neglected to show her lights. ■



A south-bound, steam-powered vessel leaving the State Street lock in Trenton.



This view looks north from the D&R towpath near the spot where the boats collided. Across the canal is the sprawling, 100-acre, Excelsior Terra Cotta Company plant looking near Rocky Hill.

This article was contributed by Bill McKelvey

Newark's Electric Inclined Plane

As Newark grew from a town to a sprawling city, the railroad lines that now fed its growing industries became hemmed in by city streets. This situation led to many grade crossings at which pedestrians, horse-drawn wagons and locomotives vied for the right of way. The route of the now nearly obsolete Morris Canal through this maze only added to the confusion.

By John Prieto

By the late 1800s, there were many calls in New Jersey to abolish railroad crossings. The crossing of the Delaware, Lackawanna & Western (DL&W) Railroad in Newark over the Morris Canal had been a particular concern for local officials for safety reasons. Around 1900, the Morris Canal in Newark ran under the DL&W tracks and Orange Street trolley. Attempts to create legislation to compel the railroad to eliminate the crossings ended in frustration.

Proposals to make railroad improvements were many, and possibly eliminating the canal altogether was

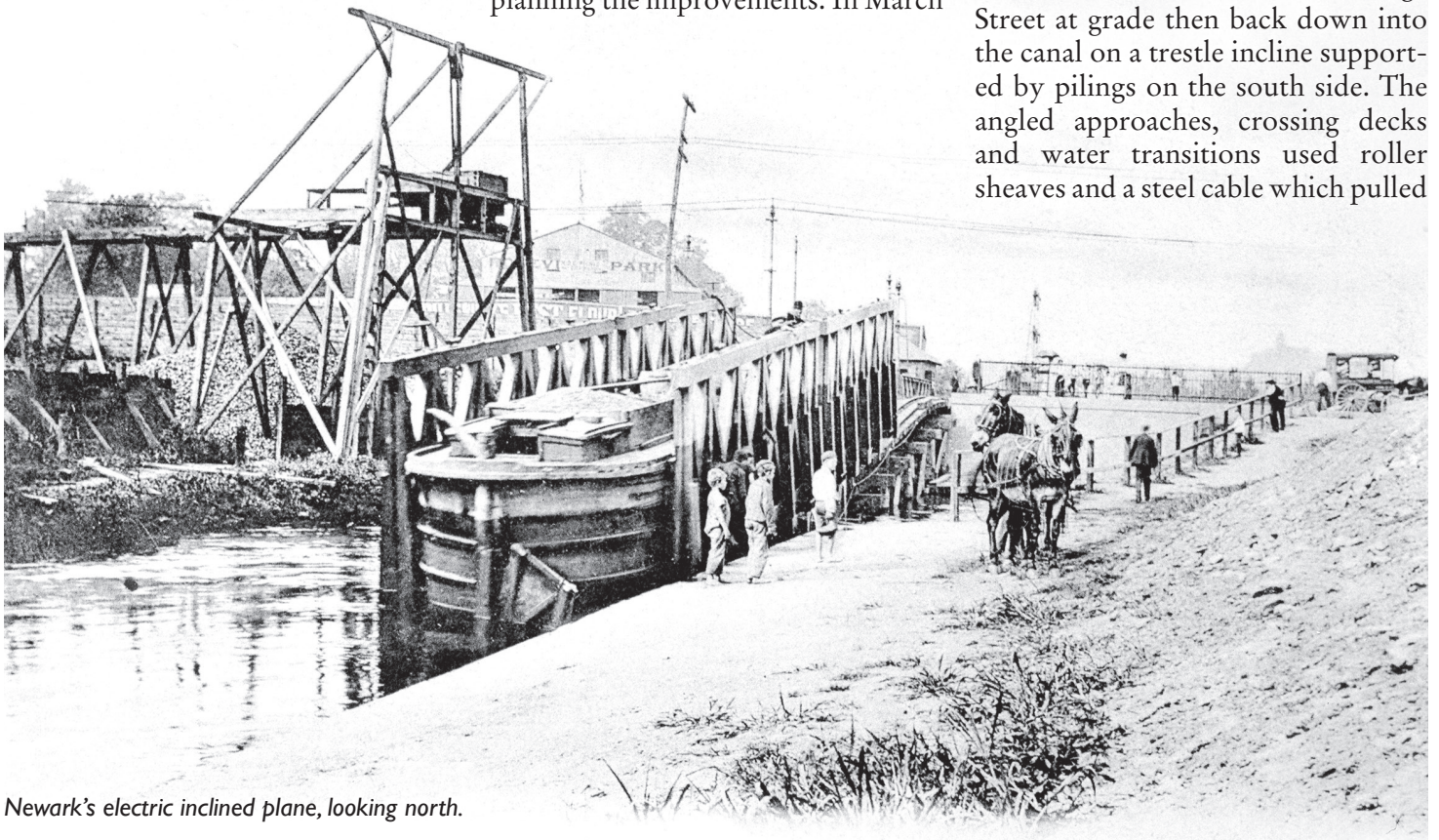
even discussed. Partly because some felt that due to reduced traffic the canal would soon be abandoned, a decision was made to wait.

A fatal rail accident suddenly changed all that. On February 19, 1903, a local trolley had collided with a train on the DL&W tracks at Orange Street and Clifton Avenue, resulting in the deaths of nine high school students and injuries to 30 others. While this tragic event certainly pressed the issue of the rail crossings, negotiations between the City of Newark and the railroad were already underway. In addition, DL&W management had been in the process of planning the improvements. In March

1904, the Lehigh Valley Railroad (the lessee of the Morris Canal) agreed that the dangerous crossing should be eliminated.

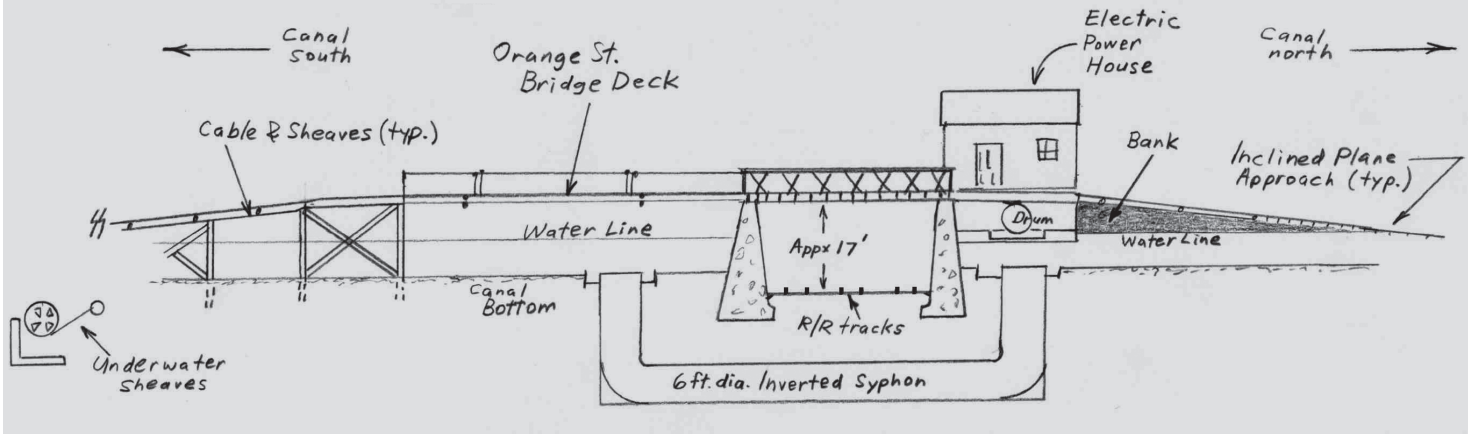
The work to improve the DL&W line involved depressing its tracks so that they would lie below the existing canal bottom and a section of the canal on either side of the railroad track would be removed. This meant that the retaining walls would support the overhead tracks of the inclined plane. The project also involved relocating a large retail coal pocket to the east.

The method of operating the canal over a depressed railroad was a novel one. The idea was to move a cradle, which held the canal boat, on tracks up and over the railroad. This was accomplished by using inclined rails rising out of the canal and resting on the retaining walls that supported the sides of the depressed railroad right of way. The boat was pulled up the incline, which rests on a filled-in bank on the north side, across a trestle over the railroad, across Orange Street at grade then back down into the canal on a trestle incline supported by pilings on the south side. The angled approaches, crossing decks and water transitions used roller sheaves and a steel cable which pulled



Newark's electric inclined plane, looking north.

Detail of the Morris Canal Inclined Plane Over the DL&W Railroad, Newark, New Jersey



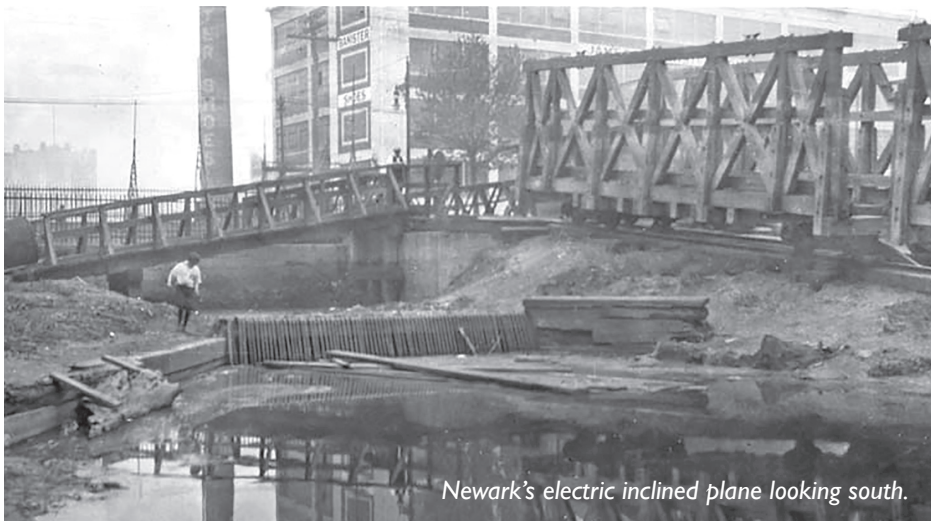
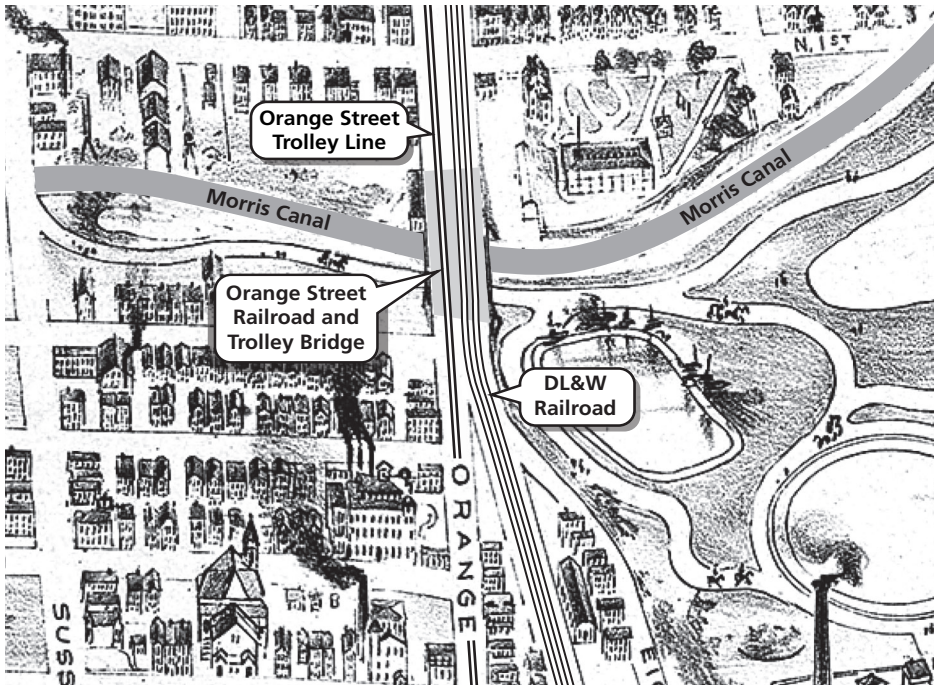
Sketch by John Prieto, Source: *The Railroad Gazette*, August 25, 1905. (Not the scale)

the cradle car. The hoisting action was powered by twin 75-horsepower, electric motors and cable drum; a dedicated generating station would not be needed to supply power to the plane due to existing overhead electric lines. Since the water-filled sections of the canal would be disconnected, a six foot-diameter brick syphon was installed under the railroad to equalize the water level in both sections of the canal.

Interestingly, while the work to depress the railroad tracks was going on, the canal continued to operate by using a timber aqueduct across the railroad property. The aqueduct was 13 feet wide, carried almost 6 feet of water, and was 160 feet long.

The work to depress the railroad tracks and the resulting elimination of grade crossings was completed in December of 1905. The new inclined plane, which was financed by a joint group of interested parties, was placed in service on May 8, 1906 when the first canal boat passed over it.

Ironically, this major effort came at a time when freight traffic on the canal was light. But the project to improve railroad safety extended the life of the Morris Canal and added two distinctions to the canal's history: an unnumbered electric plane and a temporary aqueduct. ■



Newark's electric inclined plane looking south.

Life on the Morris Canal

Tale of Two Mule Tenders

Warren County's recent release of an animated video, *Plane 9 West on New Jersey's Morris Canal: A Computer Animation*, showing the workings of Plane 9 West reminds us that youngsters worked on the Morris Canal. The video features Lizzie, a young mule tender who accompanies her father,



Mrs. Isabelle Lenstrohm Mann

Captain Peter Lenstrohm, on an trip from Phillipsburg to Hackettstown, carrying a load of coal and saw dust.

More than 40 years ago, we met Lizzie in James Lee's book, *Tales the Boatmen Told*, when she was 76 years old, known then as Mrs. Isabelle Lenstrohm Mann, and mother-in-law of the author. Mr. Lee also interviewed Mrs. Florence Van Horn, who also worked as a mule tender for her father Captain James Campbell. Both accounts provide great insight to life on the Morris Canal.

What was it like for two 12-year-old girls to live and work on a canal boat for months at a time? First off, driving the mules was not an easy job. Both girls had to walk up to 20 miles a day in their bare feet, rain or shine, keeping a sharp eye out for water snakes that would often slither across the towpath. While the boats ran from sunup to sundown, at the end of the day the mule tenders would unharness and brush the mules before



Mrs. Florence Van Horn

putting them in a stable along the canal for the night.

Both women spoke of the simple food that was eaten during the week: bacon and eggs or a pork soup that could be reheated and eaten day after day. On Sundays, which was a canalers day off, the dinner might be a bit more special. Since there was no refrigeration on the boats, any roasts or hams had to be stored in the feedboxes, with oats as insulation. Mrs. Mann recounts the sleeping arrangements in the tiny 10' x 10' cabin, where the boys slept on the floor and the girls shared one of the two narrow bunks, while her parents slept in the other.

There was danger on the boats, as a slippery deck with no rail made it easy to fall into the water. While Mrs. Mann was a good swimmer, but one time she fell in and was knocked unconscious. Fortunately she was rescued quickly. Mrs. Van Horn couldn't swim and greatly feared going overboard. Her sister did fall into the cold water at one point, and her father pulled her out using a long pole and hook. Afterwards, shots of whiskey were used to warm her up. Others were not so fortunate,

ON THE LEVEL



THE CANAL SOCIETY OF NEW JERSEY

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as with the account of a lock tender's child who was crushed between a canal boat and the lock wall.

However, one theme that emerged from both of the women's interviews is the extended family that existed on the canal. Mrs. Van Horn commented, "[Canalers] helped one another. They were a good kind. They were poor people that had the boats, but they were good to each other." An account of Mrs. Mann confirms this. When one of her family's mules died suddenly at Rockport, it was Mrs. Van Horn's father, Jim Campbell, who loaned them another until they could purchase a replacement in Phillipsburg.

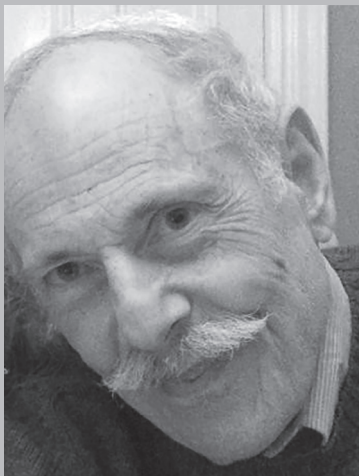
Decedents of both these women are actively involved in the Morris Canal Greenway effort today. Additionally, Mrs. Mann's great grandson, Jim Lee, III, serves on the CSNJ Board of Directors. ■

Florence Van Horn as a young girl.



Florence Van Horn's father James Campbell owned this house on North Washington Avenue in Washington. The house, seen above in poor condition, is still owned by the family and is being restored.

IN MEMORIAM: LARRY LOWENTHAL, 1940-2020



Larry Lowenthal, age 80, slipped away from life at home in Brimfield, MA, on March 12, 2020. Born in New York City, a boyhood move to Randolph Township, a short walk from the location of the Ironia station on the Chester Railroad (later a branch of the DL&W), introduced him to his lifelong passions – nature and history – which

remained at the core of nearly everything he did.

A graduate of both Rutgers and Yale Universities, Larry held a master's degree in history. He worked for the National Park Service (NPS) as a historian for 30 years, after which he continued as a consultant for the Eastern regional planning office. In his retirement years, Larry also enjoyed consulting on many local historical projects as well as his own projects. He always had projects!

Larry wrote over 18 published books, in addition to many equal-length historical studies for the NPS, always striving to present ideas in the most engaging and accessible way.

Larry's book *Iron Mine Railroads of Northern New Jersey* (1981), published by the Tri-State Railway Historical Society, was

an inspiration for a generation of budding industrial archeologists, rail enthusiasts, and canal historians. Nearly 40 years later, it remains the most thorough history of the North Jersey iron industry. At the launch of the 2nd Edition in 2016, Larry provided a humorous commentary about his earlier years researching the various railroads and his wife's ceaseless support of the project, sitting in libraries and archives while he took notes and reviewed photo collections.

His last major project was a book, *Across the Waist of New Jersey: A History of the Delaware and Raritan Canal*, for future publication by CSNJ.

Larry is survived by his wife of 50 years, Koren (Kitty), his son Isaac, daughter Eleanor, and brother Roy. Larry was buried in New Jersey. ■

AMERICAN UNION TELEGRAPH COMPANY

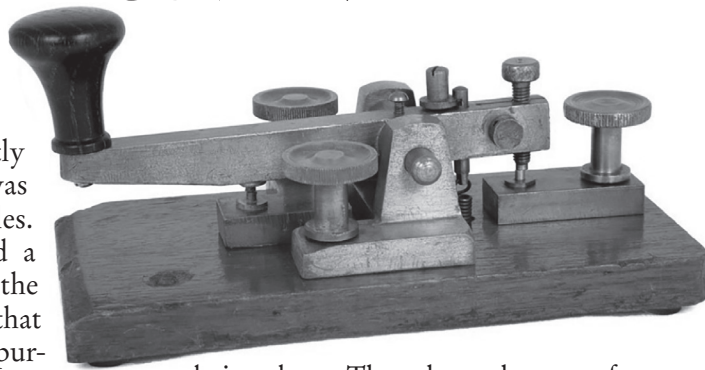
The Telegraph War at New Brunswick

Newark Daily Advertiser

July 29, 1879

Yesterday morning a force of men in the employ of the American Union Telegraph Company assembled on the dock near the draw of the Albany Street bridge prepared to lay their cables across the bed of the canal, the water in which had been drawn off as far as possible. At the same time Mr. Samuel Barr, the foreman of the D&R Canal Co., appeared on the scene in a mud scow, and took

up his position directly over the spot where it was proposed to lay the cables. He had at his command a force of men, and when the telegraph men intimated that they were there for the purpose of placing their wires across the canal, Mr. Barr quietly but firmly informed the representatives of the telegraph company that they could not proceed with the work as he had been given orders by the canal company to prevent such a thing



being done. The telegraph men, after waiting about an hour, quietly retired to await orders. It was stated that there was too much water in the canal to do the work, the freshet making it impossible to draw it off, but there can be no doubt that the canal company meant to prevent any infringement upon their franchises. The Western Union Telegraph Company have a cable under the canal at this point, the draw there making an underground connection necessary. At the last meeting of the Board of Freeholders permission was given the new company to stretch their wires across the bridge. ■

This article was contributed by Bill McKelvey

CALENDAR OF EVENTS

Canal Society Members:

We hope you have enjoyed this Story Issue of *On the Level*. As the health crisis unfolds we will follow up with a schedule of events for the rest of the year as soon it is practical to do so. In the mean time, watch for e-mail announcements. We look forward to seeing you at activities later in the year.

Joe Macasek, President CSNJ

www.CanalSocietyNJ.org



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