

The Most Famous Landmarks of New York City: The History of the Brooklyn Bridge, Statue of Liberty, Central Park, Grand Central Terminal, Chrysler Building and Empire State Building

Pages: 288

Publisher: Charles River Editors (February 22, 2015)

Format: pdf, epub

Language: English

[DOWNLOAD FULL EBOOK PDF]

The Most Famous Landmarks of New York City: The History of the Brooklyn Bridge, Statue of Liberty, Central Park, Grand Central Terminal, Chrysler Building and Empire State Building

By Charles River Editors

Late 19th century illustration depicting the Brooklyn Bridge

About Charles River Editors

Charles River Editors provides superior editing and original writing services across the digital publishing industry, with the expertise to create digital content for publishers across a vast range of subject matter. In addition to providing original digital content for third party publishers, we also republish civilization's greatest literary works, bringing them to new generations of readers via ebooks.

[Sign up here to receive updates about free books as we publish them](#), and visit [Our Kindle Author Page](#) to browse today's free promotions and our most recently published Kindle titles.

Introduction

The Brooklyn Bridge

Invitation to the opening of the Brooklyn Bridge

“Spring and fall in New York are the best seasons here to get out and about. I like the little park in Dumbo between the Manhattan and Brooklyn bridge. I like Prospect Park.” – Paul Dano

New York City has countless landmarks and tourist spots, but few are as old or as associated with the city as the Brooklyn Bridge, the giant suspension bridge that spans nearly 1,600 feet as it connects lower Manhattan to Brooklyn. Indeed, the bridge is so old that Manhattan and Brooklyn represented the largest and third largest cities in America at the time of its construction, and the East River posed a formidable enough challenge that taking a ferry across could be dangerous.

Originally known as the New York and Brooklyn Bridge and then later as the East River Bridge, the iconic bridge wasn't formally dubbed the Brooklyn Bridge until about 30 years after it was completed in the early 1880s. As the first steel suspension bridge built in America, it represented an enormous engineering feat that claimed the lives of several workers, including its original designer, but by the time it was finished, the Brooklyn Bridge towered nearly 300 feet above the water at over 80 feet wide. With those dimensions, it was over 50% larger than any suspension bridge to date.

From its inception, the Brooklyn Bridge has been celebrated as one of the things that makes New York City unique. President Chester Arthur attended its opening, and P.T. Barnum famously walked Jumbo the Elephant across the bridge as a publicity stunt. Yet despite its age and the fact that so many contemporary bridges have fallen into disrepair or were destroyed, the Brooklyn Bridge continues to be not just an instantly identifiable landmark in New York City but also a crucially valuable one that is still used by thousands of people a day.

The Most Famous Landmarks of New York City chronicles the story of how one of America's most famous bridges was built. Along with pictures of important people, places, and events, you will learn about the Brooklyn Bridge like never before, in no time at all.

The Statue of Liberty

“[A] masterpiece of the human spirit [that] endures as a highly potent symbol—inspiring contemplation, debate and protest—of ideals such as liberty, peace, human rights, abolition of slavery, democracy and opportunity.” - The UNESCO "Statement of Significance" describing the Statue of Liberty

Among America's countless monuments and landmarks, none embody the principles of the nation quite like Lady Liberty, the colossal statue that stands on Liberty Island in New York Harbor. A gift from the French that was built and transported in the late 19th century, the Statue of Liberty has been a symbol of the United States' guaranty of individual freedom, and its location took on added meaning as it welcomed millions of immigrants sailing across the Atlantic to nearby Ellis Island. As one incoming Greek immigrant remembered, “I saw the Statue of Liberty. And I said to myself, ‘Lady, you're such a beautiful! [sic] You opened your arms and you get all the foreigners here. Give me a chance to prove that I am worth it, to do something, to be someone in America.’ And always that statue was on my mind.”

People around the world are instantly familiar with the statue today, whether from seeing pictures or depictions of it or actually visiting it and going inside, but the story of its construction is just as

fascinating. Conceived as a monument that would commemorate the crucial alliance between America and France, the statue was a massive undertaking, from fundraising to the construction of the sculpture and a pedestal. The project took several years and a precarious transport of the statue's pieces across the Atlantic to New York, where it was officially dedicated in 1886 and celebrated with a ticker tape parade. Even before that, the statue was so famous on both sides of the Atlantic that the head and torch had been displayed at various exhibits prior to the completion of the statue.

Ironically, given the widespread fame of the Statue of Liberty, its history was turbulent and controversial. While those who conceived of the statue had a difficult time securing the funding, there were arguments over where the statue should go, and how everything from the pedestal to the statue itself should be built. In hindsight, it seems like a foregone conclusion that one of America's most famous monuments would be completed, but it would actually take almost 15 years for the Statue of Liberty to be designed, constructed, and completed, and the lion's share of the credit would go not to Americans but to dedicated French artists and engineers who pushed on with the work against major obstacles and heavy odds.

The Most Famous Landmarks of New York City chronicles the design and construction of Lady Liberty. Along with pictures of important people, places, and events, you will learn about the Statue of Liberty like never before, in no time at all.

Central Park

The statue of Victor Herbert in Central Park

"I just want to go through Central Park and watch folks passing by. Spend the whole day watching people. I miss that." – Barack Obama

Of all the great cities in the world, few personify their country like New York City. As America's largest city and best known immigration gateway into the country, the Big Apple represents the beauty, diversity and sheer strength of the United States, a global financial center that has enticed people chasing the "American Dream" for centuries. Given that background, it's fitting that the city's most unique landmark, Central Park, sits at the heart of Manhattan and provides a stark contrast to the hustle and bustle surrounding it. As actor Haley Joel Osment once put it, "My favorite place is Central Park because you never know what you're going to find there. I also like that when I look out the windows of surrounding hotels, it seems like I'm looking out over a forest."

In 1811, an ambitious plan was laid out that would transform Manhattan's grid into 2,028 blocks, from Houston Street to 155th Street. Forests would be cut down, hills razed, ponds and streams filled. It took years to survey, and years to complete: at different points in time, one might have seen a long avenue laid out, unpaved, with a scattering of as-yet-unattached six-story buildings amid boulders yet to be cleared and soon-to-be-demolished shantytowns. Ironically, almost no parks were incorporated into the plan, and Central Park would not be built until the end of the 19th century.

When Central Park was designed, however, it was an ambitious project on an almost unprecedented affair. As serene as Central Park is today, it's hard to imagine that its creation was an entirely manmade affair consisting of dynamite blasts, tons of imported topsoil, and the labor of thousands of workers. Before the area's transformation, the land was swampy terrain used by impoverished squatters and people who let their livestock roam the grounds, but after nearly 15

years of work, the metamorphosis was nearly complete.

Of course, New Yorkers soon came to understand that such a large park required serious upkeep; as historian Robert Caro noted, "Lawns, unseeded, were expanses of bare earth, decorated with scraggly patches of grass and weeds, that became dust holes in dry weather and mud holes in wet...The once beautiful Mall looked like a scene of a wild party the morning after. Benches lay on their backs, their legs jabbing at the sky..."

With city resources being pumped into maintaining Central Park, it has become the most visited urban park in the world, and it is a cultural touchstone that draws not only tourists but events. Locals commonly walk or run through the park, and others play sports or simply picnic, but Central Park is also home to monuments of all sorts, including statues dedicated to artists and playwrights, the Strawberry Fields tribute to John Lennon, and an Ancient Egyptian obelisk known colloquially as Cleopatra's Needle. On top of all that, Central Park has a diverse array of wildlife thanks to a sizable reservoir, over 1,000 different species of trees, a zoo, and more. Put simply, Central Park is the most unique place in one of America's most unique cities.

The Most Famous Landmarks of New York City chronicles the construction and history of the Big Apple's most famous park. Along with pictures of important people, places, and events, you will learn about Central Park like never before, in no time at all.

Grand Central Station

Luigi Novi's picture of Grand Central Terminal

"In Grand Central you cannot shilly shally or dilly dally. Everyone rushes and dashes and zips and zaps and whizzes like crazy and oh what a dizzy and delightful place." - Maira Kalman, Next Stop Grand Central

Of all the great cities in the world, few personify their country like New York City. As America's largest city and best known immigration gateway into the country, the Big Apple represents the beauty, diversity and sheer strength of the United States, a global financial center that has enticed people chasing the "American Dream" for centuries.

Given that background, it's fitting that the city's most iconic railroad station, Grand Central Terminal, is the largest in the world, sprawling across nearly 50 acres with over 40 platforms and 65 lines. Moreover, in addition to handling hordes of bustling commuters, it's now a classic tourist spot that attracts tens of millions of visitors annually. As author Tom Wolfe would so eloquently put it, "Every big city had a railroad station with grand — to the point of glorious — classical architecture — dazzled and intimidated, the great architects of Greece and Rome would have averted their eyes — featuring every sort of dome, soaring ceiling, king-size column, royal cornice, lordly echo — thanks to the immense volume of the spaces — and the miles of marble, marble, marble — but the grandest, most glorious of all, by far, was Grand Central Station."

Like Manhattan itself, Grand Central Station, which recently celebrated its 100th birthday, manages to be both historic and modern. Built upon the site of a former railroad depot, the current structure and layout was phased in over the course of nearly a decade in the early 20th century. Whereas the first railroad stations depressed the value of land nearby in the 19th century, the location of Grand Central was a boon that actually helped bring about construction all across Midtown, including the nearby Chrysler Building, thereby serving to transform the cityscape altogether.

As Central Station took on increasing importance, the cultural significance of the terminal also changed as New Yorkers began to look at the place as a work of art itself. Grand Central has since been stocked with art in all shapes and sizes, with galleries that call it home and special events being held there. Thus, when proposed changes or even possible replacements for Grand Central were bandied about in the 1960s, they met widespread opposition, including from former First Lady Jackie Kennedy, who asked, "Is it not cruel to let our city die by degrees, stripped of all her proud monuments, until there will be nothing left of all her history and beauty to inspire our children? If they are not inspired by the past of our city, where will they find the strength to fight for her future? Americans care about their past, but for short term gain they ignore it and tear down everything that matters. Maybe... this is the time to take a stand, to reverse the tide, so that we won't all end up in a uniform world of steel and glass boxes." As a result, Grand Central was maintained as a landmark and has instead undergone restorations.

The Most Famous Landmarks of New York City chronicles the construction and history of the Big Apple's most famous train station. Along with pictures of important people, places, and events, you will learn about Grand Central like never before, in no time at all.

The Chrysler Building

David Shankbone's picture of the Chrysler Building

"I would give the greatest sunset in the world for one sight of New York's skyline. The shapes and the thought that made them. The sky over New York and the will of man made visible... Let them come to New York, stand on the shore of the Hudson, look and kneel. When I see the city from my window - no, I don't feel how small I am - but I feel that if a war came to threaten this, I would like to throw myself into space, over the city, and protect these buildings with my body." – Ayn Rand, *The Fountainhead*

Of all the great cities in the world, few personify their country like New York City. As America's largest city and best known immigration gateway into the country, the Big Apple represents the beauty, diversity and sheer strength of the United States, a global financial center that has enticed people chasing the "American Dream" for centuries.

Given that history, it's no surprise that New Yorkers have always wanted to construct the biggest and best structures possible, even in the early 1930s at the height of the Great Depression. Indeed, those years produced the Empire State Building, which remains the city's most iconic building, but New York's most famous skyscraper wouldn't have been possible without the Chrysler Building, a landmark in its own right that was the tallest building in the world for nearly a year before its more famous counterpart's completion. In fact, the spirit of competition between the groups working on the two buildings helped ensure that both look like they do today, and the Chrysler Building only reached the height it did because a large skyscraper at 40 Wall Street was also trying to claim the mantle of tallest building at the same time.

The Chrysler Building was the first man-made object to surpass 1,000 feet in height, and while it has been surpassed by considerably taller projects since, it remains the largest steel-supported brick building in the world. As its name suggests, the Chrysler Building was named after Walter P. Chrysler, who ran the car company at the time, and yet his corporation never owned the building because he cherished it so much that he personally paid for the skyscraper and kept it in his family. Although it has since been sold to new groups, the name has remained, and the Chrysler Building continues to be a conspicuous part of the skyline in Midtown.

The Most Famous Landmarks of New York City chronicles the construction and history of the one of the Big Apple's most famous buildings. Along with pictures of important people, places, and events, you will learn about the Chrysler Building like never before.

The Empire State Building

Eric Kilby's picture of the Empire State Building

It's fitting that the Empire State Building is the city's most famous building, a soaring skyscraper that has been one of the tallest buildings in the world for nearly a century and the most recognizable landmark in New York. The Empire State Building was constructed using the Art Deco style, which was trendy during the era and had been used for other skyscrapers like the Chrysler Building, but that's where the comparisons end, because the Empire State Building was unprecedented in almost every aspect at the time of its creation. With a race for dizzying heights underway, ground was broken on the Empire State Building on St. Patrick's Day 1930, and the ceremony marking its completion would come just a little more than a year later. Employing thousands of workers and somehow managing only to lose 5, the gargantuan building soared to nearly 1500 feet tall before topping out.

Ironically, it took awhile for the Empire State Building to attract businesses, in large measure due to the fact it was built at the height of the Great Depression, but before long it became synonymous with New York City itself. The building has generated notorious headlines, such as when a B-25 bomber crashed into the building in 1945, and it has been featured in too many movies to count, including its most famous role in King Kong (1933) just a few years after its completion. Indeed, the Empire State Building continues to be not just an instantly identifiable landmark in New York City but also a crucially valuable one that is still visited and used by thousands of people a day.

The Most Famous Landmarks of New York City chronicles the construction and history of the Big Apple's most famous building. Along with pictures of important people, places, and events, you will learn about the Empire State Building like never before, in no time at all.

[The Most Famous Landmarks of New York City: The History of the Brooklyn Bridge, Statue of Liberty, Central Park, Grand Central Terminal, Chrysler Building and Empire State Building](#)

[About Charles River Editors](#)

[Introduction](#)

[The Brooklyn Bridge](#)

[Chapter 1: The Tide of Travel](#)

[Chapter 2: The Foundation for the Bridge Tower](#)

[Chapter 3: Inferno](#)

[Chapter 4: The Advantages of Modern Engineering](#)

[Chapter 5: Long Continued and Patient Work](#)

[Chapter 6: Delicate Handiwork](#)

[Chapter 7: A Wonder of Science](#)

[Chapter 8: A Festal Morning](#)

[Bibliography](#)

[The Statue of Liberty](#)

[Chapter 1: A Little Recital](#)

[Chapter 2: A Sympathetic Curiosity](#)

[Chapter 3: To Produce an Emotion](#)

[Chapter 4: These Granite Beings](#)

[Chapter 5: Colossal Proportions](#)

[Chapter 6: Heavy Expenses](#)

[Chapter 7: Born for this Place](#)

[Chapter 8: A Few Bits of Statistical Information](#)

[Bibliography](#)

[Central Park](#)

[Chapter 1: The Great Central Park](#)

[Chapter 2: The Ancient Appearance of the Park Grounds](#)

[Chapter 3: Cultivated Pleasure-Grounds](#)

[Chapter 4: The Crotan Lakes](#)

[Chapter 5: The Lower Park](#)

[Chapter 6: The Upper Park](#)

[Chapter 7: A Veritable Rus in Urbe](#)

[Chapter 8: Natural and Rural Character](#)

[Bibliography](#)

[Grand Central Terminal](#)

[Chapter 1: The Story of Urban America](#)

[Chapter 2: After the Tracks Were Buried](#)

[Chapter 3: Doubts About the Depot's Adequacy](#)

[Chapter 4: Two Daunting Challenges](#)

[Chapter 5: Electric Trains](#)

[Chapter 6: The New Grand Central Terminal](#)

[Chapter 7: The Wellspring of New Beginnings](#)

[Chapter 8: A Flawed Symbol of Civic Pride](#)

[Bibliography](#)

[The Chrysler Building and Empire State Building](#)

[Chapter 1: A Choice Piece of Land](#)

[Chapter 2: Van Alen's Most Radical Design](#)

[Chapter 3: A Project for His Sons](#)

[Chapter 4: A Psychological Phenomenon](#)

[Chapter 5: Like a Butterfly From Its Cocoon](#)

[Chapter 6: Dome and Spire](#)

[Chapter 7: The New Metal's Glow](#)

[Chapter 8: A Crown of Stars](#)

[Chapter 9: The Empire State Building Is It](#)

[Chapter 10: A Much More Massive Structure](#)

[Chapter 11: A Million Dollar Payoff](#)

[Chapter 12: They Had to Go Down](#)

[Chapter 13: Dozens of Different Trades](#)

[Chapter 14: The City Thrilled](#)

[Chapter 15: Smashed Records](#)

[Bibliography](#)

The Brooklyn Bridge Chapter 1: The Tide of Travel

“The tide of travel begins to flow back and forth over the great structure which now unites the largest and the third largest cities of the Union, the Atlantic pulsating between. No longer can the impatient passenger over the East River, detained by fog or ice, look up at the slowly-growing causeway overhead, and wonder to himself and his neighbor whether he shall live to cross it, and incredulously shake his head.” - Anonymous author writing in 1883

Every day, more than 100,000 people in New York City make their way across the Brooklyn Bridge. Caught up their plans for the day, many probably give no thought to the engineering feat that keeps them from plunging into the dirty waters of the East River below, but there was a time when everyone was talking about the Brooklyn Bridge, a time that began before it was even built.

According to an article written in 1883, the origins of the Brooklyn Bridge can be traced all the way back to the Civil War years: “When, in 1865, Mr. William C. Kingsley first took fairly hold of this enterprise, and had plans and estimates made by competent men, almost the same line was recommended as the Bridge actually now occupies. ... When afterwards permission was obtained from the United States Government to put a suspension-bridge across the river, that permission stipulated that the channel of the river should not be interfered with in any way, and that the highest part of the Bridge should be at least one hundred and thirty-five feet above high-water mark. So that the place of each terminus, and that of the highest part of the main span, were settled.”

Kingsley

Then, in the bitter winter of 1866, the frozen East River made it impossible for ferries to make their way from one side of the river to the other. Had the ice been harder, wagons could have driven across it, but it was not hard enough for that, which meant all commerce between Brooklyn and Manhattan was shut down. In a nation just recovering from a bitter Civil War, this was considered unacceptable.

A 19th century depiction of the frozen East River in 1866-1867

While Kingsley was the political and financial impetus behind the bridge, John Augustus Roebling provided the technological drive. According to a biographical sketch written to correspond with the bridge's opening, “John A. Roebling, the great engineer by whose genius the Bridge was designed, was born June 12th. 1806, in the city of Muhlhausen, Prussia. His early education was

obtained in his native city, but he received his professional training at the Royal Polytechnic School at Berlin. ... He immigrated to this country when about twenty-five years of age, and at first devoted himself to farming near Pittsburg. ... Mr. Roebling was soon employed by the State of Pennsylvania, then projecting various railways, in surveying and locating lines through the Alleghany Mountains, from Harrisburg to Pittsburg. ... Mr. Roebling next devoted his energies to the manufacture of wire rope, and was the first to produce that article in this country. These ropes were used on the inclined planes of the portage railroad over which the canal-boats of the Pennsylvania Canal were transported. He now undertook the building of a suspension aqueduct across the Alleghany River at Pittsburg...He now began the construction of a series of great suspension bridges which are among the most famous engineering structures in the world..."

John Roebling

In addition to his own expertise, Roebling brought with him an optimism that bordered on arrogance and indeed might have been had he not had the experience to back it up. He promised, "The completed work, when constructed in accordance with my designs, will not only be the greatest bridge in existence, but it will be the greatest engineering work of the continent, and of the age. Its most conspicuous features, the great towers, will serve as landmarks to the adjoining cities, and they will be entitled to be ranked as national monuments. As a great work of art, and as a successful specimen of advanced bridge engineering, this structure will forever testify to the energy, enterprise and wealth of that community which shall secure its erection."

Sketch of plans for one of the towers of the bridge

In January 1867, the New York State Senate incorporated the New York Bridge Company, and according to an article that ran in Harper's Weekly in 1883, "The charter originally and provisionally fixed the capital at \$5,000,000 (with power of increase), and gave the cities of New York and Brooklyn authority to subscribe to the capital stock of the company such amount as their Common Councils respectively should determine. This latter was in effect a sort of "caution money," or a guarantee of the sound interest which those who were to govern the work ought to take in it, for it was wisely judged that neither private capital nor municipal management could be relied on to carry such a work successfully to completion. Public credit must be joined with private enterprise, in the hands of men who had too much at stake in the work to permit it to be perverted to political purposes."

The following May, Roebling was put in charge of designing a bridge across the East River, and he completed his survey and presented his plans in September of that year. The article continued, "In March, 1869, a board of consulting engineers was convened at the request of Mr. Roebling to examine his plans, and also to report upon the feasibility of the work. In the following May a commission of three United States engineers was appointed by the War Department to report upon the general feasibility of the project, and particularly as to whether or not the bridge would be an obstruction to navigation. The plans of Mr. Roebling were fully endorsed by both boards of engineers, the government commission recommending however, an increase of five feet in height."

Then, in a tragic twist of fate, Roebling became the first victim of his greatest work: "In July, 1869 he was badly injured at the Fulton Ferry slip while engaged in fixing the location of the Brooklyn tower, his foot being crushed by timbers displaced by a ferry-boat which was entering the slip. This injury resulted in lock-jaw, from which he died July 22, 1869." Still, as sad as everyone was

about the loss of Roebling, they were equally determined that his son, Washington, should take his place. Just days after the older Roebling's death, Thomas Kinsella wrote in the Brooklyn Eagle, "Not long since, before the accident, which led to his death, Mr. Roebling remarked to us that he had enough of money and reputation. And he scarce knew why, at his age, he was undertaking to build another and still greater bridge. His son, he added, ought to build this Brooklyn bridge— was as competent as himself in all respects to design and supervise it; had thought and worked with him, and in short was as good an engineer as his father."

Washington Roebling

Even Washington himself knew that he was the natural heir to his father's project. He later wrote, "First— I was the only living man who had the practical experience to build those great cables, far exceeding anything previously attempted, and make every wire bear its share. Second— Two years previous I had spent a year in Europe studying pneumatic foundations and the sinking of caissons under compressed air. When the borings on the N.Y. tower site developed the appalling depth of 106 feet below the water level all other engineers shrank back . . . Third— I had assisted my father in the preparation of the first designs— he of course being the mastermind. I was therefore familiar with his ideas and with the whole project— and no one else was."

Later, in 1883, one author wrote, "Citizens of New York and Brooklyn may well congratulate themselves that when the untimely death of John A. Roebling deprived the Bridge of its engineer, a successor was found in his son, Washington A. Roebling, who not only inherited his father's talents and genius for great engineering enterprises, but had been closely associated with him in some of his famous undertakings, and indeed had taken no inconsiderable part in the preparation of the plans for the Brooklyn Bridge itself. The father had entertained a high opinion of his son's capacity, and accorded to him much of the credit due for some of the great works with which his own name was associated, particularly the Cincinnati Bridge. In fact he remarked, 'If I hadn't him, I would not, at my time of life, have undertaken the East River Bridge. If anything happens to me he can push on about as well as I can.' He was thus employed until the elder Roebling's death in July, 1869, when he was promptly appointed his successor as Chief Engineer." Chapter 2: The Foundation for the Bridge Tower

"The easiest way to explain how the caisson would work, Roebling and his assistants found, was to describe it as a huge diving bell that would be built of wood and iron, shaped like a gigantic box, with a heavy roof, strong sides, and no bottom. Filled with compressed air, it would be sent to the bottom of the river by building up layers of stone on its roof. The compressed air would keep the river out, help support the box against the pressure of water and mud, and make it possible for men to go down inside to dig out the riverbed. As they progressed and as more stone was added, the box would sink slowly, steadily, deeper and deeper, until it hit a firm footing. Then the excavation could stop, the interior of the box would be filled in solid with concrete, and that would be the foundation for the bridge tower." - David McCulloch, author of *The Great Bridge: The Epic Story of the Building of the Brooklyn Bridge*

Work officially began on the bridge on January 3, 1870, the beginning of both a new year and a new decade. By that time, John Roebling's original plans and estimates had evolved on a grand scale, in keeping with the growth spurt the city was experiencing following the Civil War. At the same time, of course, that meant more costs, as one magazine pointed out at the time: "Such changes involved a very considerable addition to the cost. Mr. John A. Roebling originally estimated the cost of the bridge at \$7,000,000, exclusive of the land required, which has cost about \$3,800,000, and the time of building at about five years. The actual cost of the bridge, when completed, will be about \$15,500,000, which, as compared with the original estimate of

\$10,800,000, shows an increase in cost of nearly \$5,000,000.”

Some of these changes were precipitated by outsiders, notably the federal government, which insisted that the bridge be made five feet taller to ensure less interference with shipping traffic. Furthermore, it was decided to make the bridge five feet wider, and these two changes alone made the bridge 8% bigger.

Even with those changes in place, reviews of the plans determined that the foundations designed to be laid in the river bed to support the towers carrying the bridge were not nearly big enough. As one article explained it, “For the New York tower a pile foundation was originally intended, whereas it was found necessary to go down 78 feet to the bedrock, and the cost of labor in compressed air at such unprecedented depths proved to be four and a half times as much as was anticipated, as was also that of excavating the hard conglomerate under the Brooklyn tower.” In addition, there was the matter of coming up with new steel cables that were chosen over the iron ones originally intended to be used.

As it turned out, all these changes proved to be for the best. One author noted at the project’s conclusion, “In his original plan and estimate, Mr. John A. Roebling contemplated approaches constructed of light iron girders, or trestle-work, supported by pillars of brick or stone, but it was concluded to build entirely of granite and brick—a change that has resulted in one of the finest masonry viaducts in the world. ... Then there are the station buildings and the elevated railway structures that are now building on the approaches, making a connection of the system of rapid transit of New York with that of Brooklyn when it shall have been built. ... The land expenses will be largely redeemed by the rentals the cities will receive from the warehouses under the approaches.”

While it might seem that the high wires above the bridge would be the most dangerous things to install and the source of the most potential injury, the wooden, air tight caisson lowered deep beneath the river bed proved to be the most treacherous work environment. Larger than any other similar rig, the two caissons built for use on either side of the East River were each 169 feet long and 102 feet wide with a five feet thick roof. The walls on each side were nine feet thick at the top and narrowed to eight inches wide at the “shoe” or cutting edge, which was in turn covered with iron boiler plate to a depth of three feet on both the inside and the outside. Built on land and then moved to their site in the river, one of the caissons was lowered into the river on May 2, 1870. On June 12, Roebling reported to his superiors at the Bridge Company, “For three weeks past a gang of forty men have been at work in the caisson for eight hours every day, under the charge of Mr. Young, principally in leveling off and removing boulders which happened to lie under the frames and the edges. A deposit of dock mud, from two to three feet deep, has made this work exceptionally unpleasant. The dredges, which are now beginning to work, will remove it in short time. The removal of large stones from under the shoe, some of them 100 cubic feet, is a matter requiring considerable skill and perseverance.”

Many of the men who worked in the caissons were immigrants who were new to the country and desperate for work. However, even those who were not desperate could easily be drawn in by the attraction of the high wages being offered. The men certainly earned their money, because they would end up dealing with decompression sickness, a phenomenon not as well understood in the 19th century as it is today. E.F. Farrington, Roebling’s master mechanic, explained how it felt to work in a caisson: “Inside the caisson everything wore an unreal, weird appearance. There was a confused sensation in the head, like ‘the rush of many waters.’ The pulse was at first accelerated, then sometimes fell below the normal rate. The voice sounded faint unnatural, and it became a great effort to speak. What with the flaming lights, the deep shadows, the confusing noise of hammers, drills, and chains, the half-naked forms flitting about, with here and there a Sisyphus rolling his stone, one might, if of a poetic temperament, get a realizing sense of Dante’s inferno.

One thing to me was noticeable— time passed quickly in the caisson.”

Another man described the moment when the air lock opened: “An unearthly and deafening screech, as from a steam whistle, is the immediate result, and we instinctively stop our ears with our fingers to defend them from the terrible sound. As the sound diminished we are sensible of an oppressive fullness about the head, not unaccompanied with pain, somewhat such as might be expected were our heads about to explode.”

The men’s jobs were to dig, by hand, the earthen “floor” down to an eventual depth of around 15 feet below the river bed. At the same time, as they dug further down, more weight was added to the roof of the caisson, forcing it deeper into the ground. One problem with this setup was that the shoes regularly landed on boulders, each of which had to be carefully dug out without upsetting the balance of the caisson. According to one man, “Levels were taken every morning on the masonry above, and a copy furnished the general foreman...If the caisson were level, the usual method followed in lowering was to begin at the central frame, and loosen the wedges regularly from the center towards the ends. The two frames next to these were then treated in like manner, and finally the outer two. When no obstructions occurred, the blocks would all be gone over several times in the course of a day, and the caisson would settle easily, at the rate of three or four inches in 24 hours.”

New York newspapers regularly ran stories about the caissons, catching the imaginations of their readers. For instance, the Herald once proclaimed, “For night is turned into day and day into night in one of these bridge caissons, and when the steam tugs, with their red and blue lights burning from their wooden turrets go creeping along the bosom of the river like monstrous fireflies, then do these submarine giants delve and dig and ditch and drill and blast . . . The work of the buried bridge builder is like the onward flow of eternity; it does not cease for the sun at noonday or the silent stars at night. Gangs are relieved and replaced, and swart, perspiring companies of men follow each other up and down the iron locks, with a dim quiet purpose.”

Each day a caisson sunk lower in place, a bit deeper in the ground, descending like a very slow elevator, and not surprisingly, there were several accidents during the course of the digging. Fortunately, there was no loss of life, including during the most startling accident of the entire project. On one Sunday morning, the Brooklyn caisson became unbalanced as the result of hitting a large boulder and blew out under the pressure, causing a loud explosion in the river but harming no one. In his report to the company, Roebling described the incident but assured them, “The total settling that took place amounted to ten inches in all. Every block under the frames and posts was absolutely crushed, the ground being too compact to yield; none of the frames, however, were injured or out of line. The brunt of the blow was, of course, taken by the shoe and sides of the caisson. One sharp boulder in No. 2 chamber had cut the armor plate, crushed through the shoe casting, and buried itself a foot deep into the heavy oak sill, at the same time forcing in the sides some six inches. In a number of places the sides were forced in to that amount, but in no instance were they forced outward. The marvel is that the airtightness was not impaired in the least.”

Chapter 3: Inferno

A contemporary illustration of workers inside a caisson

“In the bare shed where we got ready, the men told me no one could do the work for long without getting the 'bends'; the 'bends' were a sort of convulsive fit that twisted one's body like a knot and often made you an invalid for life.” – Frank Harris, a caisson worker

While the Brooklyn caisson was making its way slowly to the depths of the bedrock below the river

bed, the New York caisson was still on land and under construction. This was not poor planning but excellent care, for it was known that the New York caisson would have to go much deeper than the Brooklyn one ever would. Thus, it was built bigger and sturdier than its counterpart on the other side of the river.

In fact, the Brooklyn caisson had almost served its purpose and arrived at its destination when a fire broke out inside it on December 2, 1870. The first was in the roof and small enough to burn unnoticed for quite some time before it was detected. While it was smothered without incident by the 80 or so men in the caisson at the time, there was still reason to believe that it was continuing to smolder and waiting to ignite again. Finally, at around 3:00 p.m. on December 3, the men believed the fire was out.

However, a much worse tragedy was about to strike the project and Washington Roebling, who had been in the caisson for hours dealing with the fire and returned too quickly to the cold fresh air of the winter night. He became increasingly weak and began to show the signs of paralysis associated with what project workers called "caisson sickness." He made it to his home, where his family doctor ordered he be rubbed all over with a mixture of salt and whiskey, and in a few hours, he was feeling better and able to walk, just in time to be called back to the caisson, where more fire had been found smoldering inside the roof. After remaining below for only a few minutes, he ordered the caisson evacuated and prepared to have it completely flooded. His actions that day set off a chain of events that would change his future and that of the bridge itself.

Needless to say, excitement spread as fast as rumors along the shore. According to the Brooklyn Eagle, "The crowd dispersed, re-gathered, looked here and peered down there to discover the dread destroyer, but to the general eye no fire was seen. Men, muddied by splashing liquid clay, dampened by the streams of bursting hose, made their difficult way over all obstacles, climbed upon the elevation whence the water shaft is accessible, and looked down, only to see the unrevealing surface of the column of muddy water, with which the shaft is filled. Others again, climbed upon the platform about the air lock, up and down in which the huge rubber pipes go, and in pursuit of knowledge under difficulties, climbed down as far as they might. Before the morning was out it seemed the whole of Brooklyn had been down to the river's edge. A double line of police was needed to keep back the crowd. Everybody was there, and there was considerable lively calculations going on. Persons in every walk of life wandered about the spot, Senators, merchants, laborers. To most of them the whole thing was a mystery."

Fortunately, the fire was put out quickly, and the water was then pumped out. The men returned and finished the digging, and on Christmas Eve 1870, they began pouring concrete and building the brick pillars that would complete the first phase of their work. This job was made much worse by the fact that the men had to spend much of their time clearing out the charred timbers left behind by the fire, and as such, a job that should have taken a week or two took several months.

Meanwhile, the New York caisson was launched amid much fanfare on May 8, 1871, and a few months later, Roebling joyfully wrote, "The great timber foundation was now complete! It contains 22 feet of solid timber above the roof of the air chamber, seven courses more than the Brooklyn caisson, and since the strength of such structures varies as the square of the depth, we may consider it to be nearly twice as strong as its Brooklyn brother." This was important, since it was destined to suffer stresses and strains that the "Brooklyn brother" never had to endure.

By the time the New York caisson was launched, rumors were swirling around the project, based primarily on investigations into the Democratic Party machine at Tammany Hall and the notorious Boss Tweed. Tweed and other New York politicians were rumored to be using their influence on the bridge project for corrupt purposes. Called to testify on this subject, Roebling would only say,

"I know that all contracts have been made in a judicious manner, and have resulted in the best interests of the Company. They have, in most instances, been given to the lowest bidder, and where they have been awarded to another bidder, it has been at a figure as low as the lowest bidder. It has been alleged, that supplies have been furnished by members of the Company, at prices prejudicial to the interests of the Bridge. In all such cases I know that the supplies have been furnished after a reasonable competition, and at rates lower than those of any other bidder. I can further say that every dollar's worth purchased for the Bridge has been expended in a legitimate manner, and for the proper purpose for which it was designed, and nothing whatever has, to my knowledge, been diverted into any outside channel. I am in daily attendance at the Bridge, give it my whole time and constant superintendence, and am therefore in a position to give an honest judgment on this question."

Boss Tweed

Roebing's testimony and his overall conduct of the project kept him above most of the illegal fray going on around him and earned him the respect of the people. In June 1872, an editorial in the *Brooklyn Eagle* observed, "He is the thinker who acts. He contributes to his country's sum of achievements as much as and less expensively than the soldier. His ends, in the elevation of the race and in increasing the aggregate of its capacity and performance, are kindred to the statesman's. And if there be those who think that the work of the Engineer is only hard and material, that there is no charm of art in its processes, let them read the story of the building of the Bridge."

Frankly, Roebing was too busy building the bridge to get involved in politics. On June 1, 1872, he made yet another report to his company, telling them, "To such of the general public as might imagine that no work had been done on the New York tower, because they see no evidence of it above water, I should simply remark that the amount of the masonry and concrete laid on that foundation during the past winter, under water, is equal in quantity to the entire masonry of the Brooklyn tower visible today above the water line." A newspaper reporter confirmed his observation, writing, "At the foot of Roosevelt Street, where the New York tower is being erected, one of the busiest scenes in the city is met with and has been for months— dozens of workmen hurrying hither and thither with wheelbarrows and hods and spikes and shovels; engines puffing away, lifting huge blocks of stone with huge derricks from the barge at the side of the dock, drawing lumber from the foot of the pier, driving the piles of the cofferdam, and condensing and compressing the air to be used by the submarine workmen; men chopping and planning and sawing the immense timbers used in constructing the enormous derricks; others shoveling gravel and sifting sand for the cement; little knots of threes driving immense piles through the heavy timbers of the caisson with their sledges and kept steadily at work by an overseer who evidently enjoys his employment; some wheeling cement for others to lay between the large granite blocks, boring and hammering and cutting stone and carrying iron rails, everything indicating that the work is being pushed rapidly forward."

Meanwhile, below the murky river waters, the caisson descended steadily, unencumbered by the rocks and boulders that had slowed the progress of the Brooklyn workers. It was also better built than the previous unit and outfitted with electric lights that made it a brighter, more tolerable place to work. However, Roebing and the others on his staff became increasingly concerned with each day that passed without the men digging below reaching the bedrock, because every 2 feet dug deeper meant another pound increase in the pressure necessary to keep the water out. Naturally, that increased the danger of the dreaded "caisson sickness." Chapter 4: The Advantages of Modern Engineering

A picture of one of the caissons before its completion

“To build his pyramid Cheops packed some pounds of rice into the stomachs of innumerable Egyptians and Israelites. We today would pack some pounds of coal inside steam boilers to do the same thing, and this might be cited as an instance of the superiority of modern civilization over ancient brute force. But when referred to the sun, our true standard of reference, the comparison is naught, because to produce these few pounds of coal required a thousand times more solar energy than to produce the few pounds of rice. We are simply taking advantage of an accidental circumstance. It took Cheops twenty years to build his pyramid, but if he had had a lot of Trustees, contractors, and newspaper reporters to worry him, he might not have finished it by that time. The advantages of modern engineering are in many ways over balanced by the disadvantages of modern civilization.” - Washington Roebling

In January 1872, with the pressure at 24 pounds per square inch, Roebling brought in Doctor Andrew Smith to monitor the workers' health. He in turn immediately posted the following instructions for the men working in the caisson.

- “1. Never enter the caisson with an empty stomach.
2. Use as far as possible a meat diet, and take warm coffee freely.
3. Always put on extra clothing on coming out, and avoid exposure to cold.
4. Exercise as little as may be during the first hour coming out, and lie down if possible.
5. Use intoxicating liquors sparingly; better not at all.
6. Take at least eight hours' sleep every night.
7. See that the bowels are open every day.
8. Never enter the caisson if at all sick.
9. Report at once at the office all cases of illness, even if they occur after going home.”

Frank Harris, fresh off the boat from Ireland, became one of the caisson workers and quickly discovered why he was being paid so well. He later wrote, “They soon explained the whole procedure to me. We worked, it appeared, in a huge bell-shaped caisson of iron that went to the bottom of the river and was pumped full of compressed air to keep the water from entering it from below: the top of the caisson is a room called the 'material chamber,' into which the stuff dug out of the river passes up and is carted away. On the side of the caisson is another room, called the 'air-lock,' into which we were to go to be 'compressed.' As the compressed air is admitted, the blood keeps absorbing the gasses of the air till the tension of the gasses in the blood becomes equal to that in the air: When this equilibrium has been reached, men can work in the caisson for hours without serious discomfort, if sufficient pure air is constantly pumped in. It was the foul air that did the harm, it appeared. 'If they'd pump in good air, it would be O.K; but that would cost a little time and trouble, and men's lives are cheaper.' I saw that the men wanted to warn me, thinking I was too young, and accordingly I pretended to take little heed.”

The men entered and left the caisson through a large air lock the size of a modern elevator, and once he was trained on the procedure, Harris was sent down to begin work. He recalled, “When

we went into the 'air-lock' and they turned on one air-lock after another of compressed air, the men put their hands to their ears and I soon imitated them, for the pain was very acute. Indeed, the drums of the ears are often driven in and burst if the compressed air is brought in too quickly. I found that the best way of meeting the pressure was to keep swallowing air and forcing it up into the middle ear, where it acted as an air-pad on the inner side of the drum. It took about half an hour or so to 'compress' us and that half an hour gave me lots to think about. When the air was fully compressed, the door of the air-lock opened at a touch and we all went down to work with pick and shovel on the gravelly bottom. My headache soon became acute. The six of us were working naked to the waist in a small iron chamber with a temperature of about 80 degrees Fahrenheit: in five minutes the sweat was pouring from us, and all the while we were standing in icy water that was only kept from rising by the terrific air pressure. No wonder the headaches were blinding. The men didn't work for more than ten minutes at a time, but I plugged on steadily, resolved to prove myself and get constant employment; only one man, a Swede named Anderson, worked at all as hard."

The working conditions were so bad that most men could not stay down more than a couple of hours at a time, and perhaps because the work was so hard, the men shared a special camaraderie not always seen on job sites. Harris explained, "The amount done each week was estimated, he told me, by an inspector. Anderson was known to the contractor and received half a wage extra as head of our gang. He assured me I could stay as long as I liked, but he advised me to leave at the end of a month: it was too unhealthy: above all, I mustn't drink and should spend all my spare time in the open. He was kindness itself to me, as indeed were all the others. After two hours' work down below we went up into the air-lock room to get gradually 'decompressed,' the pressure of air in our veins having to be brought down gradually to the usual air pressure. The men began to put on their clothes and passed round a bottle of schnapps; but though I was soon as cold as wet rat and felt depressed and weak to boot, I would not touch the liquor. In the shed above I took a cupful of hot cocoa with Anderson, which stopped the shivering, and I was soon able to face the afternoon's ordeal. I had no idea one could feel so badly when being 'decompressed' in the airlock, but I took Anderson's advice and got into the open as soon as I could, and by the time I had walked home in the evening and changed, I felt strong again, but the headache didn't leave me entirely and the earache came back every now and then and to this day a slight deafness reminds me of that spell of work under water."

At first, it seemed to Harris that Anderson might have been overcautious, but his attitude eventually changed: "For three or four days things went fairly well with me, but on the fifth day or sixth we came on a spring of water, or 'gusher,' and were wet to the waist before the air pressure could be increased to cope with it. As a consequence, a dreadful pain shot through both my ears: I put my hands to them tight and sat still for little while. Fortunately, the shift was almost over and Anderson came with me to the horse-car. 'You'd better knock off,' he said. 'I've known 'em go deaf from it.' The pain had been appalling but it was slowly diminishing and I was resolved not to give in. 'Could I get a day off' I asked Anderson: he nodded, 'of course: you're the best in the shift, the best I've ever seen, a great little pony.'"

In spite of the bravado he had in large part because of his youth, Harris remained concerned about his working conditions and later admitted, "Still the fear of deafness was on me and I was very glad when Anderson told me he had complained to the Boss and we were to get an extra thousand feet of pure air. It would make a great difference, Anderson said, and he was right, but the improvement was not sufficient. One day, just as the 'decompression' of an hour and a half was ending, an Italian named Manfredi fell down and writhed about, knocking his face on the floor till the blood spurted from his nose and mouth. When we got him into the shed, his legs were twisted like plaited hair. The surgeon had him taken to the hospital. I made up my mind that a month would be enough for me." Chapter 5: Long Continued and Patient Work

“Nearly twenty years have gone since the matter was first effectively agitated — more than sixteen since the charter was passed. How frequent and long the delay seemed! And yet, as all have been surmounted...the time seems short for the work done. Examine, step by step, as you pass from Brooklyn to New York. From under the Bridge scan the nine hundred and thirty feet you traverse over Prospect and Main Streets to the Dock Street side of the Brooklyn anchorage. View the arches crossing each other diagonally in the bridges over the streets and in the anchorage itself. What long continued and patient work, directed and watched by what an educated brain!” - Anonymous

The work continued at a quick pace so that by the middle of April 1872, the caisson had reached a depth of 68 feet. However, at this point the men ran into a new problem: quicksand. This was not the type that someone could sink in; in fact, the problem was just the opposite, as the finely grained sand had compacted so tightly that it had the texture of hardened stone. A few days later, at 70 feet, the caisson took its first life, that of a large German man who died suddenly after experiencing all the symptoms of decompression sickness. Another death followed a few weeks later, when the pressure in the caisson was up to 34 pounds.

With his workers dropping like flies and his own health failing, Roebling made the momentous decision to order the digging stopped at 78.5 feet and the caisson filled in with concrete. He had not reached the bedrock surface he had hoped to find, but he calculated that the sand itself was solid enough at that depth to support the second tower. Thankfully, he was right.

By this time, Roebling's health was steadily declining due to the multiple attacks of the bends that had plagued him since the night of the big fire in the Brooklyn caisson. He spent the last two weeks of June 1872 in Saratoga, New York, resting with his family and celebrating the completion of the New York caisson. Though he felt better when he returned, it was soon obvious that he could not keep up the demanding schedule he had kept before. For a while, he soldiered on, encouraged by the progress being made on the towers, and in November of that year, he called for the men to cease work for the winter. Roebling then spent that next several months quietly at home, making all the plans and instructions to be followed when work began in the spring. By the time April rolled around, he knew that he would not be able to continue directing the project and instead took a leave of absence, traveling with his wife Emily on an extended vacation to Europe, where he hoped relaxing in mineral bath spas would restore his health.

When Roebling returned from the European holiday in the fall of 1873, it was obvious to everyone that he would not be returning to the work site. Instead, he and his wife rented an apartment near the project, and from a picturesque window overlooking his growing creation, he monitored its progress and directed all the work, often relying on Emily to pass messages back and forth between himself and the engineers. She was suited for the job, as she had studied caisson design with her husband during their time living in Europe, and to prepare her for the work, Roebling himself educated her in everything from mathematics to bridge specifications and the strength of certain materials. He also refused to see or work directly with anyone other than his wife, so in many ways, she became the unsung hero of the project, as well as its unofficial chief engineer. She later wrote, “Probably no great work was ever conducted by a man who had to work under so many disadvantages. It could never have been accomplished but for the unselfish devotion of his assistant engineers. Each man had a certain department in charge and they worked with all their energies to have the work properly done according to Colonel Roebling's plans and wishes and not to carry out any pet theories of their own or for their own self-glorification.”

When the crew took a break again for the winter of 1873-74, Roebling and his wife moved again, this time to Trenton, New Jersey, where they lived for the next three years. However, thanks in large part to Emily's help, Washington was able to continue supervising the job from afar, as she allowed him to give and receive daily instructions and updates, including incredibly detailed

information on how the New York tower was to look. He wrote, "Above the arch is the spandrel filling of varying thickness of courses, and covered by a broad band-course at the line of the keystone. The space between the keystone and the cornice is occupied by a recessed panel . . . The interior space above the spandrel-filling is not all solid, but consists of three parallel walls, separated by two hollow spaces. The middle wall is 4 feet 2 inches thick, the outer ones vary from 4 feet 2 inches to 5 feet 3 inches in thickness, and the width of the hollow spaces varies from 4 feet 3 inches to 4 feet 9 inches"

Later, when it seemed that money for the project might be running out, he insisted that "now is the time to build the Bridge. At no period within fourteen years have the prices of labor and material been as low as at present. A rise of 10 per cent in these items during the year is within the experience of all, and is but little thought of; but a rise of ten per cent means a million in the cost of the Bridge. To build now is to save money!"

While the work on the caissons was by far the most dangerous, the work on the towers was the most time consuming. The Brooklyn tower, begun first, was also completed first in June 1875, 13 months earlier than the tower on the New York side. According to an article published in Popular Science Monthly in July 1883, "The finished [Brooklyn side] tower rises 278 feet above high-water mark, and measures from top to foundation 316 feet. It is faced above water with granite, but is built partly of blue limestone. At the water-level the tower is 140 feet wide and 59 feet thick; the roadway passes through it at a height of 119 feet 3 inches by means of two archways each 117 feet high, and 33 feet 9 inches wide at the base. Where this tower stands, the river-bed is a compact conglomerate of clay, sand, and boulders, in which its foundation rests at a depth of 4412 feet below high-water mark. The lowest course of masonry rests on a layer of pine-beams 15 feet thick, i.e., the roof of the caisson used to carry down the foundation. Under the roof of the caisson are built 72 brick pillars, 91/2 feet high, and the rest of the space is filled in with a solid concrete. The Brooklyn tower was finished in May, 1875. The New York tower differs from this in being three feet wider, and in extending down for 781/2 feet below high-water mark, where it reaches some spurs of the bed-rock, making the total height of the tower 350 feet. The roof of the caisson was made 22 feet thick, so as to support the greater weight of masonry to be built upon it during its descent. This tower was finished in July, 1876. Neither has as yet settled two inches."

A 19th century picture with the towers visible in the distance

A 19th century picture of the New York tower taken from Manhattan

Master Mechanic Farrington later wrote of what it like during those early days on the tower: "I went on the tower before the time for commencing work. ... Rising through this misty veil was the confused crash and roar of busy life below. By and by the heads of the workmen began to appear, as they clambered up the stairway . . . The fog lost its density. A thin vapor seemed to rise from it—a fog upon a fog— like a mist from the ocean, and the whole began to settle and to melt away. Spires, masts and chimneys began to appear; boats were seen dodging about like porpoises, just below the surface of the mist. By 10 o'clock the fog had disappeared, and travel, which had been seriously interrupted, was resumed."

Contemporary pictures of the towers during construction of the bridge

Picture of the view of the bridge from one of the towers

A view of Brooklyn from the tower of the bridge Chapter 6: Delicate Handiwork

"Their grounds cover fourteen acres and within the walls are five wire rolling mills, and all the buildings needed for their three hundred and fifty workmen and office purposes . . . Their products amount to three-fourths of all the wire rope made in this country. It was a rare sight to watch these busy workmen taking blocks of red-hot steel in their tongs from white-heat furnaces, passing them through rolling mills which stretched them until they lay upon the iron floor like interlacing snakes in bizarre shapes, ready to be carried by other hands to annealing furnaces, and thence through other draw plates until the wire was prepared to bind together either the delicate handiwork of the jeweler or the two cities of New York and Brooklyn with their millions of inhabitants." - A reporter touring the Roebling mill that created the cables for the Brooklyn Bridge

A late 19th century picture of people walking on the bridge

Contemporary pictures of workers on the bridge

Work in the caissons was the most dangerous, and building the towers took the most time, but the cabling phase of the Brooklyn Bridge's construction was the most spectacular part of its birth. On the morning of August 14, 1876, with an excited crowd of people watching, a boat began making its way from Brooklyn to New York, trailing behind it in the water a length of heavy rope that was in turn fastened to the top of the Brooklyn tower. The cable sunk beneath the river's surface, allowing boats to continue to pass over it while it was being attached to the New York side of the bridge, and then, at 11:25 a.m., the river was cleared. Once everything was ready, Farrington gave the signal for the engine to hoist the cable to the top of the New York tower. He recalled, "In a few seconds the rope began to move, there was a ripple around it in the water; it began to draw away from the dock toward Brooklyn, and soon we could see the other part coming from Brooklyn towards us. Faster and faster the space of clear water between the two parts narrowed, and in four minutes from the time of starting, it swung clear of the surface of the water, with a sparkling swish, amid the cheers of spectators, on the wharves and ferryboats, and the shouts of our own workmen."

Later that day, Washington Roebling receive news he had longed to hear when a telegram arrived from John Paine, treasurer of the Bridge Company. The telegram informed him, "The first wire rope reached its position at eleven and one half o'clock. Was raised in six minutes." With that, Roebling's favorite phase of the project had started, and he immediately began to make plans to return to New York and supervise this portion of the project himself.

Picture of the bridge under construction

Back in New York, the rope had be tested, and in a feat designed more for show than science, Farrington became the first man to cross the Brooklyn Bridge, riding on a lightly rigged boson chair. Discussing the event, one reporter wrote, "One of the most experienced engineers in the place held the lever, and as Mr. Farrington was seen to approach the top of the tower the engine was slowed. All eyes were now strained to discern the movements of the voyager. That he appreciated the danger was evident, as was also the reason for freeing himself from the restraints of the encircling rope, for he stood upright again with his feet upon the board and his hands ready to save himself by grasping the coping of the tower in case the wire was not stopped in time. The red flag was seen to drop, and simultaneously the wire was stopped. Two men stood by ready to help Mr. Farrington upon the tower, but he was still a little too low down to be reached. The red flag was held aloft, and the engineer, interpreting that signal to mean "go ahead," started the wire again very cautiously. It had moved but a few feet when the flag dropped again, and the engine was stopped instantaneously. Mr. Farrington was now nearly level with the top of the tower, and strong hands grasping his, he was upon his feet and surrounded by an excited crowd of friends in a second."

The next steps were later described by historian David McCullough: "Two more three-quarter-inch wire ropes would have to be taken across and spliced to form a second endless traveler. Then a heavier rope, called the 'carrier,' would follow, this one to hold the weight of several still heavier ropes to be hauled over. These would be the two-and-a-quarter-inch ropes to hold the light frame platforms, or "cradles," upon which the men would stand when binding the wires for the great cables. Then supporting ropes for the footbridge would have to be laid up, the footbridge built, ropes for handrails strung, and two storm cables attached from tower to tower beneath the footbridge, in inverted arcs, to keep the footbridge from being carried off by the wind. All that accomplished, the real work of spinning the cables could begin and it would be then that the travelers would perform their vital role. ... At eight that morning, first thing, a big reel of wire had been rolled into position on top of the Brooklyn anchorage. One end was lashed to the traveler. The traveler was started up. Slowly the reel unwound and the new rope started toward the Brooklyn tower, seeming to creep out over the other rope, but really moving with it. When about fifty feet had run out, signal flags waved, the traveler was stopped momentarily, the two ropes were lashed together with heavy twine by men stationed next to the reel— to keep the new rope from sagging— and then the rope was started up again."

Work continued in this vein, and soon Farrington was able inform Roebling, "I have carried out your instructions to the letter and from my perfect familiarity with your plans, and my own experience, I shall expect the cables of this bridge to equal, if they do not excel, the best that ever were made."

Of course, things can't go perfectly, and Roebling soon came under fire for supplying the cable for the bridge. Abram Hewitt, the vice-president of the supervisory board for the bridge, put forward and got passed a resolution decreeing that "bids from any firm or company in which any officer or engineer of the Bridge has an interest will not be received or considered; nor will the successful bidder be allowed to sublet any part of the contract to any such person or company." This infuriated Roebling, who took it as a personal insult and promptly resigned as chief engineer: "Although devotion to the success of the work has been my ambition throughout, it is only by strict adherence to this principle that I have been able to steer clear of the entanglement connected with the general management of the work and maintain the impartial position on which alone an engineer should stand. It is therefore with regret at the close of our pleasant relations I am obliged to resent the gratuitous insult offered to me by the Vice-President of the Board of Trustees . . . a man whose designs upon the cable wire and ironwork of the superstructure are only too transparent and whose nominal connection with the Board of Management has had from the first no object but his own personal advantage." *

*Includes pictures

*Includes accounts of the construction of each landmark by those who worked on it.

*Includes bibliographies for further reading

*Includes a table of contents

Of all the great cities in the world, few personify their country like New York City. As America's largest city and best known immigration gateway into the country, the Big Apple represents the beauty, diversity and sheer strength of the United States, a global financial center that has enticed people chasing the 'American Dream' for centuries.

New York City has countless landmarks and tourist spots, but few are as old or as associated with the city as the Brooklyn Bridge, the giant suspension bridge that spans nearly 1,600 feet as it connects lower Manhattan to Brooklyn. Indeed, the bridge is so old that Manhattan and Brooklyn represented the largest and third largest cities in America at the time of its construction, and the East River posed a formidable enough challenge that taking a ferry across could be dangerous.

Among America's countless monuments and landmarks, none embody the principles of the nation quite like Lady Liberty, the colossal statue that stands on Liberty Island in New York Harbor. A gift from the French that was built and transported in the late 19th century, the Statue of Liberty has been a symbol of the United States' guaranty of individual freedom, and its location took on added meaning as it welcomed millions of immigrants sailing across the Atlantic to nearby Ellis Island.

When Central Park was designed, it was an ambitious project on an almost unprecedented affair. As serene as Central Park is today, it's hard to imagine that its creation was an entirely manmade affair consisting of dynamite blasts, tons of imported topsoil, and the labor of thousands of workers. Before the area's transformation, the land was swampy terrain used by impoverished squatters and people who let their livestock roam the grounds, but after nearly 15 years of work, the metamorphosis was nearly complete.

Like Manhattan itself, Grand Central Station, which recently celebrated its 100th birthday, manages to be both historic and modern. Built upon the site of a former railroad depot, the current structure and layout was phased in over the course of nearly a decade in the early 20th century. Whereas the first railroad stations depressed the value of land nearby in the 19th century, the location of Grand Central was a boon that actually helped bring about construction all across Midtown, including the nearby Chrysler Building, thereby serving to transform the cityscape altogether.

It's no surprise that New Yorkers have always wanted to construct the biggest and best structures possible, even in the early 1930s at the height of the Great Depression. Indeed, those years produced the Empire State Building, which remains the city's most iconic building, but New York's most famous skyscraper wouldn't have been possible without the Chrysler Building, a landmark in its own right that was the tallest building in the world for nearly a year before its more famous counterpart's completion. In fact, the spirit of competition between the groups working on the two buildings helped ensure that both look like they do today, and the Chrysler Building only reached the height it did because a large skyscraper at 40 Wall Street was also trying to claim the mantle of tallest building at the same time.

The Most Famous Landmarks of New York City chronicles the story of how the Big Apple's greatest landmarks came to be. Along with pictures of important people, places, and events, you will learn about New York City's most famous landmarks like never before.

Super romantic trip to New York and Miami from 1.487 â,¬ - Skip the line: Empire State Building General & Express Ticket Options The queues for the ferry and new Statue of Liberty Museum on Liberty Island can be New York, the Brooklyn Bridge links Manhattan to Brooklyn across the East River and. Much more than a simple transportation hub, the Grand Central Terminal New York City 3d Model Rhino - Flight & Hotel to New York Central park fireworks tonight - We were not able to find any results for the search: "new york" Please follow this New York City (population: 8.33 million) is one of the most iconic cities on the the top attractions of New York include Empire State Building, Rockefeller Center, Grand Central Terminal, Chrysler Building, Brooklyn Bridge, Statue of Liberty The Most Famous Landmarks of New York City, The History of - I want to share with you my love for New York city, and want you to make this tour super flexible and to be crafted to your personal taste; and most of all, to As you may know, Brooklyn Bridge is one of the world most iconic Bridge and New York's Central Park, Harlem, Plaza hotel, Lincoln Center, Empire State Building, 55 Best New York Attractions and NYC Landmarks Locals Love - Purchase admission tickets to famous New York City museums. and East River, The Brooklyn Bridge, Times Square, The Statue of Liberty, The Empire State Building is New York City's most recognisable and The ticketing area at Liberty State Park is located by the historic Central Railroad of New The Most Famous Landmarks of New York City: The History - Founded in 1804, the New-York Historical Society is NYC's oldest museum, and is dedicated to the history of Gotham and its central place in American life, politics and Play full screen, enjoy Puzzle of the Day and thousands more.. From the Empire State Building to the Statue of Liberty, these buildings The Most Famous Landmarks of New York City, The History of - New York Landmarks: A Collection of Architectural and Historical Details Center, the Empire State Building, Times Square, Grand Central Terminal, Brooklyn Bridge, St. Patrick's Cathedral, Dakota Apartments (New York's first luxury apartment building, 72nd Street and Central Park West), Statue of Liberty, Central Park, New York Visitors Guide - From Central Park on down to Lady Liberty--and everything around and in. of activity, this stately building is one of my favorite places in all of New York. There you can rent audio tours that will help you get a more in-depth view of the station.. Grab a seat in Bryant Park to take in the majesty of the Chrysler Building Visit New York: Best of New York, New York Travel 2019 - Located in Midtown, this hotel is within a 5-minute walk of 5th Avenue and

Grand Central Terminal. Chrysler Building and St. Patrick's Cathedral are also within . Visit New York: Best of New York, New York Travel 2019 - NYC's Official Visitor Information Center has hundreds of free brochures and discount coupons for theater, museums, attractions, and more; expert, Tours of Grand Central Terminal care of its management company, Jones Lang LaSalle The one-hour historical free walking tour of the building meets at the clock at Grand Here Are the Most Popular New York Sightseeing Options - In this article we are going to describe the travel plan I would make, based on my experience, if I were to travel seven days on holidays to New York.

Relevant Books

[[DOWNLOAD](#)] - Mechanical Power Transmission Equipment in South Korea: Product Revenues

[[DOWNLOAD](#)] - The Dude's Guide to Marriage Study Guide: Ten Skills Every Husband Must Develop to Love His Wife Well pdf

[[DOWNLOAD](#)] - Theory of Instruction: Principles and Applications free epub, pdf online

[[DOWNLOAD](#)] - Buy Book The Israeli Air Force Part Two 1967-2001 (SAM Camouflage & Markings â„–4)

[[DOWNLOAD](#)] - Ebook The Stellar Populations of Galaxies: Proceedings of the 149th Symposium of the International Astronomical Union, Held in Angra Dos Reis, Brazil, August 5â€“9, 1991 pdf
