

HISTORY This Week EP. 310: New York Goes Underground

Episode Transcript

NOTE: This transcript may contain errors.

Sally Helm: HISTORY This Week. March 12, 1888. I'm Sally Helm.

New York City commuters wake up this morning to a once-in-a-generation blizzard. The wind will reach 85 miles per hour, and it's flinging ice through the air – people say the snow is like bullets, or like carpet tacks flying at you. One person describes seeing passersby with their faces literally bloodied by flying ice. It's hard to even walk across the street. A group of men finds themselves together in a clump on 86th Street, trying to move forward... but they're blown back again and again by the wind. They finally get into a single file line so that they can physically drag each other to the opposite curb.

If you want to get around by horse cart instead... good luck. They've been abandoned left and right on New York City streets. So, a lot of people head for the elevated trains.

These are normally quite reliable. But today, the tracks are so icy, and the visibility is so bad that it takes hours for the trains to go just a few blocks. There's a fatal crash on the third avenue line. On the Sixth Avenue line, a train gets stuck on the track for hours, and finally, all the trains are canceled. Historian Mary Cable describes what happened to one man who was waiting on a Sixth Avenue platform for a train that never came. He decides to walk instead, below the tracks, where the snow isn't quite so deep. As he goes, he feels something falling onto his hat...and realizes that it's sparrows. Frozen solid. Falling from their perches on the girders of the elevated train.

He makes it one avenue...and then he's lifted up by the 50-mile-per-hour wind. He bangs his head on the train trestle. Drops his watch. And falls into a snowbank. The next morning, a policeman sees a hand sticking out of the snow. It's that unfortunate commuter. Now a casualty of the storm.

More specifically, he is a casualty of all the problems on the elevated trains. In the coming days, New York City digs itself out from beneath 21 inches of snow to find that four hundred people have been killed. And that many of the losses could have been prevented if the transportation network had kept running – despite the storm. And so... the Great Blizzard of 1888 gives new life to a plan that had been percolating for years. A plan to take the city's trains... and put them underground.

Today: the story of the New York City subway. How did an epic snowstorm drive the city to try a new, dangerous, daring idea? And why was the subway such a unique invention from the very start?

[AD Break]

Sally Helm: The City of New York is many things. A city of Broadway. Of bankers. Of bagels. But to Concetta Bencivenga, it is a city of transit.

Concetta Bencivenga: You experience New York, the way you do because of mass transit. You just don't know it. You've been through a tunnel. You've been over a bridge, you've been on a bus, you've been on a commuter rail, and certainly you've been on the iconic subway.

Sally Helm: Bencivenga directs the New York City Transit Museum, which is housed in a converted subway station in Brooklyn.

Concetta Bencivenga: It's very, very hard to talk about New York without talking about the subway. And actually, that's really why I love my job so much. And I say to pretty much anybody that I encounter, why our museum is so awesome. Not that I'm biased, but I totally am.

Sally Helm: She says, the subway predated many of the neighborhoods around it. In many ways, it designed the map of the city.

So, what was the city like before the subway? In the 1800s?

Concetta Bencivenga: When you ask a question about like, take me back to New York in the 18 hundreds, you have to really be very specific about what you mean when you say "the city."

Sally Helm: Places like Brooklyn and Queens were separate cities. And they were mostly farmland. The island of Manhattan was way more sparsely populated than it is today. But it was pretty dense below 34th street. On about a third of the available land.

Concetta Bencivenga: If you can imagine, it is human and horse gridlock.

Sally Helm: Shoppers. Street vendors. Commuters. And horses.

Concetta Bencivenga: We tell a story here at the transit museum that one day a guy stood at an intersection in lower Manhattan and counted 8,000 horses in a day. 8,000 horses in one day.

Sally Helm: By 1880, there were an estimated 150,000 horses on the streets of New York City. Meaning that, beneath the feet of those shoppers and street vendors and commuters... is a lot of horse waste.

Concetta Bencivenga: In fact, there's a cottage industry that springs up in offloading that manure to New Jersey to help meet the garden state a little bit more garden-y.

Sally Helm: All this human and horse traffic makes it hard to get around. And so, the city decides: we need to grow our mass transit.

They try stagecoaches--a handful of people pulled by horses. Then they try the horse omnibus--like a slightly bigger stagecoach that runs on a set route. Then horse railways--horses pulling omnibus type things along a set of rails.

But none of these are totally solving the traffic problem. And the stakes are high. People worry that the city will become so choked and congested that businessmen will just take their business elsewhere. To Philadelphia, or Baltimore. And New York will kind of wither on the vine.

The street-level traffic innovations have not worked, though. And so:

Concetta Bencivenga: You only have two choices. You can go up or you could go down.

You have to remember for all of humankind up until this point in time, right? 1860s, 1870s, you go down underneath the earth for exactly two reasons. You go down to get something and come back up, you're mining you're, you're going down to extract a natural resource. So, you go down, you get it and you come back up or you go down cause you're dead. Right? And you're buried. And so, the notion that we sort of take completely for granted that somebody would go underneath the earth to travel around is a completely foreign concept.

Sally Helm: Those 1860s New Yorkers say... no early grave for us. Instead, elevated rail lines go up all over Manhattan. And if they go up on your block...it's not an entirely good thing.

John Morris: The streets that had elevated trains were that was kind of a mixed blessing. You had transport, but, but at a price

Sally Helm: John Morris is the author of a recent book about the New York City subway. He told us; these elevated trains were running on steam power. Meaning you had to burn coal to power the engine.

John Morris: They were enormously noisy the locomotives were spitting out smoke and soot and dripping lubricants and things.

Sally Helm: And they weren't even that fast.

John Morris: They only averaged something like seven or eight miles an hour over the course of their full lines.

Sally Helm: But there's someone in New York who is walking around, navigating dripping train lubricants and piles of manure, nursing a vision for something better. A man named Alfred Ely Beach.

John Morris: Who was sort of an entrepreneur, he owned and ran Scientific American magazine, and he was sort of a Silicon Valley type of his day. He was a proselytizer for every form of technology.

Sally Helm: Beach was a hard worker—he apparently never took a vacation. And he was a prolific inventor. He came up with an early version of the typewriter before he was 21—then invented a new version that could be used by the blind.

And he gets fascinated by the idea of putting the trains underground.

But it would be pretty hard to put one of those steam-belching coal powered trains underground. London sort of tries it in 1863—they do a partly covered steam train, which is a step towards a subway, though it's still pretty far from what it'll ultimately become. But Beach worries that, if you really put a steam train underground, there could be fires. Explosions. Horrible pollution. And so, he has a different idea: pneumatic tubes.

Concetta Bencivenga: Just imagine a huge, which is what it is. It's a huge fan that is just basically pushing and sucking this train car kind of down this tube

Sally Helm: It would be clean. It would be fast. It would be beautiful. Beach loves it.

But he has a powerful adversary in New York City.

Concetta Bencivenga: The entire sort of apparatus of New York city at the, that this time is being controlled by Boss Tweed and Tammany Hall

Sally Helm: William M. Tweed, or Boss Tweed, is a corrupt, highly powerful politician who basically runs New York City through a political organization known as Tammany Hall. And he has financial interests in some of the current railroads and trolleys.

John Morris: So, he had no interest in authorizing other people to build a subway or any other kind of public transportation. He even threatened the first elevated line, apparently at one point threatened to send a mob to destroy it.

Sally Helm: But Alfred Beach is a true believer in the underground pneumatic tube train.

Concetta Bencivenga: And so, God love his heart. He goes to Tammany Hall and he's like, you know, this is my great idea. It's going to be great for the city of New York. And, you know, Boss Tweed is like, well, that is not going to be great for me. So no thank you.

Sally Helm: But Beach comes up with a sneaky workaround.

Concetta Bencivenga: He says, well, you know, there's this pneumatic tube technology. And, we could do it for the mail

Sally Helm: Just send the letters through the tubes!

Concetta Bencivenga: His pitch is that he's going to alleviate some of the street congestion by taking the mail and putting it underground.

Sally Helm: Boss Tweed lets this one go. He's not focused on the postal service. And Beach uses this opportunity to *secretly* build his train.

Concetta Bencivenga: You know, in 58 days in cover of darkness, he creates this, this pneumatic tube subway system.

Sally Helm: The first line is only 300 feet long. It runs beneath Broadway. It opens in February 1870. And the New York Times reports that people go down into the tunnel expecting a "dismal, cavernous retreat." But they find something quite different.

Concetta Bencivenga: He makes it sort of an experience it's really kind of like the hot thing to do and he makes it very elegant. There's lovely couches. There's, chandeliers, there's like a fishpond in there. There's somebody playing piano.

Sally Helm: A lot of visitors come to see it in its first week. And according to that New York Times reporter, "it must be said that every one of them came away surprised and gratified." In the coming year, four hundred thousand New Yorkers show up to try it. The pneumatic train is a hit. Bencivenga says, this is the biggest impact of Beach's train.

Concetta Bencivenga: It destigmatizes this notion of going underground

Sally Helm: But there are still issues. The pneumatic tube wasn't practical for longer distances. The political forces are still arrayed against it. And the elevated train is cheaper. So that's the idea that prevails for now.

Eventually, one New York mayor, Abram Hewitt, does get behind the idea of an underground train.

Hewitt came from a humble background. He claims to be one of the last American politicians who was literally born in a log cabin. But he ends up making a pile of money in the iron business. We talked about him with historian Clifton Hood.

Clif Hood: A thing to do in the 19th century for wealthy merchants like this was that when you had made your pile you retired and what genteel people did was devote themselves to public service.

Sally Helm: Hewitt thinks a subway will help with traffic. And he also just wants to make sure that New York is keeping up.

Clif Hood: He wants to have it, equal London if possible. But certainly, stay ahead of upstarts like Chicago.

Sally Helm: Hewitt proposes an idea to fund the subway. It's unorthodox for the time. Back then, private companies were mostly funding infrastructure. But he asks: what if they split the bill with the government? A public private partnership.

Clif Hood: I would say basically it was just ignored.

Sally Helm: Until...six weeks later.

John Morris: The blizzard brought the city to a halt. You know, people couldn't get food cause they couldn't get out at the store and the store couldn't get any provisions. Electric lines came down. The elevated trains, just, you know, switches, iced up, tracks became covered in snow. You know, as a passenger, you don't want to stand on a platform up in the air for an elevated train in a blizzard.

Clif Hood: After the snow melted, they discovered bodies that were frozen in the street. And you'd wonder why would people go out in these conditions? And the answer in some cases was that there were few labor unions. People were worried about losing their jobs. And so, they walked to work and died in doing it.

Concetta Bencivenga: It was a very, very traumatic event for New York city

Sally Helm: In the blizzard's aftermath, cleaning up power lines, getting the trains running again: New York city sees that the future is underground. The New York Tribune writes that week: "The ill wind of Monday blew into the consciences of New Yorkers a realization of the paramount necessity of supplying themselves with an underground railway service."

Clif Hood: What this did was put this on the agenda. It did not ensure that it was the top of the agenda, but what it did ensure was that this wasn't the last page that somebody's going to rip up and throw in the wastebasket.

Sally Helm: Mayor Hewitt only serves one term and isn't able to pull all the pieces together in time. And the next person to pick up the mantle is William Steinway.

He is one of the sons in Steinway & Sons, the renowned piano makers. He wants to build a piano factory in Queens, and he wants an underground train to get his workers out there. He ignores the Hewitt plan – that private/public partnership – and decides to raise the money himself.

He opens the bidding process for a lease to build and operate the line, one that would last 999 years:

John Morris: And they got one bid for a thousand dollars. And, you know, no one even thought that person was seriously capable of carrying out the plan. So, at that time, the subway was kind of, you know, stopped in its tracks yet again.

Sally Helm: The bidding approach is set aside. But a few years later, the New York Chamber of Commerce picks things up again. They go with Hewitt's plan, the public-private partnership. And manage to push it through the political machinery. The Rapid Transit Act of 1894 sets the money aside for a subway.

Now, who is actually going to build it?

First: a building contractor is brought on - John McDonald. He oversaw the construction of a major tunnel in Baltimore in 1880.

Concetta Bencivenga: This is actually quite a big deal for an Irish immigrant to be in charge of this tunnel. And so, what happens is, he catches the eye of Tammany.

Sally Helm: Boss Tweed had died years earlier, but Tammany Hall is still running things.

Concetta Bencivenga: And so, Tammany's like, who's that guy, that's a nice Irish lad. And so, let's keep tabs on him

Sally Helm: They push McDonald to submit a bid. He wins the contract.

The money comes from August Belmont Jr. His family made their fortune in banking but became famous for horse racing.

Clif Hood: They bred horses. They bred dogs and they viewed themselves as fine pedigreed stock, much like their horses and dogs, many, many cuts above the rest of us who were presumably mutts.

Sally Helm: August Jr. went to Harvard. Became president of his father's bank. Owned seven houses.

John Morris: He was convinced that public transportation, like the subway would be a good investment and, and he was right.

Sally Helm: Finally, they need an engineer. Someone who understands the science of building this thing. And that person is the man who would have built Steinway's tunnel between Manhattan and Queens. A guy named William Barclay Parsons.

Concetta Bencivenga: His classmates. They kind of nicknamed him like the Reverend Parsons because he's very stern, right? He's not like the life of the party or whatever, but that was standing, he has two degrees. His degrees are and again, I'm not making this up in mining and engineering. So, if you got to get a guy to, to build the subway, why wouldn't you get a, somebody who goes to the Columbia School of Mines and walks out with a degree in engineering? Like it's, it's perfect

Sally Helm: All the pieces are in place. And on March 24, 1900, it's finally time to build.

[AD BREAK]

Sally Helm: Digging a subway tunnel in Manhattan is extremely difficult. The island is situated on a slab of very hard bedrock.

Concetta Bencivenga: You have to say it carefully, it's called Manhattan schist,

Sally Helm: This layer of schist is closer to the surface in some places, and further down in others. So, the engineer Parsons decides that, for some sections, he won't dig into the bedrock at all. He'll stay above it: build the subway right under the road.

Of course, Parsons isn't the one actually digging. Most of this labor is done by African American and immigrant workers.

Concetta Bencivenga: The crazy thing about the construction of the original subway line is that it was, it was done mostly by hand. like pickaxes, shovels, mules, horses, carts, and that's it. A lot of the sort of lowest of the low work went to a recently arrived Italian immigrants and they were called Pekin Yeti. And if he can yet a literally translate to a pickax man, so, you know what they did, they took their pickaxes and they broke rocks.

Sally Helm: Tunneling by hand was done especially for the parts of the subway that are right underneath the road. It's called the cut and cover method: basically, the road is cut out, the track is built underneath and then... the road is put back on top.

Concetta Bencivenga: So, what I like to tell people when you're visiting New York is you actually know which subway stations are cut and cover because you can hear the train coming. It's actually quite close to the surface on the cut and cover stations

Sally Helm: Entire city blocks are ripped up. Stores are temporarily put out of business; horse omnibus lines are rerouted. Ironically, one of the main challenges came as a result of the Great Blizzard of 1888. Because trains weren't the only thing forced underground.

Clif Hood: Utility laws, electric lines. Gas lungs, telephone lines, Telegraph lines.

Sally Helm: And all of these lines had to be moved out of the way. These construction sites were a total mess.

Concetta Bencivenga: Things would fall in, carts would fall in, and mules would fall in.

Sally Helm: John Morris has a photograph from one of these scenes in his book.

John Morris: One that people always stop at when they're flipping through the book is a horse that's hanging over the side of a construction pit and it's hung by its harnesses.

Sally Helm: The work was dangerous. And there were very few worker protection laws.

One of the most infamous foremen on this project was Major Ira A. Shaler. Under his watch, on January 28, 1902, a candle was left lit in a wooden shed filled with dynamite on 41st St and Park Avenue.

John Morris: And that was such a violent explosion. It blew out the facade of a fancy hotel that looked out on the construction site. It damaged the facade of the original grand central station, killed a number of people, including workers in the hotel.

Sally Helm: 6 people were killed, and 125 injured. Shaler was indicted for manslaughter, but his run would continue. Two months later, a tunnel collapsed on his watch. And three months later, Shaler was giving a tunnel tour to his boss, Parsons, the chief engineer.

Clif Hood: Parsons and Shaler and, some of their associates are under wooden scaffolding.

Sally Helm: Parsons points to a boulder in the ceiling, tells Shaler that it doesn't look stable.

Clif Hood: Shaler disagrees with him. And he steps out from beneath the scaffolding

Sally Helm: The boulder falls. And breaks Shaler's neck. He dies ten days later in the hospital.

There were areas in Manhattan, particularly in Upper Manhattan, where the schist was very close to the surface. So cut and cover didn't work. Instead, laborers had to blast and tunnel their way through the bedrock. It's dangerous. It's disruptive. But New Yorkers are also watching the subway construction with anticipation. With excitement.

Concetta Bencivenga: A very potent mix of you gotta be kidding me. This is like ruining my life. When is this going to be over? I'm so excited for when it's finished and when it opens, oh my God, my life is so materially better.

Sally Helm: On October 27, 1904, the subway is finally ready.

Clif Hood: Many new Yorkers take today off. there are church bells ringing, there are fireboats shooting up plumes of water in the Harbor.

John Morris: Fireworks went off all over the city. The New York Times said this was, you know, this was like an election day or 4th of July fireworks.

Sally Helm: The opening ceremony is held at City Hall Station. Which is gorgeous: skylights, stained-glass tile, brass chandeliers.

Mayor George McClellan is set to kick off the first subway ride.

Concetta Bencivenga: Mayor McClellan is given a Tiffany silver-handled control to like just sort of ceremoniously drive the train out of city hall station.

Sally Helm: It's just supposed to be a demonstration. McClellan isn't qualified to drive the train any real distance. But nevertheless, he takes it all 9.1 miles. At one point, he accidentally hits the emergency brake, sending the dignitaries aboard flying. But he recovers. And that evening, the subway officially opens to the public.

Concetta Bencivenga: From 7:00 PM that night till midnight, one hundred thousand people showed up to try the subway.

Clif Hood: Some people are so nervous that they just stand on the platform and gawk, they don't get on one of the trains.

Sally Helm: That Sunday, when more New Yorkers are off work, nearly a *million* people show up to ride the new train.

Clif Hood: It was said that the lines to enter the subway reached several blocks and fist fights, broke out. It's of course the easy joke I made in the book, and I will make here is imagine people fighting to get in the subway today.

Sally Helm: But some things are true then as now.

Concetta Bencivenga: You could go four stops, or you could go 422 stops. You will pay one fare. And that has been the same since 1904.

Sally Helm: Back then, it cost a nickel. And, as it is now, it was open 24 hours a day, seven days a week.

The subway was a technological marvel. It wasn't the first—but no city had built an underground electrified train on anything close to the same scale.

Clif Hood: This is a jewel that speaks to New York City's and America's advancement into the 20th century

John Morris: People at the time talk about New York and how it will in a one day be the greatest city in the world. You have to remember New York, wasn't the center of the universe as New Yorkers today think it is.

Sally Helm: But the subway helps catapult New York City to a new level of fame and importance in the world. By creating mass transit access to Times Square, the subway helps spark the Broadway theater district. Neighborhoods like Harlem in Upper Manhattan and Flushing in Queens grow in large part because the subway lines that serve those areas. The New York Yankees – also known as the Bronx Bombers – could never have been in the Bronx if not for the 161st Station that still serves Yankee Stadium today. By 1925, the subway had helped make New York City the most populated city in the world.

One of the main reasons the subway was built in the first place was to endure brutal weather conditions. Like the Great Blizzard of 1888. And Concetta Bencivenga told us, for a long time, it has worked just how it was supposed to.

Concetta Bencivenga: So long as it was underground, the trains would run. It's brilliant. Their response to weather events is just really, it's really unparalleled, you know, and something that the city should be very proud of.

Sally Helm: But because of climate change, extreme weather is only getting worse. And the subway is threatened. The city has started to add Kevlar gates that can make stations entrances watertight. Or massive balloons that can seal off a tunnel in case of floods.

It's been over a century since the Great Blizzard of 1888. The storms have only multiplied. And gotten worse. But the subway keeps running—it keeps evolving—just like the city it helped create.