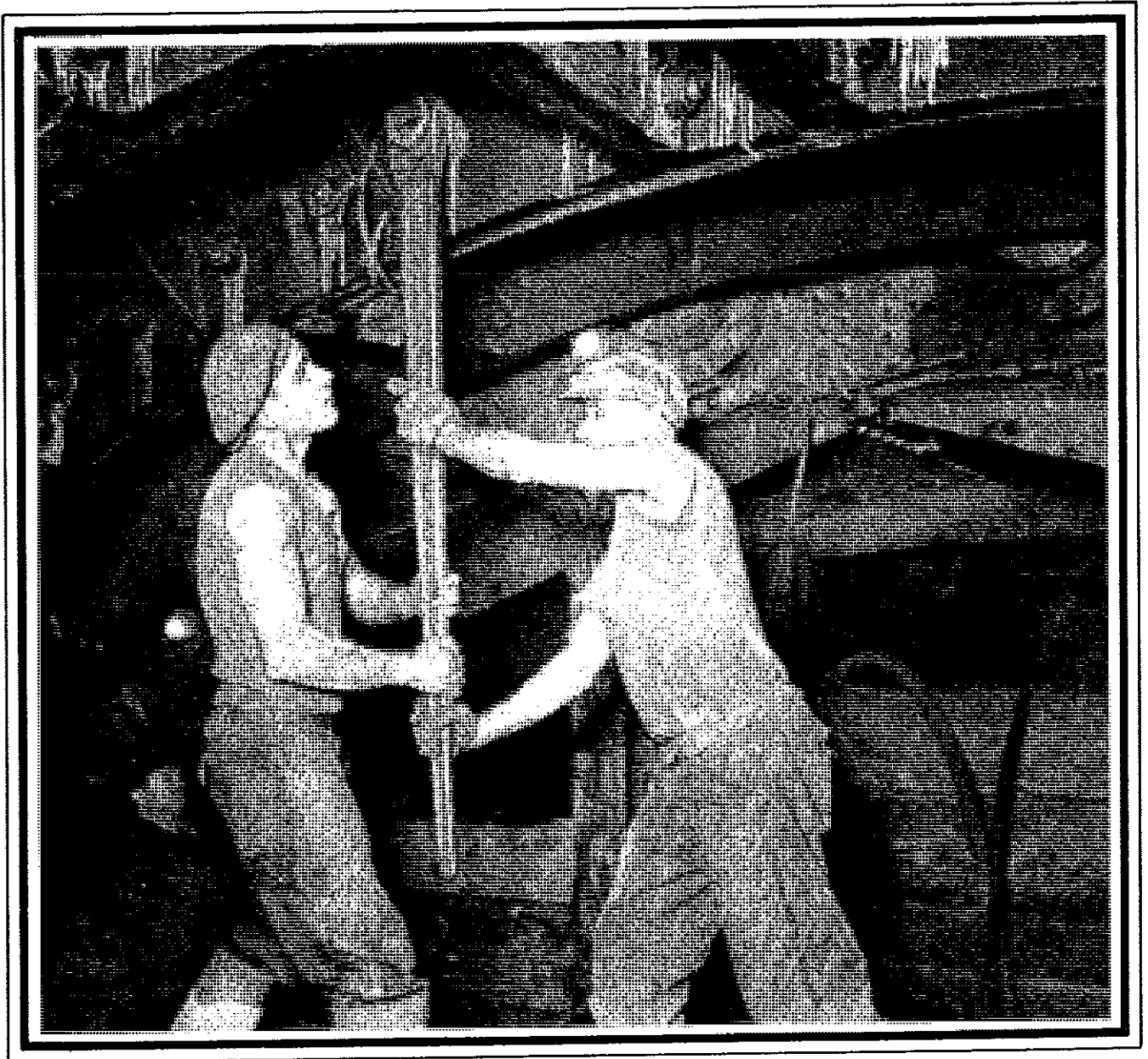


SANDHOGS

A History of the Tunnel Workers of New York

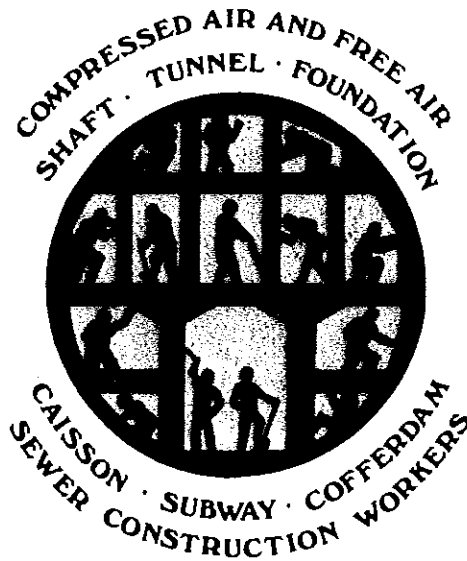


PAUL E. DELANEY

SANDHOGS

A History of the
Tunnel Workers of New York

PAUL E. DELANEY



OF NEW YORK & NEW JERSEY STATES
& VICINITY

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Contents

Preface	
Chapter I — The Bridge	1
Chapter II — The Subways	11
Chapter III — Water Tunnels	25
Chapter IV — City Tunnel No. 3	47
Chapter V — Sandhogs	59
Sandhog Jobs	73
Acknowledgments	79
Photo Credits	80



THE CITY OF NEW YORK
OFFICE OF THE MAYOR
NEW YORK, N.Y. 10007

Dear Friends:

This year marks the 100th anniversary of the Sandhogs' first gift to New Yorkers -- the Brooklyn Bridge. Every day we depend on the works of Sandhog labor for our livelihoods. The Tunnel Workers have given us the Holland, Lincoln and Midtown tunnels, the foundations of many of our greatest buildings, our subway system, which moves millions of people daily and, most important, the huge tunnels that bring us our vital water supply. Their efforts have touched all our lives and have allowed for the growth of this great metropolis.

I am proud to have this opportunity to thank those brave men, past and present, who have made as great a contribution as any to making New York the most magnificent City in the world.

This book is a tribute to Sandhog accomplishments and sacrifices on behalf of all New Yorkers. It is praise long overdue, and I join my fellow citizens in commending the tunnel workers of New York for 100 years of dedication and achievement.

Sincerely,

EDWARD I. KOCH
M a y o r

SANDHOGS

PREFACE

This book is a commemoration of the sandhogs, a small group of men who, over the past one hundred years, built a large part of the City of New York. Recognition of their achievements has been a long time coming, perhaps because their work is largely below street level, in an unseen world of rock, sand and earth. Their story is one of struggle with the forces of nature, of commerce, and, ultimately, with life and death. Mostly, though, it is the story of a brotherhood of men who share extremely hard work and constant danger.

The official name of the Tunnel Workers Union gives a very complete description of just what sandhogs do — it is Local 147, Compressed Air and Free Air, Shaft, Tunnel, Foundation, Caisson, Subway, Cofferdam, Sewer Construction Workers of New York and New Jersey States and Vicinity. This tells us that there are two basic kinds of sandhog jobs: those done in compressed air and those in normal, or free, air. The rest of the Union's name describes what is being constructed in these two basic ways. Sandhogs are miners because they dig out earth, sand or rock, but they are not looking for gold or coal. And unlike miners, the sandhogs often work in compressed air, which, as the reader will see, makes for a very unusual working environment.

Today, Local 147, AFL-CIO, represents approximately 1,500 specialized workers in the New York region, but the history of sandhogs and their unionism predates Local 147 by 75 years. The history of the labor organization of tunnel workers is the story of the American Union Movement in capsule form, and its battles were among the earliest and hardest won.

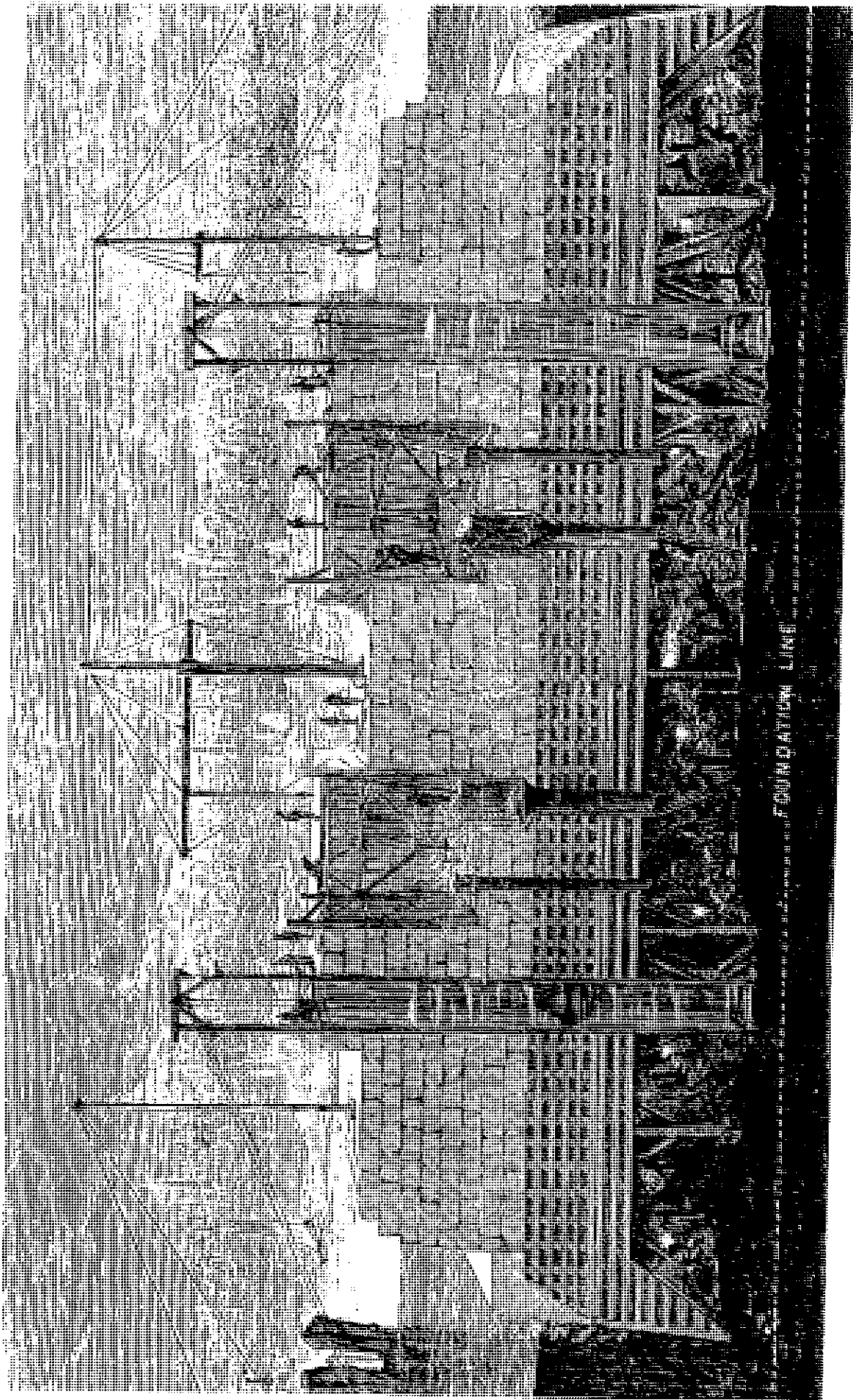
The most important story here, though, is that of individual men and individual achievements. From the caissons for the Brooklyn Bridge to the Holland and Lincoln Tunnels, to hundreds of miles of

water, train, automobile and sewer tunnels, the sandhogs have constructed the internal organs of the most complex urban organism on earth — New York City.

This short history attempts to give the reader an insight into a very big story, one that is a frequently ignored part of American history. If this is achieved it will be largely due to the ideas, support and encouragement of others.

Special thanks should go to Richard Fitzsimmons, Ed McGuinness and Chick Donohue for inspiring and contributing to this work. But the real thanks for this book must go to those officers and members of the Tunnel Workers Union who contributed to the Local 147 Political Action Fund. They made this book possible.

My personal appreciation goes to Peter Dolan for his research, photography and moral support, and to John Hayes, a young editor who has tunneled his way through certain dangerous archives to secure facts for this history.



Sinking of caissons for the Brooklyn Bridge.

Chapter One

If one had to pick a date for the beginning of the sandhogs as an organized group, it would be May 8, 1872. There was no Union at that time, but over 200 men joined together on that day to strike against dangerous work conditions on the first sandhog job, the Brooklyn Bridge. For over two years they had been digging under the East River to lay the foundations for the two towers of the Bridge. Nothing like this construction had ever before been attempted, and the risk of disaster haunted the work from the first day.

The Bridge was the brainchild of John Roebling, the most brilliant and daring engineer of his century. When he died in the latter stages of planning, his son Washington Roebling assumed the job of Chief Engineer. Only the Roeblings really knew how this fantastic project could actually be built, and the public and the workers lost faith more than once during the 13 years of its construction.

Building the Brooklyn Bridge was a unique and dangerous undertaking because of the almost untried method of laying its foundations. The technique was to use caissons, or huge inverted wooden boxes, as the foundations for the towers. The boxes were sunk, open at the bottom, to precise locations on the banks of the East River. Then compressed air was pumped in, pushing out the water and allowing sandhogs to go into the caissons to dig out the foundations.

Based on his father's precisely detailed plans, Washington Roebling had taken every precaution possible at the time. His calculations were almost always remarkably accurate, but even he knew there were problems which couldn't be anticipated. After all, a sixteen-ton wooden box was descending into the riverbed; immense stones were being laid on the box forcing it deeper through the riverbed, destined for its eventual resting place on the bedrock far below. It would then be filled with concrete to form the foundation of the world's newest wonder.

The size of the caissons was almost unimaginable. On the Brooklyn side of the River, the caisson was 168 feet long and 102 feet wide, well over half the size of a city block. Its top was made of layers of timber fifteen feet thick, its sides of nine layers, all weighing more than 16 million tons. The New York caisson was still bigger. They were built by Webb & Bell, a firm four miles up the East River. On May 3, 1870, the Brooklyn caisson was floated downriver, and the next day was set into a huge frame built for it at Fulton Street.

Everything about the Brooklyn Bridge was extraordinary, but the use of compressed air was virtually unheard of. It had been used by James Buchanan Eads in the foundations for his bridge across the Mississippi River at St. Louis, but on a much smaller scale. Captain Eads had begun to notice some effects of compressed air on workers, but his observations only hinted at what would be seen in the New York/Brooklyn Bridge.

The sandhogs began working "in the air" of the Brooklyn Caisson on May 21, 1870. The world the men entered that day was strange and terrifying. The experience began after the men were in the airlock, between the natural atmosphere and compressed air.

As a valve was opened to allow the compressed air into the airlock, the natural pressure of 14.7 pounds per square inch rose to equal the pressure in the chamber. The result was a deafening screech, sharp and loud enough to frighten even the bravest. Between the coffin-like air lock and the painful physical changes caused by the rapidly rising air pressure, many men thought at first that they were dying. Once the pressure in the airlock equalled that in the chambers, a trap door fell open and the men descended through a three-and-a-half-foot iron shaft.

One of the earliest descriptions of the sensation of being in compressed air was written by E. F. Farrington, Roebling's Chief Mechanic:

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.

As word of the bizarre world under the river became known to the public, people envisioned a race of superhuman men who were able to work under impossible conditions. But the sandhogs were very human, mostly Irish, German and Italian immigrants. The extraordinary force that enabled them to do the impossible was the desire to survive and live the American dream; but their working conditions might more accurately be described as an American nightmare.

The sandhogs had two sheds at the construction site with wash-tubs out in the open. Because it was always over 80 degrees in the caissons, they wore pants and boots, period. The compressed air caused great hunger, and the men ate huge lunches of bread, meat and beer down in the caisson. There were few dry spots below, and for most of the period of construction there was no toilet. Men defecated where they worked. As Roebling once said, "Foul odors do have their place in the caisson."

The work went on around the clock in three shifts, six days a week, except for Sundays. The day and night crews consisted of 112 men each, with the lobster-shift employing 40 men. At any given time there were 264 men working in the caisson and another 100 carpenters, machine operators and others working aboveground. The turnover rate of workers was incredible. 2700 men worked inside the Brooklyn caisson alone, with an average of 100 men quitting each week. While working conditions were dreadful, it was danger that drove men away from the Brooklyn Bridge.

As the caissons descended, the sandhogs dug out the muck of the riverbed, but they often encountered huge boulders. Some were as



Men at work inside during the caisson's descent, Brooklyn Bridge.



wide as fourteen feet, and these had to be broken up by hammer and pick, which was backbreaking work. Eventually Roebling used explosives, which added to the potential for danger. It was when a boulder was found under the lip, or outside wall, of the caisson that a real problem occurred. What everyone feared was that when such a stone was removed, the compressed air might be forced through the opening, out into the river, allowing the river water to replace it. This translated to an instant and watery death for all in the caisson. Roebling and every sandhog knew this was a real possibility; inevitably, it happened.

“The Great Blowout” was an act of God, according to the families of sandhogs, because it occurred near dawn on a Sunday and no one was working. Somehow the compressed air escaped from the chambers, and its force blew a geyser of water, muck and rocks five hundred feet above the river. Stones and murky water showered the area of docks and houses around Fulton Street, and much of Brooklyn came out to see what had happened. The caisson and the stone tower above had dropped nearly a foot in an instant. Only minor damage had been done to the caisson and its chambers, but it could not have been encouraging to the men who had to return to work when pressure had been restored.

The fear of a blowout was real, but the reality of the bends was fearsome. As the caisson descended deeper, the air pressure became greater. As the air became more compressed, more men became sick. The malady was called “The Bends”, the “Grecian Bends”, and ultimately “Caissons disease”. The symptoms had been known for some time, but the cause was a complete mystery.

The weird physical effects of compressed air were recognized from the start. Men’s chests became nearly doubled in size, it was not possible to whistle, and even gruff men’s voices turned peculiarly high-pitched and faint. Body temperature rose and the headaches were blinding. But these symptoms would seem like the common cold: the bends were like pneumonia.

When the Brooklyn caisson was laid, the effects of Caissons Disease were noted after it had reached 40 feet below the river; but it

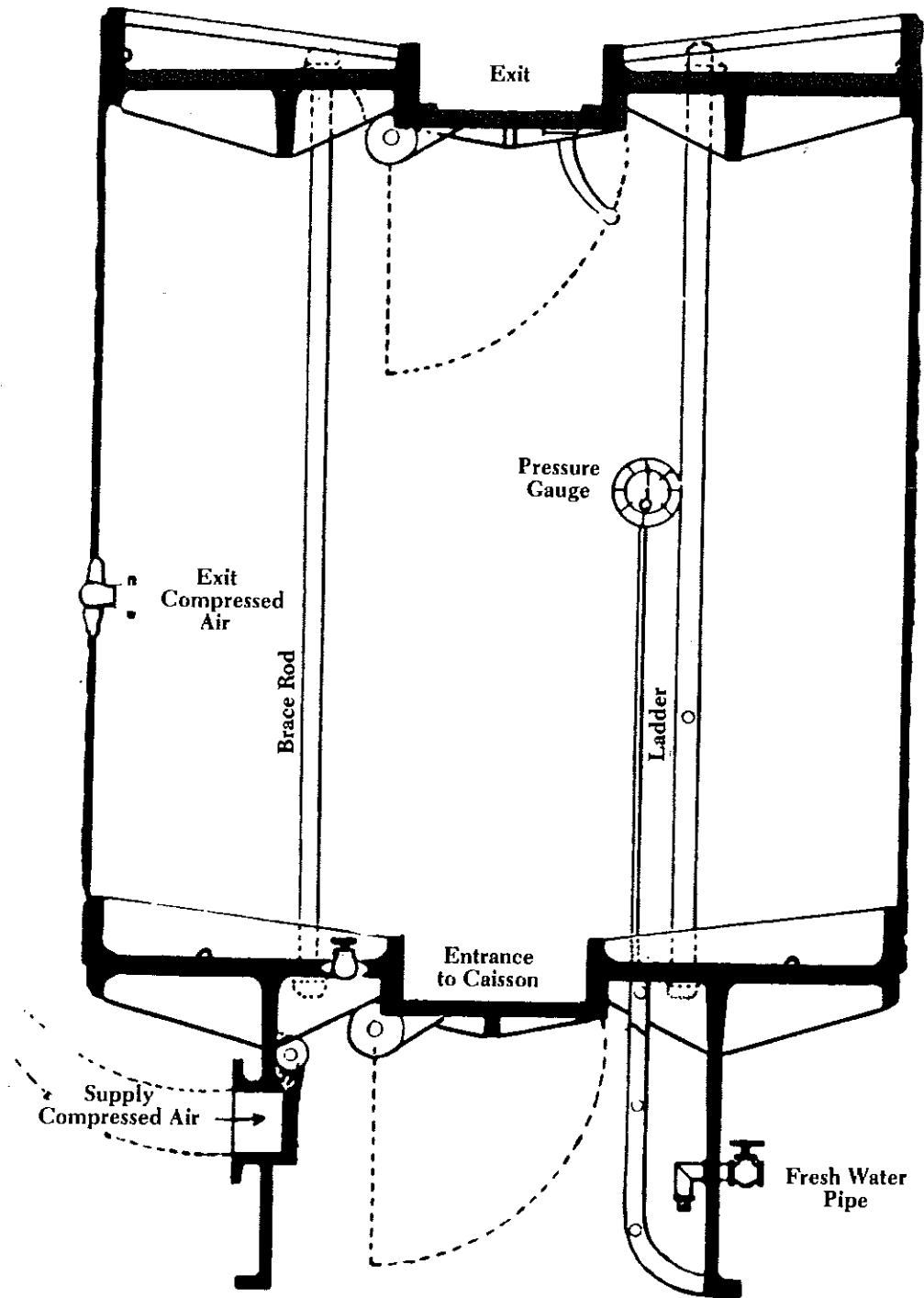


Diagram of Air Lock, Brooklyn Bridge.

would only have to go another five feet before settling at its final resting place. The New York caisson was another matter. As it turned out, it would descend twenty-six feet further than its opposite number. With roughly one pound of increased pressure for every three feet of descent, the New York caisson presented a totally new circumstance of compressed air.

The disease was crippling: a totally debilitating weakness; unbearable pain in the joints, and wrenching abdominal cramps; fever accompanied by a cold sweat and vomiting. Sandhogs would stagger out of the airlock, reeling and delirious as if wildly drunk. Strangely enough, the first method of treatment was a good dose of whiskey. But the treatment was obviously ineffective, and the sandhogs became increasingly alarmed, if not downright frightened. It was then that Washington Roebling called in Dr. Andrew Smith as Surgeon to the Bridge Company.

Smith set about examining the most severely affected sandhogs, and he looked into their living circumstances as well. For the most part the men lived in the teeming slums of Lower Manhattan, in neighborhoods such as the notorious Five Points. Dr. Smith noted that after work many men spent time in their local "gin Mills" as a form of self-medication. The sandhogs could not speak of the pain they suffered for fear of being cut from the crews, since Smith had quickly barred any but the fittest from work. He instituted his famous nine rules, hoping clean living would prevent the bends:

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.*

But as the New York caisson sank further, the victims of Caissons Disease were not helped by mere good behavior. They always appeared the same—ashen faced, sweating profusely, slurred speech, swollen joints. The symptoms mimicked those of a stroke, but after a day or two usually disappeared. No matter—the men were not allowed to return to work, and their two dollars a day could hardly be found in other manual labor.

As the caisson approached 70 feet below the River, everyone was affected, and Roebling increased the pay to \$2.25 as compensation. Ironically, Washington Roebling had been one of the first to succumb to the bends, but as Chief Engineer he had to be allowed to return to work. And the caisson had yet to hit bedrock, contrary to Roebling's usually correct predictions. An extremely solid material, a kind of hardpan, had been reached, making the sandhogs' work unbearable, but it wasn't bedrock. Roebling thought it would almost certainly support the caisson, but any doubt about the foundation would set off another flurry of public skepticism, and the Brooklyn Bridge had to have complete public confidence. The sandhogs would continue to die.

The beginning of the end came on April 22, 1872, when John Meyers, a German-born sandhog, died of Caissons Disease. He was forty and in good health (attested to by Dr. Smith), but shortly after leaving the caisson, he had succumbed. A week later, Patrick McKay, 50, Irish-born, died, having collapsed in the airlock after his shift. More men became seriously ill, and the sandhogs became more seriously organized.

On May 8th the entire work force from the caisson went out on strike. The first collective negotiations in the history of New York's sandhogs were under way. They demanded three dollars for a four-

day week. The Bridge Company countered with \$2.75 for a five-day week. This offer was angrily refused, and the men firmly prevented strikebreakers from crossing the lines.

The first sandhog strike was shortlived. It ended after only three days, when William Kingsley of the Bridge Company threatened to fire the whole crew. The caisson workers accepted the pay increase and went back to work. The strike settlement, however, was far from a defeat.

Three critical things were accomplished during that spring of 1872. The sandhogs organized virtually every man on the job to protest hazardous working conditions and inadequate compensation. They reached out to the press to enlist public support for their cause, and they helped convince management that men's lives had to be a prime consideration in all decisions.

Within one week of the strike, all digging had stopped. Colonel Roebling had gotten the message, and he was now willing to modify his original plans. While the danger to the men was a genuine factor (he estimated a loss of 100 men if they dug down to bedrock), the dollar cost of continuing was the deciding factor. For the sandhogs, there would be some weeks more work to be done in filling the caisson with cement, but for all purposes they had completed a two-year job, and it was an auspicious beginning.

The building of the Brooklyn Bridge had an impact on everyone involved. Roebling would be crippled for many years from the effects of Caissons Disease; the sandhogs would go on to an increasing number of jobs below the earth and the rivers, where they would meet again and again the cruel mathematics of money and men's lives. And the people of New York would come to rely on and trust the products of sandhog labor.



Chapter Two

The sandhog trade was an invention of the 1870's but it would have to wait for the Twentieth Century to come of age. When the Brooklyn Bridge job came to an end for sandhogs in 1872, the future looked dim for the trade. There were no plans for monumental bridges using caissons, and suddenly the trade they had practiced for two years seemed to have no applications.

This period was the first of what might be called "sandhog sabbaticals", those seemingly endless stretches of time between major construction jobs requiring sandhog labor. Considering the number and length of these layoffs, it is a wonder the trade has been able to hold together. New York sandhogs have roamed the earth to get miner's work, but almost invariably they keep their union book in the New York local.

That first layoff lasted a little over two years. In the late summer of 1874, the call went out for men experienced working in compressed air. Once again the sandhogs were going to play a role in a revolutionary development in America — the building of the subways and train tunnels.

In November 1874, the caissons for a train tunnel under the Hudson were sunk, and its construction would be made possible through the use of compressed air. Since a tunnel under a major river had never been attempted before, this was an historic moment for civilization. This tunnel would be the first physical link between New York and the rest of the country — if it worked, American transportation would be changed forever.

The problem facing Dewitt Clinton Haskins, the eccentric genius who dreamt up the project, was to dig through the silt of the riverbed without having it collapse into the tunnel. No amount of timber could hold up mud and the weight of one of the world's greatest rivers. Haskins had watched the use of compressed air in both St. Louis and

New York, and he saw another application for it. If a caisson of compressed air could move down as it did in a foundation, it could move out, as in a tunnel. In the same manner that compressed air kept out river and mud from the Bridge, it would hold up the riverbed above a tunnel dig.

That first Hudson River tunnel gave sandhogs a new respect for the dangers of compressed air, and it provided an indelible lesson for the first generation of American trade unionists. As Frank Johnson wrote in "Eight Minutes to New York," "Caisson Disease and other appalling accidents first occurred long before the days of powerful unions and minimum wages. The tunnel pushed on, though hundreds of workers were to lose their lives to compressed air." With an immigrant population of four-and-a-half million entering each year, there was no shortage of available able bodied men.

Work on Haskins' tunnel was interrupted several times during its course, but it was completely shut down in July 1880 when a terrible tragedy took place. In the world of sandhogs, disaster arrives quickly, and the scream of escaping air signals its arrival. Peter Woodland was in charge of a gang working on the thirty-third street tunnel. He knew the sound of a blowout, and he shouted "Make for the lock" when he heard the screech. Eight sandhogs reached the airlock; a ninth was crushed by a falling beam. Woodland closed the airlock door and stayed with nineteen men to die slowly in the rising water. The last thing the eight survivors saw through the airlock window was Woodland, waist deep in water. The men had stripped off their clothing in a vain attempt to stop the break and the onrush of water. Twenty men died, but eight were saved. Woodland became an instant hero.

But what about the living sandhogs who had no desire to be dead heroes? For \$1.50 a day, men were working in dreadful conditions. Shouldn't they at least be protected from a horrible and painful death? Perhaps this scheme, using compressed air in tunnel digging, simply didn't work. There was a storm of questions and a drought of answers, and the second sandhog strike was on the horizon.

The scene of the tragedy had become circuslike. Hawkers and hot



Subway construction workers in tunnel (photograph undated).

dog vendors gathered by the Hudson to cater to the multitude of the curious. On September 24th, Woodland's body was brought up from 60 feet below the Hudson. Seven more bodies were found in the next few days. Identification of the corpses was spotty—a narrow leather belt on one man, a leg bandage on another. Considering the great river's powerful movement, the press hailed the retrieval of the bodies as a great engineering achievement. The sandhogs were not impressed.

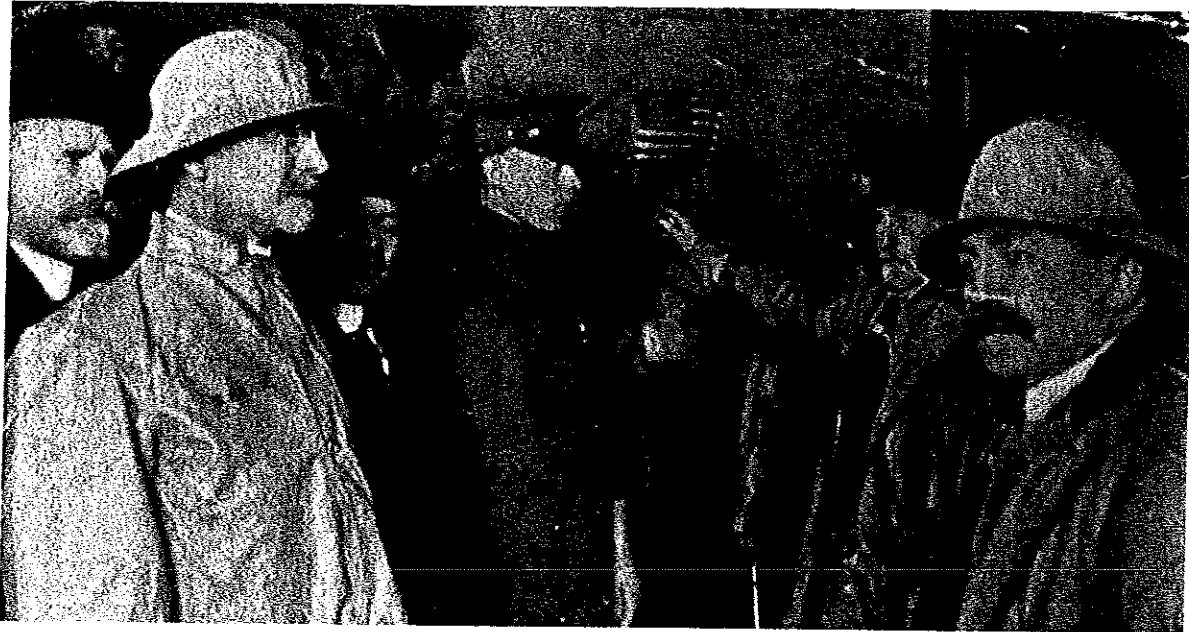
The Hudson River Railroad Company lost its credibility, and financial backers withdrew support. The company folded; it would be more than twenty years before the same tunnel digs would be reactivated as the Hudson Tubes. By then, compressed air had been successfully used in tunneling under riverbed. By then the Hudson Tubes were only one of several river tunneling jobs.

In the first ten years of this century more than a dozen immense tunneling jobs were begun. There were railroad and subway tunnels under both the Hudson and East Rivers. Beneath the streets of the recently consolidated City, subway tunnels were shooting out in all directions, and by 1907, the digging had begun on the world's most extraordinary water tunnel system.

In those early days, the ranks of sandhogs grew enormously, and a picture of this unique breed of men was becoming fixed in the public's mind. These were the people who were building tunnels which would profoundly change the lives of all New Yorkers. Their work was extremely dangerous, and while they worked hard, they played hard, too.

"The Sandhog Band a Hit at Sherry's" read the Page One article in the *New York Times* of March 12, 1907. The occasion was a dinner celebrating the opening of the Morton Street PATH tube — although the party took place more than seventy-five years ago, it has the distinct sound of a sandhog party.

The Sand Hog Band appeared on the stage and made more noise than sixteen calliopes. The Sandhogs wore their yellow oil-skin suits, with long rubber boots and



Mayor Gaynor switches on electric current to blast out the last section of rock between the headings of the Hudson River Tunnel. (January 30, 1912.)



Brooklyn Rapid Transit Tunnel, 1906 — Sandhog at work under pressure.

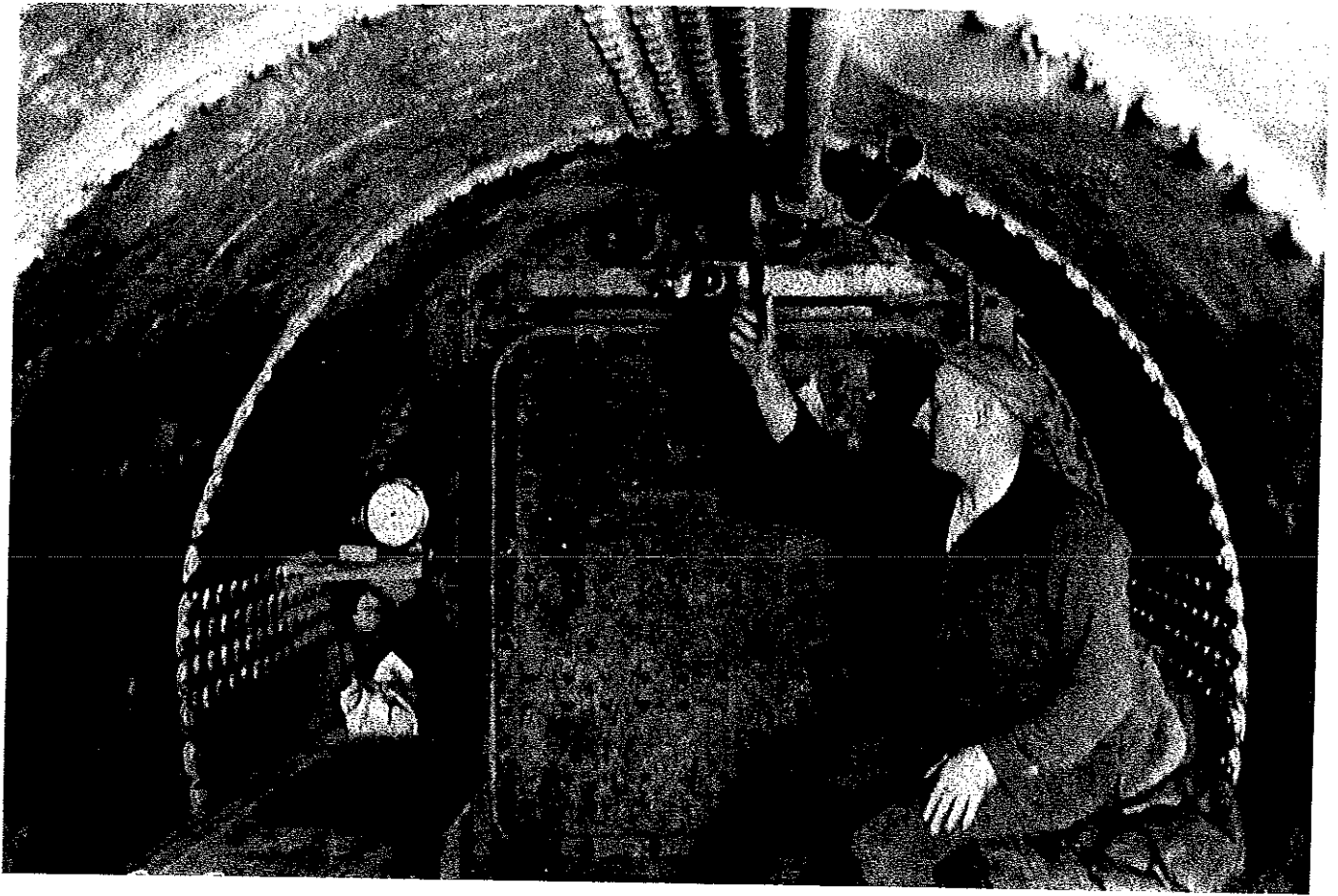


The McAdoo Tunnel — air lock.

yellow tunneling hats. Instead of playing upon brass instruments, they had trombones, cornets, and other instruments made of tin . . . Led by H. D. Bastow, a tunnel construction boss, the band proceeded to play a Sousa march. From the tuba came a bubbling sound like that of a compressed air blow-out under the river. The tin cornet wailed as mournfully as a fog siren, but the bass horn produced a noise that sounded like a tunnel explosion . . . when the Sand Hog Band started to grind out "Marching Through Georgia" folks along Fifth Avenue began to get frightened and the policeman on post came around to Sherry's front door to find out what had happened . . . other things, too, came the band's way. First it was rolls, then pickles, and within a few minutes the place was in an uproar with four hundred tunnelers pelting the Sand Hog Band with loaves of bread, chunks of beef, and other things handy on the tables. The army of waiters became frightened and fled pell-mell from the great dining-hall, but Chief Engineer Jacobs restored order by escorting the Sand Hog Band from the platform.

Except for the yellow slickers and sandhog boots, the scene at Sherry's could not have been more unlike the scene in the tunnels. By 1906, grim stories of sandhog deaths began to surface, particularly from the Pennsylvania Railroad tunnels under both rivers. A story began to emerge which was to horrify the people of New York. Even the City government, normally very friendly to the powerful railroad interests, was moved to action. For sandhogs, however, the scandals of 1906 would result in the most important development in their history — unionization.

It all began with the issue which to this day is *the* priority for tunnel workers — safety. In early 1906, the management of S. Pearson & Sons, contractors of the Penn Railroad tunnel job, laid off all air lock tenders as a cost cutting measure. The lock tenders are essential to the



Air Lock and Tender.

safe operation of a tunnel dig, and their removal jeopardized every sandhog on the job. Their absence was soon felt in a sharp increase in worker deaths from the bends, but the company had an endless supply of immigrant labor willing to risk their lives for a good days' pay. The only fear the contractors had was that of public opinion, which was kept strictly uninformed.

Too many men were dying. Their families and friends could not be kept in the dark, although it appears there was an attempt to do just that. In early June, the New York papers revealed charges that the bodies of sandhogs who had died in the tunnel had been secretly removed and transported to other locations. Some were taken to hospitals in the Bronx and Brooklyn, where they were declared dead "of natural causes". Evidence of other falsified death certificates became known, and the families of victims joined together to force an investigation. They hired former Assistant D.A. Marshall Clarke who pressed the New York County Coroner, George F. Sharady, Jr., to begin hearings.

The charges resulting from Shradys' inquiry were staggering:

At the very least, fifty sandhogs died in the first five months of 1906.

A medical doctor, formerly associated with Pearson & Sons, reported "I am amazed that there are no lock tenders in the tunnels. I never heard of such an omission. It is a fatal oversight. The experienced lock tender is the most important man in the tunnel. The lives of forty to fifty men depend upon his knowledge, judgment, skill and courage. Some dreadful calamity will result if lock tenders are not immediately restored to their duties."

Pearson & Sons told its employees to ignore the Coroner's subpoenas. When questioned about the firing of lock tenders, which saved the company \$112 a day, Charles Fraser, Superintendent of the works, declared "I do not see it is the public's affair." Coroner Shradys did not agree, and the testimony went on. As the *New York Herald*

put it: "Extraordinary are the records of the deaths of the men employed by S. Pearson & Son. Men who die on the works and are taken to hospital and the morgue appear in the records of the institutions and in the coroner's books as dying in places far removed from the actual places of their death and of causes remote from the real ones."

Many cases were clearly documented:

Thomas Kelly was recorded by the coroner as dying in Bellevue. He died in the locks.

Timothy Crotty was crushed to death by a flywheel in the tunnel. The morgue recorded him as dying of asphyxiation.

Raymond Sanders died of the bends in the shaft. On the record he died from an "air embolism" at Bellevue. Coroner Shrady himself had actually seen the corpse in the Doctor's airlock at the tunnel site.

John Dalton and B. Trueman died of the bends, but there was no record of their deaths at all.

While horror stories filled the press, the sandhogs organized. Although there had been attempts to organize before, with some successes, the contractors had thousands of men waiting to go into the tunnels. But too many were dying and many more were leaving the tunnels with crippling injuries. The workers realized that only a union could protect them from management's negligence as well as from other workers' incompetence. Certainly it wasn't going to be easy.

At the same time the *New York Times* reported the Shrady inquiry and regular tunnel accidents, it warned against striking for the right to a union. Specialized trades, such as electricians and explosives experts, were already organized, and their representatives supported unionization of all tunnel workers. James Holland of the Eccentric Firemen's Union threatened to call out the firemen and engineers if workers weren't allowed to organize. Holland said "If we cannot organize the men in the tunnel we can declare a strike of the

engineers and firemen which will flood the tunnel, and it will be twenty-five years before it is finished." A *New York Times* editorial of July 3, 1906 pointed out that Mr. Holland's remarks could make him and his union liable for damages resulting from a strike. The newspaper reminded its readers that conviction could lead Mr. Holland to a year in the penitentiary and/or a large fine.

Within a month, the United Tunnel Workers were born. And on July 30th, 500 of them went out on strike. The vote was taken at a meeting at the Labor Temple on East 84th Street. The meeting's chairman was one Gus Weinberg, who said that the union would call out 1,000 men from the Belmont Tunnel job alone. It was estimated that as many as 5,000 men from different trades would walk out — the issues: the right to organize; the right to safety; the right to fair wages for dangerous work.

The Tunnel Workers' strike of 1906 marked the beginning of Local 147 as we know it today. It was the catalyst for the creation of the first permanent union representing all trades on a construction job, and the tunnel workers joined other unions in the earliest years of the creation of the American Federation of Labor. Hundreds of men had died to secure this accomplishment, but with the settlement of the strike, not everything was set straight.

The fight for the union was settled for the moment, but the sandhogs were periodically threatened with wholesale firings, and, of course, new contracts for new jobs had to be fought for every time. As far as safety was concerned, improvements had been made. Scores of men continued to die, however, in the years after the strike — they died in blowouts, they died of the bends, they died in explosions. They died, in other words, in the same old ways.

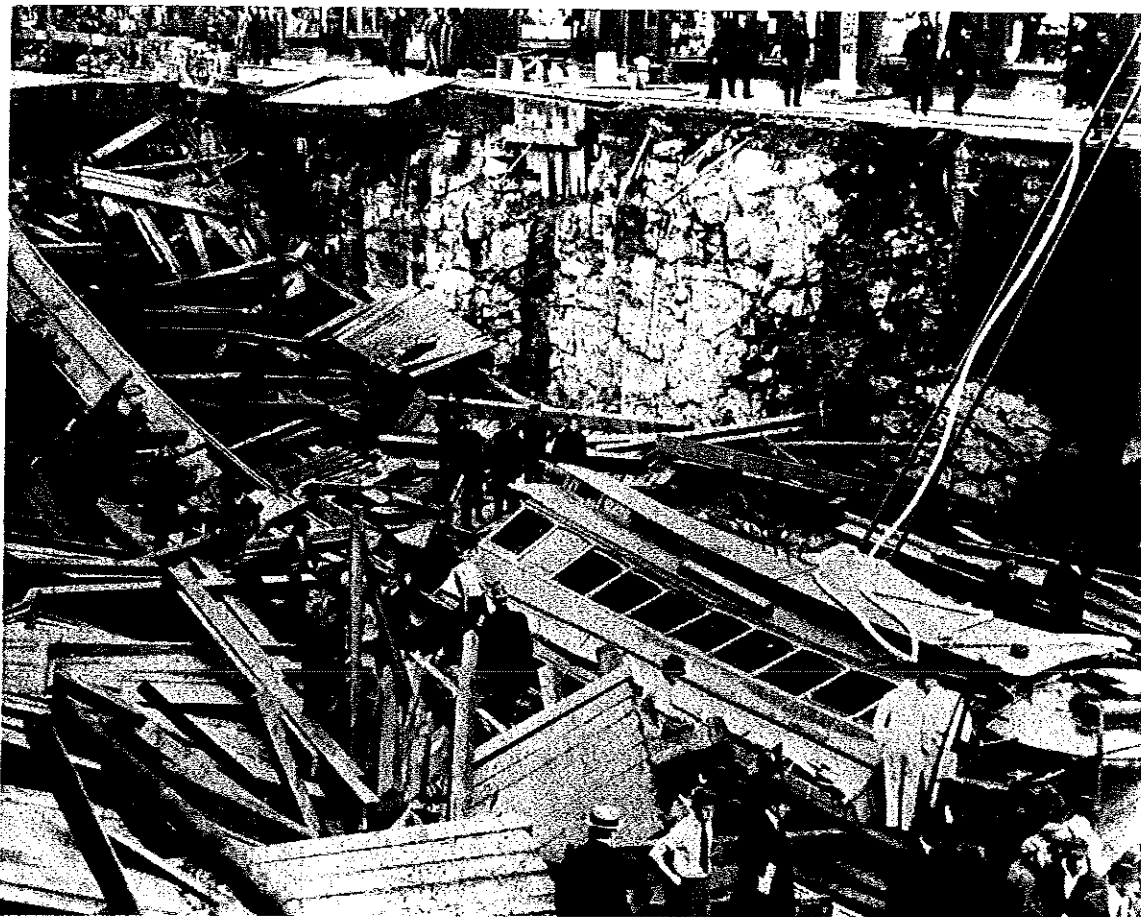
While many sandhogs died building the subway tunnels, some survived against all odds. One almost unbelievable incident occurred in 1916 during the construction of the BMT under the East River.

The screech of a bad blowout was heard in the tunnel. Before they could escape, three men were sucked through a widening hole, and propelled through the river mud by escaping compressed air. One man, Marshall Mabey, was shot through the twelve feet of riverbed, through

the water of the East River and into the afternoon sky on a geyser four stories high. He was retrieved by a contractor's boat, somewhat startled, but better off than his two friends who died in the blowout.

Marshall Mabey went on to work in the tunnels for another quarter-century, and even had two sons who became sandhogs. He has come to symbolize his fellow workers in their fight to work and survive.

Just as Mabey prevailed, so the Union lived beyond those years of challenge and difficulty. One of its first victories was securing a clause in new subway contracts requiring union labor on all jobs. Finally, New York was becoming a union town, and the Sandhog Band was leading the parade.



Subway cave-in on Seventh Avenue between 23rd and 25th Streets, September 22, 1915; Timber shoring supporting the street collapsed.



Subway under East River — "Holing Through"; October 13, 1918.



Catskill Aqueduct — City tunnel. 72" x 48" Bronze shaft cap to which city water mains are connected.

Chapter Three

The first ten years of this century saw an explosion of growth in the New York subway system and its river tunnels, with thousands of sandhogs working on these jobs at one time. For the first time, the sandhogs had unified union representation — the United Tunnel Workers. The union was recognized by the American Federation of Labor, and, however grudgingly, by the contractors. In 1907 the sandhogs began a job which was to open a new world for them and for the people of New York — the Catskill Water Tunnel System.

Every day, New Yorkers use an average of 1.5 billion gallons of water. It is delivered directly to their faucets and fire hydrants by the most complex network of tunnels and aqueducts in the world. New York's water supply comes from three upstate reservoir systems: the Croton reservoirs and aqueducts, which were built in the last century; the Catskill system, built in the first decades of the Twentieth Century; and the Delaware system, which was built over the years from 1935 to 1961.

New York was not always endowed with such water resources as it has today. From the days of the first Dutch settlement in Manhattan, the City Fathers have known water supply to be of primary and critical concern. The history of New York is studded with frequent epidemics and fires which resulted directly from inadequate water supplies. For years the City's main source of water was a fetid pond called "the Collect" near what is now Foley Square. By 1780, the Collect was described as "a very sink and common sewer," and everything from dead cats to murdered women of the night was deposited there. Between the frequent epidemics and the devastating fires, even the politicians realized something had to be done.

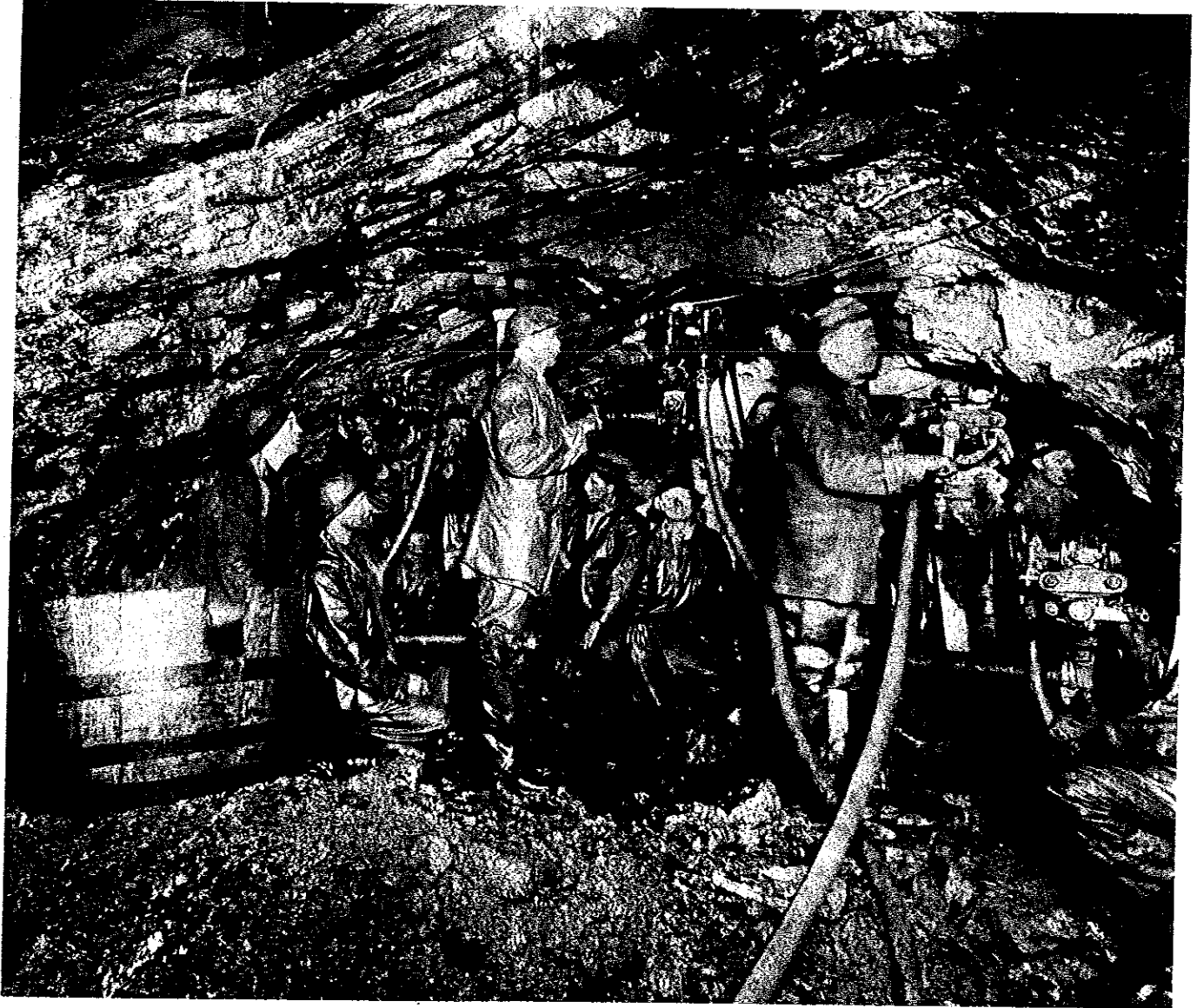
It took the shrewd and ambitious Aaron Burr to devise a plan to deliver water to New York, at the same time foiling his arch enemy Alexander Hamilton. Burr organized the Manhattan Company, which

was authorized by the State Legislature to lay wooden pipes beneath the streets of New York. A little-noticed clause of the bill which Burr pushed through the State empowered the Manhattan Company to use its surplus capital for any purpose not in violation of the law. In other words, the Company could act as a bank, lending and borrowing money at fixed rates. At the time, the only bank in the State of New York was controlled by Hamilton, and with his plan of "public service," Burr had hoodwinked his old rival. To this day remnants of wooden pipe are unearthed during construction downtown. Another remnant of the scheme is the Manhattan Company, which survives today as the Chase Manhattan Bank.

As is so often the case, the people of New York suffered from these ulterior motives to public service. The Manhattan Company's water system was neglected in direct proportion to the company's banking success. Meanwhile, New Yorkers were dying of thirst. The City suffered yellow fever epidemics in 1795, 1798, 1819, and 1822. In 1832 Asiatic cholera arrived, killing 3,500 people, and two years later it struck again. It was a time when good water was more costly than liquor, when fire devastated the dense, wooden buildings of New York every few years, when the population would nearly double in ten years. It was a time when New York was desperate for a public water supply.

In 1835 New Yorkers acted, approving the construction of a reservoir and aqueduct system fed from the Croton River in Westchester County. For that time, the project was almost unimaginably vast. It included a large dam forty miles north of the City, with an enclosed masonry aqueduct running to a reservoir at 42nd Street and 5th Avenue (where the Public Library is today). It would take six years to construct, employing thousands of workers, and cost the incredible sum of \$5,000,000.

The City was finally responding to an urgent need, but not in time to prevent the deadly fire of 1835. The fire began in a department store in the Wall Street area and quickly spread in every direction. Because there was little water to fight the growing blaze, it burned for more than 24 hours, destroying over 600 buildings and putting thousands of shopkeepers out of business. Damages were estimated



Shaft of Ashokan Water Tunnel

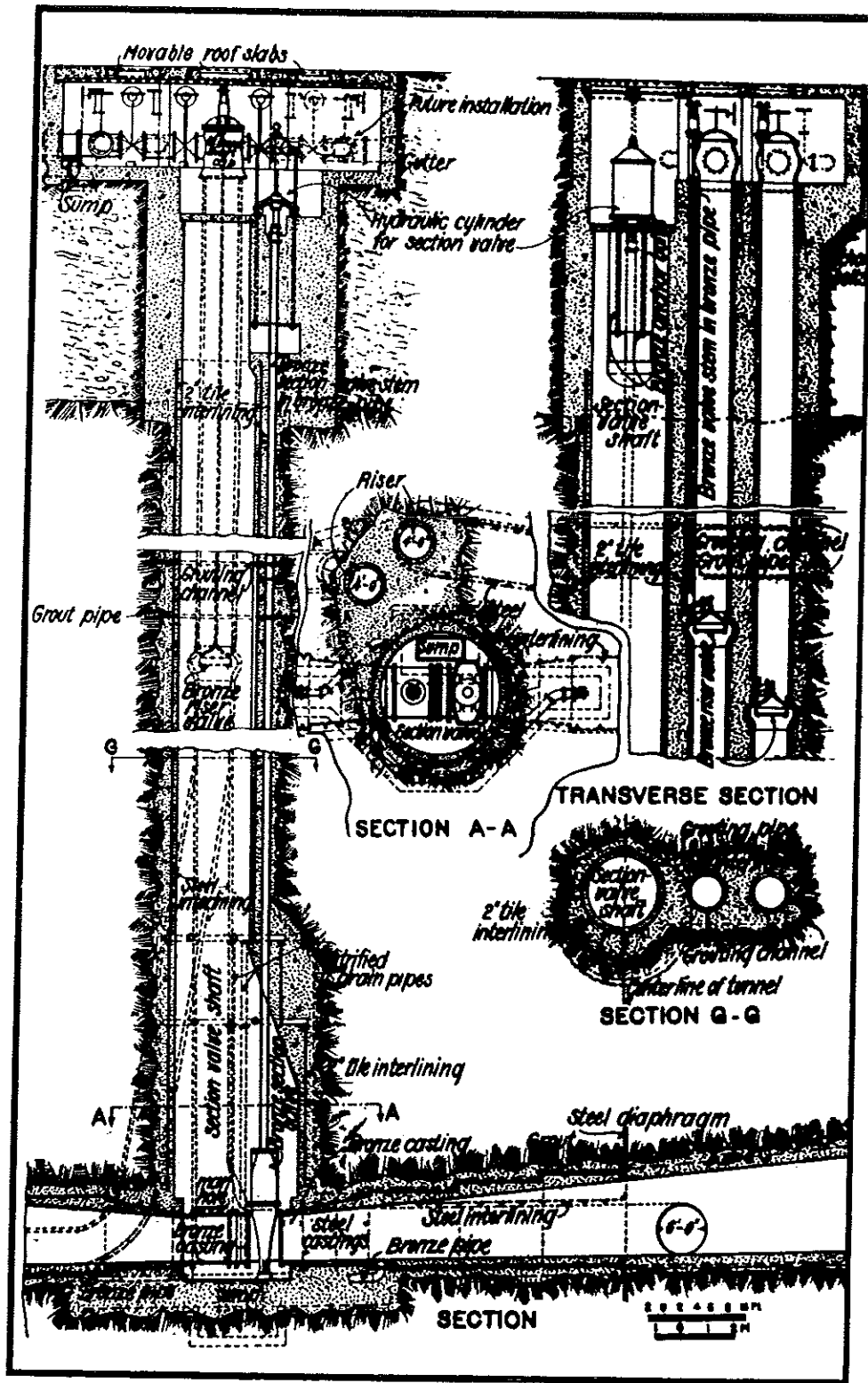
at \$25,000,000. Suddenly the Aqueduct didn't look so expensive.

When the Croton Aqueduct opened in 1842, the City celebrated with days of public events and parades. It was a time when people really appreciated water, as is evidenced by this comment of the period: "Nothing is talked about or thought of in New York but Croton water; fountains, aqueducts, hydrants, and hose attract our attention and impede our progress through the streets. Political spouting has given way to water spouts, and the free current of water has diverted the attention of the people from the confused state of the national currency."

Over the next 60 years, the Croton system was augmented as New York's population grew from 400,000 to 4 million. When the Catskill system was begun in 1907, the City was again desperate for water. A typical sandhog job, the project was grander than anything that had ever been built in America. Vast areas in the Catskill Mountains were purchased for the reservoirs that would serve New York. Nine villages were eventually submerged, over 3,000 people relocated, and more than 4,000 bodies in 39 cemeteries were reinterred. Some observers noted that the dead were treated with more respect than the living. According to the legislation giving the City the right to condemn lands for the system, it was required to give half the assessed value of the properties and thirty days notice to vacate. Many farmers suffered greatly under these terms — the assessed value was a fraction of the true value, and many had been the fourth generation or more to work the land. After much commotion the terms were made somewhat more just, but still many individuals in the north country paid dearly for New York's great water system. And to this day, resentment lingers in their descendents.

The tunnel from the Catskill reservoirs — Schoharie, Ashokan, Kensico and Hillview — is 1,114 feet deep under the Hudson River and eventually leads to Tunnel No. 1. The first City Tunnel is a subterranean river of water under extremely high pressure. At its deepest, it is 750 feet under the City, as far below the streets as the Woolworth Building is above them.

Blasted through hard rock in most places, Tunnel No. 1 is far



Catskill Aqueduct — Details of shafts showing section valve, section valve shaft and 48" risers.

enough below the City to survive an earthquake. It has 25 riser shafts dotting its path from the Bronx city limits, south through Manhattan to a terminus in Brooklyn. This monumental job employed thousands of sandhogs, and with advanced construction techniques it doubled the distance tunneled through hard rock to an average of 60 feet per week. Still, advances in technology did not translate into advances in safety.

There are no accurate figures for the number of casualties suffered in the construction of the Catskill system, but the toll was high. One casualty of the job, according to the *New York Times* of November 26, 1910, was Robert K. Everett, the owner of one tunnel company building the Ashokan aqueduct, who committed suicide, probably as a result of the many accidents on the job. "For a long time the contractor has worried greatly over these accidents, particularly the one of January 21 last when dynamite that was stored in the works exploded and eleven men were killed and many others wounded. Several suits for damages were instituted as a result of this explosion and in at least two of the cases heavy damages were obtained against Everett & Company."

Safety was not the only problem facing the sandhogs. While great strides in organizing workers had been made, the contractors never stopped trying to circumvent the union. The struggle was constant and, oddly enough, was made worse by the vast number of jobs involved. Between the subways, the river tunnels, building caisson work and the water tunnels, tens of thousands of sandhog jobs were created. This new industry could not be organized overnight, and the contractors were certain to take advantage of the situation.

In 1910, the Tunnel Workers charged that contractors on the aqueduct preferred foreign to American labor at a time when the country was experiencing a severe economic depression. In testimony before a City Commission on labor and wages, the contractors claimed that Americans couldn't be persuaded to do the difficult work of tunnel digging. Secretary Marsh of the Commission asked "Is it not true that the employment of so many immigrants keeps the rate of pay so low that Americans cannot find it a living wage?" The contractors agreed that \$1.50 to \$1.75 per day was a modest wage. But

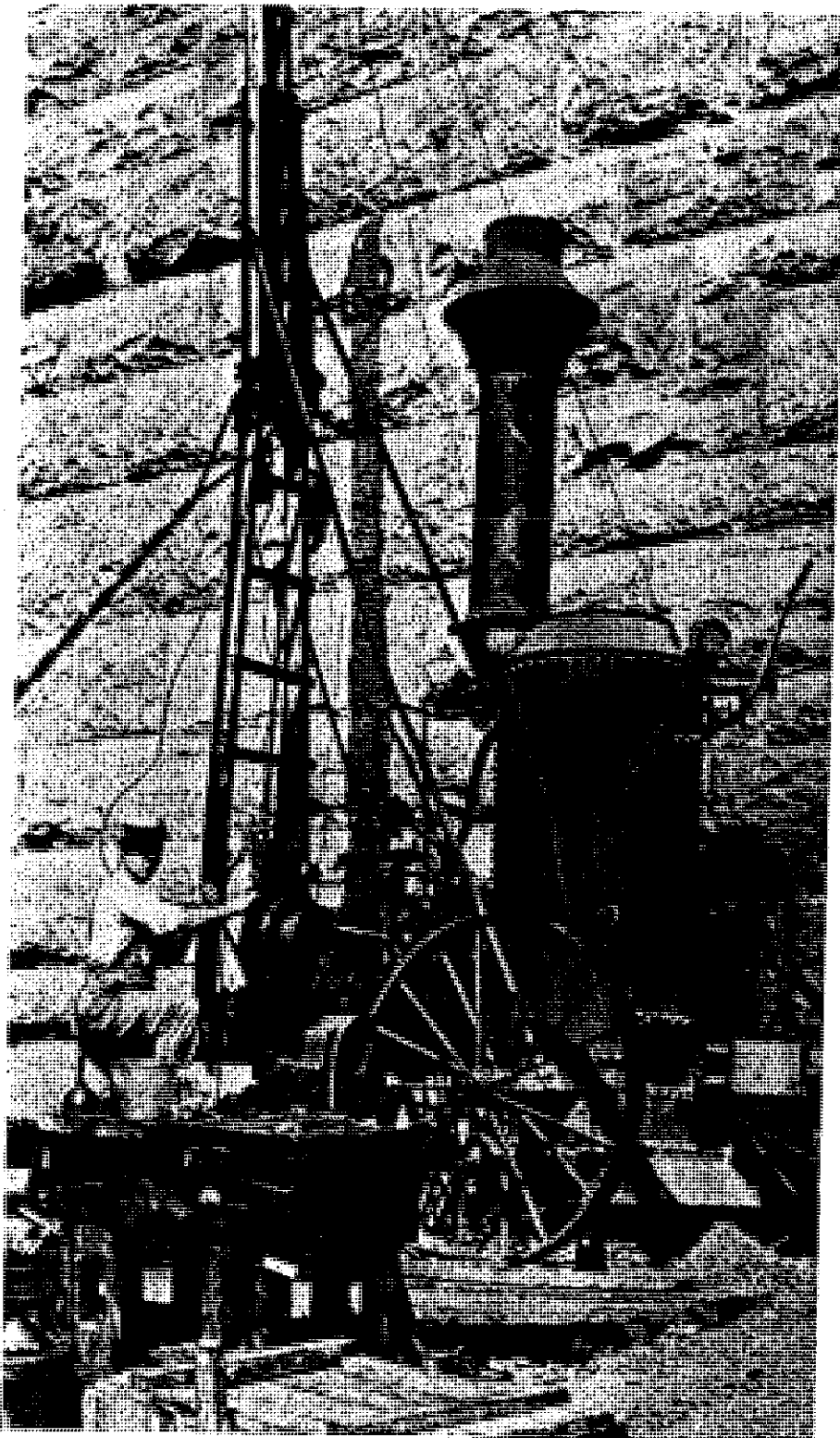
men at the Bowery Mission said they had sought work on the aqueduct in vain, and the superintendent of the mission was also rebuffed when he attempted to get work for Americans.

There is an ironic twist to the sandhogs' complaint about the hiring of foreign labor. Many of the tunnel workers were themselves foreign born. Though perhaps they arrived ten or twenty years before the newer immigrants, they were immigrants nonetheless. In those days they numbered among them Irish, English and Scottish miners, some Italians, and a large contingent of blacks from the Caribbean. Blacks, incidentally, have always made up a large part of the trade, and they've played a major role in the history of the union.

For the next seven years the union fought for recognition, and by the last years of construction on the Catskill System, almost all work had become unionized. In 1917, City Tunnel No. 1 (the Catskill Aqueduct) delivered its first water to the people of New York. The same year the Tunnel Workers affiliated with the International Hod Carriers.

The decision to join the International was a difficult one for the sandhogs. They had always been an independent union with jurisdiction over all the United States and Canada. Contractors from across the nation came to New York to recruit sandhogs because the City was a tunnel town and its tunnel workers were the best. By joining the International, the sandhogs of New York gave up jurisdiction for all states except New York and New Jersey, but they achieved job security for older workers, who needed the clout of the International behind them.

Within a year of the agreement, the International Hod Carriers issued charters for every state, including one for New York and New Jersey — Local 63. Over the next twenty years, the sandhogs had their difficulties with each other and with the International. Various splinter groups developed including, on July 14, 1930, an entirely separate local, 102. Soon after Locals 63, 67 and 68 merged into Local 45, that group and Local 102 (102+45) finally joined forces creating Local 147. During those years there were problems with the International, difficulties arising out of the mutual necessity of the relationship. The



City Tunnel — Portable Rig making core borings into ledge-rock at Speedway near 156th Street; 1909.

International naturally needed the Local, and the Local relied on the larger group, but both sometimes thought there was no need for the other. Finally all was resolved and the Tunnel Workers have experienced nearly thirty years without major internal conflicts.

By the 1920's another world of sandhog construction was realized with the City's first vehicular tunnel, the Holland Tunnel, begun on October 12, 1920. Its two tubes, from Canal Street to Hoboken, were destined to carry the first private automobiles under the Hudson. The Holland Tunnel symbolized the revolution in American transportation, as well as sounding the death knell for the charming ferries that had plied their trade across the Hudson for centuries. For the sandhogs, it represented the slow transition from the old trade to the modern era. Safety conditions had improved, thanks to a complete unionization of the job. But working conditions in the compressed air were almost unbearably hard. One sandhog recalls "The turnover in workers was unbelievable. Men would work an hour or maybe a shift, and they'd never be seen on the job again. Even the strongest men were tired after fifteen or twenty minutes in the air. And there was always the worry of being fired. If a man went for more than two sips of water during a shift, he was told to collect his wages and go home."

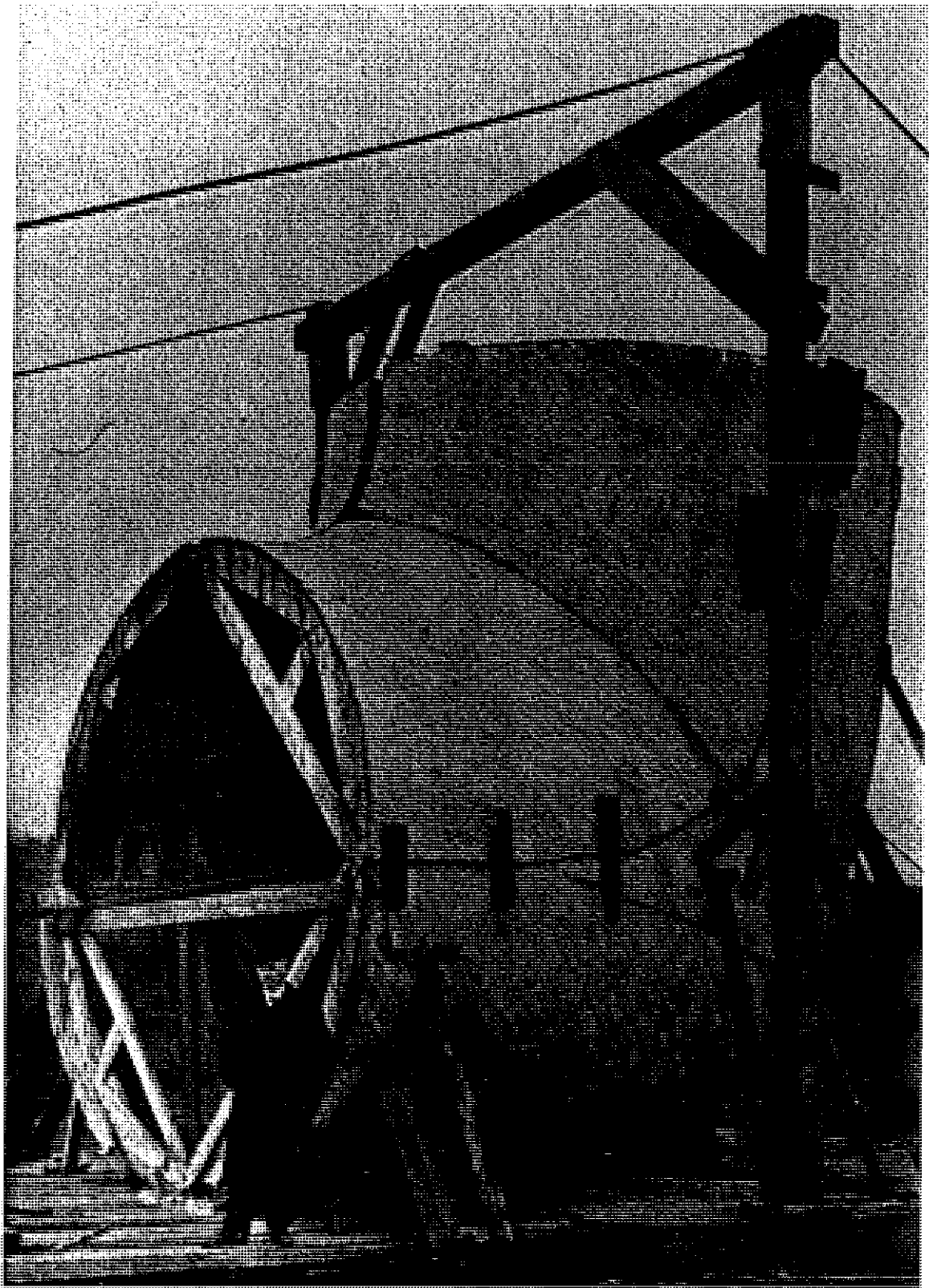
The vehicular tunnels have kept several generations of sandhogs very busy. The Holland Tunnel was opened on November 13, 1927 and to date it has carried over a trillion vehicles safely under the river. It was joined by the Lincoln Tunnel No. 1 (1935), Lincoln Tunnel No. 2 (1937), the Queens Midtown Tunnel (1939), the Brooklyn-Battery Tunnel (1947) and the Lincoln Tunnel No. 3 (1953).

The Lincoln Tunnel was considered truly spectacular for its time. Built by the Port of New York Authority for 75 million dollars, it connects Manhattan's West Side to Weehawken, New Jersey. Its 8,218 feet of tunnel was opened to traffic in December, 1937, and there are sandhogs working today who remember the "Holing Through" of this remarkable structure.

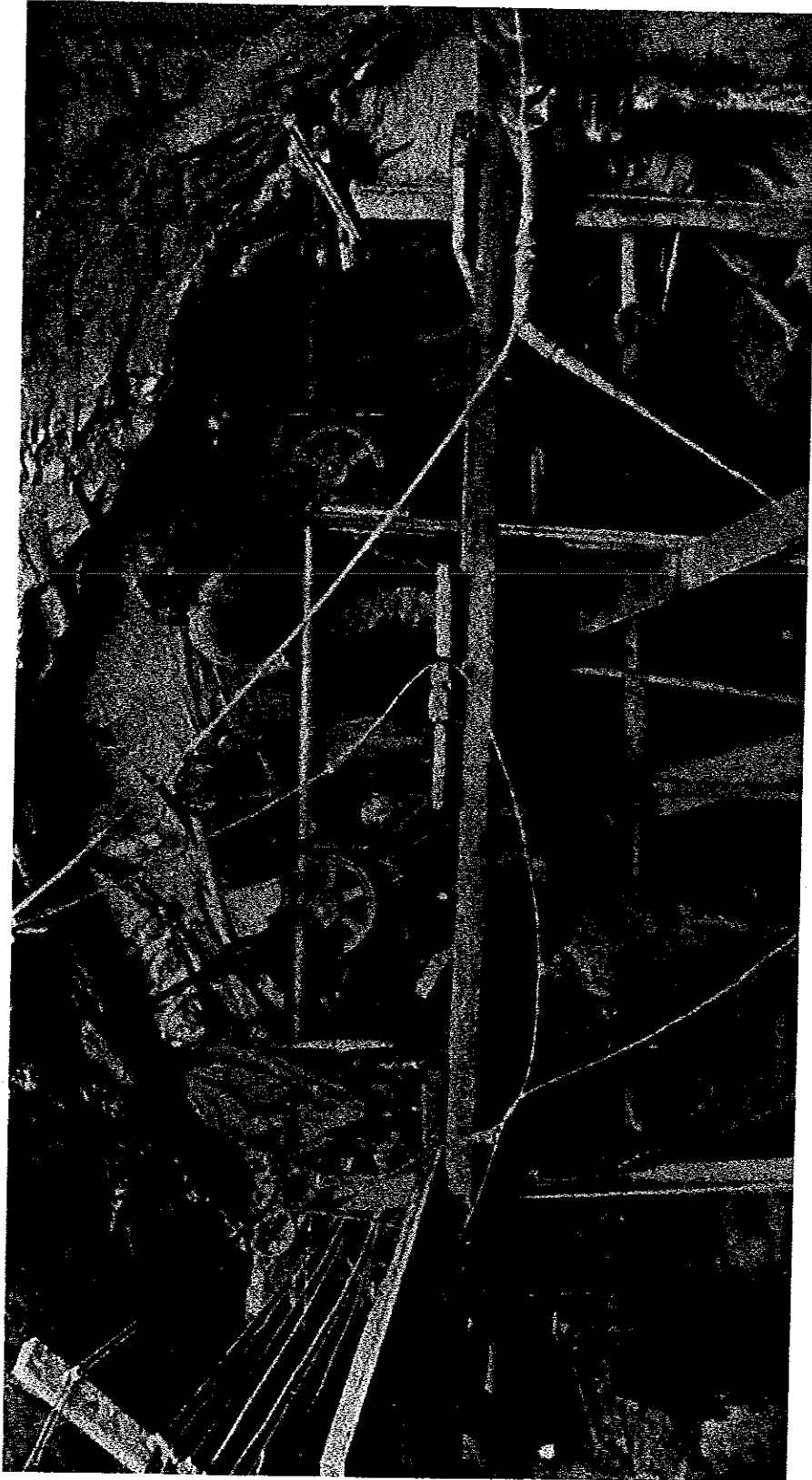
Those years also saw the completion of the Second City Water Tunnel in 1937. Known as "McGovern's Tunnel" for the contractor, it took a heavy toll on sandhog labor. The job was plagued by scandals,

both financial and concerning the safety of the workers. City Tunnel No. 2 runs through the Bronx and Queens to a terminus at Fort Greene in Brooklyn where it connects with City Tunnel No. 1.

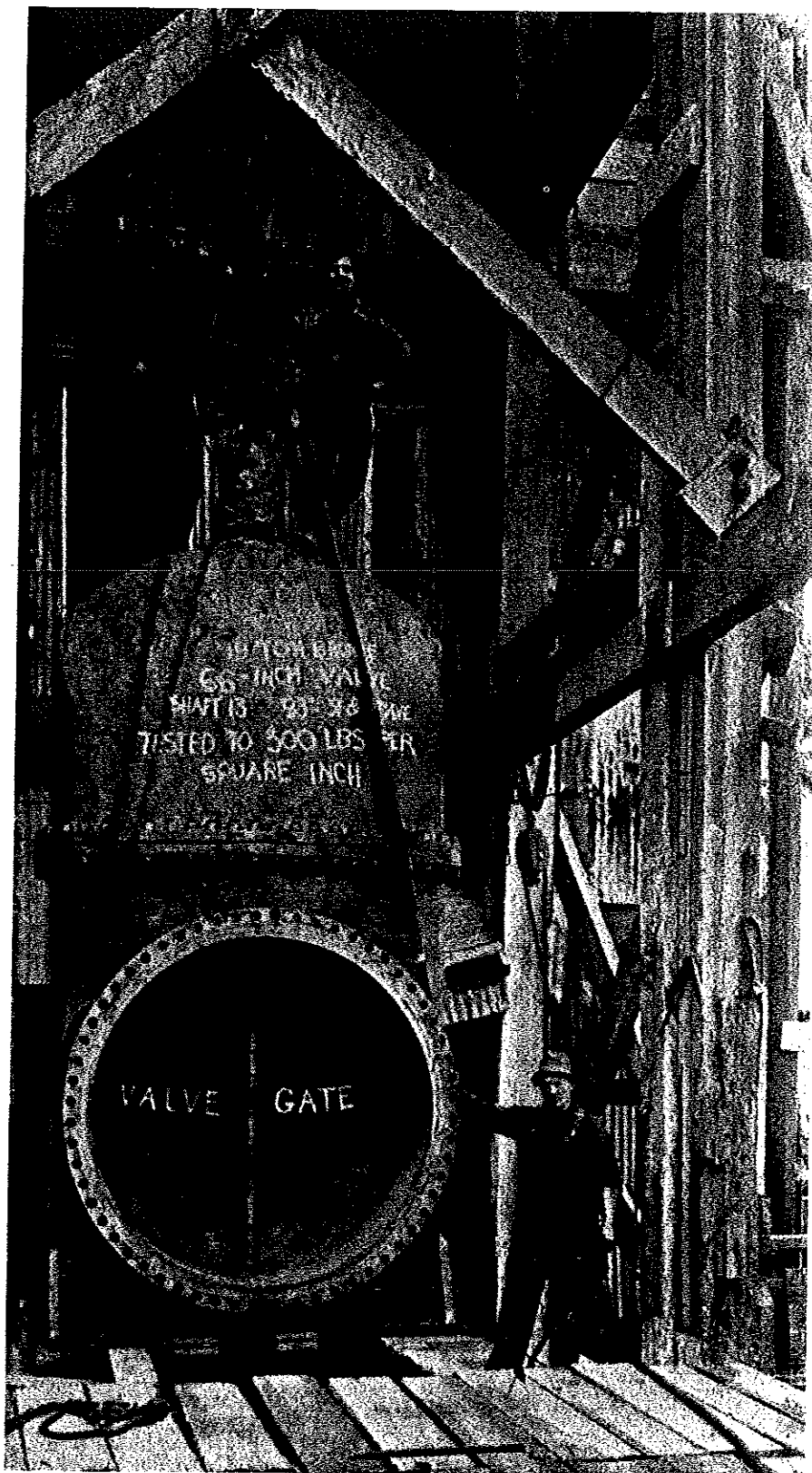
The Second City Water Tunnel and the Delaware Reservoir System greatly augmented the New York water supply and delivery systems. The Delaware Aqueduct's 110 miles of deep rock tunnel is the longest in the world. City Tunnel No. 2 was longer, bigger and more sophisticated than its predecessor. One quarter century later it, in turn, would be dwarfed by another city water tunnel that is still making history today.



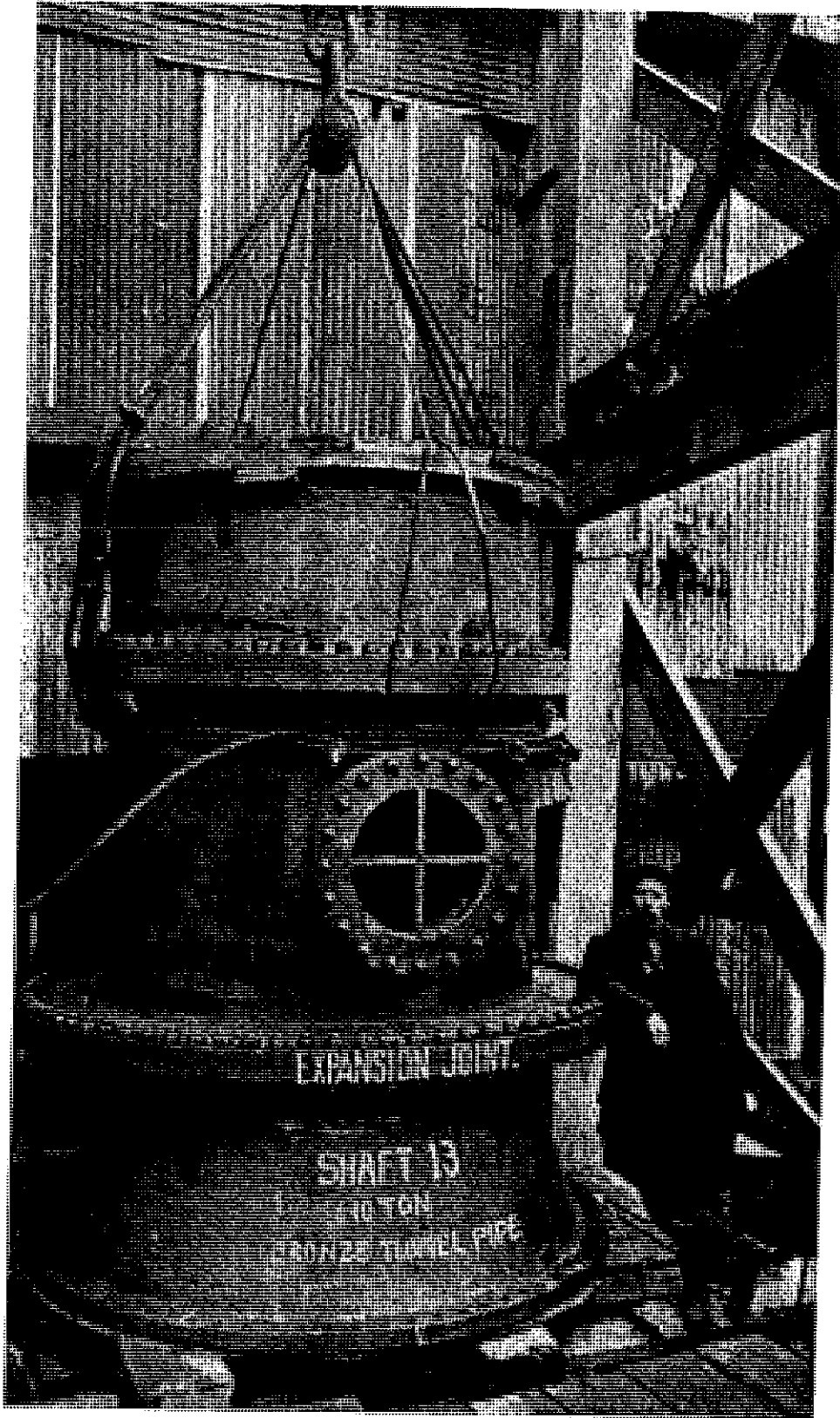
Catskill Aqueduct — Rondout Pressure Tunnel. Form used for molding concrete lining in bend at foot of spike shaft; 1909.



*City Tunnel — Drilling diaphragm slot for end of steel lining of drift connecting
waterway tunnel with drainage shaft.*

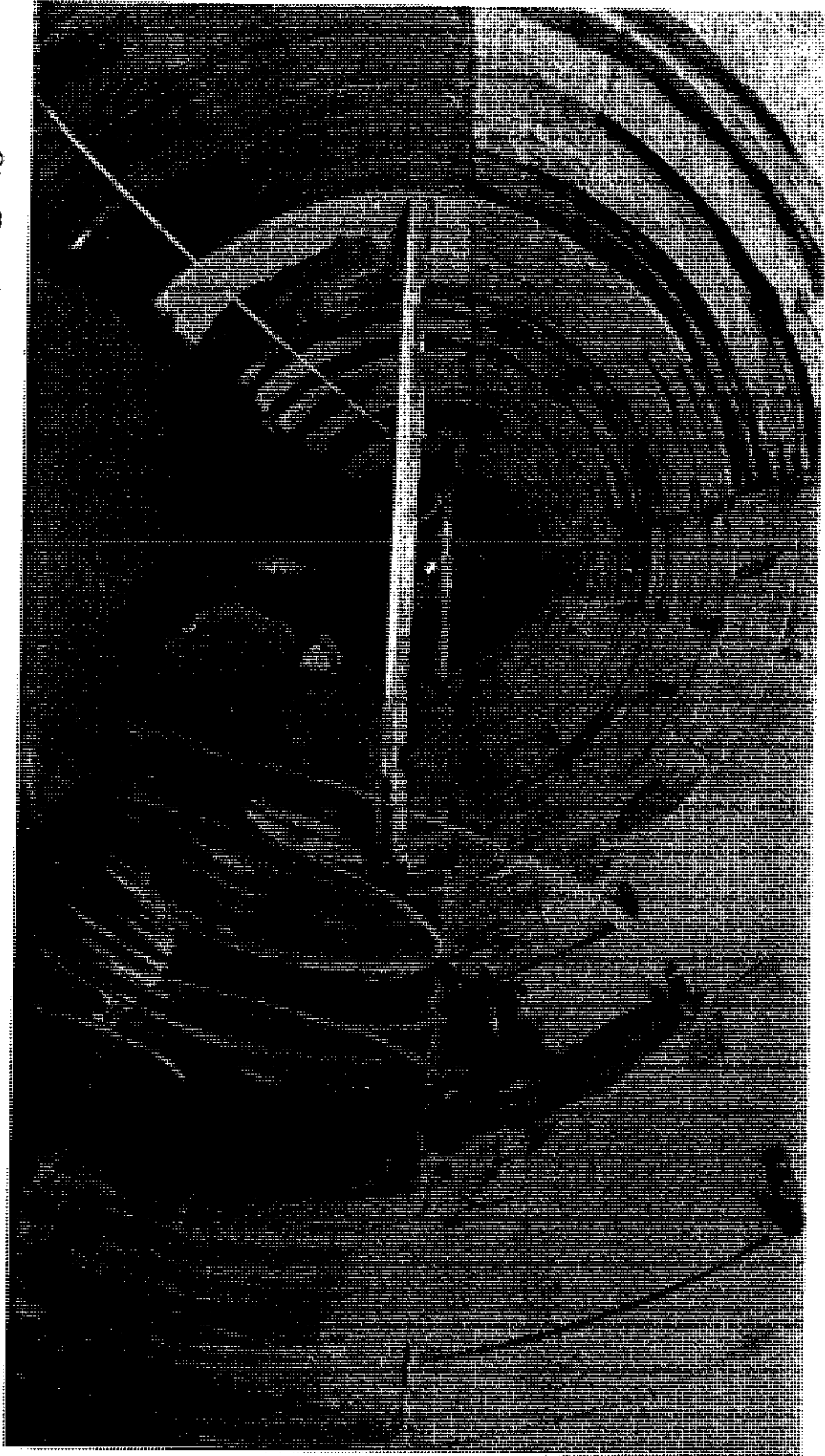


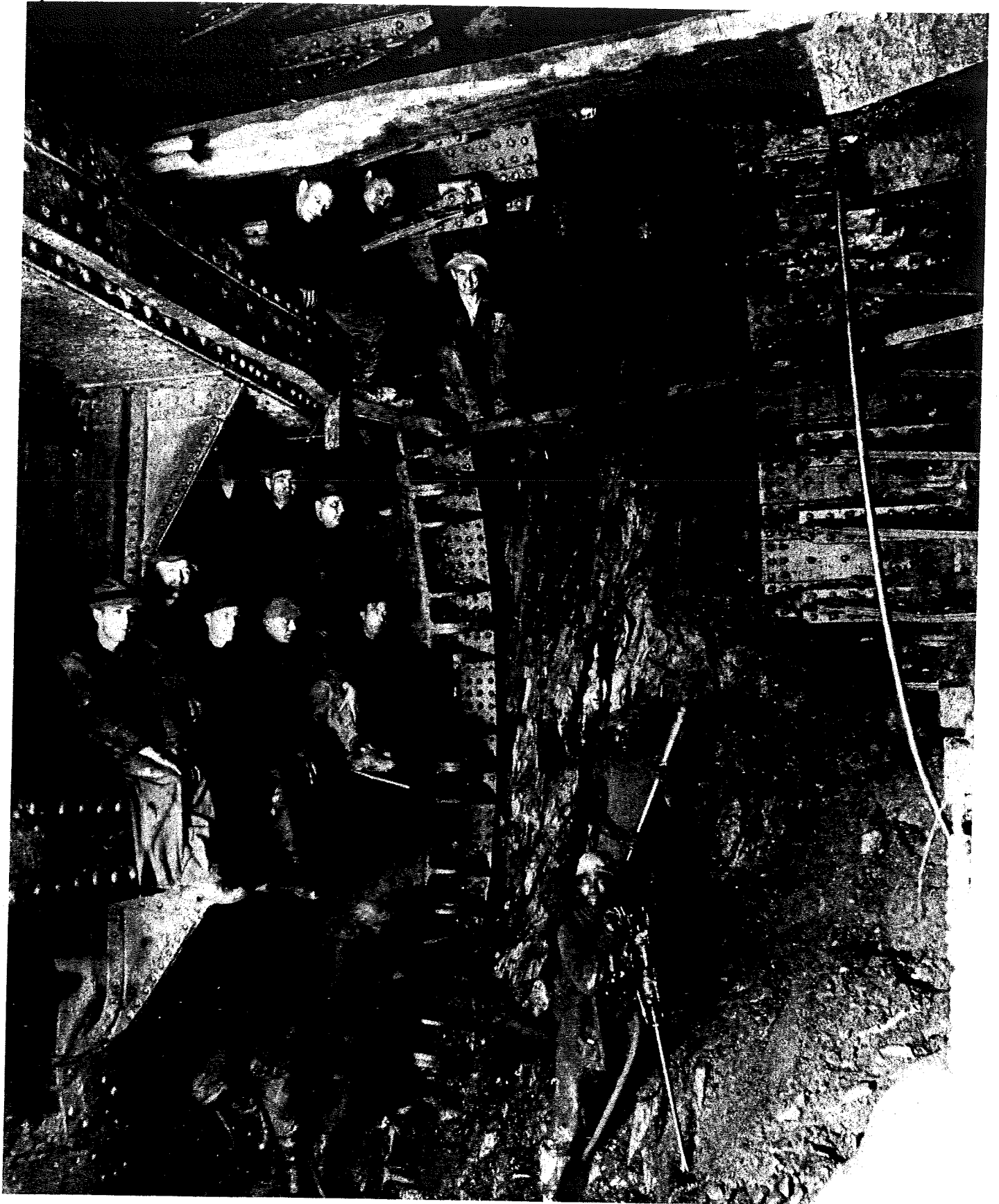
City Tunnel — 48" Bronze Section Valve.



City Tunnel — Bronze Reducer Pipes.

City Tunnel — Inflow before grouting in tunnel south of shaft 4, Claflin Terrace, the Bronx.

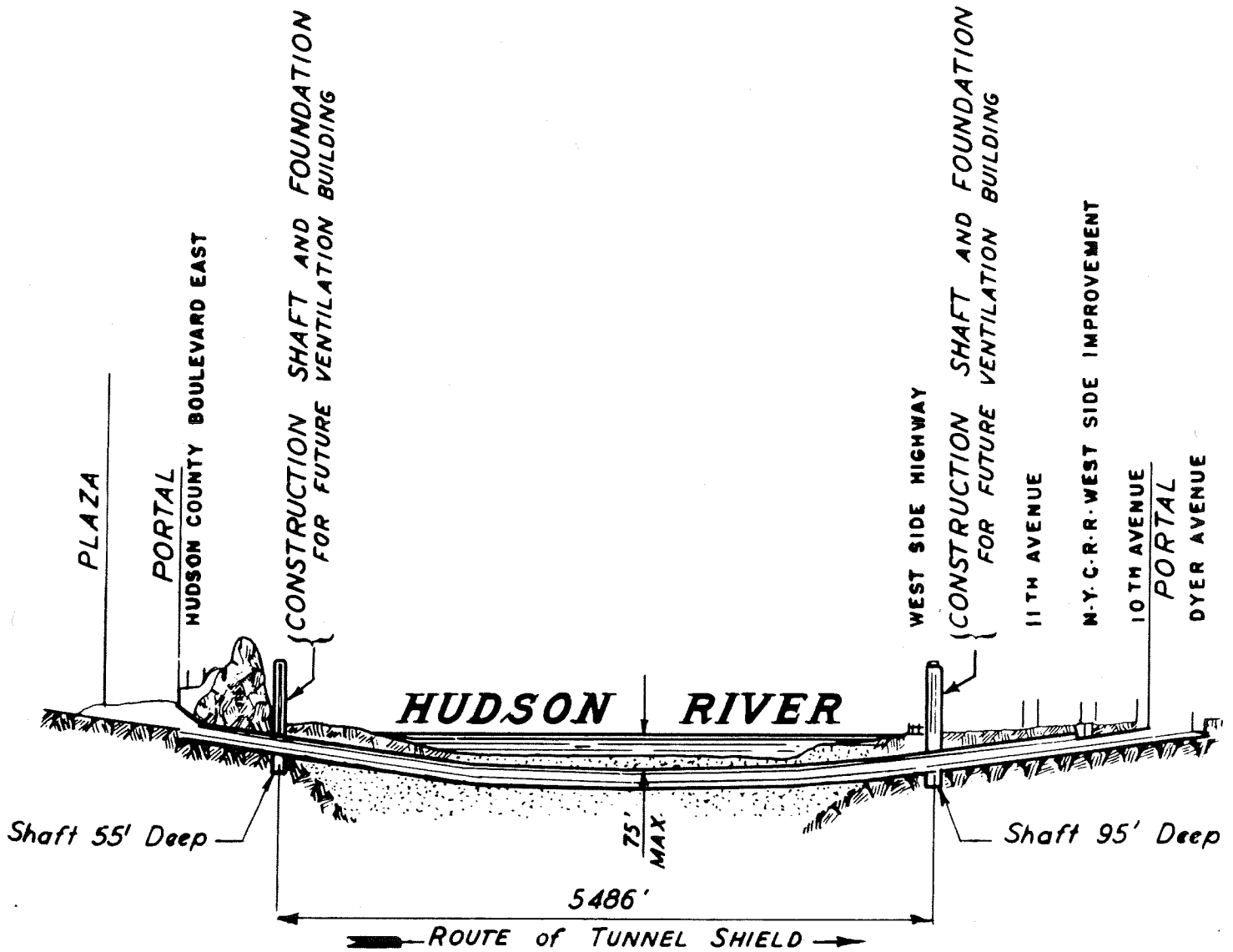




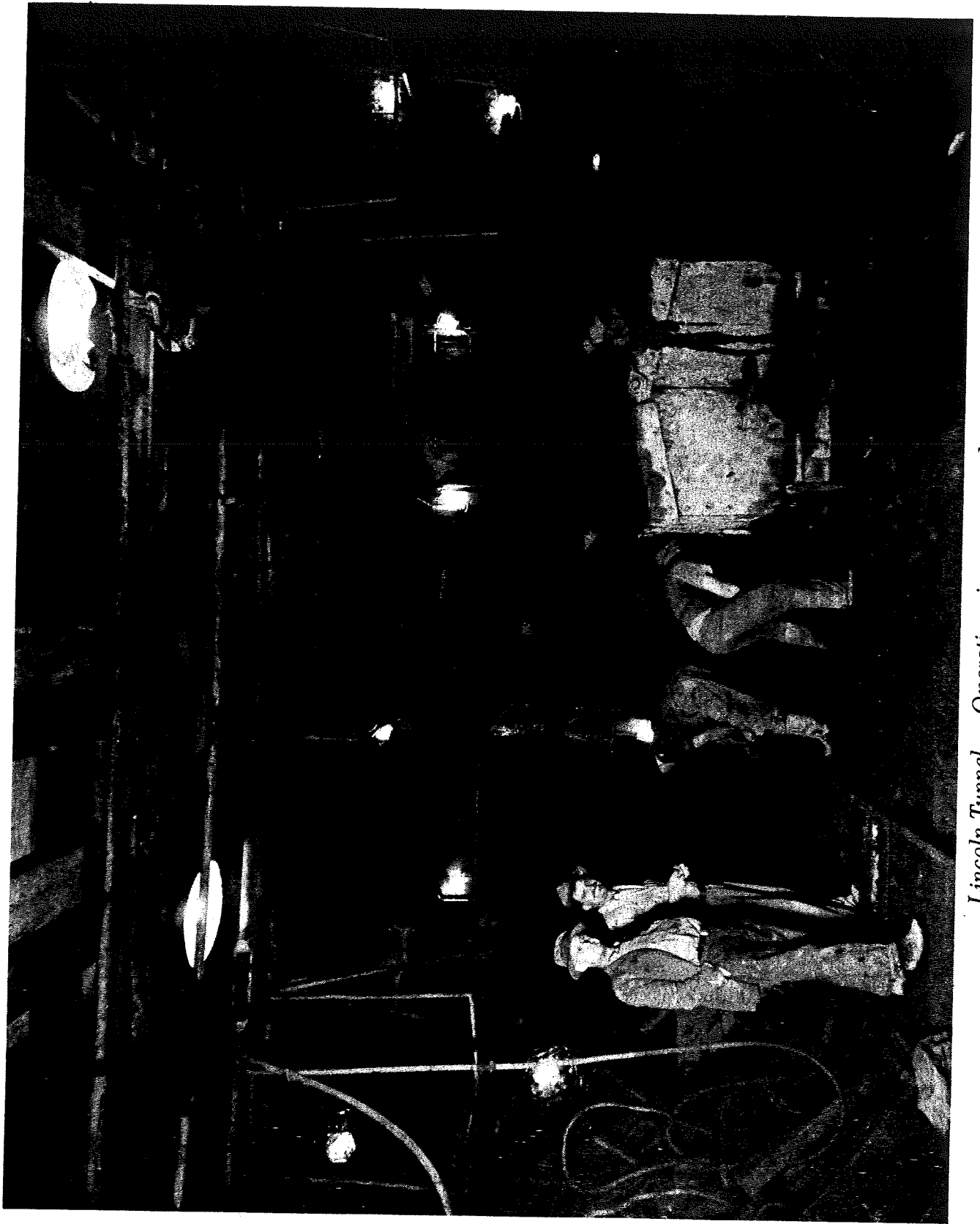
Holland Tunnel — Construction workers.

NEW JERSEY

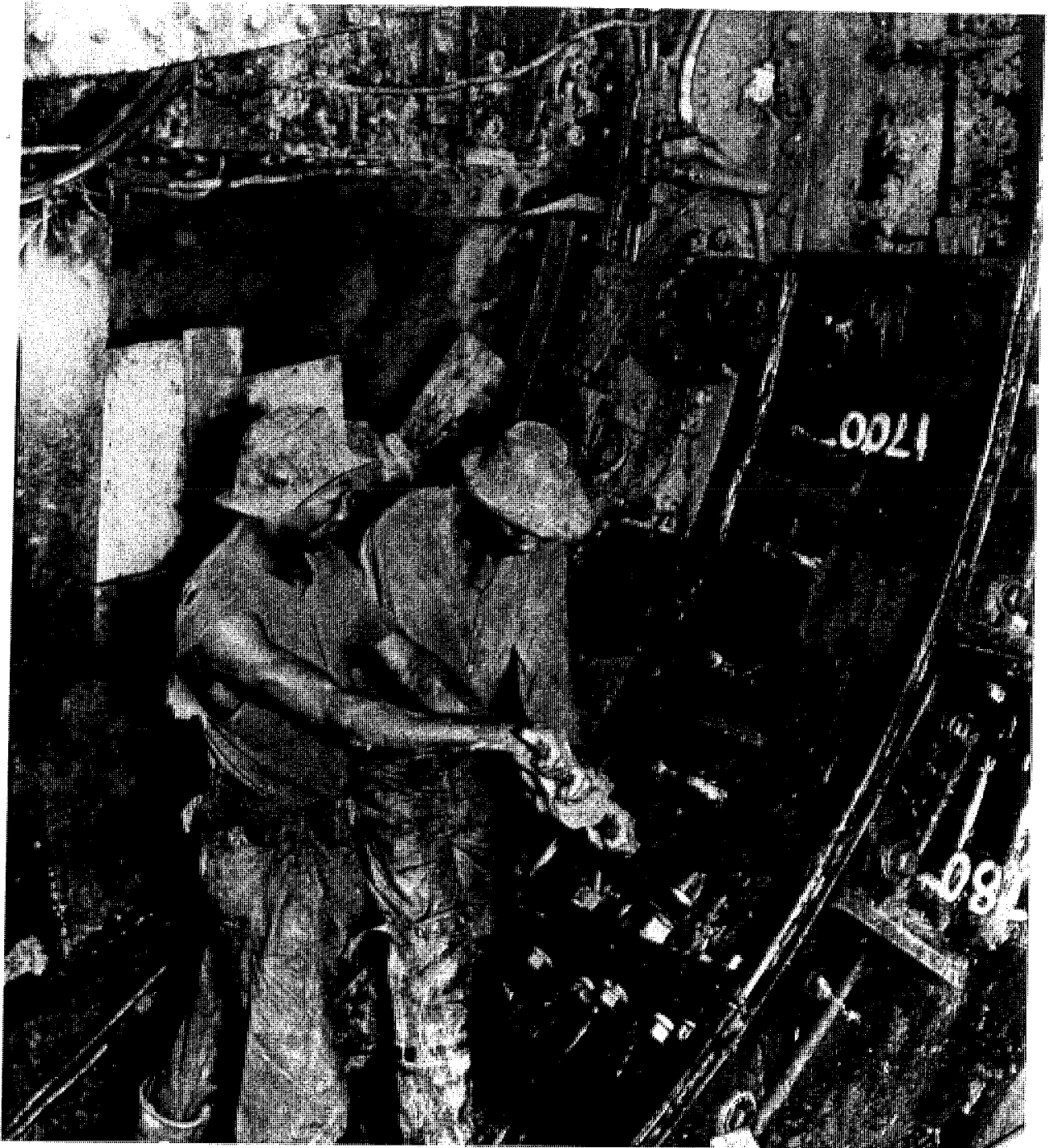
NEW YORK



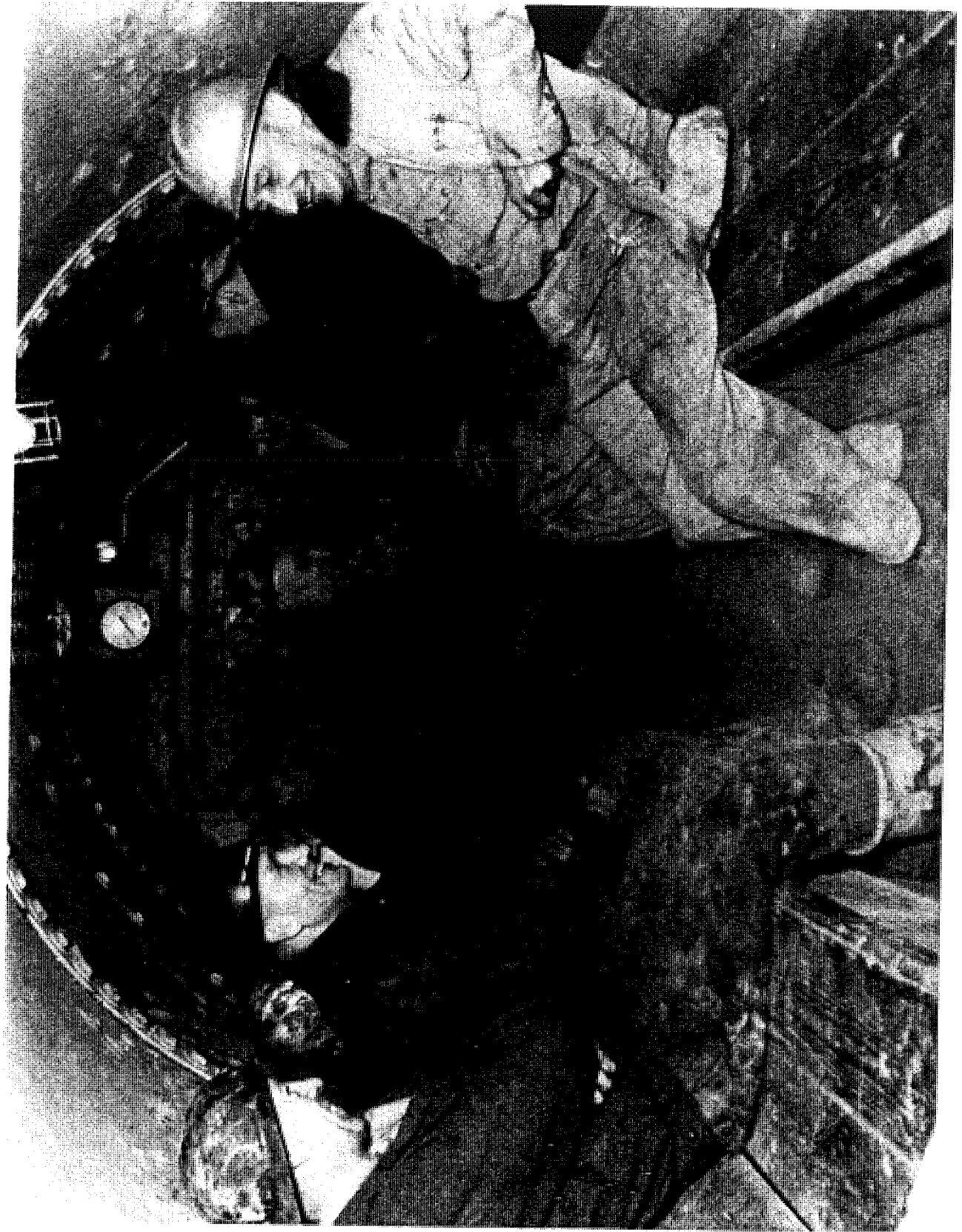
SECTION of LINCOLN TUNNEL THIRD TUBE
DRIVEN UNDER THE HUDSON RIVER
BY
THE SHIELD METHOD



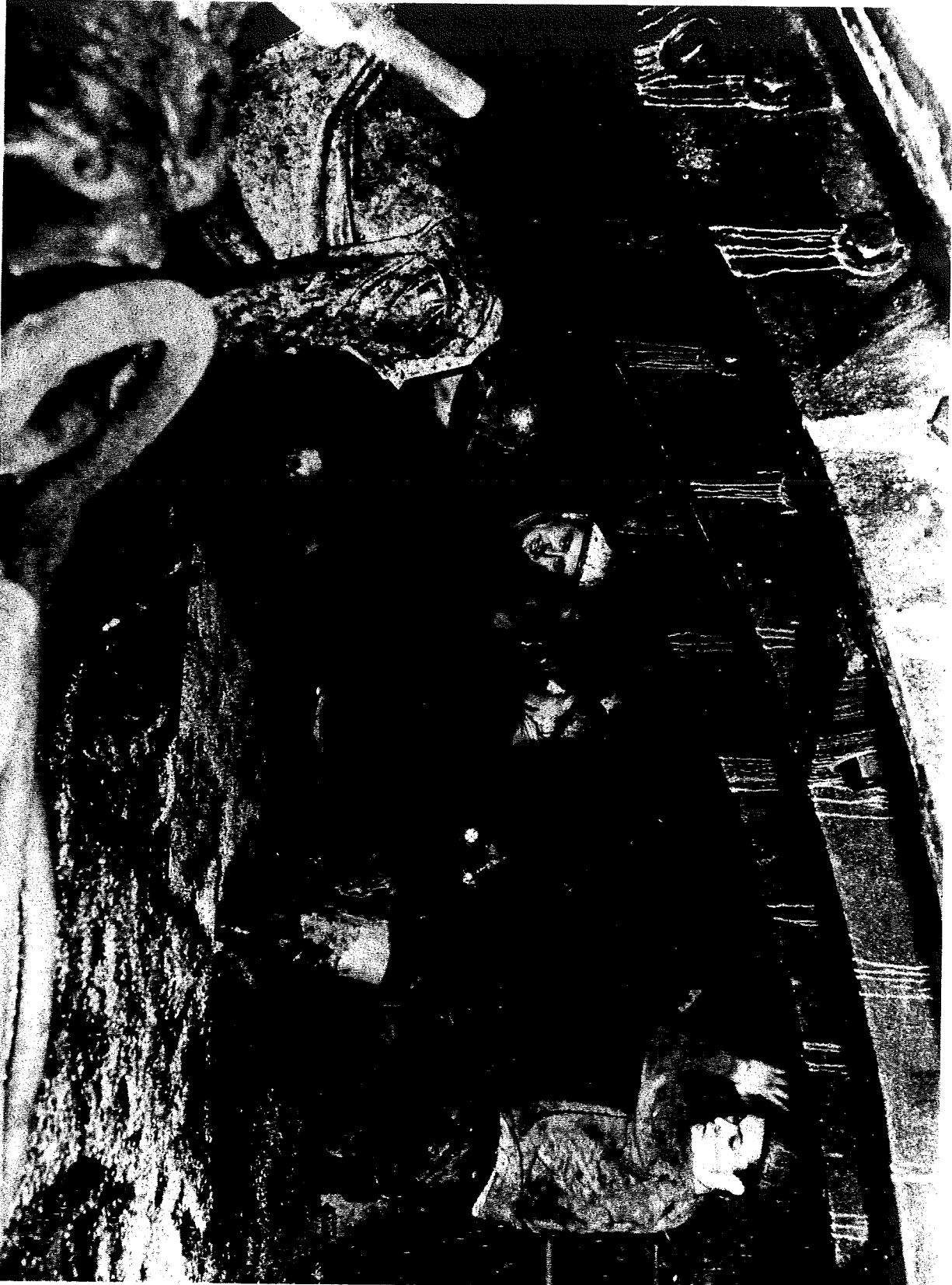
Lincoln Tunnel — Operations in compressed air; 1934.



Tightening Bolts, 1932.



Lincoln Tunnel, Third Tube — Air lock.



Lincoln Tunnel, Third Tube — tightening ring section bolts.



City Tunnel #3, Stage 1 — Muck at sidewall of tunnel after blasting.

Chapter Four

One hundred years after the Sandhogs began their first job, the Brooklyn Bridge, they started their biggest job — City Tunnel No. 3. On January 12, 1970, ground was broken for the largest nonmilitary construction project in history. To the last four Mayors, it is also the most important project for the future of New York.

Stated simply, City Tunnel No. 3 is vital to New York because of the following facts. Two existing tunnels carry most of the 1½ billion gallons of water used daily in the City. Tunnel No. 1, completed in 1917, and Tunnel No. 2, opened in 1936, have never been inspected; there are indications they are leaking badly — some say hemorrhaging. If there were to be a failure of either tunnel, the City would have to be evacuated. There would be no water for any building over one story, no water for a bad fire, no water period in many places. It is estimated by the Department of Water Resources that repair time could be a year or more (it would probably take over a month just to pump the water out of the damaged tunnel section).

These facts explain why so many officials and concerned citizens consider this project to be so important. What the facts don't explain is why the project remains unfinished despite its urgency. That story represents a crucial chapter in the history of the sandhogs as well as in the history of New York City.

The Third City Water Tunnel was first officially proposed by Mayor Robert F. Wagner in 1961. It is made up of four stages, the first of which is under construction today. This first stage is destined to be 13.7 miles of deep rock tunnel lined with concrete which is supported with steel rings where necessary. It runs from Hill View Reservoir in Yonkers south through the Bronx, under the Harlem River to 181st Street in Manhattan, down the island to 78th Street where it turns east under the river to Queens. To date over 11 miles have been tunneled, and much of that has been lined with concrete.

The tunnel is best described by a string of superlatives, starting with "biggest." At its widest, Tunnel No. 1 is 15 feet in diameter; Tunnel No. 2 is 17 feet; the Third City Tunnel is 24 feet wide. Technological advances have made it the fastest driving tunnel in history. The 1916 tunnel was considered a marvel for its time, progressing at the rate of 60 feet each week. The new tunnel was moved ahead at an average of 40 feet a day.

However, the most important superlative about City Tunnel No. 3 is its superior design. At the bottom of a 25-story steel staircase which descends below Van Cortlandt Park in the Bronx lies the main distribution chamber, the key to the entire system. Roughly twice the size of the waiting room at Grand Central Station, the chamber divides the flow of water from Kensico Reservoir into 17 conduits with individual controls. This allows for targeted distribution of water through connections to Tunnels No. 1 and 2, via Hill View, as well as to the new Third Tunnel.

The tunnel is vital for two reasons, really. In periods of high water consumption, the existing system simply doesn't provide enough water, particularly in the boroughs of Queens, Brooklyn and Staten Island. The Third Tunnel will greatly augment the system's ability to deliver water to those dangerously underserved areas, but the most urgent need lies in its use as a backup to the two old tunnels.

Independent engineers' reports dating from 1973 underscore this point:

City Tunnel No. 1 has been in operation for some 56 years without opportunity for inspection or repair. City Tunnel No. 2 has functioned likewise for some 37 years without attention. Neither can be closed down for inspection or repair until City Tunnel No. 3 (Stages 1 and 2) have been placed in operation. The engineers who designed and built these tunnels did an excellent job. However, the City of New York should not tempt fate by expecting these old tunnels to function forever without attention. . . . The history of New York City's

water supply has been one of delay until the forces of Nature have compelled action. It is to be hoped that the initiation of this project will not have to await the onset of an emergency.

*Thomas W. Fluhr, P.E.
Independent Consultant*

My only concern is that . . . the demands put on the present system during days of high consumption which already exceed previous estimates will result in disastrous pressure conditions and serious hazards from fire in many parts of the City. It doesn't take any imagination to visualize the consequences of either City Tunnel No. 1 or City Tunnel No. 2 going out of service even on a day of low demand.

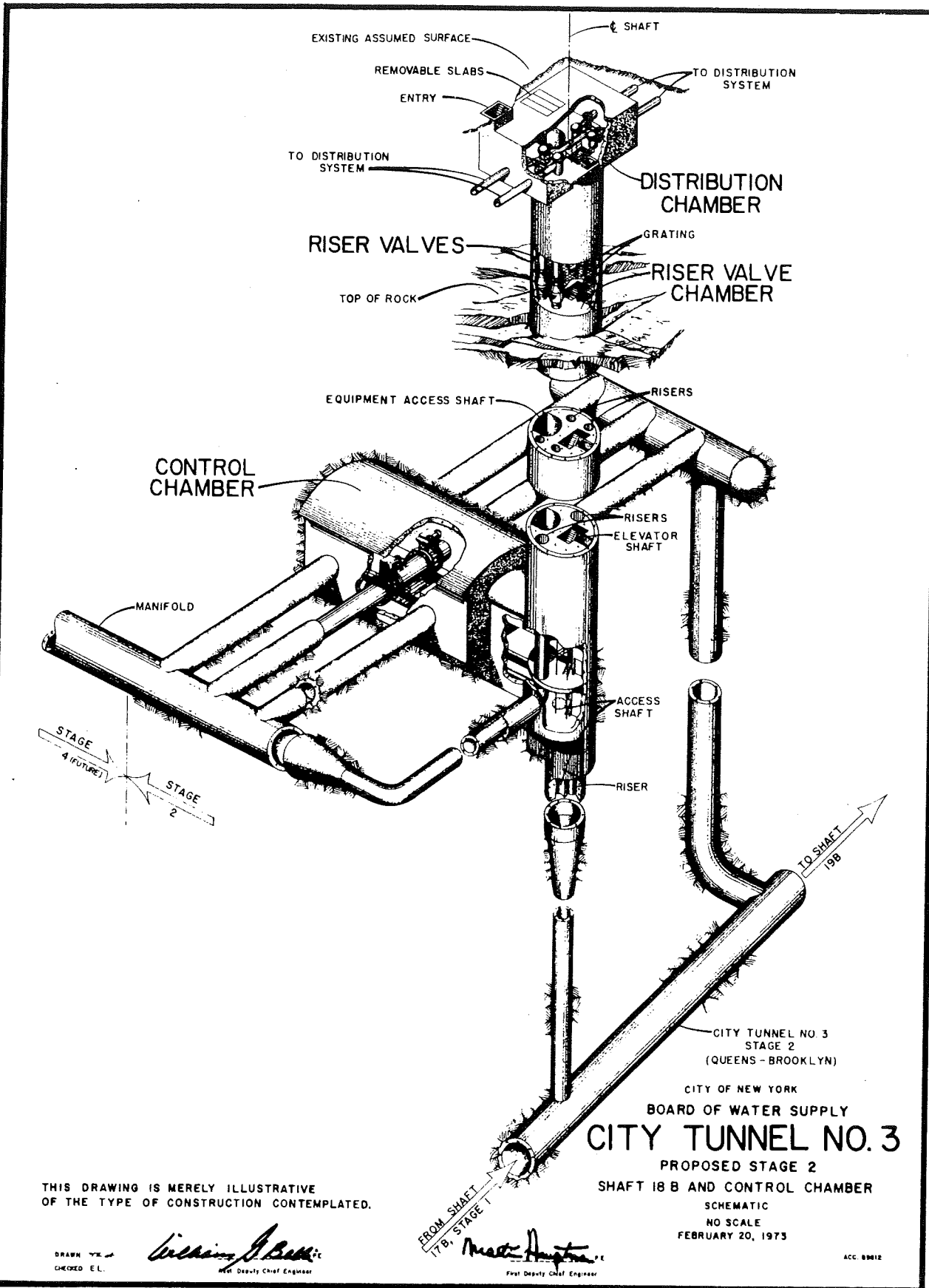
*Leroy Ericson, P.E.
Independent Consultant*

One can only hope and pray that no major conflagrations will occur in the meantime and that City Tunnels No. 1 and 2 will continue to function despite their age and no opportunity for maintenance.

*Rolf Eliassen, P.E.
Stanford University*

Despite the project's importance, despite its urgency, City Tunnel No. 3 almost died in 1975. For the sandhogs that year spelled the beginning of another enforced "sabbatical" but it also marked the start of the most intense political struggle in their history.

The job was stopped by two blows from which it almost didn't recover. The first was a contract dispute between the Tunnel Consortium, the group of contractors who started the project, and the City. The issue was what the City called the excessive use of steel reinforcement in the tunnel, which escalated the cost. The contractors argued that the City's projections of what was hard rock, not requiring the steel rings, were incorrect. If one pictures the size of the huge rings,



THIS DRAWING IS MERELY ILLUSTRATIVE OF THE TYPE OF CONSTRUCTION CONTEMPLATED.

DRAWN BY *William J. Bell*
 CHECKED E.L.
 1st Deputy Chief Engineer

Mark Hampton
 1st Deputy Chief Engineer

CITY OF NEW YORK
 BOARD OF WATER SUPPLY
CITY TUNNEL NO. 3
 PROPOSED STAGE 2
 SHAFT 18 B AND CONTROL CHAMBER
 SCHEMATIC
 NO SCALE
 FEBRUARY 20, 1973

ACC. 88012

roughly 28 feet in diameter, and the effort to put them in place, one can understand why this became the largest lawsuit in history.

The City took the hard position, ejecting the contractors from the sites on December 6, 1974. The Consortium responded with a Federal suit charging the Board of Water Supply with misrepresenting the requirements of the project. The battle between the giants was joined, and the sandhogs were caught in the middle. A settlement brought the men back briefly, but on June 6, 1975 the job closed down. 1,200 sandhogs were out of a job, losing \$600,000 every week the job was shut down, and the City of New York was getting no closer to solving its serious water problems. Meanwhile, the tab for maintaining the empty diggings (with only 40 sandhog jobs) was going to be \$6 million a year. Eleven miles of tunnel and track, the huge stone chamber and hundreds of pieces of construction equipment would have to be maintained with no progress on the tunnel to show for it.

By 1975, nineteen sandhogs had died on the job (three more have died since), and the tunnel workers were not about to turn their backs on Tunnel No. 3. They took the only course open, and sued the contractors and the city. The suit in the Manhattan Supreme Court sought an immediate resumption of work and ten million dollars in damages to the sandhogs. David had taken on two Goliaths, but the whole issue of steel rings and hard rock was about to seem small next to the financial crisis facing New York in 1975.

In 1975 it became public knowledge that the City of New York was up to its spires in debt. For years it had been borrowing great sums from banks, but for more than a decade it had also been borrowing from its own capital budget. The capital budget is supposed to pay for the building and maintenance of the physical city itself — the schools and the firehouses, the bridges and roadways, and the water supply system. The City government had used capital funds to survive — paying salaries, operating bills and interest on the growing debt. Vital as it was, there was no money for City Tunnel No. 3.

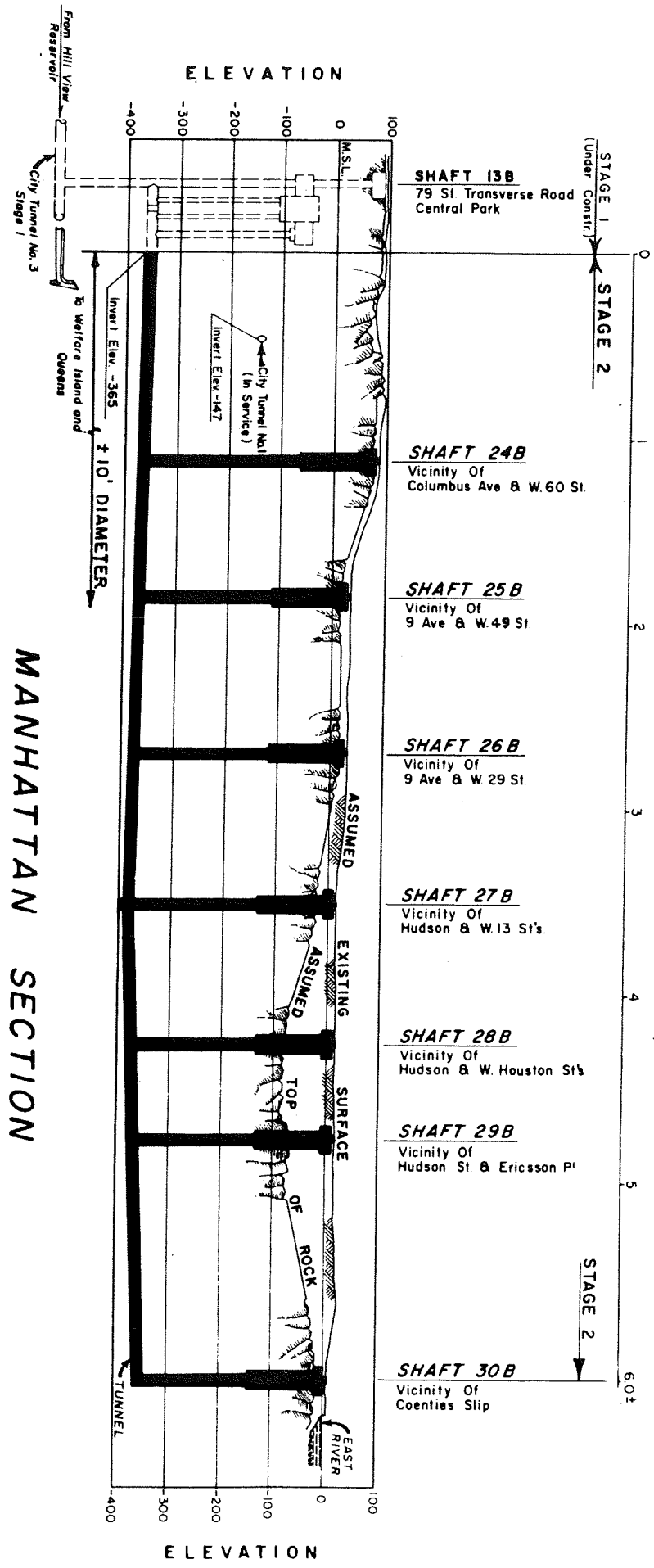
When news of the City's fiscal condition began to surface, sandhogs understood the implications for their only significant job at

the time. In one way, the City had taken the contract dispute as an opportunity to shut down work on its costliest capital project. The City fathers could argue that they hadn't stopped work on this terribly vital project, the contractors had. The sandhogs began to realize that only the workers had sufficiently strong motivation to move the titanic job along. Over the next five years, the sandhogs and their leadership lobbied, cajoled, and shouted about City Tunnel No. 3. Out of necessity, the sandhogs became a highly politicized group of trade unionists.

Just as the sandhogs went to the press and the public in 1873 to inform them about the public outrage in the caissons of the Brooklyn Bridge, the sandhogs of 1975 went to the press to inform about the desperate need for the new water tunnel. Articles in the *New York Times*, the *Daily News* and on the wire services told of the halt in work and of the need for the great tunnel. Television crews were induced to film in the empty tunnel below the city. The public's indifference to the issue of water supply was beginning to be pierced.

There was also a contrary movement afoot, however. Some members of the New York City Council questioned the need for the Tunnel in the first place. It was suggested that it was a good time to flood the tunnel and seek some more modest solution to the City's water problems. An ironic footnote to that suggestion is that the same thing was said of the City's first water tunnel. In 1910, with more than half the work completed, the United Real Estate Owners Association declared in public testimony "There is no water famine in this city. We need all of our money for our present needs. And our engineer, Mr. Win, has told us a great many things about the impracticability of such a rock tunnel as this." The history of New York is filled with short-sighted people, and the late 1970's were no exception.

In public testimony on the project, Local 147's Business Manager, Richard Fitzsimmons, described effects of the job shutdown on his men. "The tunnel workers are really hurting in this situation. These men have worked hard all their lives and now they're out in the street with families to support. We are seeing more men with marital problems, more alcoholism, people losing their homes. We are a small union and we all know each other. It's terrible to see the toll this layoff



MANHATTAN SECTION



Senator Daniel Patrick Moynihan visits site of City Tunnel No. 3.

is taking on the men and their families.”

The sandhogs were not taking the situation lying down. They understood that only government would be able to move the project to completion, and that political action was critical to that end. In 1976, the Tunnel Workers commissioned an independent producer to make a movie about the City Tunnel. “*Whatever Happened to Water Tunnel #3*,” was produced on a shoestring, but it described the history of the job while explaining, through expert testimony, the necessity for the project. The following year an expanded and more detailed version of the documentary, “*City Without Water*,” was sponsored by Local 147, Local 15 of the Operating Engineers, and the General Contractors Association.

With the help of the New York State AFL-CIO Committee on Political Education, key Federal legislators were contacted and briefed on the national relevance of New York’s Water Supply system: nearly ten percent of the American population and the nation’s financial center are affected by it. This effort culminated on May 16, 1978, when “*City Without Water*” was screened for the New York Congressional delegation in Washington.

Armed with their movie and supportive literature, the sandhogs walked the corridors of City Hall, the State Capitol, and the halls of Congress, telling their story to startlingly uninformed public officials. Members of the Board of Estimate were individually contacted, and, with the aid of the City’s Board of Water Supply, they were educated in detail about the City’s sorry state of affairs.

In 1978, the sandhogs formed a Political Action Committee with Chick Donohue as its director. A Political Fund was established, funded through a voluntary check-off, and the great majority of workers contribute three cents for every hour’s work. The fund has helped further to gain the attention of legislators, and it has made possible other advances toward political effectiveness for the sandhogs. Today, the Political Action Committee publishes a regular newsletter which informs the membership about issues of politics, safety, and benefits. More than ever, the sandhogs know who are friends and

who are not.

The results of these efforts have been extraordinary. In 1976, 40 men were working on Tunnel No. 3. By 1980, 700 sandhogs were back to work. In the late '70's, the Local was having difficulty paying the rent in its modest offices in the Flatiron Building. In the early eighties, the Union is supporting an array of political candidacies, based on the candidate's awareness of water supply issues. The members' benefits have been expanded to include an excellent pension plan, better medical and dental coverage, an alcoholism counseling and treatment program, and an elaborate annuity plan.

Most importantly, City Tunnel No. 3 is back on track. The sandhogs spearheaded the renewed movement to make the Tunnel a priority for the City of New York, and they have forced both the State and Federal governments to recognize their interest in the Tunnel's completion. In 1975 everyone in the know had given up on the Third City Tunnel — except the sandhogs.

As a result of intense lobbying in the late Seventies, work on the Tunnel has resumed and actually picked up momentum. In 1977, contracts were started on the concrete lining of two miles of the tunnel. Subsequent contracts continued the lining of what had been tunneled, and began the completion of work at Roosevelt Island, beneath Central Park, and at the Distribution Chamber at Van Cortlandt Park. By 1982, \$420 million in contracts had been awarded since the job was shut down in '75. To the sandhogs, it seemed as if they had fought for every dollar.

These years of struggle culminated on February 24, 1983 when the City of New York announced the awarding of contracts which will virtually complete Stage One of the Third City Water Tunnel. The \$120 million contract will cover the final excavations and the concrete lining of that and other portions of the Tunnel. To the list of trades practiced by the sandhogs, one more can now be added — successful political lobbying.

Today, the membership of Local 147 faces the future with confidence and a sense of genuine accomplishment. The sandhogs have helped to secure many years of work on New York's water

tunnels. At the same time they are making a vital contribution to the life of their City. From the earliest days of their organization, the sandhogs have set an example for all trade unionists. A small local can make a critical difference to its trade and be of service to its community as well. In the case of New York City's sandhogs, the light at the end of the tunnel may well turn out to be a beacon.

CONVERSATIONS
with
SANDHOGS

There are some old-timers who'd lead you to believe that when Moses parted the Red Sea there was a couple of Sandhogs there.

A Sandhog Legend

John Flowers, Sandhog (Retired) 46 years service

I started working in New York in 1931, on the Eighth Avenue Subway. The wage was ten dollars a day for muckers, eleven dollars for miners. The trade was different then.

If you go back years ago, the sandhogs used to do almost everything. That was, cut and cover and tunnels. They had their own electricians, their own motormen, and they used to do all the work from the top down. Even on top, they used to run some of the stifflegs — that's the cranes they had in those days.

Was there much sandhog work in 1931?

When the first Lincoln Tunnel started up, it was the Depression. We worked three days a week, to spread the work out, but that only lasted a short time and then we worked a six-day week. We used to get a day off in the middle of the week. There would always be a couple of men shifting around, in the same gang, and they'd be mucking one day and then there'd be a man off and they'd take his place. So there were always a couple of extra men in the gang. It was of benefit to the contractor because he worked six days. There was no double time or time-and-a-half on Saturday. It was just straight time.

There were a lot of people looking for work, but there were a lot of people wanted no part of tunnels. I knew a lot of people who came down a shift and that was it. Whether compressed air or claustrophobia, some fellows couldn't take it.

In your 46 years as a sandhog, has the job changed?

Oh, it changed tremendously. When they had an open shield, you had about thirty-six men in a gang. Today you don't have that many men. Maybe ten to a gang, and when they have the Mole (*a tunneling machine*) you have even fewer men. Then fellows years ago used to have the big wrenches. They used to tighten the bolts manually. The wrench used to weigh 75 pounds. They could hardly lift them. But today they've got bolting-up machines, run off high air, that tighten the iron. That cut down on labor too, on time for tightening

the iron. You can tighten bolts in 20 minutes where it would take you an hour by hand.

Today there are better tools, like your mucking machines, your jackhammers, your hydraulic breakers, now, for boulders, where you used to use plug and feathers. You'd drill a hole, you put your feathers in, put your plug in, and keep hitting it with a sledgehammer 'til the boulder split.

And then when I started, a man could be fired for really no cause. They'd just tell you, go up and get your money, that was it. When you fire a man today, you've got to have a good reason to fire him.

There was great competition between gangs in those days. Like on shield work, you would do two rings and two shoves, the next gang would do a little better, and the gang after that, and eventually you're doing three and three, and by the time the job ended you'd be up to four and four.

You've been retired almost six years now — how do you feel about having spent your life as a sandhog?

I loved it. Whether it was born into me or what, I don't know. My father and my grandfather worked in the tunnels. Besides, almost every tunnel I worked on, it was different. Even the three Lincoln Tunnels, they all went under the same river, one alongside the other, but each job was a little different. Different machinery, different methods. For example, on the first and second Lincoln Tunnel some of the muck was put at the bottom of the tunnel to keep it from floating. The rest of the muck was pumped out to the river. As a matter of fact, that muck built up in the channel and the Normandie got stuck in it on its maiden trip. Anyway, at that time the muck at the tunnel bottom was dug up with a steam shovel and carted out in cars. It took a couple of months. On the third Lincoln tunnel they had a sump pit with water lines feeding it and the mud and water were pumped out through high-pressure hoses. It took ten days.

Do you have any job-related physical disabilities?

I've had silicosis for several years now. I got that from breathing rock dust. We would try to drill with water to cut down on dust, but

sometimes there was no water and the job had to keep going.

Do you use masks while drilling?

That didn't really come in until the water tunnel in the early seventies. I also have a bad hearing loss that I got from working in the tunnels.

Do you get compensation for that?

I got \$3,000 for the hearing, a one-shot deal.

So for your hearing they gave you \$3,000?

I'd give them \$3,000 to get my hearing back.

George Gluszak, Sandhog (Active) 32 years service

The first job I worked on was the Healy job (*sewer*), Bowery Bay, working for Tommy Adair. Most of the job was in compressed air. From there I went to the third tube of the Lincoln Tunnel, working on the compressed air portion of it. We were working in high air, 37 pounds of pressure. We were only allowed to work an hour and fifteen minutes, then we were off for five and a half hours. Another gang took over — then we came back for another hour fifteen. That was your eight-hour day.

Were you tired after an hour and fifteen minutes?

You were tired after five minutes! In five minutes you're soaking wet. It's just hard work. Your life is on the line all the time. You never know what to expect. So you expect anything. At the end of your hour fifteen, you had it. You were looking for somebody to tap you on the shoulder to take your place.

If you're tired after five minutes, how can you work for seventy-five minutes?

You just keep going, or else you go out the door. They don't want to hear it.

You witnessed a bad accident in the water tunnel. Can you tell me about it?

This was in June '82. We were having lunch down in the tunnel when we heard an engineer up the line blowing his air horn. Apparently an agitator (*a concrete mixer on a rail car*) had gotten loose. It's all downgrade traveling toward Highbridge, and these agitators were picking up speed as they moved. When I heard the airhorn I knew something was wrong and I got my men off the track just in time to see these agitators shoot by with no motor behind. We knew there were men working down the line about a mile and a half, and all I could visualize was bodies all over the place once this thing hit. I ran back the line about a thousand feet, picked up the phone to warn them, but at the time they had two men working through lunch drilling,

and they couldn't hear the phone ringing. By the time they did, it was too late. The agitators just plowed into two high cars — scaffold work on tracks, plus the concrete pump. When we heard the crash we knew those guys were in trouble. We stopped the motor, went and picked up all the stretchers we could find and picked up more men, and went in there and started pulling out mangled bodies. Nobody got killed, thank God. When we got them out of the hole, seven men were badly injured. One man lost his leg, and the other leg is still in jeopardy. To get him out so he wouldn't bleed to death, we had to cut part of his foot off, because he was wrapped around a pipe and we couldn't get him out. We took our time, cut the skin off that was wrapped around the coupling. The other leg was completely gone anyway. Everybody kept their heads. The people with broken arms and broken legs didn't even know they had them. They were out there helping everybody else get out, carrying stretchers. When it comes to accidents, they're all professionals down there.

Do you think the danger in the tunnels adds to the comradeship of the workers?

Definitely. Everybody gets close. They're people you grew up with. Brothers. Sons. Black. White. Makes no difference. We have no color down in the tunnel. Everyone depends on one another. You have to.

Is the Union important to the sandhogs?

Without the Union we're dead. Some contractors would eat us up, especially contractors from out of town. It's our Union that keeps us together. We all look out for one another. The younger guys don't know what we had to go through to get the conditions we have today, to get a pension fund the way we have it today. Years ago we had nothing. Today we've got one of the best pension funds going, the best conditions going. Right now every job we have is a safe job. When I started, they'd put one man on a drill, they didn't care. Today you have two men on a drill, you don't work alone. It's just a whole different ball game.

Edward McGuinness, *President, Local 147, Tunnel Workers*

When you first went into the air was it a strange experience for you?

It was a frightening experience. I had sinus trouble and I bled a lot after I came out of the air — in other words, the air would hold your sinuses together, but when you decompressed you would have a flood of blood — some ear pain, too.

Your father was a sandhog — do you know much about his experiences, and the jobs he worked?

The best I can recall from the family history is that when he came out of the service in World War I in 1920, he worked on caissons in Lower Manhattan, which were all done by compressed air at that time. Some of them, including the General American Building, the Tombs, he and another fellow worked on Trinity Church which was sinking at the time. They rebuilt it with compressed air caissons. He had worked in New Jersey on caissons. He worked upstate on caissons, plus the tunnels — the Holland Tunnel, the Lincoln Tunnel One and Two, the Brooklyn Battery Tunnel. He started it — he was on the first gang there. In 1940 he worked through the Queens Midtown, and in the Queens Midtown he suffered from the staggers, which is a form of the bends where your equilibrium is lost, and you have no control over your legs. He would look like someone who had too much to drink, the way he walked. When he died, at 79, the only thing he had left working was his heart; his lungs were gone; he had heart attacks that nobody in the family even knew about; his legs were all crippled — he had a hip socket that looked like a pocket when you saw him naked — the hip socket was gone so far you could put your fist into the hole that was there.

How did that happen?

Deterioration of the bone from the caisson, and he waited too long to have the operation; he was quite old when he thought that he would have the operation, so he had been, up to his last five or eight years, in ambulatory condition — he was a hard man.

Did he have silicosis?

Yes, and he had Caissons, and they did a test on his lungs before he died, and found that all the elasticity was gone out of them, and he was not a heavy smoker.

So the job really takes its toll.

It does. In fact, the reason we got four hours air was Bobby Goodman (God rest him, he is dead now), a good contractor, related so many stories through us in negotiation about his father, and this was in 1962, his father was about 80 years old at that time; and myself and Richie Fitzsimmons were pressing for the four hour air at that time — four hours to the complete day. So Bobby Goodman had taken such pride in his father, who was, as I said, 80 years old, and I had related that my father was not that old at that time (he was in his middle sixties) and he was unable to work from the time that he had spent in the air, and we kept hammering at that issue. I did not want to use my father in that way, but that's what brought the four hour air to the local today.

You worked in a compressed air caisson when, for whatever reason, it dropped — what was that like?

It all depends on how far the box dropped. There were occasions when boxes dropped as soon as they took the air off — the air was holding the weight of the concrete above it, which was being poured every day, continuously. When the air came off, that box might shoot down ten feet; it might shoot down twenty feet, and then you would have no room until you would muck your way out. Somebody would trench over to the man bucket, whether it was ten, fifteen or twenty feet away, and then start the process of loading the man bucket again, digging a little rectangular square back which may be 120 × 120 or 80 × 80, whatever. If you have any fear of closeness, there is more of a fear when the box, the roof of the working chamber, is almost down in the muck. You really need special type guys to go and do that.

Is the sandhog trade different in New York than other places?

Yes, I think so. I worked with a fellow down there on Third

Street who is retired now. He drilled out West; he was what you would call a California miner, and his biggest fear — and I never realized it here, because we drill with water — was putting dynamite in the hot hole (the hot hole being the rock that he created by drilling without water), and there were many cases the hot hole would ignite the dynamite before they had loaded it. They were carried out.

Why do you call him a California miner?

Well, a California miner had a little color to it. We used to say that they were best in the West until they came East, and then they were least in the East. I always thought there were better men in New York City. There was always more production; always you could go to any trade in the building trades, and if you worked at any trade, no matter whether you were an iron worker, bridge painter, a plumber, steam fitter, an electrician — when you had worked in New York and you went out of town you were a master, compared to what they would do out of town. You were a producer.

Is the trade different in 1983 from the way it was when you started in 1954?

I am sure, looking back on dead members, I'm sure they're all in Heaven; and if they're in Heaven, it's for one reason — the way they worked when they were here on earth. The way we worked when I came in here and the way we work today is different. I am sure for the labor and the sweat for what they did back then, they gained entrance into Paradise. Compared to them we have a long way to go.

So you believe the work used to be much tougher.

Even during the Depression most men wouldn't take these jobs. Nobody was going to go down and work with a shovel all day and then work in compressed air. We had some hard, hard people, and you had to be a rough commander. Nobody would go over and ask anybody, "Would you do this?" They told you do it or get the hell out. So the only ones, as the insurance adjusters will tell you, that survived were the most fit. The others sought employment of a more calm and genteel nature, if you will, or light duty work. Compared to what was

here, I think even the membership today, maybe even myself included, if we had to do the jobs that were done in the past, we would say “No way.”

In a business like yours, men died right and left. Does that create a special relationship between the people who work on these jobs?

You know, we have a plaque outside in commemoration — if that’s the word — in memory of all the members who were killed on the Tunnel, and one on the Kiewit job also. People came down and were taking pictures, trying to remember their husbands or their fathers in a way that would last a lifetime. But we do not have much follow-up, and it seems to be more callous than any of our fathers were. Not callous, maybe, we just don’t have time. We have a Mass said every year, which I said to the members before — it’s the only way — in my Catholic way — of showing there is something owed by us. And I hope we would be owed something by the people who have the Mass said for us — it’s the cheapest commemoration, but it’s the most lasting.

Valentine "Sailor" Kaplin, Sandhog, 48 years' service

How many tunnel jobs have you worked on, Sailor?

In New York, since 1935, I've worked on every tunnel except the Third Lincoln Tunnel. But I also worked across the country, in Mexico, South America, even in Pakistan. But New York was always best for the working man. Those jobs out West — they had what we called cigar-box locals. A guy would pull up on the job, he was a delegate, he'd give you a slip. It would cost you maybe five dollars a month for the privilege of working. Then you got East of the Mississippi and labor was more well-organized, you had better working conditions.

Has the work changed over these years?

Very much. After the war — and today the younger fellows coming in, they wouldn't take no crap from the companies; they knew their rights, and they got better conditions. See, years ago you always had a sense of fear of bosses. When you got a job, you watched your P's and Q's — you always had that little fear of losing your job. But today, you don't have that among the masses of labor because they know they have the Union to protect them.

How have the unions changed since the early days?

Oh, it's tremendous, especially Local 147. It's a democratic union; it's more democratic than any union in the City of New York. You can get up on the floor and voice your opinion. There's no strong arm methods. You can say what you want and that's it. And you can bitch to delegates — in other unions you couldn't get away with that. When I first started, you couldn't open up your mouth, not in 147 but in other labor unions. You dasn't say anything because they had their goons.

Now, I've seen this local here down to maybe 250 membership. That was the mid-1950's and the guys would chip in and pay the rent. I was on the board then and we inserted that two per cent on your salary to make the local stable. Because there was no work and the guys would drop their books. That was after the Healy job and the Lincoln Tunnel was finishing up. So the guys would drop their books, especially the dings, the drifters.

Why do you call them “dings”?

Well, a ding is a dog in Australia that digs in the ground, and maybe a couple of Aussies started it, but we called them tunnel dings. Now they're not sandhogs, they're strictly free air. Now when the Local had some hard times, the dings would drift somewhere else and drop their books. So when work started up on some big job or other, they'd come back. But these younger guys closed the books to protect the local guy from, you know, walking the street. This is a great father and son local. You've got the Donovans, third generation — the Bingham, I could name you scores of third generation sandhogs. It's a good racket. It's a little fascinating. Now, you take a guy, if he takes an interest in it, he feels like he's doing something for the sake of humanity. Now just picture this tunnel here (*City Tunnel No. 3, construction site at Van Cortlandt Park*). Now, all the way from Ashokan down to Downsville, Neversink, then Croton, then you come down to Valhalla, Kensico, Hillview, Jerome Avenue Reservoir, then Central Park and from Central Park to Brooklyn — this is some big system we're a part of.

Now a lot of people don't realize that water's traveling 142 miles to them plush apartments. Little do those people realize when they turn that spigot on that there was twenty-two men gave their lives just on this 14-mile segment. Then on the Delaware Aqueduct there was fifty-eight in all that was killed, and those are just the fatalities.

Despite the dangers, men still go back down in the hole and seem to love their work.

Maybe it's the money, or maybe it's the environment. You know it never rains or snows there! It's not hot in the summer; it's pretty much the same temperature year round. They say they're going to leave it, but they always drift back.

What makes you do it? I can't answer that. Mind over matter, I guess. You're down there and you're cutting out rock, and you know it's going to be there for thousands and thousands of years. It'll never wear away. The concrete'll wear away but the rock won't. You might get a cave-in here or there but it'll always be there. And you figure

you're a part of it. That you've been a creative man. That's the only thing I can say. That's my feeling and I've been in the business. I almost lost both of my legs in the Battery Tunnel when the roadbed collapsed, and if it wasn't for Courtney Hill I would have lost both of my legs. And in the Midtown Tunnel, slabbing down, my arm went out, and I've got a deformed arm, but I came back. You figure you'd get the fright and you wouldn't come back. But I can't answer why, because I don't know. It's mind over matter.

Appendix

Sandhog Jobs

Picture Credits:

Museum of the City of New York — pp. 13, 16, 18, 23, 27, 40, 43.

New York Public Library — pp. 4, 6, 10, 15.

Port Authority of New York and New Jersey — pp. 41, 42, 44, 45

Bureau of Water Supply, New York City — pp. 24, 29, 32, 35, 36, 37, 38, 39, 46.

Local 147 — pp. 54.

JOB	C/FA*	CONTRACTOR	YEARS
Brooklyn Bridge	CA	N. Y./Brooklyn Bridge Co.	1870-1883
IRT Subway	C/FA	Subway Contractors	1900-1941
PATH Tubes	CA	William McAdoo	1902-1908
Pennsylvania R. R.	C/FA	S. Pearson & Sons	1904-1908
BMT Subway	C/FA	Subway Contractors	1910-1928
Woolworth Building	CA	Caisson Contractors	1911
14th St. Subway	C/FA	Booth and Flynn	1917-1918
59th St. Subway	C/FA	P. McGovern	1917-1918
Montague & Clark St. Subway Tunnel	C/FA	Booth & Flynn	1918-1919
North 7th St. Subway — Brooklyn	FA	Flynn & O'Rourke	1919
Flushing Sewer Tunnel	FA	J. O'Rourke	1920
Woodside & Astoria Sewer Tunnel	FA	Booth and Flynn	1921-1922
Old Tombs Building	CA	Senior & Palmer	1921
Holland Tunnel	CA	Booth and Flynn	1921-1924
Trinity Church	CA	Spencer-White	1922
28th St. NYC Sewer Tunnel	FA	P. McGovern	1924-1925
Canal-Spring St. approach Holland	FA	Haggerty	1924-1925
Bay Ridge Sewer	FA	Montrose Construction	1926
Hunts Point Gas Line Tunnel	CA	Booth and Flynn	1927

*C — Compressed Air; FA — Free Air

JOB	C/FA*	CONTRACTOR	YEARS
53rd St. Subway	C/FA	P. McGovern	1927-1929
Journal American Building	CA	Caisson Contractors	1927
Furman-Fulton St. Subway	C/FA	Mason and Hanger	1928-1929
Newton Creek Subway	FA	Peter Connally	1928
Newton Creek Subway	FA	Mid-Eastern Construction	1929-1930
Flushing Sewer	CA	A. Johnson	1928
Aqueduct Tunnel	FA	P. McGovern	1929-1930
Harlem River Subway	CA	Flynn	1930-1931
Prospect Park Subway	FA	Cornell Construction	1929-1930
Rutgers Slip Subway	C/FA	Mason and Hanger	1931-1932
Lincoln Tunnel No. 1	C/FA	Mason and Hanger	1933-1935
Wards Island Sewer Tunnels	C/FA	Flynn, Rosoff, Rogers	1936-1937
Lincoln Tunnel No. 2	C/FA	Mason and Hanger	1937-1938
6th Avenue Subway	FA	Park Construction	1937-1939
6th Avenue Subway	FA	Rosoff-Brader Construction	1937-1939
6th Avenue Subway	C/FA	A. Johnson and Necaro	1937-1939
6th Avenue Subway	C/FA	Spencer, White & Prentis	1937-1939
Queens Midtown Tunnel	C/FA	Walsh Construction	1937-1939
Wards Island Sewer	FA	Johnson and Necaro	1938-1939

*C — Compressed Air; FA — Free Air

JOB	C/FA*	CONTRACTOR	YEARS
38th St. approach Queens Midtown	FA	Woodcrest-Rosoff	1938-1939
Brooklyn Battery Tunnel	C/FA	Flynn-Brooklyn, Mason-NY	1945-1947
60th St. Sewer	FA	E. F. Casey	1949-1950
Foundation — Ward's Island Bridge	CA	Peter F. Connally	1950
NY Central R.R. Bridge — 138th St.	CA	Senior-Palmer-Connally	1951-1952
Mountain Hill Storm Sewer	FA	Garden State Construction	1953
Bowery Bay Sewer	C/FA	S. A. Healy	1953-1956
3rd Lincoln Tube	C/FA	Mason, Johnson, MacLean	1954-1957
96th St. Sewer	FA	Manhattan Waterworks	1957-1958
Morgan Avenue Sewer	C	Catapano Grow	1957-1961
Paterson NJ Sewer Tunnel	C/FA	Hillcrest Association	1957-1958
South Amboy Sewer	C/FA	Tunnel Constructors	1958
Ridgefield Park Public Service Plant	FA	Adair Construction	1958
Whitestone Sewer Tunnel	FA	T. Adair Co.	1958
Force Main Sewer, Brooklyn-13 St. NY	FA	Poirier & McLane	1959-1961
Meeker Avenue Sewer	CA	Catapano Grow	1959-1962
Cross Bronx Expressway	FA	Johnson-Drake-Piper	1959-1960
6th Avenue Express Line	C/FA	MacLean, Grove, Shepherd	1961-1965
Riverdale Sewer Tunnel	C/FA	MacLean, Grove, Shepherd	1961-1962

*C — Compressed Air; FA — Free Air

JOB	C/FA*	CONTRACTOR	YEARS
Richmond Water Tunnel Staten Island	FA	Perini-Morrison-Knudsen	1962-1968
Manhattan Sewer Tun. — Spring-61 St.	C/FA	Catapano-Grow, McLane	1963-1966
Staten Island Water Tunnel	FA	Perini	1965-1970
North River Treatment Plant	C/FA	Poirier-McLane-Perini	1968-1972
Staten Island Sewer	FA	Kiewit-Grow	1969-1973
City Water Tunnel No. 3	FA	Joint Venture	1970-present
Long Island R.R.	FA	Ballport Construction	1971-1972
Manhattan-L.I.C. Tubes	CA	Kiewit (Joint Venture)	1971-1974
Isham St. Sewer	CA	Thale	1973-1974
Central Park Subway Connec.	FA	Central Park Construction	1974-1977
Delancey St. Sewer Repair	CA	M & K	1975
Archer Avenue Subway	FA	Schiavone	1976-1978
63rd St. Lexington Subway	FA	Schiavone (J. V.)	1976-1983
Oakwood Beach Sewer	FA	Grow	1977-1979
Red Hook Sewer	CA	Grow-Kiewit	1979-1980
63rd St. 2nd Avenue Subway	FA	Schiavone (J. V.)	1979-present
Archer Avenue Subway	FA	Schiavone	1981-present

*C — Compressed Air; FA — Free Air

Acknowledgments

There is not a wealth of source material about the sandhogs. They have always been more interested in getting to work than in recording their efforts to do so. As a result, much of this book relies on newspaper accounts of the early times. In particular, the *New York Herald*, *Harper's Weekly* and the *New York Times* provided most of the research materials.

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