Cryptic invitations arrived at the City Hall offices of Boss Tweed and his cronies earlier in the week:

UNDER BROADWAY RECEPTION

To State Officers, Members of the Legislature, City Officials, and Members of the Press:

You are respectfully invited to be present on Saturday, February 26th, 1870, from two to six o'clock P.M., at the office of the Beach Pneumatic Transit Company, 260 Broadway, corner of Warren street.

Joseph Dixon, Secretary A.E. Beach, President

Those looking out their windows at City Hall would have good reason to be puzzled. The corner of Warren and Broadway was not far up the street, and there was scarcely any sign of activity—nothing, that is, other than the usual cacophony of plodding delivery vans, packed horse-drawn trams, and yelling street urchins. The building in question was a mere clothing store; it could hardly fit the mayor's staff, let alone the entire city's press corps. And underground . . . well, there wasn't any underground.

Was there?

That Saturday afternoon, when the first journalists and politicians arrived at the premises of Devlin & Co. Clothiers, it didn't look like much of a place for a grand reception. But they were quietly ushered down the back steps, into what had been the cellar of the store.

It was not a cellar now. An amazed reporter for the New York Herald described the scene that unfolded before him: "Descending an ordinary basement 'dive' under Devlin's clothing store, visitors found themselves in a comfortable office, and a few steps lower there was a kind of Aladdin's cave opened to view. ..."

The crowd filed through a doorway to find a reception room, 120 feet long and ablaze with gaslit chandeliers, spread out before them. Fine paintings hung upon the walls, lavish tables of champagne and hors d'oeuvres had been laid out, a fountain glittered with its stock of goldfish, and sumptuously upholstered couches awaited the visitors; in one corner a piano was playing, its notes echoing through the subterranean lair. But

the crowd could also hear the distant rumble of traffic—for twenty-one feet over their heads was Broadway, where thousands of New Yorkers traipsed and drove by, utterly unaware of what was right under their feet.

Beyond the edge of this cavernous room, brilliantly lit up, lay something that no New Yorker above or below had seen before: a subway car.

THEIR HOST WAS ready for them. He was a dapper fellow in his mid-forties with a carefully groomed mustache, and instantly recognizable: Alfred E. Beach, the owner and publisher of Scientific American magazine. He patiently guided the bewildered elite of the city around the cavern. What you see before you, he explained, is an atmospheric railway: "The Pneumatic Dispatch consists of a railroad track enclosed in a tube, the cars being driven by atmospheric pressure. The car, in effect, is a piston, moving with the tube."

He showed the crowd a single handsomely built railway carriage; the tracks that it sat upon disappeared into a brightly lit and whitewashed circular tunnel that gently curved away into the distance, into the bowels of the Manhattan earth. A keystone over the tunnel bore a carved inscription:

PNEUMATIC TRANSIT.

1870.

But where was the locomotive?

"A tube, a car, a revolving fan! Little more is required. The ponderous locomotive, with its various appurtenances, is dispensed with, and the light aerial fluid that we breathe is the substituted motor."

Those still scratching their heads at this were led up a few steps to view a massive machine housing festooned on the outside with elaborate frescos. The Aeolor, Beach called it. A glance inside revealed its purpose: it was a gigantic steam-powered fan. It was all very simple, really—the subway car they had seen in the cavern below fit snugly into a tunnel in which it was pushed along by the force of wind, just like a sailboat. Only, as Beach pointed out, "a car mounted upon a track is moved much easier than a boat upon the water, because the vessel encounters great resistance displacing the water, while the car merely has to overcome the friction of its wheels."

The return journey was easily arranged. Just run the fan in reverse, and the resulting vacuum drew the car back again.

More guests showed up as the afternoon progressed, each emerging dazed through the doorway into the cavern now filled with the city's elite, all chatting and drinking,

and leaning upon the piano in an enormous space that should have been nothing but thousands of cubic feet of dirt and rock. Alfred Beach was the center of attention, leading his guests all around the subway station that he had built entirely in secret. Guests were amazed and delighted; champagne glasses were raised and, as the New York Times wryly put it the next day, "the 'health' of the tunnel was not forgotten."

After a while, Beach gathered his first adventurous group of passengers together. Holding on to their champagne glasses and their hats, the crowd watched as the Aeolor wind machine built up to a roar, the doors closed on the tunnel tube, and the car slid out of sight. The first subway in America had officially gone into service.

THE RIDE TOOK only seconds; at the end of it, the passengers stepped out to find themselves at another subway station. They were now by the corner of Murray Street.

At this point, it might have started to dawn on the passengers just what Beach had really done. Not only had he built a subway without telling anyone, he had run it beneath City Hall. It is hard enough today to imagine what an insane enterprise this was: how, working in the dead of night and without permits, could one man build a working subway line under Manhattan's busiest street, right next to City Hall itself, and all without a single neighbor ever catching on to it?

But Beach had done it.

He was not the first to build an atmospheric railway, though. That honor belonged to others an ocean and a decade away.

ALTHOUGH IT HAS undergone a renaissance of late, Battersea is not the most scenic of London locations; it was no accident that Pink Floyd once chose it for the grim postindustrial cover art of their album Animals. During the Industrial Revolution, though, there was no better place to build a power station, a massive smokestack, or any other hulking behemoth of iron and brick to grab a capitalist's fancy. Where else, then, for the Pneumatic Dispatch Company to lay down a quarter mile of cast-iron pipe?

Readers of the July 19, 1861, issue of the London Mechanics Magazine were treated to this description of the strange goings-on by the Thames riverside:

On Wednesday last some experiments, on a rather large scale, were made on the right bank of the river . . . with a view to testing the efficiency of the novel mode of transmitting goods and parcels. The mechanical arrangements in connection with the experimental line of cast iron tubing—which, like a huge black snake, stretches for more than a quarter of a mile along the river side— are few and simple.

It was, like Beach's subway, essentially a giant peashooter. This straw was a yard high

and built of cast iron, the pea weighed about half a ton, and the breath propelling it was a giant pneumatic ejector fan spinning at 200 rpm.

The carriages, low-slung and rather sporty-looking, stood less than three feet high—far too short for passengers. But the directors of the Pneumatic Dispatch Company gathered at the riverside that Wednesday watched with satisfaction as workers loaded a carriage with one ton of cement bags. The carriage was pushed into the end of the tube, the hatch shut with a clang, the signal given, and— whoosh —fifty seconds later a ton of metal and cement came banging out the other end, a full quarter mile away.

The company directors were delighted.

More tests were run, with the little carriages merrily zooming back and forth through the tube, around sharp curves and up and down steep grades, every time without a hitch. The crowd watching all probably had the same thought by now: Who will ride in it?

And then their eyes settled upon, in the rather unkind words of Mechanics Magazine, "a living passenger in the shape of a dog, not very handsome." The hapless pooch was tossed in along with some bags of cement and sent rocketing off. Word came back from other end—the dog was fine. Now the real question came up. Would a man climb in?

It being London, there were a couple of likely lads happy to oblige. A mattress was thrown into a carriage, a saddle blanket found to tuck in the adventurers, and in they went, lying flat on their backs and staring up at the sky. The carriage was rolled forward and enclosed in the utter darkness of the iron tube. The signal was given and, with a mighty blast of air, the two felt themselves thrown forward.

Fifty seconds later the two emerged at the other end, the lucky recipients of a bizarre joyride. But the company directors watching had more than amusement in mind. They now knew their tube could carry mail, heavy cargo, even passengers—and it could carry the Pneumatic Dispatch Company all the way to the bank.

PNEUMATIC TRANSIT HAD been tried even before then. In 1810, the London inventor George Medhurst published a curious pamphlet titled A New Method of Conveying Letters and Goods with Great Certainty and Rapidity by Air. Using air forced through a tube, Medhurst thought, goods could be shot along at up to 100 mph. Soon he expanded his vision to passenger lines, and he spent the next two decades perfecting his ideas, at one point issuing shares for the building of an atmospheric railway line. He had few takers.

Others followed, though. In the 1820s and 1830s, John Vallance and Henry Pinkus both took cues from Medhurst's later work and developed passenger railway designs

that kept the compressed air but dispensed with the all-enclosing and claustrophobic tubing: instead, their tubes of compressed air would be built into the trackway, with the carriage riding atop it in the open air. Pinkus even claimed that farm plows could be driven by laying these pneumatic rails across fields. Vallance managed to attract the attention of officials from the Russian embassy, who examined his designs with a view toward building their own atmospheric line from St. Petersburg to the Black Sea.

But these inventors were far ahead of the public's imagination and the technology of their day. Both floated stock to finance their designs, and both went home empty-handed. By the 1840s, though, there were enough improvements in these open-air designs that investors started taking more notice. One inventor built a working model across a London cricket pitch. Not too far away, near Wormwood Scrubs Prison, another team of inventors built a full-scale experimental rail line that carried seventy-five passengers and could reach 40 mph when empty.

There was a boom in atmospheric railway building for the next few years, and for good reason: the trains were quiet and clean, and they could stop and start with astonishing speed. One unwary tester on a Dublin atmospheric line accidentally hit 84 mph, which may well have made him the fastest man on earth for a time. Lines were built in France, Austria, Ireland, and England. Stock offerings were legion, and in England extensions were planned all the way down to Cornwall.

But the system remained a bit dodgy. The materials at hand just weren't reliable enough: air pistons leaked and cracked in the cold, and rats nestling in them were shot out like furry bullets as the train approached. Many designs only allowed trains to go in one direction at a time, so that if a train overshot a station, all the passengers had to get out and push it back to the platform. Tracks could not be merged or crossed. Worse still, the compressors of the day lacked sufficient power for long rail lines. Timetable inspectors found that breakdowns were a constant problem on some lines, and—most humiliating of all—sometimes a steam locomotive had to be hauled out to do the job. By the late 1840s, investors had decidedly had it with atmospheric rail.

POPULATION DENSITIES IN London, Paris, and New York became intolerable in the 1860s; city planners knew they needed to expand outward with worker housing, but they lacked transportation for a daily commute to work. In the meantime, downtown street traffic was becoming increasingly dangerous and grindingly slow.

Amid these traffic jams, surface rail lines looked less appealing now, at least inside cities, and so attention naturally turned to subways. But coal-fired locomotives, which spewed cinders and smoke into passenger compartments even aboveground, were doubly undesirable in a confined tunnel system. Inevitably, the massive propeller blades of pneumatic motors began to turn once again—and now, thanks to engineering developments during the 1850s, they could spin in reverse, so that cars could be pushed forward and pulled back within the same tube. Telegraph offices in London

started installing small-bore tubes to send messages from stock exchanges to central telegraphy offices, and by 1858 there was over a mile of tubing under London. Large-bore tubes for cargo and passengers were the next logical step.

After the success of the Battersea line, in 1863 the Pneumatic Dispatch Company built cargo lines in London for the post office, including a half-mile pipe from Euston Station to Eversholt Street; by 1865 the company had extended it another two miles, through Tottenham Court, New Oxford Street, and finally to the central General Post Office at 245 Holborn Street. It was not unknown for workers to take joyrides in the mail carriages, getting shot through a massive iron tube across two and a half miles of metropolitan London in a matter of a few minutes. The Duke of Buckingham, who happened to be the chairman of Pneumatic Dispatch, was fond of personally showing off his thrill ride. One pneumonaut recalled:

The sensation at starting, and still more so upon arriving was not agreeable. For about a minute in each case there was a pressure upon the ears suggestive of a diving-bell experience, a suction like that with which one is drawn under a wave, and a cold draught of wind upon the eyes, having almost the effect of falling water.

But as long as the passengers kept their heads down, no one seemed to be worse for the experience. Frank Leslie's Illustrated Newspaper announced that "the air in the tube was by no means foul or disagreeable," though "here and there a strong flavour of rust was encountered."

Inventors became ambitious again. In the Crystal Palace Exhibition of 1864, the public boarded a quarter-mile-long line set up by the Pneumatic Dispatch Company and overseen by the company's chief engineer, T. W. Rammell. Afterward, Rammell proposed a huge London system of atmospheric subways, running thirty trains an hour. The sum of £135,000 was raised from investors, and groundbreaking was held on October 25, 1865.

Pneumatic postal schemes met with even greater success. Lines snaked between London post offices and businesses, and over the next thirty years, ninety-four lines with more than thirty-four miles of tubing crisscrossed the city. The London Times sunnily predicted that "between the pneumatic dispatch and the subterranean railways, the days ought to be fast approaching when the ponderous goods vans which fly between station and station shall disappear forever from the streets of London."

Pneumatic systems roared to life in every major city in Britain, as well as in Berlin, Paris, and Vienna. One was even proposed across the Swiss Alps. None, though, were being built in America—at least, not at first. But that was about to change.

BEFORE HE LAID a single foot of railway track, Alfred Beach had seen an even faster and cheaper means of transport: pigeons.

The pigeons belonged to his father, Moses Beach, owner of the scrappy tabloid the New York Sun. One of Moses's first acts as a publisher was building a massive pigeon house on the roof of his building; his winged legions carried news back from Albany and Washington, D.C., giving him a slight edge in a publishing world so rough-and-tumble that Sun and rival Herald newsboys would knock each other down in the streets.

Alfred inherited his father's publishing savvy, but he was also deeply interested in sciences. And so in 1846, at the age of twenty, he and prep school roommate Orson Munn bought out a failing magazine called Scientific American. Early on, Beach had a masterful insight: he added a patent law business to the magazine offices. With nearly every New York inventor passing through his doors, Beach had an endless supply of breaking technology news. He had patent papers to write stories from before the Patent Office examiners in Washington had even seen them.

Beach traveled down there every month to Patent Office hearings, and was the best friend that inventors in this country had. It is easy to see how this empathy arose. Beach was a brilliant inventor himself, having designed one of the first working typewriters when he was only twenty-one years old. His greatest passion, though, was reserved for atmospheric railways. He pored over London papers and magazines as they came off arriving boats, saving any article mentioning the successes of pneumatic transit. Soon, the idea began to germinate within him: why not build one in Manhattan?

IF YOU STOOD in just the right spot on 14th Street on September 16, 1867, you could see the future. It had arrived in Manhattan with the opening of the American Institute Fair, and it had visitors craning their necks to look heavenward: suspended from the ceiling of the Armory was a gigantic wooden tube, 107 feet long and six feet wide, with an open carriage sliding back and forth inside. Delighted visitors clamored to get aboard, a dozen at a time, and by the end of the exhibition it had carried more than 100,000 Manhattanites.

Near the train was another exhibit, an ingenious postal pneumatic system consisting of street-level lampposts with built-in mail slots for letters bound uptown and downtown. A letter dropped in would waft down to a bin far below the street. This bin hung just over a pneumatic tube; a car roaring by would smack open the bin, dumping out its contents into the mail car, which then rocketed onward with the cargo. It was to be far cheaper than conventional Manhattan haulage: for what was spent each year on cargo horses in Manhattan, the pneumatic system could be laid down in every street three times over.

Presiding over these wonders was Alfred Beach. The passenger line had been built in just six weeks by Beach, and it was already unlike any train ever seen before. For one

thing, you could hang it from a ceiling. A new laminating process used by Beach meant that the tube was only a one-and-a-half-inch thick wooden shell, light and strong enough to be hung almost anywhere, and flexible enough to be bent into outlandishly arcing and curving designs.

Beach had fantastic visions on offer to exhibition visitors—of a future landscape of pneumatic trains burrowing into the depths of Manhattan, and then rearing up aboveground to lace the urban airspace, arcing out in gentle curves to hang from the sides of buildings, even passing on stilts right over the rooftops. The metropolis would be a writhing mass of silent, slithering tubes, pulsing with encapsulated citizenry hurled along at up to 100 mph. Passengers embarking from City Hall could arrive at Jersey City in just five minutes, Central Park in eight minutes, or Harlem in fourteen minutes.

"Almost anything is possible to modern engineering," marveled one bedazzled reporter from the Brooklyn Daily Eagle, "providing money enough is furnished."

WITH THIS GREAT truism in mind, Beach spent much of 1868 lobbying the legislature in Albany, exhorting readers in the pages of his magazine, and issuing The Pneumatic Dispatch, a lavishly illustrated booklet describing his dreams for the city. But Beach was not the only one making plans. His father's old rival Horace Greeley was also lurking the halls of the capitol; he and Cornelius Vanderbilt, among others, had hatched their own railway scheme for the city. Vanderbilt and his minions were to be sorely disappointed, though, for not only did the legislature turn them down, it also gave Beach permission to build a small pneumatic mail line by City Hall.

Beach was going to get his chance to prove himself at last. He hurriedly drew up a charter and scrambled to issue $5 million in stock, and on August 1, 1868, the Beach Pneumatic Transit Company was born. And then, for a while . . . nothing happened.

Or so it seemed. Beach knew he had to move very carefully. Vanderbilt and others were waiting to pounce on him at the first sign of actual construction, ready to halt work with court accusations of disruptions in water and sewage service. And the teamsters at the stagecoach and cargo companies, furious at their looming obsolescence, would love nothing better than to crack a few heads at the construction site while cops pointedly looked the other way.

There was no groundbreaking ceremony, then—quite the opposite. Beach had assembled his team in the basement of a clothing store and sworn them to utter secrecy as they burrowed down into the earth. The telltale piles of dirt they excavated were whisked away in sacks in the dead of night. Tons of brick, marble, and wood and an entire piano were all smuggled down through the store's basement, all without a soul on the street knowing it.

It helped that the team had something of a secret weapon. The ever-inventive Beach had designed a special tunneling shield for them, a massive honeycombed metal disk propped up with hydraulic jacks; under pressure, the shield extruded dirt out the back, which was then dug out and carted away. By cranking up the pressure of the jacks on either side, the excavators could make the tunnel curve to the left or right. The Beach shield was to become standard excavating equipment years later, but right now, Beach's workers were the only people in the world to have one—and they couldn't even tell anyone about it.

Even those in on the secret, though, might have noticed something puzzling about the proceedings. The bill passed by the legislature had allowed Beach to build two fifty-four-inch tubes under Broadway, a limit that effectively ruled out passenger traffic. What Beach was laying track down for, though, was a single tunnel with a 108-inch bore—which just happened to be big enough to carry passengers.

Explaining this decision to the public afterward, Beach held up the smallest of fig leaves:

The quickest and best method for construction for the two tubes was to . . . erect a masonry shell large enough to enclose both of the fifty-four inch tubes. It is a portion of this outer tunnel that has been erected; and as it has proved to be strong enough and large enough for the transit of passengers, the company laid down therein a railway track and provided a passenger car, for the purpose of temporarily illustrating, by an actual demonstration, the feasibility of placing an actual railway under Broadway.

As an explanation it was, like the rail line itself, marvelously convenient.

BOSS TWEED WAS not amused.

Today William M. Tweed is a byword for machine politics and unbridled corruption. It is a reputation that is richly deserved: Tweed had his fingers in every pie in New York City, and in the space of a three years he and his minions siphoned away up to $200 million from city coffers, single-handedly tripling the city's debt burden. So even as the city and state dallied over the implementation of a mass transit plan, Tweed's men were sure that, whatever the outcome, they would all get their cut of the action.

Would-be railway companies eyed the city hungrily. Building New York City's light rail would be the largest public works project in U.S. history, and the rail construction contracts alone would be worth hundreds of millions. Tweed, who had already installed himself on the boards of a local railway company, a gas company, a bank, and the Brooklyn Bridge Company, all while still serving as the mayor, had an unbeatable inside track to landing any construction contracts.

But then came Beach.

New Yorkers loved Beach Pneumatic Transit. City luminaries eagerly boarded the plush carriage for their 321-foot ride of the future, and visiting dignitaries came down to Warren Street to marvel at the station. Newspapers throughout the city were almost unanimous in their praise of Beach, and wondered if the solution to the city's transit problems had been found at last.

Tweed was appalled, and then flabbergasted, and then utterly furious. He and his men had stood to gain astronomical sums from rail contracts, and now some delicate-boned egghead publisher had yanked the rug out from underneath all of them. And, just to rub it in, Beach had dug out his illegal subway almost underneath Tweed's City Hall lair—a place already in danger of sinking into the earth under the weight of all its plundered loot.

Beach seized the moment, and the 1871 session of the state legislature saw him pushing a bill to allow him to extend pneumatic lines from the tip of Manhattan all the way up to Harlem, down to Jersey City, and out to Brooklyn. At first, there was little Tweed could do to directly block Beach. Pneumatic rail was tremendously popular, and even a rapacious despot like Tweed knew that the public's fancy would not tolerate a frontal assault. Residents of both the East-Side Association and the West-Side Association had voted their support of the Broadway Underground Railway bill and circulated petitions around the city. Newspapers also supported the bill, and the Journal of Commerce made much of its most startling feature in a February 15, 1871, editorial: "There can be no good objection to the passage of the bill —one of the chief merits of which is, that the company ask no subsidy from the city, but are willing to pay the whole cost out of their own pockets." Not only was Beach's company scooping up the most important contract in the city's history, it was making every other company look bad in the process. Beach Pneumatic Transit had already spent $350,000 of its own money, $70,000 of which came out Beach's wallet. The company was not, unlike nearly every other railway builder in the city, busy lining its pockets.

The opposition consisted of the usual suspects: Tweed, Astor, Vanderbilt, and an assortment of Broadway residents who feared for their mansions. They were, Beach complained, "an organized clique of opponents to this beneficent measure, consisting largely of rich men, who ride in their carriages, and don't want to be disturbed by fast railways." And, as with any major undertaking, a few naysayers were simply crotchety old men. "I have fought steam railroad projects in Broadway for the last twenty years," snapped one at a reporter, "and I mean to fight them for twenty years more."

This kind of reasoning carried little weight in Albany, and on March 17, 1871, the assembly passed Beach's bill by a staggering margin of 102 to 11. Not long afterward, the senate passed it by 22 to 5. Now it was only up to Governor Hoffman to sign the bill into law. A hearing was set for March 30, and Beach showed up to plead his cause.

He was walking into a trap. Tweed was prepared all along; the governor was already in his pocket. That day, citing the possibility of damage to houses along Broadway, Governor John T. Hoffman dutifully bowed to his dread master the mayor of New York, and vetoed the bill.

SURELY NONE OF those at the offices of Scientific American could have imagined for long that they could take on Boss Tweed and simply get away with it. And yet, they had dared to imagine it.

Beach—a sober and industrious man who never took a day off work in his life—would not be put off so easily by the infamous diamond-bedecked mayor. He and his railway company pushed the legislature into approving the bill again the following year, and the company now wielded a fistful of engineering reports asserting that no damage would done to any buildings. But Boss Tweed had his own kept man: Edward Tracy, the chief engineer of the Croton Aqueduct Works. Tracy issued a dire report on the Beach bill, predicting that sewer lines would need to be torn up, tunnels would flood, buildings would sink, and fifteen massive ventilators would have to project out of the street for every mile of pneumatic subway.

Citing Tracy's report, Hoffman vetoed the bill once again on May 1, 1872. Amazingly, he claimed that much of the route in question didn't even need mass transit, accusing Beach of seeking "possession of the valuable portion of Broadway . . . where the facilities for transit are already many, making the great question of Rapid Transit through the whole length of the city secondary." Any Manhattanite not utterly appalled by Hoffman's reasoning would have found this claim hilarious.

And then came help from another funnyman—a cartoonist. Although a number of citizens appalled by Tweed's dirty dealings helped topple the mayor, Thomas Nast's cartoons for the New York Times effectively revealed to the world the vast scale of the extortion and skulduggery employed by the Tweed Ring. Tweed fell under indictment and was ultimately convicted for his myriad crimes; at one point, he even fled to Spain to avoid prosecution. There was a change in power in Albany, too: power passed from Governor John Hoffman to Governor John Dix.

This time, when the bill came up for vote again in the 1873 session, both the legislature and Governor Dix approved it. Beach's dream, it seemed, was to come true at last. But the very feature that buoyed the bill—all the money would come from the company, and none from the public—also cruelly sank it. The year ended with a massive financial crash, the Panic of 1873; investment money dried up, and suddenly Beach and his company were left stranded.

When Boss Tweed finally died in 1877, the new mayor stubbornly refused to lower City Hall's flags to half mast. A great evil was now dead. But so was a great good—the

Beach pneumatic line. And neither was ever coming back.

PNEUMATIC LINES BACK in Europe were faring little better. As steam and electric trains improved, the advantages of pneumatics looked less overwhelming. Some mail lines collected seepage at the bottom of inclines, so that carriages rocketing through them would hit puddles that dashed water all over the mail inside. Air leakage bedeviled the systems, and the cost of maintaining them became harder to justify to post offices that, with the advent of instant communication via telephone, no longer had a market in earning messages with the utmost speed.

Still, a few systems clung to life. Amazingly, the Royal Mail still uses a few of its air-driven lines in London. A vogue for message-bearing "pneus" developed in Paris and remnants of the Prague pneumatic mail system remain in use to this day. One of the few stateside survivors is the tube system in the New York Public Library; it is used to convey book requests from Room 315 to workers in the vast catacombs below.

Pneumatic passenger trains, though, have vanished entirely. The Whitehall & Waterloo passenger line, the offspring of the enthusiastic reception given to the Crystal Palace exhibition, actually did break ground and begin tunneling beneath London. But the venture was swamped by an economic slump in 1866, and the half-finished tunnel was never demolished or filled in. It now sits eternally entombed somewhere beneath the sidewalks of WTutehall.

But occasionally the notion of pneumatic passenger lines is disinterred. Even as pneumatics went out of favor, in 1877 the journal Nature carried a hopeful notice for the formation of a company to build a pneumatic railway between South Kensington Station and the Royal .Albert Hall. In the 1940s the Xobel physicist Irving Langmuir floated the idea of a 5,000-mph rocket-assisted pneumatic railway running from Manhattan to San Francisco, and in 1965, Scientific American returned to its roots by running a plan for a 300-mph intercity atmospheric network. But, like even' other pneumatic proposal, these railways in the air had the same terminus: nowhere.

THE BEACH PNEUMATIC Transit Company staggered on for years. The Broadway tunnel was hired out for a while as a shooting range and then a wine cellar, and then simply sealed up. Beach's interest waned with the defeat of pneumatics, and the company went on to abandon air pumps for steam and electric engineering schemes that might actuallv see some return on their huge venture-capital expenditures. The company became the Broadway Underground Railway Company in 1874, and then the New York Arcade Railway Company in 1885. Each name change reflected a vast new engineering scheme, and hence a new round of lobbying and debilitating lawsuits from rivals in the railway business.

Alfred Beach died in 1896, and the next year his old company gave up any pretension to winning contracts to build passenger service—it would now be the New York Parcel

Dispatch Company. It struggled feebly for the next decade to secure any sizable business, and failed utterly.

In 1912, long after the contests of Boss Tweed's days were forgotten and the Beach line but a distant memory, the city of New York announced plans to build a new subway station at City Hall. From out of the void, a letter arrived at the subway commission's office:

New York City, February 19, 1912 Notice is hereby given that the tunnel under Broadway from Warren Street southward about two hundred and ninety-four (294) feet in the Borough of Manhattan, City, County, and State of New York, is the property of the New York Parcel Dispatch Company, that anyone molesting or interfering therewith will be proceeded against as a trespasser and that the rights of the owner will be enforced in the courts.

New York Parcel Dispatch Company Eugene W. Austin, President

But nobody knew or cared about Beach anymore. And so with the shattering of brick and the splintering of wood, one day the subway sandhogs came crashing and stumbling through the darkness and into a pitch-black recess.

It was Beach's old tunnel.

Lights were brought in, and the awed workers looked around. The tunnel had been sealed for forty years now, and yet all was ready for another run. Workers shining their electric lights into the sumptuous parlor found that it lay untouched and entombed in a layer of dust, its soft divans still awaiting the impress of the next visitor's body. Nor had the tunnel leaked or caved in, for the air inside it was warm and dry. At the far end of the tunnel was Beach's wondrous excavating shield, still waiting its next push, ready to go all the way across the city and under the East River. Its wooden frame disintegrated to the touch.

And farther back, inside the tunnel, a vehicle awaited its next run. The pneumatic train, decomposed with dry rot, was still sitting on the tracks, waiting for a rush hour that would never come.