Do you ever worry about air pollution or about dishonest politicians? Well, so did people in the 19th century.

Just to reassure you—most politicians are honest and most air is clean. But that is no reason to relax. There are people around who will mess up the world if we let them.

One of the worst, in the years after the Civil War, was a man named William Marcy Tweed. He was called “Boss” Tweed and he ran New York City. New York had problems—big problems—especially problems of air pollution and traffic congestion. Some 700,000 people lived in New York, most of them squeezed into a small area near the tip of Manhattan island. Much of the city’s business took place around a famous street called Broadway. Trying to walk or take a horse-drawn bus down Broadway was a nightmare. There were so many people it sometimes took an hour just to move a few yards. And talk about pollution—whew—hold your nose while I tell you about it.

New York was home to more than 100,000 horses. Now, a healthy horse dumps a whole lot of manure each day. Imagine all that smelly manure spread around by wheels and feet. When the manure dries, it turns into powder that blows in your face and goes up your nostrils. But that isn’t the worst of it. In the 19th century, people and businesses could burn anything they wanted. Mostly that was

William Marcy Tweed was called “Boss” Tweed because that was exactly what he was: the boss. He wasn’t elected to run New York, but he did it anyway. He was actually a city alderman. (An alderman is a member of a city legislative body.) He was never mayor. It didn’t matter. He controlled the New York State Democratic Party and the Tammany Hall political machine.

Tweed put graft (getting dishonest money) on a businesslike basis. All city contracts were padded by a fixed amount, which went to Tweed and his cronies. At the Tammany clubhouse, he slept in a bed with blue silk sheets. He sometimes entertained on his yacht, the William M. Tweed, which had a crew of 12, fancy furniture, and Oriental rugs. When Tweed went to jail, he was asked his occupation. He said, “Statesman.”

Artist Thomas Nast’s original caption for this Boss Tweed cartoon read: “Well, what are you going to do about it?”

Who’s the Boss?
coal, which puts black fumes in the air. Even worse, Standard Oil had a New York refinery. Oil refineries, without controls, give off terrible, noxious fumes. That oil refinery was a big polluter. Hold on, that’s not all. When Boss Tweed controlled New York there wasn’t much in the way of sanitary services. So people often dumped their garbage in the streets. Garbage smells—especially in August. Are you choking? Well, I still haven’t mentioned the pigs. Pigs ran about eating garbage and leaving their own smells and dumplings. And then there were flies, and disease. But you may have heard enough.

There you are in the middle of Broadway, and you want to get away. You climb on a horsedrawn bus. It sways back and forth so violently that some passengers get seasick. You try walking. But there are no street lights (they haven’t been invented yet). Horses, people, buses, and carriages are all pushing and shoving on Broadway. Pedestrians often get killed in traffic accidents. Have you had enough of the good old days? So had a lot of people in the 19th century. The politicians said that soot in the air was a sign of modern progress, but most people were beginning to gasp for fresh air.

Fresh air was the last thing that Boss Tweed cared about. He was a scoundrel—a real bad guy who controlled most of the city’s jobs and services. He used his power to get money for himself. He bribed
others and forced them to do as he wished. Here is an example of the way he worked. A new city courthouse was to be built; Boss Tweed became the contractor and charged the city three or four times what the building actually cost. He put the difference in his pocket. Then he filled the building with $50 sofas and charged the city $5,000 for each. How did he get away with that? Well, he was charming—in a scoundrelly way—so he fooled people. Many citizens didn’t realize he was stealing from them. And because he was so powerful, those who did know were afraid to do anything about it.

Except for a quiet, frail little man named Alfred Ely Beach. Beach was a genius—an inventor, a publisher, and a patent lawyer. He invented one of the world’s first typewriters. He called it a “literary piano.” Beach invented other things, too, and because of that he understood about patents. If you invent something, and you want to be sure that your idea is not stolen, it is necessary to register your idea with the patent office in Washington. As a patent lawyer, Beach helped many inventors with their patents.

Beach did many things and did them all well. When he was only 19 he took over a small magazine named Scientific American and helped make it the fine journal it is today. He became publisher of the New York Sun and it became an important newspaper.

But that isn’t what this story is about. It is about Ely Beach’s fight
with Boss Tweed. Beach wanted to do something about the traffic congestion on New York’s streets. He thought and thought and finally came up with the idea of putting a railroad train underground. He called it a subway. He knew Boss Tweed wouldn’t let him build it—unless he agreed to give Tweed millions of dollars. And Beach was too honest a man to pay off a politician.

He decided to build a subway and not tell Tweed. He built it right under Broadway and hardly anyone knew he was doing it! He invented a hydraulic tunneling machine and a pneumatic subway. He got laborers to work at night and to haul dirt away in wagons with wheels muffled so they wouldn’t make noise. It took 58 nights of secret work to get the tunnel done.

In February 1870, a group of New York newspaper reporters were invited to a reception. They were surprised when they were led underground into a beautiful, large waiting room. Paintings hung on bright walls, a pianist played at a grand piano, a fountain splashed, and goldfish swam in a giant tank. Beach had done it! His subway was ready. The reporters all took a ride in a cylinder-shaped wooden car. The car had handsome upholstered seats, fine woodwork, and gas lamps. It fit tight—like a bullet in a rifle—and moved down tracks inside a round brick underground tube. It went right under Broadway, under all the pollution and traffic.

What made it move? A giant fan blew it 371 feet. There the subway car stopped and tripped a wire; that made the fan reverse itself, and that sucked the subway car back.

Beach saw his subway as a model for a grand subway he had planned. It would carry 20,000 passengers a day and go for five

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**Hydraulic** means “water-powered”; **pneumatic** means “air-powered.”
miles—to Central Park, he said—at a speed of a mile a minute. A mile a minute? Nothing had ever gone that fast.

Boss Tweed was outraged! He controlled all the streetcars in the city. This was a threat to his power. He must have pounded his diamond-ringed fingers. He got in touch with the governor—his governor (he’d bribed and bought him).

What happened is a long and complicated story, and I can’t tell it all here. People flocked to Beach’s little subway; they rode back and forth under Broadway. Beach gave the subway’s profits to charity. The state legislature passed a bill allowing Beach to build the grand subway. Tweed’s governor vetoed it. Beach worked hard, talking to congressmen, and a second subway bill was passed. Governor John T. Hoffman vetoed it again.

Finally, the newspapers began writing editorials telling the truth about Boss Tweed. A cartoonist—named Thomas Nast—drew funny cartoons that showed Tweed as the wicked man that he was. Tweed threatened Nast. “I don’t care what the papers write about me—my

George Washington What?

George Washington Plunkitt: his name sounds unreal, and some of what he said seems so, too, but he was real, and a member of Tammany Hall, and a New York state senator. Journalist William Riordan, who knew Plunkitt, called him “Tammany’s philosopher,” and took down some of his words.

Everybody is talkin’ these days about Tammany men growin’ rich on graft, but nobody thinks of drawin’ the distinction between honest graft and dishonest graft,” said Plunkitt. “There’s all the difference in the world between the two. Yes, many of our men have grown rich in politics. I have myself. I’ve made a big fortune out of the game, and I’m gettin’ richer every day, but I’ve not gone in for dishonest graft—blackmailin’ gamblers, saloon-keepers, disorderly people, etc. “There’s honest graft, and I’m an example of how it works. I might sum up the whole thing by sayin’: ‘I seen my opportunities and I took ’em.’

“Just let me explain by examples. My party’s in power in the city, and it’s goin’ to undertake a lot of public improvements. Well, I’m tipped off, say, that they’re going to lay out a new park at a certain place.

see my opportunity and I take it. I go to that place and I buy up all the land I can in the neighborhood. Then the board of this or that makes its plan public, and there is a rush to get my land, which nobody cared particular for before.

“Ain’t it perfectly honest to charge a good price and make a profit on my investment and foresight? Of course it is. Well, that’s honest graft.”

(Today that kind of “honest” graft will get you in jail. It’s not fair for public officials to take advantage of their knowledge of government business to make a profit.)
constituents can’t read,” said Tweed, “but, damn it, they can see pictures!” When threats didn’t work, Boss Tweed offered Thomas Nast half a million dollars to stop drawing his cartoons. Nast kept drawing. Now people were getting angry about Boss Tweed. Most New Yorkers just hadn’t known what he’d been doing.

Tweed was arrested and charged with fraud. He had lied, stolen, and cheated. He was sent to jail. William Marcy Tweed died in jail at age 55. So much for that bad guy.

The state legislature finally passed a third Beach transit bill. But by this time Alfred Ely Beach was a tired man. The stock market was in trouble. It was hard to raise money. Beach no longer had the energy, or the money, to build his grand subway. The subway under Broadway was closed and sealed up.

Beach concentrated on publishing and helping others. Inventors loved him. One day Thomas Edison brought a talking box to him. Beach turned a handle on the box. Good morning, sir, said the machine. How are you? How do you like my talking box?

Beach spent what money he had left on others. He founded an institute in Savannah, Georgia, to give free schooling to former slaves. He taught himself Spanish and founded a scientific magazine in that language. At age 69 he died quietly of pneumonia, loved and respected by those who knew him.

When the city of New York finally built a subway in 1912, workers tunneling under Broadway were startled to come upon a grand reception room and a small, elegant, wood-paneled subway. Today, scientists say a jet-powered subway in a vacuum tube could whoosh people across the country at amazing speeds. They call it a new idea.

Alfred Ely Beach had something like that in mind more than 100 years ago.

It takes a thief or one who has associated with thieves to catch a thief,” said Nast’s cartoon. When Nast drew Tweed in prison clothes, the Boss predicted that if people got used to seeing him in stripes they’d end up putting him in jail. They did.