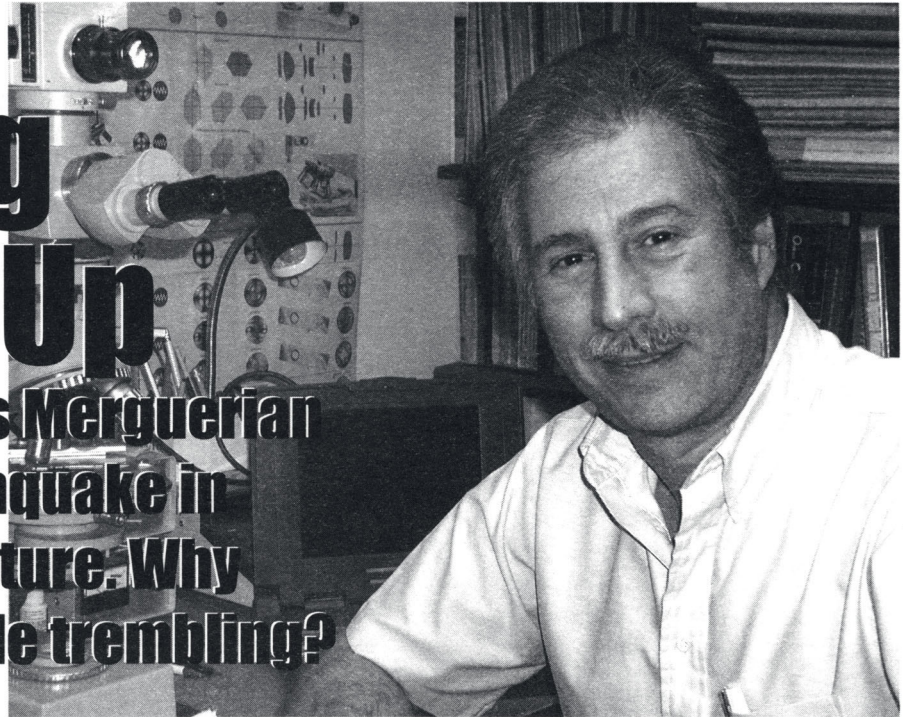


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Shaking Things Up Geologist Charles Merguerian foresees an earthquake in New York City's future. Why aren't more people trembling?



Charles Merguerian

By Brian Reiferson

Seven hundred feet below the busy streets of Long Island City, Queens, Dr. Charles Merguerian stared into the eyes of the beast. Before him in the dark tunnel stretched a northwest-tending crack, merely inches in width, that had the destructive power to take down New York City. Technically termed a "fault," the tiny crack could give at any moment with no clear warning signs, unleashing a major earthquake.

Merguerian spent two and half years and nearly 100 hours underground in the newly excavated Queens Tunnel, piecing together an updated picture of New York's subsurface geology and adding an array of new faults to the mix. The Queens Tunnel is an ongoing municipal project designed to improve New York City's water supply, he said, and has provided a wealth of new evidence for the curious geologist.

The evidence, according to Merguerian, a structural geology professor at Hofstra, shows that each passing second could be the countdown to a seismic nightmare. The mere thought of bloody victims trapped under tons of rubble, and the chaotic after effects like raging fires, broken gas lines, over-crowded streets and gridlock traffic, is

enough to stir up fear in even the most jaded New Yorker, but Merguerian is by no means a fear-monger. "The city is totally unprepared for an earthquake, yet there's a resplendent seismic history of large earthquakes in our region," he said.

The problem in the city, according to Merguerian, is that hardly any buildings are up to earthquake building codes, not to mention prepared for the loss of water and power outages that could follow an earthquake. "New York is a vertical city and the major ground breakage that could occur would cause building facades to fall, blocking off traffic, preventing emergency vehicles from reaching those in need," he said.

Merguerian, whose office is adorned with numerous Godzilla pictures and figurines, has been mapping the region for years, studying core drillings, outcroppings of rock and more recently, the newly excavated Queens Tunnel. He meticulously mapped over 25,000 feet of the tunnel and in the process, confirmed what many geologists and seismologists were only hypothesizing: the existence of young, "brittle" northwest and northeast tending faults, a total of 300 in all. He also confirmed the existence of faults beneath both Dyckman Avenue and

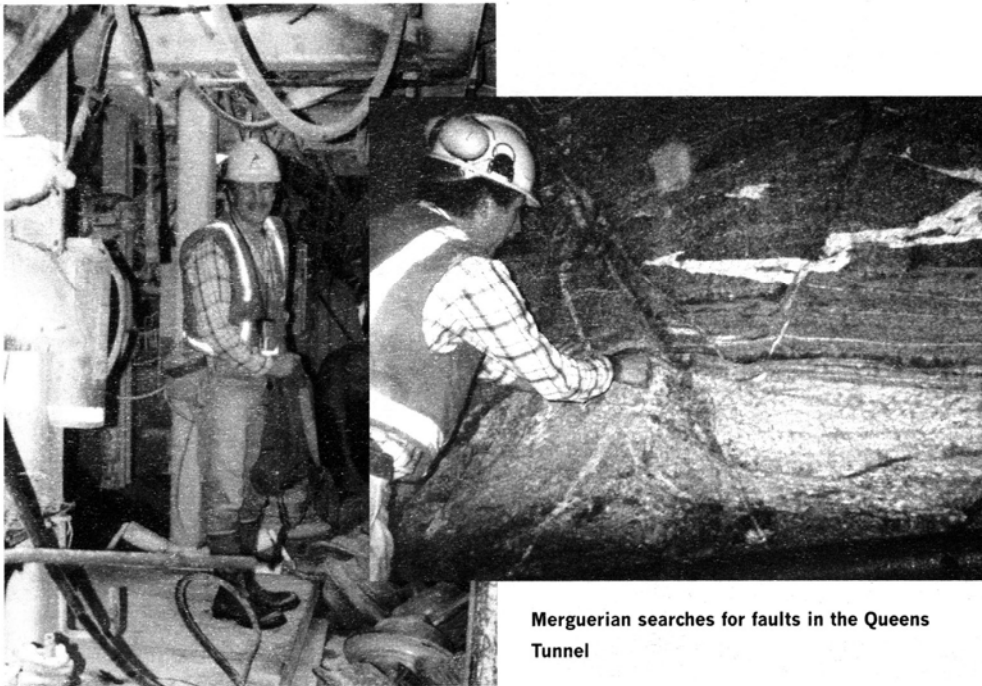
155th Street in the Bronx, 96th Street in Manhattan and one just east of Roosevelt Island, as well as the 125th Street fault in Harlem, in separate research projects.

Merguerian points to the earthquake that hit Charleston, N.C. in the late 1800's, which measured a 7.2 on the Richter scale, as further evidence that a major earthquake could occur in the New York City region, since both cities have the same basic bedrock geology.

Why aren't New Yorkers scared?

"The problem is that the periodicity of earthquakes in the New York region is longer than human memory, where we have long periods of boredom, interrupted by brief periods of terror," he said. The area's last major earthquake was centered in Brooklyn, and occurred in 1884.

Long Island wouldn't fare any better than New York City, should a major quake hit. Merguerian points to the large Alaskan earthquake that took place in 1964 as a good example of what could happen here. According to Merguerian, the clays below Long Island closely resemble the clays underlying Alaska. The Alaskan quake, which measured 9.2 on the Richter scale, started with a few seconds of small tremors,



Merguerian searches for faults in the Queens Tunnel

intensifying into violent shaking which amazingly lasted for approximately five minutes. As a result, water saturated sands in between the underlying clays, liquefied and lubricated the slabs of clay, which according to Merguerian, led to the literal slumping of real estate into the ocean.

“Long Island’s worst enemy would be the tsunamis that could develop, even offshore, which would totally obliterate the South Shore,” he added. Tsunamis are seismic sea waves produced by earthquakes, capable of reaching over 40 feet in height.

The level of concern about earthquakes among businesses on Long Island, and those in the city, can be determined by looking at how many carry earthquake insurance. John Klein, Chief Operations Officer of American Business Continuity Centers in Woodbury, has spent 27 years in the insurance industry as a claims adjuster, mostly on Long Island. “There are a number of companies that carry earthquake insurance,” he said, “but only due to the fact that they have facilities in an earthquake zone region.” Continuity Centers specializes in disaster recovery for businesses, offering alternate work facilities for businesses that suffer a catastrophe, be it fire, earthquakes or flooding. “No one covers earthquakes on their policy,” said Klein, “except the larger corporations that have offices nationwide.”

The Multidisciplinary Center for Earthquake Engineering Research (MCEER) at the State University of New York at Buffalo is an organization that works to increase awareness of the possibilities of earthquakes along the East Coast. By doing so, MCEER hopes to greatly reduce the loss of life, as well as the damages suffered during major earthquakes, according to Andrea Dargush who is the Associate Director for Education and Research Administration at MCEER. “One thing that is a big challenge is that people don’t realize

“Long Island’s worst enemy would be the tsunamis, which could obliterate the South Shore.”

there’s a hazard; we’re very poorly prepared,” said Dargush, in reference to New York City in particular. “In general terms, I can say that the possibility that an earthquake will occur in the New York City area is certain - how large an event, when or precisely where is largely unknown,” she said.

Also devoted to increasing earthquake awareness in our area is the New York City Consortium for Earthquake Loss Mitigation (NYCEM), on the web at www.nycem.org. Much like MCEER, NYCEM serves to edu-

cate the population by estimating the potential for damage and loss in the metropolitan New York area, and has links to published research by renowned seismologist Dr. Klaus Jacob of Columbia University’s Lamont-Doherty Earth Observatory. “We can deny as long as we want that earthquakes aren’t happening, but it’s up to us to decide whether we are prepared for the earthquake when it comes or not,” said Jacob. “Earthquakes don’t care whether we care.” Jacob has been actively encouraging the City to update its building codes since the mid-1980s. In 1995, Local Law 17/95 was passed, which enforced stricter building code regulations to resist the effects of an earthquake.

On January 17th, a small earthquake, measuring 2.4 on the Richter scale, struck New York City. The quake was centered on the 125th Street fault in Harlem. Although it did not have the strength to cause any serious damage, those who were in the city did feel the tremors. Donald Joseph, 22, a student at Pace University, was in Harlem during the quake. “I felt the earth shake,” said Joseph. “The ground I walk on every day to go to school and work, it just shook.” Still, Joseph doubts that a large earthquake could hit the city. “It just seems impossible, like it just won’t happen,” he said, adding, “I don’t think about it.”

It is just such an attitude that has rendered New York City seriously under-prepared for a disaster that is inevitable, says Merguerian. In the wake of recent devastating earthquakes in India, South America and Seattle, Merguerian and seismologists like Jacob have stepped up warnings. But to date, most New York buildings are not up standard earthquake codes and emergency preparation is lacking. “We have the power to take a proactive step,” said Merguerian, “but we are still completely unprepared.”

What will it take for New Yorkers to realize that the potentially devastating quake could hit at any time? And where will you be when it does: in the subway, on the highway, walking down the street?