

THE BEACH BROADWAY TUNNEL.

In clearing away the rubbish from the cellar of the Rogers, Peet & Company's burned building on the corner of Warren Street and Broadway in this city, which it will be remembered was destroyed on December 4, 1898, and caused great damage to the Home Life Insurance building next to it, the contractors have brought to view the entrance to the Beach Broadway Tunnel under the sidewalk vault on the southwest corner of Warren Street and Broadway, which, since the tunnel was closed, has been walled up. Our small illustration shows a portion of the entrance broken a way enough to permit access to the tunnel; a portion of the arch built into the vault will be observed at the top, and the white-painted iron plates forming the interior of the curve extending from Warren Street southeast into Broadway will also be seen through the aperture.

The tunnel was built in 1869, just thirty years ago, and to-day it is still in a good state of preservation, demonstrating beyond a doubt its utility for rapid transit purposes and the fact that such a work could be readily carried on under Broadway without in the least disturbing the traffic overhead or damaging adjoining property.

We think the opponents of the Rapid Transit Commission were mistaken in giving out the impression that there might be considerable damage done to adjoining property during the building of a road under Broadway; for it appeared to be such a probability that determined the Appellate Division of the Supreme Court to require a bond of unusual and prohibitive proportions to be given, which caused the commission to locate the road off Broadway on another street (the new widened Elm Street) parallel with Broadway and to terminate at City Hall Park instead of continuing on down Broadway between the rows of new high buildings to the Battery, where its natural terminus should be.

The fears of architects and engineers of former days, who contended that a tunnel passing through the center of Broadway at a depth of twenty feet below the surface might cause such a massive structure then as Trinity Church steeple to crack and fall over into the street, have been proved by actual experience, to be unfounded.

The Beach tunnel runs under Broadway south to a point just opposite the south side of Murray Street. During the past few years, on the west side of Broadway, in the same block, has been erected one of several of the highest buildings in lower Broadway, the Home Life, nearly to the height of Trinity Church steeple, yet its foundations are as solid and firm as they would be if no tunnel existed there.

This tunnel was constructed by means of the shield system invented by Alfred E. Beach, and was the first in which hydraulic power was employed for pushing it forward through the earth. The shield was forced forward 2 feet at a time, then a section of 2 feet of tunnel was built, and using that as a backing, another 2 foot forward movement was made, the earth coming in at the center, then carried to the rear. By this plan only the exact amount of earth is removed to be occupied by the tunnel, and much expense of excavation is

saved. The curve of the tunnel is built of cast iron flanged plates bolted together, and is a foot larger than the brick portion, which passes directly south in a straight line under Broadway. The enlarged portion provided room for the car in passing

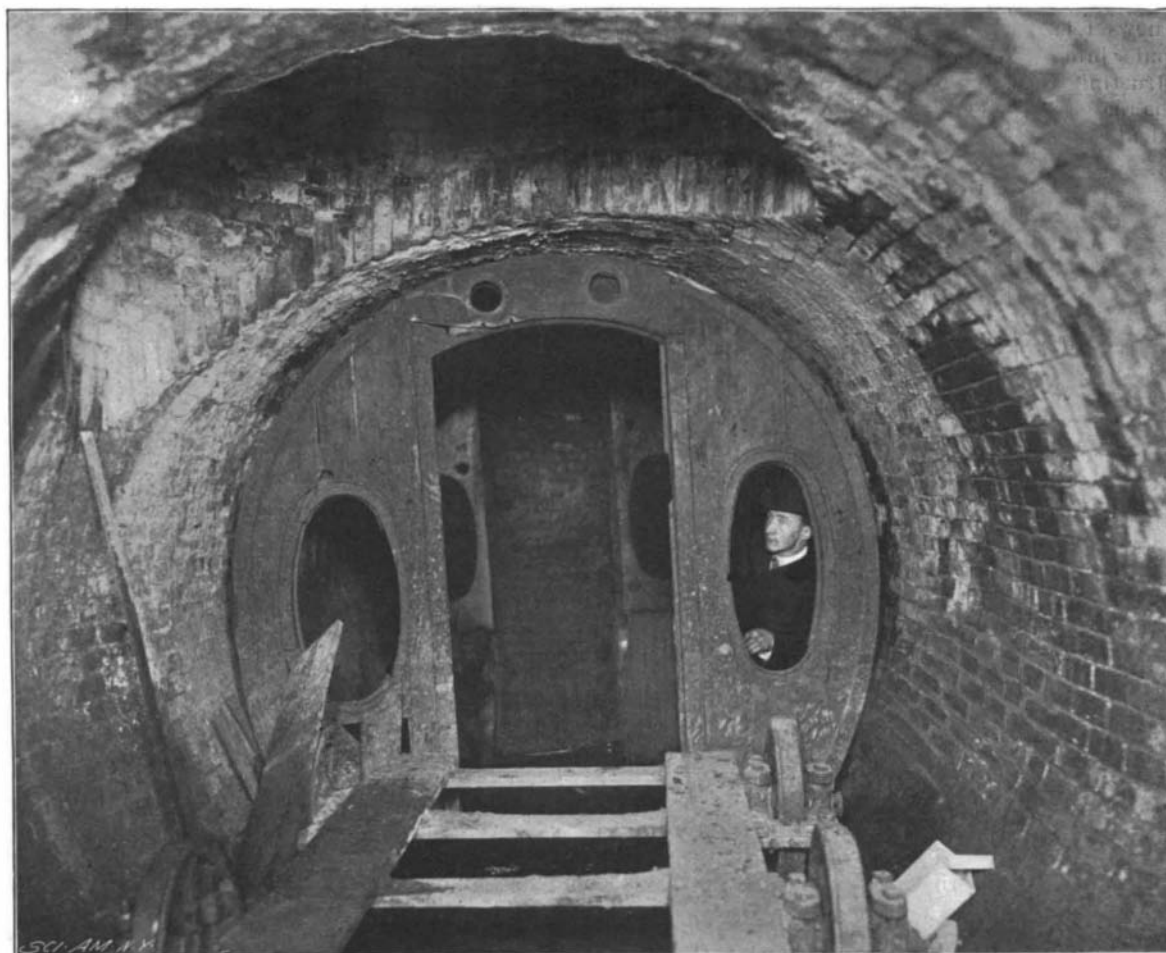
around the curve. Our illustration, made from a flash light photograph, discloses its present condition and the junction of the iron tunnel with the brick portion. The group of gentlemen conveys an idea of its size, which is about 8 feet interior diameter.



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ENTRANCE TO THE BROADWAY TUNNEL.



THE REMAINS OF THE BROADWAY TUNNEL CAR.

The other illustration shows the present appearance of the car, driven by pneumatic power, now located at the extreme south end. On the opposite side of the transverse brick wall is where the shield is buried. A glimpse of the wall is seen just beyond the car. The figure in the car conveys an idea of its size, the oval aperture having once been closed with glass. There were doors at each end opening on to small platforms. All are now missing, but we see just in front the remains of the car truck which once carried the car. The large opening in the top of the tunnel just in front of the car is a vertical and horizontal smaller tunnel between 4 and 5 feet in diameter running in a northeast direction under Broadway to an air well covered by a grating in City Hall Park. This served as an outlet and inlet for air, according as the car was driven by pressure of air on its end down the tunnel from a huge blower, or drawn back to the place of starting by the suction of the

air in a reverse direction. There was an air space of about 1½ inches around the car, but this leakage had no appreciable effect in reducing its speed.

In the spring of 1870 the tunnel was opened for inspection to the public and crowds of visitors enjoyed a walk through it, with the novel sensation of hearing the then Broadway omnibuses traveling over their heads. About a year later a steam engine and an enormous Root blower was installed and the car was successfully propelled back and forth by air pressure. The reversal of the air current stopped the car very gently.

Many people enjoyed rides through the tunnel in the car, including such distinguished persons as Horace Greeley and others. Though this practical demonstration proved the feasibility of the scheme, it did not become as popular as the elevated railroad, and for that reason its merits were overlooked. But to-day the slow speed of the old time elevated roads brings again into prominence the advantages of a well ventilated, clean, well lighted tunnel, which it is hoped this city will soon possess.

Prof. Koch and Malaria.

Prof. Robert Koch, the celebrated bacteriologist, will start some time in April for the tropics, at the head of an expedition to continue his investigations as to the nature and origin of malaria. It is hoped that his work will tend to mitigate tropical fevers. When he returned last year from the East African coast he advanced a theory that, in the case of human beings, mosquitoes played the part in communicating malaria which ticks played in the cattle disease known as Texas fever. He had reached the conclusion that where there are mosquitoes there is always malaria, and where there are no mosquitoes there is no malaria. His theory is that quinine taken at the right moment stops malarial fever, not by killing the germs, but by arresting their growth, and that a proper employment of quinine, with the establishment of mountain health resorts, would rid tropical fever of many of its terrors.