The New York Post Office

UNDERGROUND PNEUMATIC TUBE SYSTEM

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The underground pneumatic tube service of the New York Post Office, which has proved to be a very important adjunct to mail transportation in the city, was placed in operation on October 15, 1897.

The pneumatic tubes are located four to six feet below the surface of the city streets. In some places in Manhattan they are on the subway roof, and then again, in other places they run under the subway. The tubes are twelve feet under the Chrysler Building and eighteen feet under Grand Central. They extend in what is a sort of loop and link connecting the main office, that is, the General Post Office, with twenty-one stations along the east and west sides of the city and the Brooklyn General Post Office by way of the Brooklyn Bridge, with a crosstown line to and from the General Post Office and Grand Central Station. Service is maintained with approximately twenty-seven miles of double eight-inch tubes so that mail can be transmitted in both directions at the same time.

The carriers are steel cylinders, twenty-four inches long and eight inches in diameter on the outside, and inside, they measure twenty-two inches long and seven inches in diameter. The steel cylinder or container weighs twenty-one pounds with a capacity of approximately 400 letters. These cylinders, not unlike a cannon shell with its warhead removed, are forced through the tubes by a constant charge of compressed air developed through eleven power stations. The cylinders develop a speed of thirty miles per hour, spiraling or spinning in transit. Of course, air pressure could actually drive these carriers through the tubes at the rate of one hundred miles per hour if the entire route were a straightaway, but as there are approximately 1,000 turns, loops or bends in the system, such a situation naturally requires regulating the speed at thirty miles per hour. Pressure in the lines is maintained at from three to eight pounds per square inch and before regular operation begins each day, a number of test carriers are sent through.

As a precaution, so as to avoid interruption in service and maintain tubes in a “sick” condition, decay projectiles, which are merely steel cylinders perforated in the same manner as a sieve and bearing lubricating oil, are sent out. These careening robots spray the tubes with a protective film to ease the battering they ordinarily would have to take, especially on the curves or bends. Normal operation consists of the dispatch of a cylinder or projectile at the rate of one every twelve seconds. The speed of transit is thirty miles per hour, yet notwithstanding this high velocity, the air pressures are so skillfully controlled that when the cylinders reach their destination and are shot out of the tubes onto an apron device, they arrive without damage of any kind.

Since these tubes are below the surface of the streets, conditions of ice and snow which make traveling most difficult for motor vehicles, do not interrupt the flow of mail. In December, 1947, when New York suffered a crippling record snowstorm, the inscriptions which appear in the frieze on the facade of the General Post Office: “NEITHER

Six million letters a day are carried underground in New York, N. Y., by steel cylinders such as those above. They go to every part of the city, and each carrier holds 600 letters. The carriers must be replaced once each year.

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SNOW NOR RAIN NOR HEAT
NOR GLOOM OF NIGHT STAYS
THESE COURIERS FROM THE
SWIFT COMPLETION OF
THEIR APPOINTED ROUNDS."
was put to a test, but as usual, the
mails went through. The pneumatic
tubes were placed on a twenty-four
hour basis, and those round shiny
speed demons got no rest at all. They
were the only means available for
the transportation of mail in the
city. Mail trucks were hopelessly
stalled in snow drifts and the Brook-
lyn Bridge was impassable.

The nerve center of the pneumatic
tube system is located in the Gen-
eral Post Office. From the General
Post Office the carriers zoom out
alongside of the Pennsylvania Rail-
road station into Times Square and
Radio City, then with intermediate
stops along the west side of Central
Park, skirt the lower edge of Har-
lem and continue to the east side,
down past the Triborough Bridge,
making other intermediate stops un-
til they reach Grand Central Sta-
tion. Continuing on to Church
Street, Wall Street, Bowling Green
and then back to Church Street, up
through Greenwich Village, they
complete the circuit at the General
Post Office. Mail intended for
Brooklyn, New York, is dispatched
from the spur tube leading from
Church Street Station. Approaching
the river the tubes then leave the
ground and come out high over the
Brooklyn Bridge, where, in the case
of a block, it is necessary to crawl
along a twelve-inch catwalk at-
tached to the cables of the bridge.

The containers or cylinders open
at one end, in which bundled letters
or very small first class parcels are
placed, after which the door or open-
ing is closed by a contrivance which
no amount of jarring can unfasten.

A container filled with mail origi-
nating at the General Post Office
and destined for Manhattanville Sta-
tion located at West 125th Street is
duly closed and labelled, "Manhat-
tanville." A container dispatched
from the General Post Office does
not go directly to a station far re-
moved from that point. There is a
substantial amount of manual han-
dling required, due to relaying at
each intermediate station. There-
fore, a container intended for Man-
hattanville Station is placed in the
tube at the General Post Office, and
arrives three minutes later at Times
Square Station, where it is rede-
posited in the outgoing section of
the tube destined for Radio City
Station, at which point it emerges
and is again deposited in the out-
going tube section on its way to
Ansonia Station; and similarly on
through Planetarium, Cathedral and
Morningside Stations, arriving at
Manhattanville Station way up on
West 125th Street in just twenty
minutes after its original dispatch
from the General Post Office.

The system is privately-owned
and is leased annually to the Post
Office Department. The company
keeps it in working order, but the
Post Office supplies the manpower
to operate it. The tubes are in oper-
ation from 5:00 A.M. to 10:00 P.M.
every day except Saturday, when
they close down at 10:00 A.M. They
are not in operation on Sundays or
legal holidays. On a full day the
pneumatic tubes accommodate ap-
proximately 95,000 of these pro-
jectile-like carriers, transporting in
the neighborhood of 5,000,000 pieces
of mail. An outside label shows the
destination of each carrier and it is
not opened until it reaches the pro-
er destination.

There are 138 Regular Em-
ployees engaged in that particular
activity and from a computation of
mails handled on Thursday, Septem-
ber 29, 1949, it was shown that a
total of 5,958,175 pieces were trans-
mittted via the Pneumatic Tubes.
Based on the weight of ordinary
first-class mail, requiring trans-
portation, combining the several
types: originating mail, incoming
mail for city delivery and transit
mail for other post offices, 59.09
per cent of all such combined mail is
delivered during the time the Pneu-
matic Tubes are in operation (9:00
A.M. to 10:00 P.M.), a period of
seventeen hours, of which 47.3 per
cent is dispatched through the Pneu-
matic Tubes.

Trouble-shooting in the pneumatic
tubes, while a necessary evil, is
nevertheless quite interesting. Each
station has an automatic means of
block detection for the portion of
the tubes between the station North
and the station South. In the event
of a block in one of the lines, the
first indication is given by small con-
trol fans, which are in constant mo-
tion while the tubes are functioning
correctly. However, a fan that sud-
denly becomes idle or revolves slow-
ly, indicates failing air pressure due
to a block where a container or cy-
inder slows down or stops alto-
gether. In the majority of cases the
cylinder is set in motion again by
the simple expedient of stepping up
the air pressure behind it and re-
ducing the pressure in front to form
a vacuum. Sometimes it is not that
simple. There are cases when the
ground must be opened in order to
locate and break the jam, but such
occurrences are very infrequent.

Today when mail matter must
move quickly to meet all kinds of
time-table deadlines – plane, railroad
and steamer – to ensure its early de-
ivery, the underground pneumatic
tube system is invaluable; without
it, the post office would have to op-
erate a larger fleet of trucks to trans-
port the mail, and tribute must there-
fore be paid to the foresight of the
postal authorities who inaugurated
this marvelous system a half cen-
tury ago.