

FREIGHT DISTRIBUTION BY SUBWAY

The city of New York contains within its cramped area 5 per cent of the nation's population, produces 11 per cent of the manufactured products, and serves as an outlet for nearly one-half of the country's foreign commerce. Stated more in detail, this means that the imports and exports alone, which in 1907 passed through the city, amounted to 13,000,000 tons, valued at \$1,600,000,000. According to testimony given before the New York Commerce Commission in 1900, the annual tonnage of all kinds exceeds 100,000,000. One would suppose that for the handling of this huge amount of freight the most efficient and splendidly equipped transportation system would be found in the metropolis of the western hemisphere. As a matter of fact, probably no large city of the world handles its freight so clumsily and expensively as this same metropolis. At present the New York Central and Hudson River Railroad is the only line that has direct rail access to Manhattan Island, and there have been repeated attempts in recent years to abolish the terminals of that road within the city and to compel it to devise other means of handling the 5,000,000 tons of freight that now enter New York at Spuyten Duyvil. Because the New York Commerce Commission and the New York Chamber of Commerce have laid down a policy which forbids an increased use of waterfront space, any attempt to utilize the waters around New York instead of the railway mentioned would be frustrated.

Freight is now brought to New York city by the transatlantic and coast steamship lines, by several railways which terminate on the New Jersey bank of the Hudson River, by the New York Central freight line with yards lying within the city and in the Borough of the Bronx.

The steamship lines loaded and unloaded 9,400,000 tons of freight on New York or New Jersey docks in 1906-1907. A portion landed in New Jersey and intended for New York had to be brought across the Hudson River and carted off; another portion, landed in New York and intended for other cities, was unloaded and ferried across the Hudson to the railway terminals on the Jersey shore; and a third portion was carted to the New York Central freight yards for further shipment. The reverse process was carried out when goods were shipped out of the city by steamer.

The freight which arrives at the railway terminals on the Jersey and Long Island shores and which is intended for New York must be brought across the river in car-ferryboats and eventually distributed by drays.

All the freight which is brought to the city by the New York Central lines terminating in the Borough of Manhattan is clumsily and expensively conveyed in trucks. There is also a large amount of merchandise which is similarly carted to the steamship lines and to the New York Central freight yards for shipment to other points. All this unloading, carting, and loading again has resulted in packing the business streets of New York with a dense mass of vehicles, each crawling to its destination as best it may in

thoroughfares laid out for five-story buildings and gorged with the outpourings of twenty-story structures. Anyone who has ever seen West Street, South Street, and Broadway on a week day can realize that the conditions pictured are not exaggerated.

The cost of handling the 23,200,000 tons of freight brought into and shipped out of New York city by railways and steamships is enormous. With the exception of that portion of the New York Central's tonnage which is drayed to and from its terminals, all railroad freight requires lighterage and break of bulk at the waterfront. The cost of lighterage varies from 83 to 88 cents per ton. The cost of cartage on city streets varies from 60 cents to \$1.25 a ton, depending on the haul and the character of the freight. It is not astonishing that in a single year the merchants of the city of New York pay \$33,570,000 for hauling 23,200,000 tons of freight through the streets.

With the available water frontage on the commercial portion of Manhattan Island incapable of enlargement, and with an urgent demand by the water carriers for more room, some method of land cartage must obviously be devised that will decrease rather than increase the need for railroad space on the waterfront. Mr. William J. Wilgus, an engineer whose wide

shipment of freight is to be made at remote points where space is less congested and costly than along the waterfront. The subways are to be of such dimensions that they will be able to handle at least 90 per cent of the commerce of lower Manhattan Island, and that, moreover, with but one change of bulk at points remote from the congested portions of the city. A special type of standard-gage car is to be used for steep grades, curves, and for elevators in the shipping and commercial districts. The type of car to be used is to have sufficient capacity to accommodate the largest package of merchandise and still economize space, so as to permit the delivery of cars directly to the water carrier, merchant, and manufacturer, free from contact with the surface of the city streets and removed from the expenses, uncertainties, and delays of harbor navigation. Such a car can run on the tracks of connecting trunk lines, over which it can be sent to points at a considerable distance from New York. Elaborate as such a system of subways must necessarily be, Mr. Wilgus claims that it will not prevent the construction of future subways nor interfere seriously with sewers. The streets will be cleared of the boxes and bales that obstruct the sidewalks. As the accompanying illustration shows, the relief of the

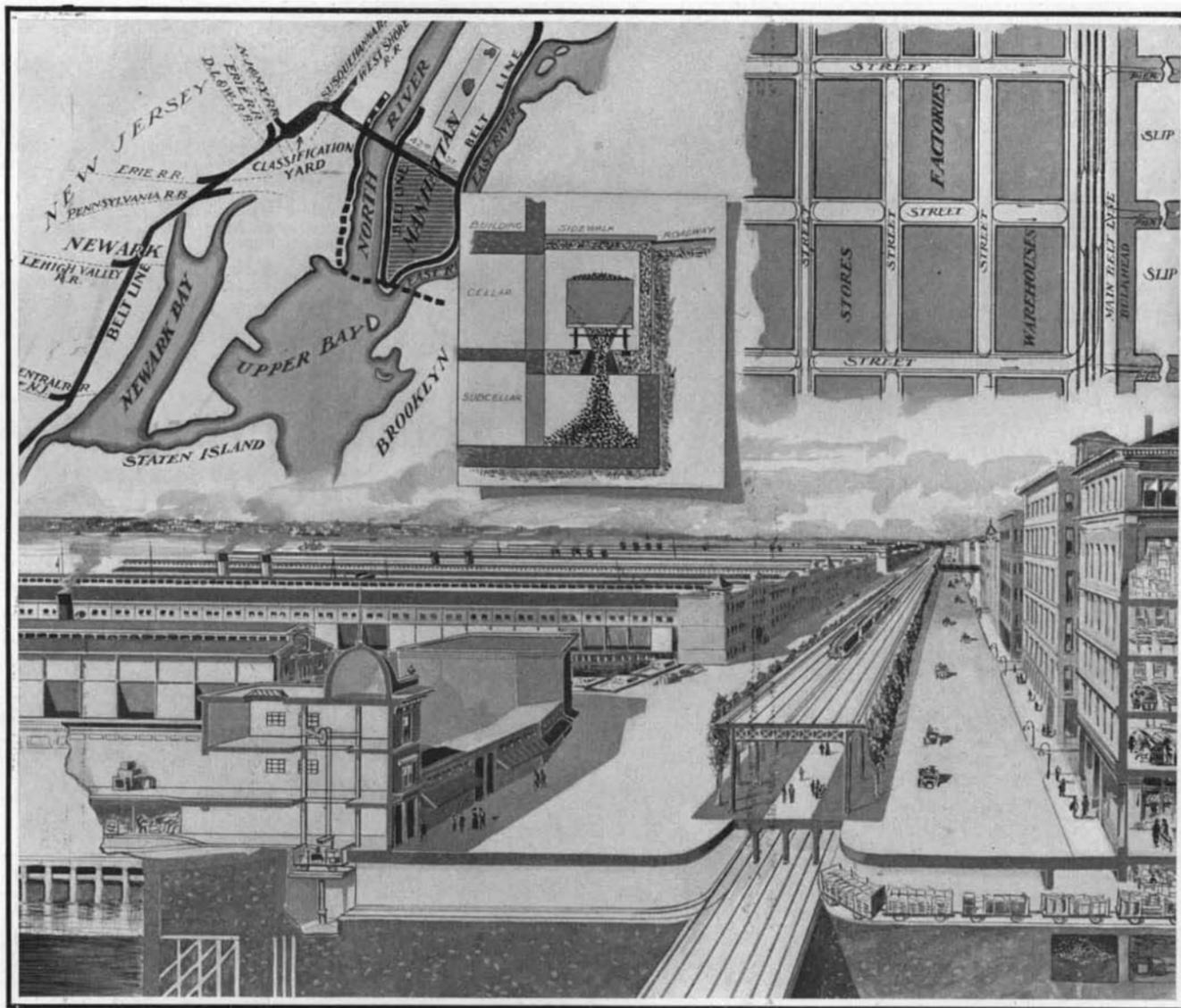
marginal way from trucking will render the thoroughfare along the waterfront available for an elevated passenger railway and for light vehicular traffic between the business and residential sections of the island.

Mr. Wilgus places the approximate cost of such a system between a minimum of \$80,000,000 and a maximum of \$100,000,000. If the plan is carried out, he believes that it will solve the West Side problem; that it will relieve the streets of their present dense traffic; that it will render Manhattan Island directly accessible to all shippers who use the railroads; and that it will release docks and piers from railroad uses and permit the expansion of legitimate water-carrier traffic.

The present congestion is causing a gradual decrease of the city's rate of growth, and we are undoubtedly confronted with

the necessity of improving transportation facilities if New York is to hold its pre-eminent position. In 1899 the foreign commerce of the port of New York was 50 per cent of the total for the United States; last year it was but 45 per cent. Similarly, the value of production has fallen from 12 to 11 per cent of the national total. From these data it must be concluded that any improved method of freight transit is worthy of serious consideration, particularly since the first requirement of this great port is ample space for the accommodation of water carriers in close relation to railroads, warehouses, and the active business district of the city.

The Abrasive-Resisting Qualities of Conveyer Belts.—Strips of seven materials, mounted on a board and subjected to the uniform action of a sand blast for 45 minutes, show the following relative abrasive-resisting qualities, rubber belting being taken as the standard: Rubber belt, 1; rolled steel bar, 0.66; cast iron, 0.28; balata belt, including gum cover, 0.2; woven cotton belt, high grade, 0.16; stitched duck, high grade, 0.13; woven cotton belt, low grade, 0.06 to 0.11.—T. A. Bennett, in the discussion of papers on Conveying of Materials, read at the Detroit meeting of the A. S. M. E.



New York spent in the year 1906 to 1907 about \$37,000,000 for carting freight through its streets to and from steamship docks and railroad terminals. This system of subterranean cartage subways, with a railway belt tunnel extending around the city and communicating with the steamship docks and with the railway terminals lying both within the city and along the New Jersey shore, is designed to handle 90 per cent of this freight at a small cost, so as to leave the streets clear and allow the waterfront to be used more or less exclusively for legitimate purposes.

PROPOSED SYSTEM OF FREIGHT SUBWAYS FOR NEW YORK CITY.

experience in adapting the New York Central's passenger terminals to the ever-growing needs of the city has admirably equipped him for the task, has made a painstaking study of this peculiar problem, and offered to the Public Service Commission, on behalf of the Amsterdam Corporation, a solution which apparently secures the benefits of rail connection not only with the New York Central's freight terminals, but also with all the other railroads now terminating on the New Jersey side of the Hudson River and in the Borough of the Bronx. Moreover, he has devised an improved method of distributing freight, whereby the time for delivery is lessened, the present high terminal charges reduced, and the harbor and the city streets relieved of congestion. Briefly stated, Mr. Wilgus proposes the construction of a system of cartage subways which will tap both sides of the principal business streets below Forty-second Street, and which will be surrounded by a high-speed belt line connected with railroads terminating on the west side of the North River, with the Sixtieth Street yard of the New York Central on Manhattan Island, and with the railroad terminals in the Bronx. Provision is also made for tunnel extensions to Long Island City and Brooklyn and along the Jersey waterfront. The trans-