

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, for the U. S., Canada or Mexico. \$3 00
One copy, six months, for the U. S., Canada or Mexico. 1 50
One copy, one year, to any foreign country belonging to Postal Union 4 00
Remit by postal or express money order, or by bank draft or check.

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is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$3.00 a year, for the U. S., Canada or Mexico. \$3.00 a year to foreign countries belonging to the Postal Union. Single copies 10 cents. Sold by all newsdealers throughout the country. See prospectus, last page.

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NEW YORK, SATURDAY, JANUARY 25, 1896.

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THE TRANSPORTATION PROBLEM IN NEW YORK CITY.

There are certain elements entering into the problem of rapid transit in New York City which render its solution perplexing and difficult as compared with the same problem in other great cities, such as London, Paris, Chicago, Berlin, or Philadelphia. These difficulties arise partly from the topography of the site upon which it stands and in part from the character and tastes of its inhabitants. For it is certain that the American temperament would find any system of subterranean transportation uncongenial; and such of us as may have chance to ride upon either the Metropolitan or the District Underground Railways in London, or the Underground Railroad in Liverpool, have set down the experience as one of the "bad dreams" of our life.

It is true that the two underground railways above mentioned can scarcely be taken as illustrating the best possibilities of underground travel. They were both pioneer enterprises of their kind; they are worked by steam locomotives, and they are at all times badly ventilated and poorly lighted. The use of the electric locomotive would, it is true, go far to remove one objection, and electric lighting the other; but no possible refinements of modern invention can remove the prejudice which does and probably always will exist in New York against such a system of transportation, on the ground that it was located below, and not above, the surface of the city.

The objection is a purely sentimental one, but it exists; and it constitutes one of the elements that make the transit problem in New York so perplexing. For it is certain that in the underground tunnel, placed well below the level of sewers, water mains and electric wiring, free to follow the avenues of traffic, and radiating at will from the centers of business to the outlying suburbs, we have the theoretically perfect system.

In the city of London they are elaborating an underground system—driven to it by sheer necessity—and it is likely that the Southwark electrically worked tunnel will prove to be the forerunner of a vast system, which will spread like a network below the metropolis. It is probable, however, that for New York this "dernier ressort" of congested city traffic is not available.

It is to the peculiar topography of the site upon which New York is built that we must look for an explanation of the present rapid and alarming congestion of traffic. New York City proper is built upon a site which may be approximately described as a narrow parallelogram, some 14 miles in length, and of an average width of 1 1/2 miles. At the extreme southern end of this parallelogram is situated the heart of the city—its most important business center. During a space of two hours in the morning the flow of traffic sets in southward toward this business portion of the city. It commences in the northern suburbs, 15 to 20 miles distant, and rapidly gathers volume as it moves to the south, traveling at first over the elevated roads and later over the elevated and the cable and horse car lines combined. Many miles before the lower city is reached this stream of humanity has overflowed the available means of transportation, and both the cable cars and the elevated trains are crowded to suffocation. The same congestion takes place at night, the cars being filled to more than double their seating capacity.

There is probably no city in the world to-day which can show such a spectacle of overcrowding as may be seen daily on the Broadway cars and on the elevated roads in the lower city. And it is not that the city is ill provided with transportation facilities. It is simply that the present facilities are inadequate. Indeed, we question whether there is another section in any city of the world where there are so many trips occur per square mile in a given time as in Manhattan Island.

The overcrowding is to be traced to the fact that the bulk of the traffic to and from the city is hemmed in between the waters of the East and North Rivers. Judged from the standpoint of transportation facilities, the ideal location for a great city is that which on all sides affords uninterrupted communication by rail and car line with the outlying districts. The business center can then receive and discharge its multitude of toilers along lines of travel which radiate from it, as the spokes from the hub of a wheel. Each radial line of travel in such a case has this advantage over parallel lines of travel, such as obtain on Manhattan Island: that the area served by such lines increases as the square of the distance traveled, and the distribution of its passengers will be proportionately rapid.

Nor can it be urged that the ferry service on the two rivers and on the bay provides a radial service similar

to that of an inland city. For it is a well established fact in the economics of transportation that travel will always favor a rail in preference to a water route; and the truth of this rule is made manifest in the excessive crowding on the Brooklyn Bridge as compared with that which obtains at the various ferries. The astonishing increase of travel across the bridge is a fact whose significance must be borne in mind when we are devising some means of relief from the present intolerable congestion. The reduplication of the Brooklyn Bridge, either alongside or near the present structure, and the erection of other bridges across the East and North Rivers, would provide New York with radiating lines of travel which could land their passengers in the heart of the lower city and distribute them at night with great facility and dispatch, and in many cases without the inconvenience of a change of car.

In looking broadly at the whole question of transportation it would be consoling if we could feel assured that, bad as the case is, it has reached its worst stage. Unfortunately the statistics which we give below prove very clearly that we are going rapidly from bad to worse; and that, unless some emergency scheme of relief be quickly devised, the main avenues of traffic will soon be hopelessly paralyzed!

We are indebted for the following figures to a recent article on the bridging of the North River by Mr. Gustav Lindenthal, the author of the original and evidently the most practicable scheme for bridging the North River; the location of the crossing being in the neighborhood of Twenty-third Street and Hoboken, N. J.

Table with 2 columns: Year and Traffic Count. Rows include Brooklyn Bridge Traffic (1884-1895), North River Ferry Traffic (1886-1894), and Elevated Railroad Traffic (1879-1893).

* The last available figures.

It will be noticed that whereas during equal intervals of time the ferry traffic has doubled itself, that of the elevated roads has multiplied itself two and one-half times, and that across the bridge no less than five times; a fact which establishes the statement we have made above, to the effect that travel will always seek a rail in preference to a water route. It should also be noted that the number of people that travel is gaining upon the means provided for their transportation at a rapidly increasing ratio; and, furthermore, that the increase is most rapid along those lines of travel which are already most seriously encumbered.

The total street railroad traffic in 1887 amounted to 164,000,000; and this, distributed among a population of 1,107,000, gave 148 trips per capita.

The same class of traffic in 1894 amounted to 400,000,000, which shows a per capita rate of 250 trips among a population of 1,840,000.

Here we are confronted with another fact which must affect any scheme for the relief of the present congestion; for it is evident that not only must provision be made for an increase of population, but also for an increased per capita travel.

It will be evident from the considerations which we have advanced in this brief review of the present state of the rapid transit problem that we are face to face with a crisis, which in the near future will beget an intolerable amount of delay and discomfort. In a subsequent issue we shall indicate the lines along which a temporary relief may be realized—a relief which shall last during such time as may be necessary for the bridging of both rivers; and, if it should prove to be an ultimate necessity, the construction of an underground railway.

THE OVER-SUPPLY OF ELECTRICAL ENGINEERS.

It is characteristic of the alertness and restless activity of the age in which we live that no sooner is a promising field of enterprise opened than it is quickly flooded with a surplus of labor and capital. The old time conservatism, which baffled the early efforts of Fulton, Howe and Morse, has been succeeded by a lavish expenditure of wealth and toil in the promoting of new inventions, as they from time to time appear.

In the choice of his calling the son no longer treads in the footsteps of the father; but, impelled by the keen competition of the hour, he rather seeks out that line of work in which he will meet with least competitors and command the highest possible remuneration for his labor.

Shortly after the opening up of any new industry there will be found at its doors a large and increasing army of more or less qualified applicants, who have been attracted by the high scale of wages that is paid at the outset for skilled labor. The supply soon exceeds the demand. There is a simul-