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Municipal Transportation

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The nineteenth century is closing upon a race that is destined to live in cities or under conditions more or less strictly urban. This fact has only recently forced its way into the general consciousness. For a quarter of a century the cities of the United States have taken a distinguished pride in their buoyant growth. Most of them have eagerly welcomed the evidence of large yearly or decennial additions to their numbers. But at length they are discovering that the city element begins to preponderate in a country whose whole fabric of civilization had been wrought upon a foundation of agricultural and rural life, and that the future safety of our institutions requires that we learn how to adapt city life to the promotion of the general welfare.

Since life in cities under new and artificial conditions, seems henceforth the lot assigned to the majority of families, it must be accepted for the present generation and its immediate successors. This order apparently inevitable is not to be rebelled against as an evil, but welcomed as if it were the most desirable of destinies, because the present disadvantages of city life are remediable. The conditions that surround the masses in modern cities can be so adjusted to their needs as to result in the highest developement of the race, in body, mind, and character. The problems to be solved, however, are numerous and extremely difficult, and to name and describe them all, is more than can be at-

tempted at this time. The question of transportation is, at present, one of the most important occupying the attention of the city authorities, and it will be the object of this paper to show what the cities of the United States, as well as some in Europe, are doing to solve this great problem.

In order to fully understand the importance of transportation in cities, we must know something of the crowded condition. In Glasgow, in 1750 the population was less than 25,000; in 1850, it was approximately 335,000: in 1870, it was 478,000: and in 1890 we find within a district six or seven miles long and about three and one half miles wide, 800,000 people. We can see by a glance at these figures that the density of the population is extremely great, and this in turn causes unclean streets, poor ventilation, unpleasant sanitary conditions, and last of all epidemic diseases, keeping the death rate at a very high figure.

The city of Manchester also has a dense population. Within a radius of fifteen miles from the town hall, there were dwelling according to the census of 1890, more that 3,000,000 souls. The municipality, however, includes only about twelve a acres with a population of 520,000. As a matter of comparison, Chicago has twice the population of Manchester and an area eight times as large. Brooklyn, in 1890, had about the same number of inhabitants as Manchester housed in an area somewhat more

restricted, the average number of persons being about forty-nine to the acre. These statistics from cities which have increased their population most rapidly, go to prove that the great mass of people live in tenement houses, or as they are sometimes called "flats" , several persons, in some cases two or three families often occupying one or two small rooms.

Statistics also state that in 1790, 3.2% of the total population of the United States was to be found in cities; in 1880, 22.5% ; in 1890, 29.1%; and at the same rate, the census of 1900 will show that 35% of the entire population is urban. Again in 1790, there were only six cities in the U.S. having over 8,000 inhabitants, while in 1890, there were 448.

We can now better understand why some method of transportation must necessarily be adopted, to relieve these congested centers and furnish rapid transit from them to the suburbs. To accomplish this end, street railways of various kinds were built and for a time were sufficient; but growth has been so rapid that cities still find themselves confronted by the same serious problem of too much crowding at the centers and inadequate means of transportation. Improvements must be made and more rapid and efficient systems established. Various cities have taken up this subject and dealt with it with more or less success, while others are still considering it. It is our

purpose to show how some have overcome the difficulties involved.

As the development of the ordinary street railway has followed about the same course in most of our cities, a history of the Philadelphia system may be considered typical. On Jan. 20, 1858, the first street car line was put in operation in Philadelphia. This line was constructed in the face of widespread opposition. Street railroads had been introduced earlier into New York, Chicago, Boston and other cities, but the citizens of Philadelphia were not favorably impressed. The principal arguments against the construction of the road were: that the proposed road was a mischievous construction aiming at monopoly among the lines and methods of travel; that the cars could not be easily stopped and therefore were dangerous to to human life; that the noise would disturb the repose of the residents of the streets and make life unbearable; that the value of property along the lines would depreciate greatly on this account; that the streets were already overcrowded and the introduction of railroads would add to the congestion of traffic; and that the rails would ruin the streets for the use of carriages and wagons. Once in operation, however, the line proved itself a decided success, and other companies were granted frenchises, and began to build their lines. Horse power was used on all these systems, and they rapidly gained favor.

But just as the people had settled down to a cheerful acceptance of the stree railway system, they were again aroused to renewed controversy when the various companies announced that they intended to run cars on Sunday. Previous to this time the Philadelphians had always observed Sunday as a sacred day, and they rigorously opposed the action of the companies. They appealed to the mayor and he in turn tried to prevent it. The companies refused to listen, however, until the General Assembly took a hand in the matter, when a compromise was effected, whereby the companies agreed to start no cars on Sunday before 1 o'clock P.M., to remove all bells on that day, and to instruct drivers to walk their horses past places of public worship. This compromise was soon broken and in a short time cars were run as regularly on Sunday as on any other day.

During the period from 1858 to 1874, thirty-nine companies were given charter rights to operate street cars in Philadelphia. Some of them, for many years, maintained a separate existence. But the majority of them soon entered into an alliance for the purpose of regulating competition, called the Board of Presidents of City Railroad Companies. This organization sought to obtain a complete monopoly. Whenever a company was not represented on the Board sold tickets for less than five cents, action was immediately taken against it, forcing it to restore the old fare. Soon the fares began to

rise: first to six cents then to seven cents, and again the public rigorously protested, until finally the action of the Board was denounced as a conspiracy and punishable under common laws. Thus the rates were reduced to the original price but as a result, the number of companies was reduced, until in 1877 there were only seventeen, and they operated 280 miles of street railroads.

Matters remained thus until the formation of the Union Traction Co., which proceeded to weld the companies of the city into a system far-reaching and powerful. The people could not stop the monopoly nor could the the legislature. In 1892, when electricity was substituted for horse power there were but three companies. The final step was taken in 1895 when the Union Traction Co. bought one of the lines and leased the others. Thus was the tendency toward monopoly in municipal matters shown. Yet there is a check on the system now in operation. The General Assembly have placed no limit on the period of corporate existence of the company. Furthermore the President of the road must file in the office of the city solicitor a paper showing the exact cost of the entire line, and the city reserves the right, to purchase the same at any time by paying the cost of said road or roads and cars at a fair valuation. Any company refusing to consent ot the purchase of its property shall forfeit all rights and privileges it may have acquired.

Again the street railway Co. must repair all streets over which its lines are operated, and is also compelled by law to charge a uniform fare, obey all laws governing the running of cars through the streets, and other minor details. Thus the street railway system of Philadelphia, although owned and operated by a private company, is practically under municipal control. It is well managed and for the present is sufficient to handle the traffic.

Many cities, however, find problems of a more serious nature to solve. For instance, New York in trying to accommodate the public, found that the street lines were so numerous that the streets were a mere network of wires carrying the deadly current. Danger to human life was very great, because these wires would get broken and fall to the street. This was especially dangerous during a heavy wind. Accordingly the wires, or some of them at least, were drawn into sub-ways and the power delivered to the cars from underneath. But these sub-ways formed reservoirs for escaping gas from the underground mains, and occasionally an explosion would tear up a ~~m~~ street, and greatly endanger life and property. This problem in turn had need to be solved, and the companies then provided a system of blowers located in various parts of the city, which by force of air driven under pressure through pipes running parallel with the sub-way, drives all gases out at the

manholes. In 1898, about 50,000 miles of wires for power and lighting service, had been drawn into these subways.

After all this trouble and expense, the system is still unsatisfactory, because it cannot handle the traffic of the city. We can realize the great amount of travel in New York, when we read that at the present time, a system of Rapid Transit in that city must be able to accommodate 150,000 passengers in one hour in one direction. After a four years struggle, the city has now completed the contract for a rapid transit line. The construction of it has already begun the first shovelful of earth having been removed in front of City Hall about March 15th.

The elevated road of New York has contributed greatly toward the relief of the congested centers. It is operated by steam and trains of three and four cars run every ten minutes. Stations are located on either side of the double track and are reached by stairways leading from the street. Steps also enable one to cross the tracks above the trains, as all walking on the track is forbidden. Trains have no conductors, but a person must deposit his ticket in a box provided for it at each station, then get aboard and go as far as he cares to. Many working people use this road because of its cheap and efficient service. It owns 35 miles of track and in 1894 carried nearly 220,000,000 passengers.

The difficulties in Brooklyn, however, are greater than in any other city in the United States, and there is no relief possible until New York City alone or in connection with private capital is prepared to spend many millions of dollars in additional bridges across or tunnels underneath the East River. The one East River Bridge is of course, the popular communication and by actual count the bridge cars carry about 83% of the entire traffic between the two cities. As the traffic is not equally distributed is very difficult to handle. For instance, between 8.30 and 9 o'clock every morning, a period of 2 1/2 hours' about 70,000 people pass over this bridge, and the same number try to get back at night in less than one hour and a half, while if the evening is foggy and the ferries deserted, there may be from 25,000 to 30,000 more. Of course to accommodate this immense crowd in so short a time is utterly impossible and the broad promenade is filled to overflowing, all pushing over the bridge at a lock-step pace. Relief is approaching, however, in the form of a second bridge across the East River, which, although not sufficent to accommodate all the surplus traffic will be a great help in doing so.

The subject of a tunnel is also being agitated, and preliminary investigations are already well under way. The immediate future will doubtless see this plan also realized.

In Portland, Oregon, it was found impossible to gener-

ate in the city power enough to run a sufficient number of cars to accommodate the people. But this difficulty has been met in a way to furnish an object lesson to other cities with like conditions. The power is generated in oregon city, a distance of twelve miles, where the falls of the Williams River form one of the greatest water powers on the Pacific Coast. Six improved Victor turbines are connected with three generators, delivering an alternating current of 5,000 volts, which is transformed by the proper apparatus, at the Portland end of the line to a potential of 400 volts. This current is then delivered to rotary transformers and these deliver a direct current of 500 volts which is used for street car service. The company also supplies power to the city for electric lights, which lessens the expense of transmitting it over such a long distance. In spite of all this extra expense, the street car fares are no more in Portland than in other cities.

The city of Detroit, one of the first in the country to run high speed cars now operates 78 miles of road and uses the alternating current and transformers. This system besides accommodating the city traffic, runs cars out into the country and handles freight. The local tradesmen are thus supplied with fruit, fresh meat and fish, vegetables, etc., every day. Merchants in outlying towns can also supply their customers with goods from the city in about two hours by electric car

service. This plant also furnishes electric lights to towns and residences along its route.

Most of the western cities have succeeded in providing a rapid and cheap means of reaching the suburbs from the factories and shops; and as a result, the majority of the working class reside in the healthy districts, have first class sanitary conditions and are still able to attend to their labors in the business part of the city. For instance, Chicago has a rapid transit line capable of running trains of six cars each by means of an electric locomotive, at a speed of 18 miles per hour, and runs 20 trains per hour, thus having a capacity of 11,000 passengers per hour in one direction.

Cleveland, Ohio, a city whose whole system of municipal government is admirable, has two electric roads running out into the surrounding country. Both lines run trains for the purpose of bringing in the produce from the farming districts, as well as providing a way for the people to live in the country. To every market gardiner these lines are worth $100,00 per year.

Dayton is another city that has a very good transportation system. The lines are operated by three companies and cars run every four minutes in the most crowded sections and not less than six minutes apart anywhere. Tickets are sold 26 for $1.00 and are good on any one of these lines. Transfers are also issued from one road to any of the others. There

are plenty of cars, and the accommodation of the public is excellent even in the "rush hours".

The system in San Francisco is still unable to satisfy the demand of traffic, and extensive additions are now being made. Tunnels are being dug for high-speed trains, and furthermore the people are agitating the subject of lower fares. The companies refuse to grant this request, because they fail to see any benefit from the reduction. They claim that as they give transfers to the other roads in the city and divide the fares, five cents, they could not compel another road to accept these transfers if the fares were lower; and whereas a person now using a transfer could ride according to the present system to his place of business for five cents, if the fares were reduced even to three cents, transfers would not be given and it would cost him six cents for the same ride. Again, the companies claim that if the people insist on a reduced fare, with transfers, the only natural result will be a reduction in the wages of the employees of the various roads. The question is still under consideration.

Rapid transit in Boston is furnished by an underground line of tracks as follows; from Shawmut Ave. and Tremont St., to Boylston, thence under the mall of the common to Park St. Church, thence under Tremont to Scollay Square, and from there to a terminal at the Northern Union Station. An interesting

feature of the system is, that tracks going in opposite directions never cross. This is effected by building sub-subways. For instance a car ending its trip at Park St. passes by a loop under the intermediate track instead of crossing it. The subway is artificially ventilated and lighted. It is drained by point pumps located at the lowest places. This underground system is to be connected with an elevated one, and a tunnel to East Boston; so that Boston will soon have one of the most efficient rapid transit systems in the country.

In the city of Buffalo the power for the electric lines is obtained from Niagara. Costly changes have been made on the street car system, and at present it is sufficient to handle the traffic of the city.

The Union Street Railway Co. of Providence has a service of from 350 to 400 cars and is rapidly increasing its capacity. This Co. controls the road to Buttonwoods and has substituted electricity for steam. The apparatus of the alternating-current makes this possible, and solves the problem of economical production of power, because with the direct current at least three power stations would be necessary, while with the alternating current, one power-house is sufficient. The fare from Providence to Buttonwoods is now fifteen cents, whereas when the road was operated by steam, it was twenty-five cents.

The speed of the electric car is fully equal to that of the steam car for it runs at an average speed of 40 miles per hour outside the city limits.

Some American cities are at the present time considering the question of substituting liquid air for electricity, but as yet the experiments have not been successful enough to insure the possibility of a change.

In Great Britain and continental Europe the methods of transportation have not yet reached that state of perfection attained by American cities. In most cases the street railways are owned and operated by the city, and they believe in low rates and crowded cars. The increasing population calls for larger facilities but the cities refuse to add the necessary cars.

In Liverpool the city operates a system of tramways and at present there is no possibility of the introduction of electric or cable cars. While the people may not be wholly satisfied with the street railway facilities now furnished, still the city governemnt would seriously oppose any project for tearing up the streets, which is necessary for a cable or electric wire conduit, and an overhead wire would not be permitted. The streets have been paved in a very careful manner at an expense of about $5.00 per square yard and if the surface were disturbed it would be necessary to repave the entire street

form curb to curb in order to obtain complete uniformity.

Thirty years ago it was impossible for a bank clerk in London to live more than walking distance from his work, while the factory people were compelled to live in the immediate vicinity of the shops. To-day we find a rapid, cheap, and convenient means of transportation to the outskirts of the city although the system is far from perfect because it is unable to handle the large amount of traffic. Bills are being considered by Parliament, however, and it is quite probable that the system will be increased sufficiently to accommodate the entire traffic.

Manchester is a little better situated than Liverpool as regards transportation, yet there is no present intention to introduce electric or cable lines. The city authorities have endeavored to pass ordinances governing the convenience of the public and have in part succeeded. But still more could be done to perfect the system now in use.

In Birmingham there are four different systems of street-railway transit; viz., steam, electric, cable, and horse cars, all owned and operated by the city. Rules governing the crowding of cars, and other conveniences of the public are strictly enforced, and the laboring class have a means of cheap access to the healthy districts.

The next important point to be considered is the relation of the municipality to the street railway company. The importance of this is shown first, by the great influence the Co. may secure over the city government. A shrewd and wealthy corporation with so much at stake is quick to take advantage of any carelessness on the part of city officials; and before the public is aware, it may secure privileges which place it beyond the power of the authorities. It can then act as it pleases regarding fares, service of the public, or care of streets, without the possibility of interference, and this in spite of the fact that it is a monopoly on which the public is wholly dependent. Again the existence of so powerful and wealthy a corporation is a source of great corruption in politics. Furthermore the profits of the business may be extremely large since there can be no competition. Hence without some regulation, the companies may be able to earn exorbitant dividends at the expense of the city. Thus the Street R.R. Co. of Philadelphia, the largest property of its kind in the world, although paying licences and taxes of 8.2% of its entire receipts, had total operating expenses of only 49% of its receipts in 1898 The profits was over $12,000 per mile on probable cost of duplication, or about 16% on the entire capital invested.

Another instance of large financial benefits is in New York, where the net earnings in 1897 were $38,422.00 per mile,

or 21% on the invested capital. The necessity for some control over such monopolies is at once evident; and if the cities owned these lines instead of private companies a large income might be derived from them and a saving to the public be effecte

A good example of excessive profits is afforded by the New York Elevated whose dividends on stock and bonds were at the rate of 4%. But this is reckoning capital at $70,000,000 or about $2,000,000 per mile; whereas the real cost was said to be $750,000 per mile and it could be duplicated as shown in Brooklyn for less than $402,000 a mile. On proper valuation then, the dividend was nearly 23%. This shows the effect of watering stock over which the city should have some control.

Again a street railroad may largely determine the growth of a city in any direction it chooses, because it is probable that the population will increase along the electric lines. This hasbeen the case in the past and undoubtedly will be in the future. It is very evident that the city should have some control of this growth, rather than that private companies should direct it wholly to selfish ends.

The importance of this relation becomes even more evident when we examine some of the contracts which have been made For instance, Chicago a few years ago was asked by a corporationto grant a perpetual franchise. It was only by a hard political fight that the measure was defeated. The authori-

ties were so careless or subject to the influence of the company that the measure would have been passed but fot the activity of a few public spirited citizens. It must be remembered that by provision of our national constitution, "contracts once made cannot be broken without the consent of both parties".

Another instance is that of Cincinnati, where the city granted the company the free use of the streets, and having no voice as to how the privileges of the public should be respected.

Again the New York Elevated obtained in 1872 a franchise for 999 years. For several years this line paid the city 5% of its receipts but now pays nothing.

Other cities have given franchises without any compensation for periods varying from 50 to 999 years, and in every case the city now realizes its carelessness.

In examining the relation of the municipality to the R.R. Co., let us first look at the common long term franchise. In granting this, the city authorities often fail to make a provision for the disposal of the road at the end of the time. They also omit many of the conditions which are insisted upon when the term is a short one. There is no excuse for a 99-year contract at this enlightened age of the world. Even if the municipal officials had the right to give away valuable assets belonging to their own generation, they have no right

to bind posterity. Though knowing this fact, the states of Louisiana and Mississippi still allow 99-year contracts. Dr. Albert Shaw, a most thorough student of municipal affairs, in the New York Independent for May 1887 says, "Any man claiming intelligence, and occupying an official position, who works, speaks, or votes, for measures intended to make it easier for any great corporation to obtain a 50 year franchise, is 'prima' facie' a rascal".

An instance of a long-term contract is in Des Moines, Iowa, where the company obtained the free use of streets for 50 years, still owned the road at the end of that time, and make their own rules governing the running of cars.

The trend at present is to grant twenty year franchises. This keeps street railway questions prominently at the front in public discussions. Any evils resulting from them are more than counter-balanced by the resulting education of public opinion. The state of Minnesota proposes to restrict her franchises to a term of ten years. This may prove to be still better than the twenty year law, which has worked well wherever it has been tried. Instances of short-term franchises are to be found in Cleveland, Ohio, and Detroit. In the former city a company obtained a lease of the streets for twenty years, and under conditions very favorable to the municipality, that is, regarding fares, crowded cars, care of streets, and disposal of

road at the expiration of the lease. In Detroit, conditions even more strict than in Cleveland were included in the contract.

We see cities all over the country following the example of the two just mentioned in trying to obtain favorable contracts. For instance the contract for the undergroung rapid transit line just completed in New York is so favorable to the city, that it seems almost incredible. At the end of 50 years the city will own the entire road without expending a dollar. It comes about in this manner. The city borrows $35,000,000 at 3%interest. The contractor from the receipts of the road pays the city 4 1/2% on the value of the bonds, which not only covers the interest upon them, but provides a sinking fund which will pay the principle at the end of 50 years. Therefore the next generation will receive the entire system without payment and without debt. The stress R.R. Co's positively refused to provide new facilities, and no other corporation would undertake to constuuct a rapid transit line. But the struggle is practically over, and henceforth American cities, when corporations demand perpetual franchises, can remind them of the state of affairs in New York. The conditions there are so unusual and requirements so extreme, that whatever accomplishes its purpose in that city will serve as an object lesson of the greatest possible utility elsewhere.

It seems as if New York were becoming well educated in

dealing with municipal affairs, when we note the fact that in 1873 she granted a franchise to a rapid-transit Co. for 100 years to build tunnels, and charged nothing for the use of streets since it was to be for a public purpose. Again in 1892 she offered for sale a franchise for 999years for constructing and operating an underground system.

There are many matters in regardto which these great monopolies should be controlled. Among these the most important are fares, as illustrated by Detroit where they are lower than in any other city in the United States; crowded cars; no. of cars; care of streets; as shown in Philadelphia where the city has excellent control over the street railway lines; and lastly the watering of stock, which should be prevented as it is in many cities.

In considering the conditions by which a city may obtain control, the question naturally arises, why shall the city not own and operate its streets railroads ? The principle argument against this is that such ownership may lead to corruption in politics, and of course result in very inefficient service. Many points in favor of and against public ownership could be mentioned, and are at the present time being discussed by various cities of the world; and it is possible that in the near future we may see cities doing much more to solve the pro-

blem of relieving the congested centers and providing a rapid, cheap and efficient method of transportating the population to the healthy districts.