

**MUNICIPAL  
UNDERGROUND RAILWAYS**  
for the  
**CITY OF MONTREAL**

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**Transportation in Other Cities**

**F. STUART WILLIAMSON**

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*under map*  
*of previous*  
*edition*

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**F. STUART WILLIAMSON**

*(ca. 1918)*

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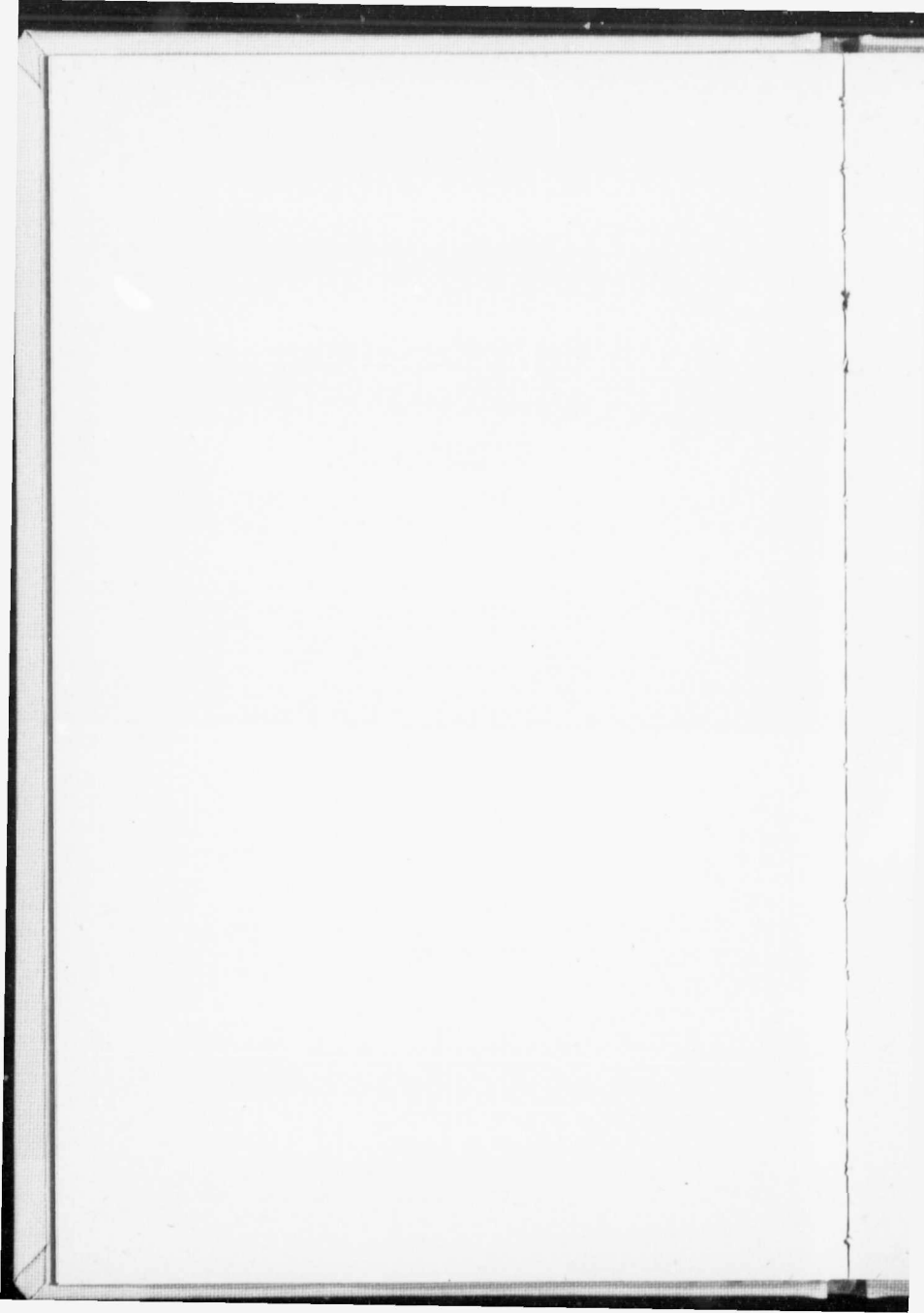
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Statement of Conditions

and

Proposed Relief



## STATEMENT OF CONDITIONS

and

### PROPOSED RELIEF.

The people of Montreal are suffering discomfort, delay and inconvenience, and in many cases, indecent conditions :—

(1) By reason of the congestion of traffic on the existing surface railway system, especially during the "rush" hours; and (2) By reason of the length of time required to travel between their homes and places of employment, resulting from the city's growth in area.

As a result of inadequate transit facilities, the population of the city is being crowded into the already built up sections, in flats and tenements. The Tramways Company can do no more to relieve the congestion with its present surface facilities, and even with new routes opened up, could only temporarily relieve conditions.

The question of increased transit facilities is a vital issue in the city, the demand for which must be met in the broadest and most liberal spirit.

Permanent relief for the aforementioned increasing congestion can only be secured by the construction and operation of rapid transit underground lines. Such underground lines will increase the taxable values of real estate, and therefore place in the control of the city, additional sources of income, and benefit the travelling public by many millions of dollars a year, by saving of time.

A rapid transit system of underground lines will open up and make accessible large areas in the outlying districts, giving the people ready access to the centres of employment, of amusement and education, quickly and for a single fare.

The expenditure contemplated upon extensions of the present surface system, widening of streets, and other expedients, might better be reserved for the construction of said rapid transit lines.

It is of great importance that the public should be enlightened and definitely informed of the routes, plans and other steps contemplated, in order to undertake the construction and carry to completion such rapid transit underground lines.

Such underground lines as may be built should become part of the existing system of surface lines now operated by the Tramways Company, and which underground lines must be leased to and operated by the said Tramways Company upon terms to be agreed upon.

The present debt of the City of Montreal forbids the borrowing of the large amount of money necessary to construct a system of underground lines, and therefore special legislative authority must be obtained in order that the capital may be secured for the purpose, without such money becoming a charge on the City's funded debt. (The underground lines will be a revenue producing property, meeting interest and other charges, and by reason of a sinking fund, extinguishing the debt incurred, during the 40 or 50 years of a lease or franchise.

Therefore the Tramways Commission, or in default of these, the Board of Commissioners of the City of Montreal should determine and fix the routes of such underground lines as may be required, with a full description of the lines contemplated, with a statement of the probable cost, estimated amount of revenue which may reasonably be expected from the leasing and operation of the same, and the order in which the several routes should be undertaken, so that the money may be borrowed in such sums as may be needed, section by section:—and it is further suggested

That a tentative agreement be executed between the City and the Montreal Tramways Company, by which the latter agrees to equip and operate the said underground lines if constructed by the City, and upon what terms and upon what compensation to the City; and

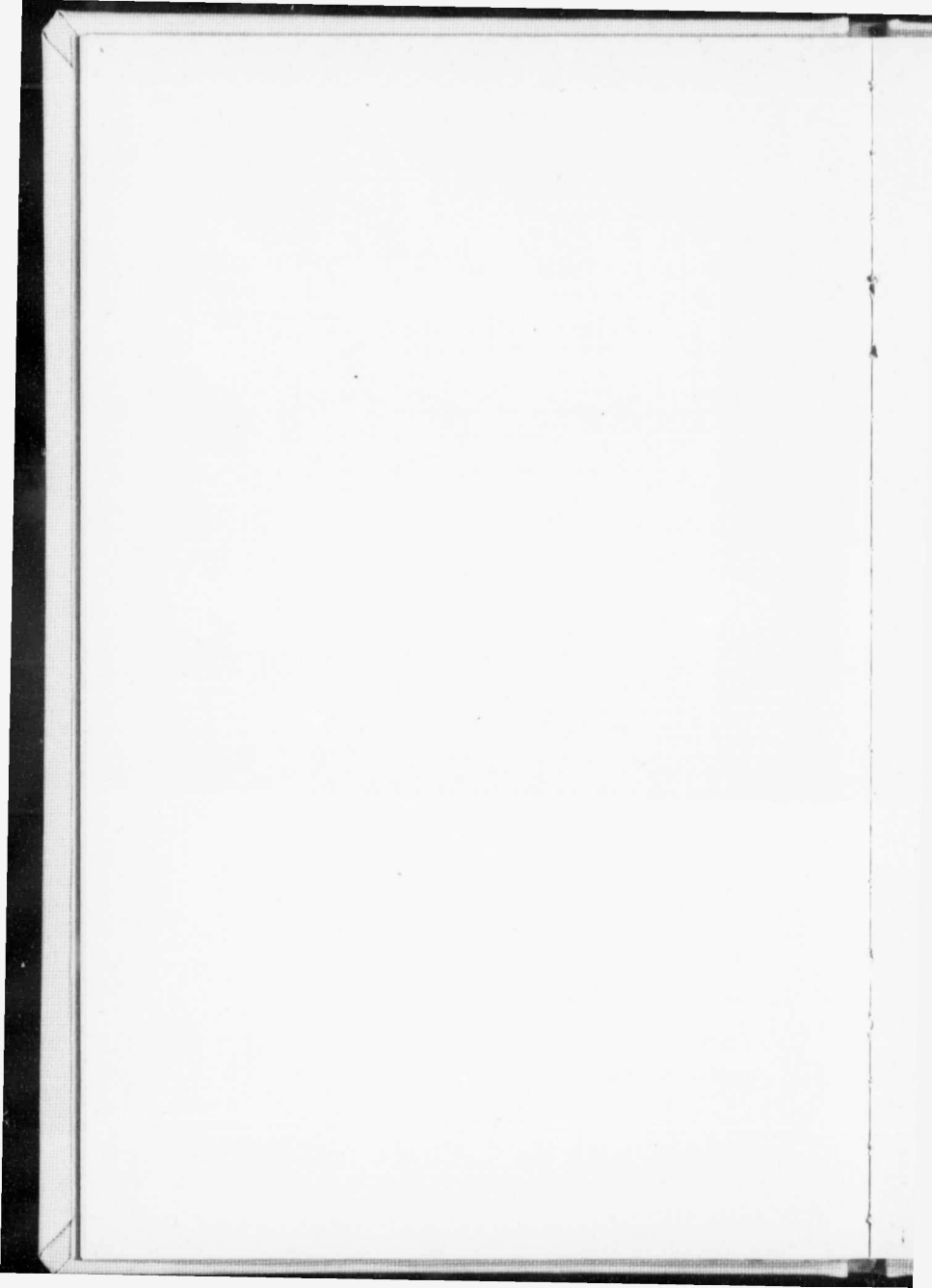
That the City authorities be requested, at the coming election, or by means of a referendum, to afford the electors an opportunity to express their decision, whether or no the construction of underground lines shall be proceeded with, and whether an application shall be made by the City of Montreal to the Lieutenant-Governor-in-Council of the Province of Quebec, to enable the City to borrow the necessary money by the issue of 50-year 5 per cent. bonds, to be known as "Municipal Underground Railway Bonds of the City of Montreal," or other suitable designation.

F. S. W.

Description of Lines

Estimated Cost and Revenue





## DESCRIPTION OF LINES.

### ESTIMATED COST AND REVENUE.

The accompanying map shows an initial lay-out of underground lines which it is believed will provide for the increasing travel in Montreal for many years to come.

The Routes are as follows:

City and North End—

Place d'Armes to Mile End=2.84 miles.

City and West End—

Place d'Armes to Notre Dame des Graces=3.98 miles.

City and East End—

Peel Street to Moreau=3.12 miles.

A total distance of double track line=10 miles.

Place d'Armes is the central point or focus of all the lines, and passage can be taken from this Station to all points of the City, North, East and West.

Passengers could reach Mile End in 15 minutes, Notre Dame des Graces in 21 minutes, and Moreau Street in 18 minutes. Passengers to the east end would transfer at St. Catherine Street to the east and west line, which is on a lower level.

The routes as above described, and as shown on the map, will provide for quick service to and from our places of business and homes, the railway stations, the theatres and other places of amusement, and the shopping district.

Further extensions of these lines can be made either by "elevated" structures or by bringing them up to the surface and continuing them out to the Back River, Montreal West, Maisonneuve, or in any other direction required. Neither the line to Verdun nor to the northeast part of the City is considered at this time, but provision will soon be needed for the increasing population in the vicinity of the Angus Shops, as well as in Verdun and Point St. Charles.

All underground lines should be either municipally built and owned, and leased on advantageous terms to the Tramway Company, or jointly built by the City and operating

Company, and the ownership to revert to the City at the expiration of a certain term of years.

Full studies will be required before exact estimates of cost can be made. Borings, surveys, location of sewers and water pipes, depths to which foundations of buildings extend, etc., etc., must be carefully ascertained. A conservative estimate, however, of the cost, can be stated to be between \$350 and \$400 per lineal foot of double track tunnel, including ventilation, re-location of sewers, and water and gas pipes, the protection of buildings along the route and all stations, but not real estate.

The tunnels will be as close to the surface of the streets as possible, thus avoiding the use of elevators in stations.

Taking the cost of the 10 miles to be 20 million dollars, and the equipment at 5 millions, the total cost will be in the neighborhood of 25 million dollars. The City to furnish the former and the operating company to furnish the latter amount. Supposing that the tunnels were ready for operation in 4 years, and the population at that time to be 900,000 persons, the total number of fares, exclusive of transfers, might safely be estimated at 80 million. This would give a gross income of 4 million dollars on a straight 5 cent fare, and a probable net revenue of 2 million dollars, from which must be deducted interest on the investment, sinking fund, taxes (if any) and depreciation, leaving a surplus for the first year of operation, of approximately a quarter of a million dollars. Each succeeding year should show an increasing number of rides and an enlarged revenue.

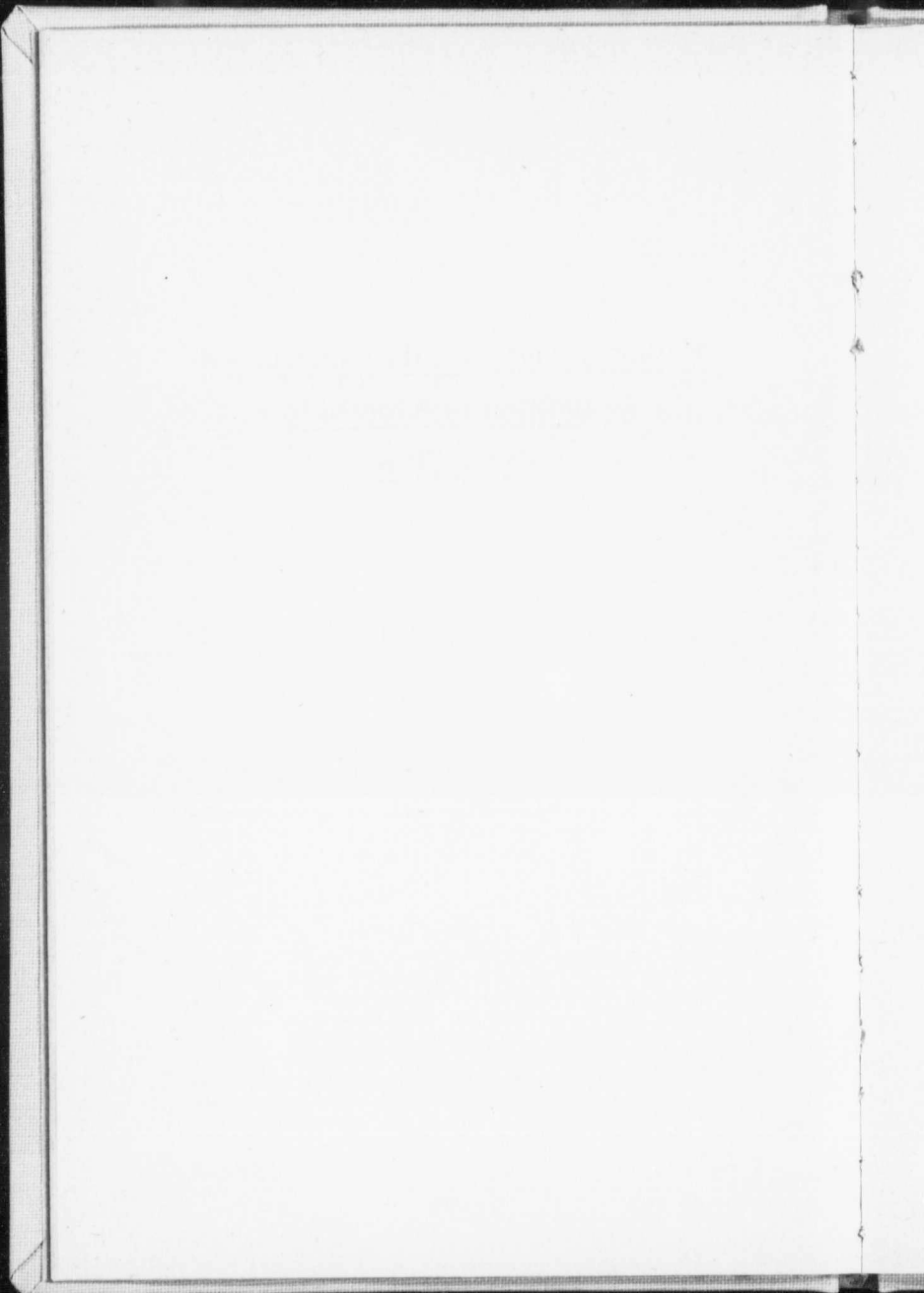
The Tramways Company meanwhile should not lose a single fare, but would share in the increased tendency to travel, owing to the improved facilities.

The Public Service Commission of New York, in its Report for the year 1916, remarks, "Every additional transit facility appears to develop new traffic, while the old lines soon regain what is lost by competition with the new lines, and continue to carry a constantly increasing number of people."

There is no doubt that barely shall we have put the first tunnels in operation, the demand will arise for further extensions. It is a well known fact that the number of rides per capita increases at a much greater rate than the population; that is to say, if every person in a city of one hundred thousand makes 100 rides a year, or a total of ten million rides, the rides per person in a city of five hundred thousand will probably be 200, or a total in the year of one hundred million rides, showing that with increased facilities, the riding habit grows.

F. S. W.

Method of Financing the Construction  
of Subways as Adopted by  
Other Cities



## **METHOD OF FINANCING THE CONSTRUCTION OF SUBWAYS AS ADOPTED BY OTHER CITIES.**

### **Boston.**

The money for the construction of the Subway is procured by bond issues, authorized by the Legislature, but vouched for by the City of Boston. The City is authorized to issue bonds bearing interest up to 4%, for a term not exceeding 40 years.

The Subways are leased to the Boston Elevated Railway Company, before construction is begun, and by recent legislation the leases are so arranged that they expire simultaneously in 1936, at which time they may be renewed by agreement between the City and the lessee corporation, which is in all cases the Boston Elevated Railway Company. The Company pays to the City an annual rental, varying from  $4\frac{1}{2}$  to  $4\frac{7}{8}$  per cent. of the net cost of the subway construction, and at the same time it installs and maintains all of the track and equipment.

### **New York.**

The New York Lines are being constructed partly by the City and partly by the Railway Company, the latter to furnish the equipment. The Operating Company pays the City interest on its investment, plus 1 per cent. per annum for a sinking fund, and after deducting operating expenses and interest on their investment, share with the City any further earnings

### **Providence.**

The Act establishes the Providence Transit Commission, consisting of the Mayor and Commissioner of Public Works, ex-officio, and the several members of the present Commission on Subways. The Commission is directed to proceed with the plans and construction of the Subway lines, and is authorized to execute contracts, approved by the City Council, for the use of the subways. The City is authorized to issue bonds for the construction of the lines.

### Philadelphia.

“The City of Philadelphia may increase its indebtedness to the extent of three (3 per centum in excess of seven (7) per centum upon the assessed value of the taxable property therein, for the specific purpose of providing for all or any—the following purposes, to wit:—for the construction and improvement of subways, tunnels, railways, elevated railways and other transit facilities, and for the construction and improvement of wharves and docks. Such increase, however, shall only be made with the assent of the Electors thereof at a public election, to be held in such manner as shall be provided by law.”

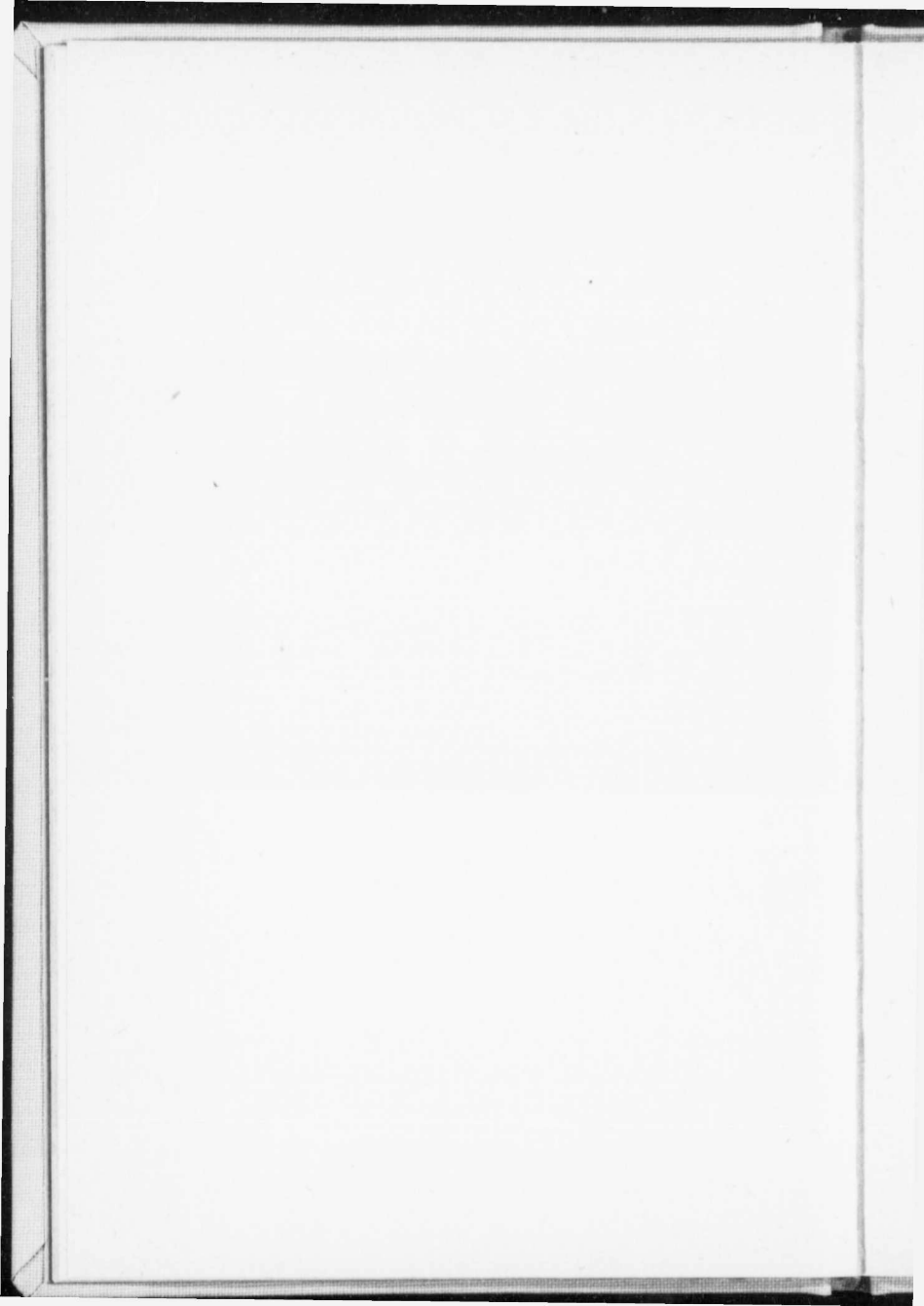
—Constitution of Pennsylvania, 1913.

Extracts from Various Reports & Papers

Relating to

Transportation in Cities





## EXTRACTS FROM VARIOUS REPORTS AND PAPERS

Relating to

### TRANSPORTATION IN CITIES.

For the purpose of showing the importance of this subject, and the great benefits to be derived from a rapid transit scheme of underground railway, and also the immense and profitable business which will accrue to the City and Tramway Company from the operation of the said underground lines, the following statements and extracts should be read by all those who are interested in the continued prosperity, growth and advancement of the metropolitan city of Canada.

The writer believes that there is no more pressing question before the citizens to-day than that of improved travel between the several districts of Greater Montreal. Excellent in many respects as is our existing street surface system, far too much time is spent every day in reaching our homes and places of business, and in many cases the time is spent in uncomfortable conditions.

F. S. W.

#### What Boston Has Done.

“The business section of Boston is only about 1.80 square miles . Within this area there are already in operation, or under construction, about 9 miles of subway and elevated lines, with about 20 miles of single track.

No part of the business district, east of Beacon Street, is more than 1,100 feet distant from some Rapid Transit line.

There are 3 north and south lines through the district, and the distance between adjacent lines is nowhere more than 2,200 feet. And there are 2 rapid transit lines, east and west, and they are nowhere within more than 2,800 feet apart.”

—Report of the Boston R.T. Commission, 1914.

“Since 1898 there has been a complete reversal of opinion with reference to the comparative advantages of subways and elevated lines, and it is probably safe to say that at

present the preponderance of sentiment in favor of subways is as great as it was in favor of elevated lines 25 years ago. Elevated lines diminish the value of property along the line. Subways, on the other hand, tend to increase property values."

—Report as above.

### **Philadelphia.**

"The entire local transportation system must be operated as a unit, to best serve the public, in affording convenient and economical transportation from each section of the city to the other. The function of gathering and distributing traffic in the residential districts is best performed by intersecting surface lines.

The Rapid Transit underground lines forming the trunks or main systems, and the transfer surface lines, the limbs or branches.

Continued growth of the city is dependent upon the development of adequate transit facilities, and is essential to the welfare of the Philadelphia R.T. Company. It is expected that the management of that Company will enter into the forthcoming negotiations in a fair, broadminded, and progressive spirit.

If the negotiations with the Philadelphia R.T. Company do not produce such results as the City Council can accept as advantageous to the City, the establishment by the City of an independent rapid transit system, with certain new surface line feeders will be necessary, and will be made the subject of a supplementary report."

—Annual Report Dept. of City Transit, Philadelphia, 1913.

Since the above was written satisfactory terms have been agreed upon between the Dept of City Transit and the Philadelphia R.T. Company. The City builds the subways, and the Philadelphia R.T. Company equips and operates them.

F. S. W.

### **Growth Follows Transit.**

"Since the first housing conference held in New York more than twenty years ago, we have witnessed a marvellous transformation. The thing has happened here that many of us have seen happen in London, and to some extent in Berlin, Vienna and elsewhere. We have seen slums very

largely eliminated. We have seen the death rate steadily reduced. We have seen conditions brought about that render it possible for the police and fire department, the health authorities and the schools to make their efforts availing. This is precisely what it was possible to predict twenty-five years ago. Without transit facilities we were somewhat in the position of a European walled city surviving into the industrial period with a frightful density of intra-mural population, until, as in Vienna and numerous German cities, the walls were reduced, the moats were filled, transit lines were shot out in every direction, and vast suburbs, fresh, healthful and modern in their appointments, appeared as if by magic, in broad outer zones. Whereupon, with congestion relieved, it became possible to apply sound principles of policing, sanitation, and modern social progress. While the congestion continued, bad tenements could not be condemned and destroyed. But with more favored classes moving to the outer zones, life could be made enurable for the less favored classes remaining in the old districts. Transit facilities have not been developed merely as an ordinary venture of private capital seeking remuneration, but because they were needed by the public and so were developed by consent of the franchise granting authorities.

New York has had to employ the public credit to the extent of hundreds of millions of dollars in the creation of her great system of Rapid Transit."

—Review of Reviews, February, 1917.

### City Traffic a Puzzle.

"The suburbs of the City are growing faster than the City itself. No limit to the amount of subway and elevated traffic seems within sight. From 1 million in September 1916, the daily average has mounted steadily higher. In November it was 1,200,000, and in December 1,250,000. Behind these figures there are certain big facts — the ever increasing apparently inexhaustible traffic of the growing city — the number of riders is still growing—there is a growing dependence on the subway and elevated—and each rider uses the subway oftener. People are living further and further away from their business, largely because the subway makes that possible.

Statement of the Interborough R.T. Co.,  
New York, Feb., 1917.

### **Subway Jam Increases.**

"No matter how fast rapid transit lines are built, the transportation needs of the population always seem to keep ahead of them. The significant feature of this increase in traffic, is that it has not been taken from the elevated or surface lines. Every additional transit facility in New York appears to develop new traffic, while the old lines soon regain what is lost by competition with the new lines, and continue to carry a constantly increasing number of people."

New York Times,  
January, 1917.

### **Growth of London Traffic.**

"The marvellous development in passenger traffic in American cities since the introduction of the electric car, is closely paralleled by the development in the principal cities of Europe. The passenger traffic of Greater London substantially doubled in the years 1906-1913. This growth was due to the increase of the habit of travel, far more than to actual increase in population. In 1906, the number of journeys per head of population was 128. In 1913, the number of journeys had increased to 271 per head, and is now close to 365 per head. The aggregate journeys in this period increased from 972,000,000 to 1,659,000,000."

Board of Trade Report, London,  
April, 1915.

### **New Transit Lines and How They Help Building and Increase Real Estate Values.**

"It does not take an expert in realty values to see that this Brooklyn subway has already placed the real estate adjacent to it, in the same relative position as the New York subway did for realty along its lines, when it was first extended into the Bronx. Although transit improvement is not the only factor in making for enhanced valuation, it is, of course, the one important pre-requisite. The railways have made this nation the great country it is to-day, and similarly the subways are quickly making New York City the leading Metropolis of the World."

The Building Trade,  
New York, 1915.

### **Lack of Transit Means Loss To All.**

“Shall transportation continue to progress? Millions more are needed for additional facilities and extensions of lines. Many square miles of available land offer opportunity for housing a large population. Partially developed sections need additional improvements. Full developed sections require relief from congestion. Municipal expansion and progress in large cities cannot exist without transportation. The expansion of facilities has inevitably been followed by increasing valuations of land, construction of new buildings, enlargement of industry and increase of population. To interrupt the constant improvement in transportation is to interrupt the flow of population with its heavy loss to real estate interests. A heavy loss to the city would also follow any cessation of growth because of the failure of taxable values to increase, and to people generally because it would prevent a more general distribution of the population.”

Philadelphia Press, 1915.

### **Vast Subway Growth in New York.**

“The operation of the new subway lines in New York revealed a remarkable and rapid growth of travel, and an indication of an amazing increase in the future.

“It would not be surprising if ten years from now, the city would be still building further additions to the vast network of new rapid transit lines, because the congestion of traffic would be far greater at that time than it is now.

“The New York subway was designed to accommodate 400,000 passengers per day: this was in 1904. One year later it was carrying 423,000 per day. For the month of November, 1904, the subway carried 6,150,000 passengers. Two years later it carried nearly 16,000,000 passengers for the same month, an increase of 159 per cent.

“The new Queensboro subway, for the first month of operation, July, 1915, carried 131,000 passengers. Two years later, for the same month, it carried 1,300,000 passengers, an increase of 886 per cent.”

Statement of President Shonts,

Interborough R.T. Company,  
New York, Dec., 1917.

### **New York Traffic Grows Fast.**

“The subways of New York City carried 34,000,000 passengers in January last, according to figures made public recently by the State Public Service Commission for the First District. This represents a 13½ per cent. increase over the number of passengers carried in January 1915. The total number of passengers carried on all subway and elevated lines for the month was 60,500,000 as compared with 55,700,000 a year previous.”

New York Times, 1916.

### **Rapid Transit in Cincinnati Assured by Vote.**

“By the special election of April, 1917, when a vote in a proportion of 2 to 1 was cast in favour of ratifying the leases drawn up between the city and local traction company for the operation of the new lines, the proposed rapid transit improvement is assured. The work of preparing plans, estimates and specifications covering the special engineering features will be promptly proceeded with, and by January, 1918, it is expected to have a number of contracts ready for the receipt of bids. The total length of the “Loop” will be about 16 miles. It will be a two track system of standard gauge underground lines, and will provide the means by which the interurban lines may have their terminal at a central depot in the heart of the city. Six million dollars towards construction have already been authorized.

Engineering News Record,

April, 1917.

The above extract bears out and endorses the method which the writer has suggested in a former page, namely, that now is the time to prepare plans and estimates and specifications for underground lines in Montreal, so that we may know what amount of money is required for construction and whether the people are in favour of recording a vote on the much needed improvement.

F. S. W.

### **What the Montreal Tramways Company are Ready to Do.**

The Montreal Tramways Company wrote about a year ago, a letter to the Mayor and Commissioners of the City, in which the following passages occur, re Subways:

“The Company is prepared to build and operate at its own expense the underground subways above referred to. From some point on Craig street, between Bleury and St. Denis, running north to Mount Royal, Van Horne, or some point in that section of the city. The next underground subway should be constructed east and west, under, possibly, St. Catherine street. It might be found desirable to follow one or two courses after these two subways are built. One might be the construction of an underground subway under Notre Dame or St. James street, between the Court House and Victoria Square, or it might be considered advisable to build a subway from Hochelaga or some point in that vicinity, west as far as Victoria Square, with a fork to extend northwesterly to Westmount and Notre Dame de Grace. The City to guarantee the mortgage securities to be issued by the Company to cover the cost of the said underground subway. It is proposed to start the first subway within three years, and not later than the completion of the first subway, to start the second subway mentioned, under St. Catherine street, and to start building the third subway before the completion of the second. The Company will operate these subways individually for a straight five cent fare. The exact location of the above mentioned subways to be left in the hands of experts, etc., etc.”

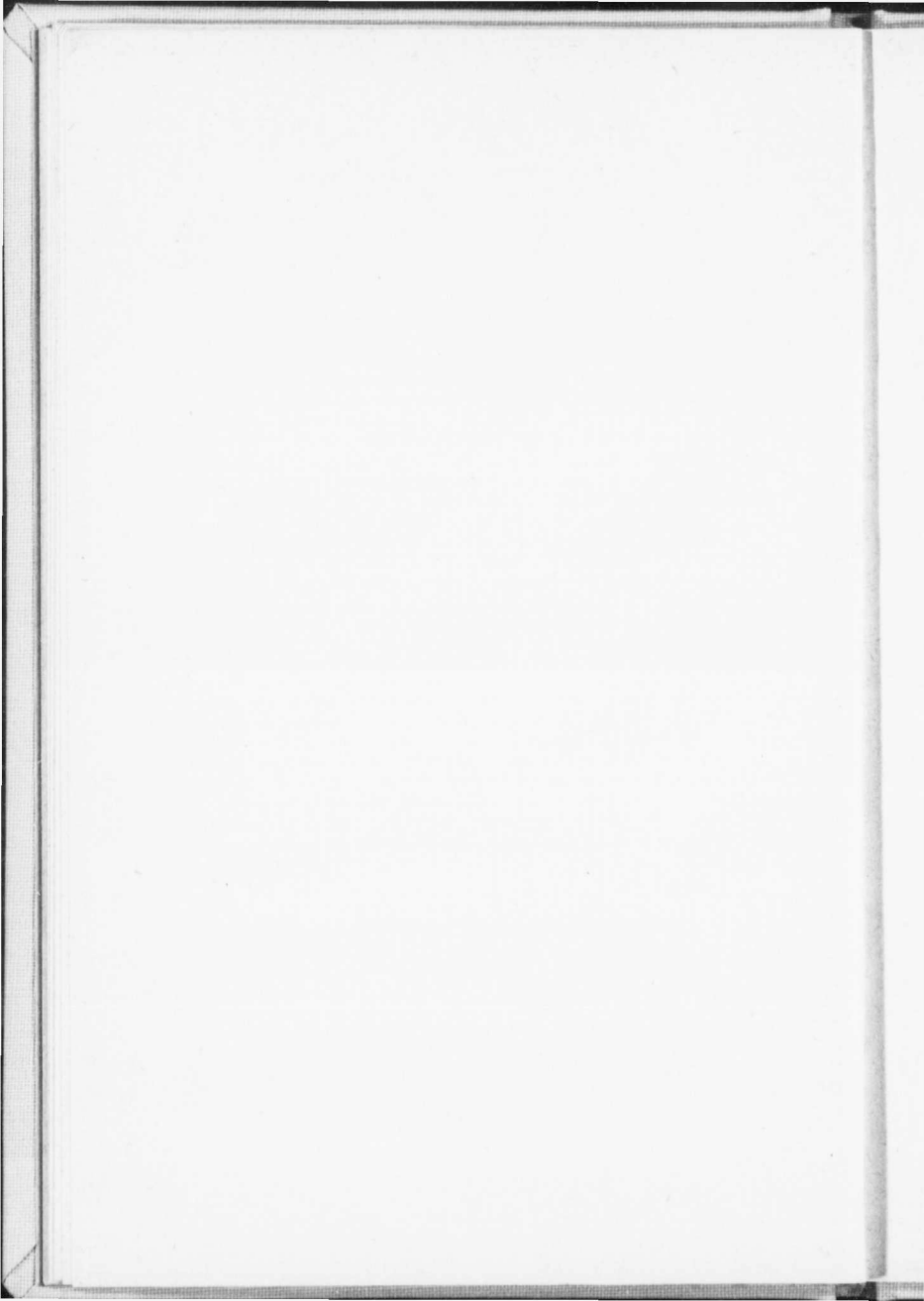
The above mentioned lines practically follow the routes advocated for the past 4 years by the enclosed map. If the Tramway Company are ready to construct these underground lines with money provided by themselves, but the securities or bonds to be guaranteed by the City, and are willing to operate the said lines when built, it would be better for the City to furnish the money and do the building, and leave the operation to the Tramway Company.

F. S. W.

A more recent statement from the Tramway Company is as follows:—

“You must devise some means whereby you can handle the long distance travel For 4, 5, or 7 mile distances, you will require an express service, and this can only be given by an underground system, where stops could be half a mile or a mile apart. That would relieve the congestion on the surface lines and would give the public, in a great measure, what they require.”





The Five Cent Fare



## THE FIVE CENT FARE.

"The five cent fare has been buying more and better service for the Public every year since street railways were invented: while it is now buying for the Companies less than it ever did, of the labour and materials needed to give good service. In practically every city on the continent there has been wonderful improvement in service and distance covered for the same fare, yet the public has not been called upon to pay more until now, when costs are threatening to send many companies into bankruptcy."

"The baker is getting more for the loaf, because it costs him more—the milkman is getting more for milk, because it costs him more—the two-for-a-quarter collar is now 15 cents straight—and the old reliable dollar watch is \$1.35. Street Railways are not different to other lines of business. They can no longer sell transportation at the old rates and remain in business."

"The serious financial difficulties brought about by the alarming increase in the cost of materials, labour and power, is forcing the cutting down of street car facilities, when new lines and extensions ought to be undertaken."

"In these days, when the cost of labour, material and overhead work has advanced anywhere from 5 to 100 per cent., it is of prime importance that net earning power of public utilities be somewhere nearly maintained."

"There is only one way that this can be done, and that is, of course, by increasing the gross earnings more rapidly than they normally increase from the growth of population. With operating expenses increasing, the year's earnings must be increased also, and there is only one solution — a prompt granting by State Commissions of a fair increase in the price charged for gas, water, electricity, or street railway service. This seems absolutely essential.

The credit of a public utility corporation, in fact of every other company, is largely dependent on its net earning power.

Public utilities must continue somewhere near their normal service, and at the same time their credit must be maintained. In those cases, then, where the necessity has been proved, increase of rates should be promptly granted."

T. H. DUDLEY PERKINS,

New Jersey Utility Association, 1917.

“The agitation for increased traction fares is one of the interesting developments in American cities. Permission to increase its fares from 5 cents to 6 cents has been granted to the Huntingdon Railroad Co. by the New York Up-State Public Service Commission. There was no dispute that the company required increased revenue to enable it to pay operating expenses. The Commission decided that the Public Service Commission laws were intended by the Legislature to make it the duty of the Commission, where it found that the maximum rates or fares chargeable under the railroad law, or under local franchise were insufficient to yield reasonable compensation for the services rendered, to authorize an increase of such fares.”

New York Times,  
November, 1917.

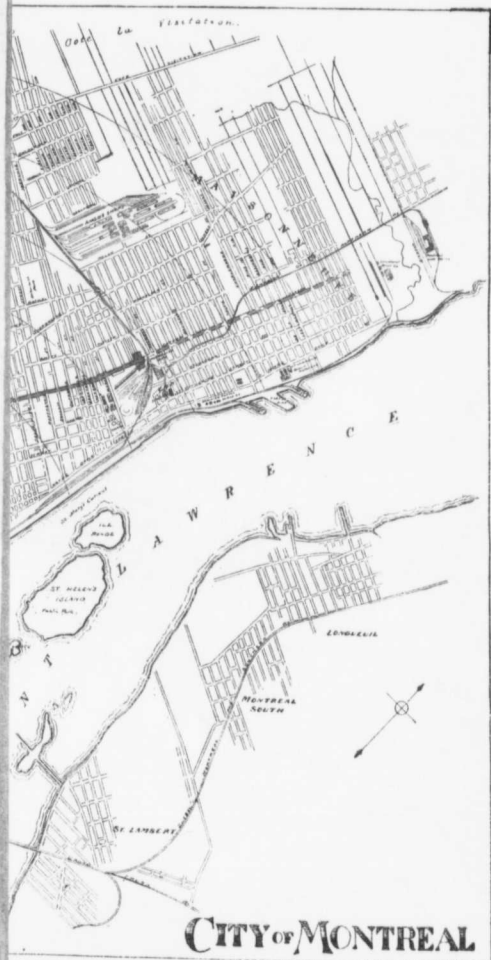
“If the price paid for street car service doesn't make the business attractive, the investor will go into something else, and the street railway service will suffer.”

JOSEPH K. CHOATE,  
New York, 1917.

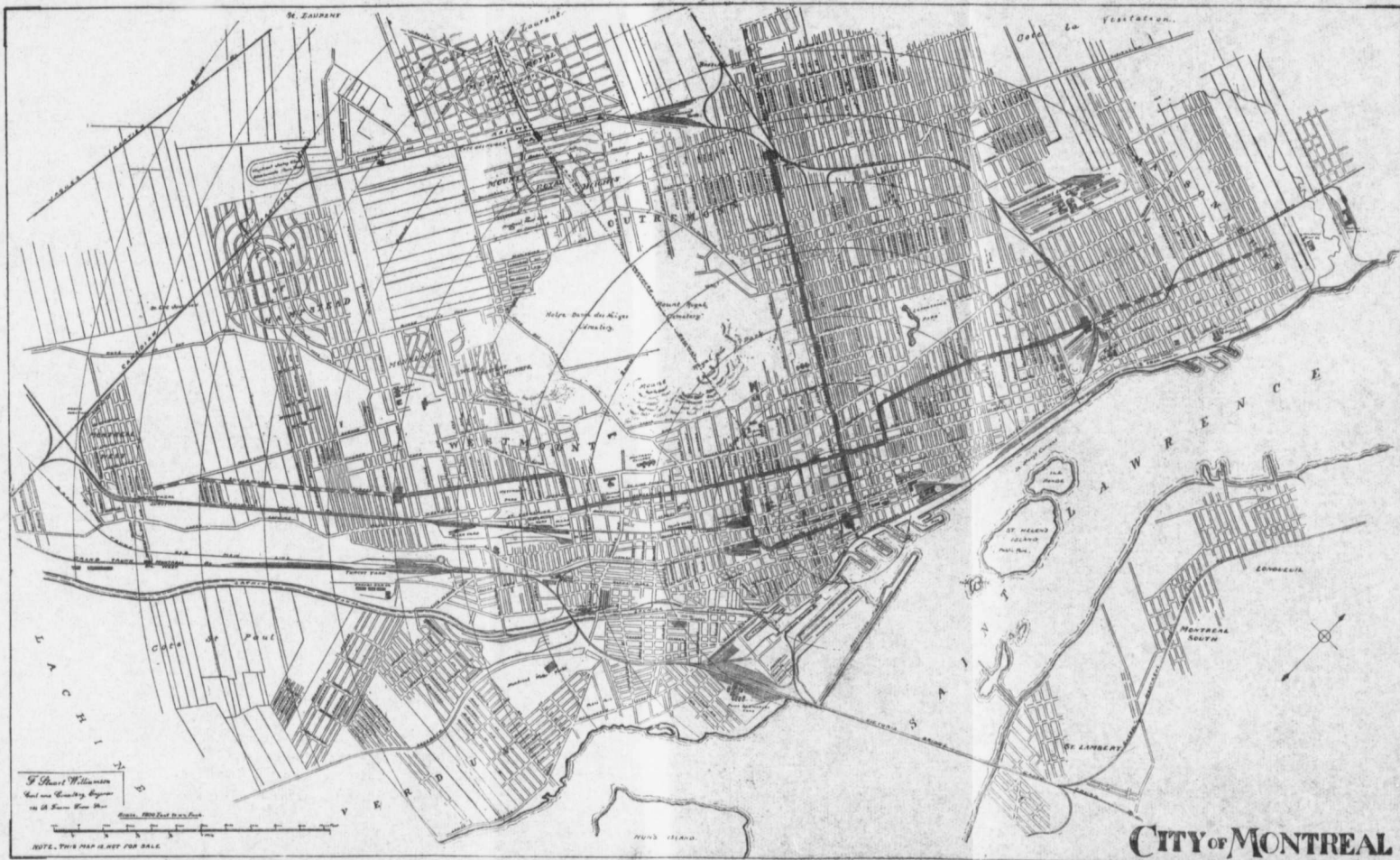
There is nothing sacred about the five cent fare. Except that we have a 5 cent coin, it is probable that 4 cents, or perhaps 6 cents, might have been the universal fare from the inception of street railway business. As far as the writer can figure out, five cents is an arbitrary charge, bearing no relation to either the fixed charges, or the gross receipts, nor to the earnings. If the street railway companies, though carrying more passengers, are making less money, either the companies must go out of business, or be taken over by the municipalities and operated at a loss.

The alternative seems to be, either that the sale of six tickets for a quarter may have to be abolished, and the straight five cent fare retained; or that an increased rate of fare must be charged all round. Capital invested in the Tramways must be safeguarded and a good rate of interest, as well as an annual dividend, must be assured. At the same time the City must secure an adequate annual rental from the Company for the use of the streets, and the best of service for the people.

F. S. W.



**CITY OF MONTREAL**



J. Shaw, Williams  
and Co. Geographers  
100 St. James Street

NOTE: THIS MAP IS NOT FOR SALE.

CITY OF MONTREAL