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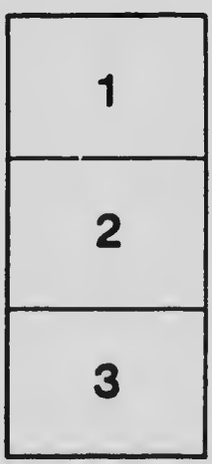

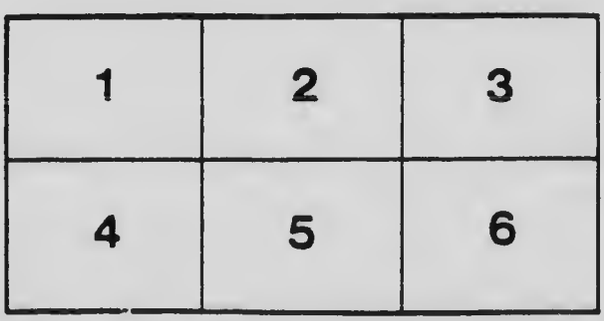

REPORT OF

BION J. ARNOLD and JOHN W. MOY[illegible]

ON THE

Toronto Railway Company and portions of the Toronto and York Radial Railway and the Toronto Suburban Railway Company, situated within the City Limits.

I. Scope of Report.

This report includes an investigation of the cost, new and present value, of the physical value of the properties considered as of July 1st, 1913, together with a study of the operation of the properties considered, with the view of determining such other elements of value as may exist in these street railway properties as now constituted and operated within the City limits of Toronto. The whole investigation has been made to determine the value of their properties, including the companies' contractual rights under existing franchise ordinances expiring in general on September 1st, 1921, in order to determine a fair and just purchase price in case the City decides to purchase the various properties considered.

II. Definition of Terms.

The "cost to reproduce new" is used in this report to represent the cost that would be incurred in replacing as of July 1st, 1913, the physical property as found with new property of similar character.

The "present value" of the physical property, or the "depreciated value," as used in this report, means the cost to reproduce new less the accrued depreciation on a straight line basis as determined in detail in the premises hereinafter given for the various classes of property.

The "intangible value," as used in this report, is intended to signify those other elements of value which attach to the physical properties in view of the contract now existing between the City of Toronto and the Toronto Railway Company, and in accordance with the terms of which contract the railway companies are operating, and may continue to operate, their properties in the City of Toronto. In general, this intangible value may be understood to represent the monetary value to the Railway Company of its right to continue its operation until its existing franchise agreements, with the various stipulations thereof, shall terminate.

III. List of Properties Considered and Location.

The properties dealt with are as follows:

(a) The Toronto Railway Company,
(b) The Toronto & York Radial Railway Company,
(c) The Toronto Suburban Railway Company.

All of the street railway property of the Toronto Railway Company has been considered in this appraisal, but no property of the Toronto Electric Light Company has been included. The property (a) valued lies entirely within the City limits of Toronto as of 1891, and consists of approximately 120 miles of single track equipped with overhead distributing system, on which are operated approximately 725 single-truck or double-truck motor cars, and approximately 1[illegible] single-truck trail cars. For the housing of these cars the company owns and operates five car houses. The power is furnished through the medium of four modern sub-stations, provided with storage batteries, transforming such energy as is purchased from outside companies, and in addition by means of the Company's power plant, which, however, is used solely as a stand-by station. The Company is also possessed of such realty, including buildings, as is necessary to carry on the street railway business, likewise a car building plant, since the Company is required by the agreement to construct all car bodies used on the system.

With respect to the radial railways considered, namely, the Toronto & York Radial Railway Company (b), and the Toronto Suburban Railway Company (c), the valuations determined include the property of those companies lying in or upon the streets within the present City limits of Toronto, and cover solely those portions of the track and electrical distribution system so situated.

The Toronto & York Radial Railway consists of the following divisions: The Metropolitan Railway Division, operating on Yonge Street north to the City limits from Cottingham Street to Mason Avenue, a length, including main track and sidings, of 4.25 miles; the Toronto & Scarboro Railway Division, which operates in two divisions, one of which extends east on Queen Street from McLean Avenue to the present City limits, the other extending eastwardly on Kingston Road from Queen Street to the present City limits, and on Walter Street from Kingston Road to Gerrard and Main Streets, the mileage of these divisions, including main track and sidings, being respectively .66 and 2.27 miles, or a total of 2.93 miles.

The Metropolitan Railway Division is operated under franchise subject to review at stated periods. The franchise of the Toronto & Scarboro Railway Division expired previous to the date of this appraisal.

The Toronto Suburban Railway Company operates in three divisions, one known as the Davenport Road, extending from Bathurst Street and Davenport Road west via Davenport Road, Ford Street and St. Clair Avenue

to Keele Street, a distance of about 3.03 miles. Another division known as the Weston Route, extending from Keele and Dundas Streets north via Keele and Weston Road to Weston, a distance of 1.06 miles. That known as the Lambton Route, extending west on Dundas Street from Keele to the present City limits at Runnymede Road, a distance of .888 miles. This route has a branch line extending eastwardly from Dundas Road on Gilmore Avenue and south on Gilmore Avenue to John's Road and Fairview Avenue, a distance of .62 miles. This Company (c) has a franchise to sell electric energy for light, heat and power purposes within a certain area of the present City of Toronto, which franchise has been taken into consideration, and is included in the valuation herein made.

The franchises of the Toronto Interurban Railway Company expire at the same date as the franchises of the Toronto Railway Company, namely, September 1st, 1921.

IV. Date of the Appraisal.

The valuation of all the properties, as previously stated, has been determined as of July 1st, 1913. Such a fixed date is necessary in order that in the future any additions made by the companies constituting capital investment can be added to the valuation now fixed should it be adopted.

V. Value Found for the Properties.

The value of the properties, as determined justly and fairly, represents their value to the owners, and in arriving at this value proper consideration has been given to all those elements of value which inhere in the property, including the value of the physical property and the value of its attached business and right to operate in accordance with the franchises and agreements under which the companies are now operated. In arriving at the value, the uses to which the properties are put have been considered, also their extent, character and present condition, together with their earning power, past and prospective, and amount of operating expenses, the character of the service, and the fact that they are operating the limited territory which the major company is required to serve under its existing franchise; the character and facilities of the property for rendering the class of service to which the public is entitled both now and in the future, with the large earning power of the capital invested.

After full consideration of the above elements, as fully analyzed in later sections of this report, the value of the properties of the companies, including their remaining operating rights and attached business, has been found to be as follows:

(a) *The Toronto Railway Company*—

Present value of the physical property as of July 1st, 1913 .	$9,894,483
Intangible value of the property, as of the same date	10,713,553
Total value of Toronto Railway Company	$20,608,036

(b) *Toronto & York Radial Railway Company*—

Present value of the physical property of the Metropolitan Railway Division	$64,304
Present value of Toronto & Scarboro Railway Division	27,300
Total present value of the physical property	$91,604
Intangible value of the Metropolitan Railway Division	193,694
Total value of the Toronto & York Radial Railway	$285,298

(c) *Toronto Suburban Railway Company*—

Present value of the physical property	$51,144
Total value of the Toronto Suburban Railway Company, including light, heat, and power franchise	51,144
Total value of Toronto Railway Company, and those portions of the Radial Railways within the present City limits	$20,944,478

The above valuations represent the entire monetary value of the properties considered to their present owners under the premises fully stated hereinafter in this report. In these premises it is assumed that the railway companies will vest in the City of Toronto title to all the physical property listed in detail in the appraisal, together with *all* the rights and privileges conferred on them by Act 55, Victoria, Chapter 90, entitled "An Act respecting the City of Toronto," and all subsequent amendments thereof (which rights have been made the basis of the determination of the intangible value), with the result that the City shall then become the sole owner and possessor of all the physical property herein considered, and of all rights and privileges by whomsoever granted pertaining to the operation of street railway, light, and power systems, within the City of Toronto, and that such rights, privileges and grants of the railway companies shall thereupon cease and determine.

VI. Basis of Valuation.

(a) *Premises of Appraisal of the Physical Property*:

(1) *Cost to Reproduce New*:

In arriving at the cost to reproduce new, a complete physical examination was made of all the properties and a general inventory was made listing classes of physical property in a general way, and appropriate unit prices were determined and applied to the quantities as listed to arrive at the construction cost of the property as found.

In determining the amount and quantities of the various kinds of property, free use was made of the records of the company and of the City. All such records that were used in listing the apparatus were checked in the field and verified as to their accuracy both in kind and quantity. Un

prices applied to the various kinds of property were checked by means of prices paid by the street railway company and by the City in the construction of its municipal railway property. They were independently checked by prices obtained from manufacturers for property of a like kind. As a result of this method of procedure, the entire property has been listed in such detail as is found in the exhibits accompanying this report showing the various quantities of the property under their various divisions and subdivisions accompanied by their unit costs. With regard to the inventory it should be stated that in the case of the overhead and underground feeder system it was found that the Toronto Railway Company was making extensive renewals and changes in its equipment and arrangement, and that at the date of the appraisal about 90 per cent. of this work had been completed and the equipment installed and that the balance of the necessary material was on hand. Therefore the equipment as listed includes the distributing system as it would exist at the completion of the extensive alterations in progress as of the date of the appraisal, and which were to be completed sixty days from that date.

As has been stated above, the company makes a practice of constructing its own car bodies and assembling its car equipment. The usual amount of this work was in progress at the time the inventory was made, but the value of no cars nor car parts under construction was included in this inventory, there being included only the value of such cars as had up to the date of the inventory been turned over to the operating department.

The unit cost price covered all expense for materials, tools and labor required to furnish the various classes of property in place, and contains such profit as exists in the manufacturer's price for equipment purchased, or the contractor's price for such parts of the work as would naturally be let to a contractor. In case of equipment purchased directly from the manufacturer, whose price included the cost of erection, the only profit included in the unit cost is the manufacturer's profit. In case of other parts of the property the unit cost is intended to represent the amount for which the company is able to contract for the work in place. In no case is a general contractor's profit included in this appraisal in addition to the profit of the direct contractor or manufacturer who would be considered as a contractor as the term contractor is used in this paragraph.

To the base cost of the various items of property there have been added varying percentages to cover the expenses of organization, engineering and incidentals. Such percentages have been added on the theory that in an estimate of the cost to reproduce new the property as it stands to-day, it would be necessary to provide an organization representing the company, and that this organization would have to incur expense in the way of so much of the salaries of its own officials as would be properly chargeable to construction, and the engineering expenditures and such incidental expenses as might be incurred by the construction contracts. In the case of a property that is constructed piecemeal, that is, a certain initial construction is made, after which this portion of the property is put in operation,

and then during succeeding years additions to the property are made, which in turn are put in operation when constructed, the actual expenditures for the various parts may exceed the cost that would be incurred had the entire property been constructed as a unit at one time. In such case, however, it often occurs that the engineering and organization expense is included as a part of the operating expense, since the officers of the company, including the engineers who are engaged upon this work, may be devoting a large portion of their time to the regular operation of the property. However, for the purpose of an estimate such as contained in this report, the cost to reproduce new has been determined on the assumption that the entire property is constructed at one time, and it is necessary, in order to arrive at the cost of actually constructing a complete property, to add to the cost of the physical property a certain percentage of the cost of such physical property to cover the expense of organization, engineering and incidentals.

The percentage added for organization covers the cost of general office expense, securing bids, preparing contracts, purchase of materials, salary of officials chargeable to construction, and general superintendence and legal expenses chargeable to construction.

The percentage added for engineering covers the cost of preparing working plans, specifications and contracts, supervision, progress reports, estimates for payment, together with expense of shop inspection, tests and field engineering.

The percentage added for incidentals covers all incidental construction expense to the company that lies outside of the contract cost, such as extras in the contract price. These extra expenditures may be due to small changes in design, additional expense due to interference with construction for various causes, the cost of trial operation, the cost of insurance, and operating expense during construction.

Such percentages for organization, engineering, and incidentals have been added to the divisions of the physical value representing the cost of track, electrical distributing system, rolling stock, power plant equipment. No such percentage has been added to the items of stores, shop equipment, and tools, furniture and fixtures, real estate and buildings. In the case of exhibits containing stores, shop equipment and tools, furniture and fixtures, 5 per cent. has been added, which is intended to cover in lieu of organization, engineering and incidentals, the cost of purchasing, handling, and drayage. In the case of real estate and buildings, no percentage has been added, as the valuation furnished by Mr. J. C. Forman, Assessment Commissioner of the City of Toronto, has been accepted. The aggregate value of the above percentages included under organization, engineering or incidentals, or their equivalents, varies from a minimum of 5 per cent. in certain exhibits to a maximum of 15 per cent. in other exhibits, and for the whole property the average amounts to 6.4 per cent.

The total obtained after adding the percentage covering organization, engineering and incidentals represents the actual cash that would be required

in reproducing the property new, but does not include the cost of obtaining the money necessary to finance the property, such as brokerage, bond discount, nor the carrying charges during construction, including taxes and interest, nor such legal expenses not properly chargeable to construction, such as those incurred in organizing the company, or any preliminary engineering, legal or other expense incurred in initiating the enterprise. Additional percentages must be added to represent the expense of these items, which although not items of construction cost, are items of financial and general organization cost which as truly enter into the cost to reproduce new as do the items of construction cost above referred to.

While bond discount, as such, did not enter into the cost of creating the property of the Toronto Street Railway Company, the cost of securing money to construct the property represented by discount on loans, etc., did enter into the cost of producing the property, and it has been assumed in valuing the property that these discounts amounted to not less than 5 per cent.

The overhead percentage allowed for carrying charges during construction and general legal expense incurred in financing has been 5 per cent., of which 3 per cent. represent the carrying charges, and 2 per cent. the general legal and organization expense. The total resulting from the application of the above percentages to the base costs represents the total cost incurred in reproducing new the physical property, and, therefore, includes not only the cost of all material and labor, together with suitable percentages for contractor's profit, organization, engineering, and incidentals, but as well the expense that would be incurred in organizing and financing the property. The cost thus determined includes no development expense or promoter's profit.

(2) *Present Value.*

The present value of the physical property has been determined by depreciating the cost to reproduce new of all the various items of property contained in the various divisions. Varying rates of depreciation have been applied to various classes of physical property, and the present value has been determined by a consideration of the life of the property and its salvage value, such consideration having been given to all items of the property that are now considered as depreciable. Certain exhibits, such as the land value of real estate and stores, have not been depreciated, but the present value of these items has been considered the same as the cost new value. The present value of the amount allowed as the cost of securing money has been obtained by depreciating its original value in the same ratio as the elapsed life of the franchise right at the date of the inventory bears to the entire term of the franchise. Legal expenses, carrying charges and incidentals have not been depreciated, since when any rehabilitation of the property takes place, this would be done without incurring any carrying charges or legal expenses, as such expenses incurred in connection with renewals would be charged to operation.

(3) *Inventory.*

For the purpose of making an inventory the property has been divided into the following general divisions termed exhibits:

(1) Track,
(2) Electrical distribution system,
(3) Rolling stock,
(4) Power plant equipment,
(5) Shop equipment and tools,
(6) Furniture and fixtures,
(7) Real estate and buildings,
(8) Stores.

Each exhibit was in turn subdivided into various parts, that is, track was divided into tangent track, track special work, and track in car houses and yards, and in a similar way subdivisions were made for the other exhibits.

In the following paragraphs the premises upon which the value of the physical property listed in the various exhibits was determined as set forth in detail.

Exhibit 1—Track.

(*a*) *Tangent Track.*—The lengths of all sections of track were determined from records furnished by the City, covering all track of the Toronto Railway Company inside of the City limits of Toronto, as of September 1st, 1891. This record has been accurately kept by the City, since it forms the basis on which the City bills the railway company for payments required of the latter in accordance with the present franchise. In addition, this City record was checked up by comparison with the railway company's record, and the type of track structure existing on the various streets was determined both from the records and by inspection. In this way the various types of rails and joints, together with their location and the size and spacing of the ties and other features of the track construction, were determined together with the limits of each type of construction. The various types were grouped, first, into classes of track construction, including rails and joints, and, second, track substructure, including only ties and fastenings, since the ballast or permanent foundation underneath the ties is not owned by the railway company, but by the city.

Unit cost estimates per mile of the various types of construction found were then prepared, which unit costs include in addition to the bare cost of material and labor, an item of 15 per cent. to cover the cost of contractor's profit, and of organization, engineering and incidentals as previously defined, in order to arrive at the construction cost in place. The item of contractor's profit has been included in the percentage in this case, since the units used in estimating the cost of track construction are the net prices for like material laid down on the site of the work. In arriving at the total length of tangent track, the length of track existing in special

work has been excluded. The total track mileage as returned by the City included all track, that is, tangent track, as well as curved and straight track forming a part of the special work. Each special work layout was measured in detail in place, the amount of curved and straight track in each layout thus being determined, and the sum of these amounts when deducted from the total mileage as returned by the City gave the amount of tangent track which has been used, together with the appropriate unit cost in arriving at the value of the tangent track.

The substructure has been depreciated on a basis of 4 per cent. per annum for the number of years of life, as determined from the records of the company and such other sources as were available. In depreciating the value of the girder rail measurements were made to determine the amount of wear that had taken place in the rail. The life of the rail is considered to be the period of time required for the head of the rail to wear away to a remaining height of 5/8 inches above the tram or the base of the groove. The difference between this height and the height of the head above the tram at any time constitutes the remaining wearing life of the rail at that time. To determine the height of the head of the rail above the tram at the present time, measurements were taken along the track at frequent intervals with a specially constructed vernier measuring device, by which means the actual distance between the head of the rail and the tram was obtained in 64ths of an inch. From this determined height there was deducted the scrap height of 40-64 inches, the remainder representing the wearing height of the rail. This method of depreciating the rail depends entirely upon the actual wear of the rail to date, and is entirely independent of the wear on the substructure.

The above measurement gives no information with regard to the track so far as the joints are concerned. It is readily seen that, although the rail as a whole may not be worn to a sufficient point to require its removal, the joints may be in poor condition, either due to a poor foundation or to the excessive traffic resulting in the battering of the rails at the end, with the result that it may be necessary to replace the joints, and at the same time saw off the end of the rail, in order to use the remaining length of the rail in the track and realize its full wearing value. In this case it will be necessary to cut off about 6 per cent. of the length of 30-foot rail when the rail is trimmed approximately 11 inches at each end. This will result in a loss of 6 per cent. in the length of the rail, and in addition such loss as may be incurred by replacing the joint.

The track was inspected at frequent intervals throughout the various portions of the City. As a result of this inspection it was evident that the condition of the track laid with 6½-inch rail, weighing either 69 or 73 pounds per yard, was inadequate to meet the demands of the traffic as it exists in the Toronto district at this time, and it has also been stated by the company that the operation of the improved or heavier rolling stock is not advisable for reasons of safety on this older construction. Virtually all this track was constructed in 1892 or 1893, and because of its inadequacy,

the depreciation has been based on other than the measurements taken of the wear of the head of the rail. In estimating the depreciation of this track it was determined that the entire mileage of same, approximately 48 miles, should be removed within five years, and accordingly a wearing life varying from 1 to 5 years has been accorded the entire mileage of this class of construction.

(*b*) *Track Special Work.*—Each piece of track special work was measured, listed, and sketches prepared and reproduced herein, and unit cost estimate was prepared for each layout. To the cost of the steel in the layout, there has been added the cost of ties and labor, and the necessary miscellaneous items included in the installation of the same, in order to determine the total cost of the work in place, and there has been further added to this cost an item of 15 per cent. to cover contractor's profit, engineering, organization, and incidentals.

The depreciation in special work has been determined by field inspection, during which inspection the present condition of the work was noted, and the rates of depreciation which have been applied to the summaries are the weighted average percentage shown by such investigation.

(*c*) *Track in Car Houses and Yards.*—The determination of the length of track in car houses and yards, was based on the railway company's records. The track was actually checked up by visiting the various car houses and yards, and the types of construction located at the various points were determined.

Exhibit 2—Electrical Distribution System.

The electrical distributing system has been inventoried under the following subdivisions:—

Overhead straight line construction,
Overhead trolley special work,
Overhead feeders.
Underground conduit,
Underground high tension and low tension cables,
Signal and telephone system,
Track bonds.

The overhead straight line construction was inventoried by taking actual count of the various types of poles, the various classes of cross-span construction, brackets, and amount of trolley wire in existence, and applying unit costs to each of these items. A similar method was applied in the case of the overhead feeder cables, in which the cross-arms and quantity of various sized cables were determined and priced. In the case of the underground conduit system, and the underground cables, the railway company's blue prints showing the amounts and types of this construction were used, and after having checked up at random a sufficient amount of the material in the field to determine that the records were correct, the total amounts

of the various items entering into these divisions were compiled from the records and unit prices determined and applied to the items in arriving at the total cost.

Similar methods were applied in arriving at the signal system and telephone line.

Track bonds were estimated on the basis of the track miles. The total mileage of the various types of rails was determined and compiled, and by estimating the cost per mile for the various types of construction, the total cost new was obtained.

The price used for copper wire is based on a monthly average price of bar copper for the past ten years f.o.b. New York, to which has been added the cost of drawing, freight and installation in order to obtain the cost new in place. The scrap values were based on quotations from local dealers in these commodities. The depreciation in general has been based on the estimated life of the various materials used in the construction, and as well by inspection. The depreciation of the trolley wire was determined by actual measurement of the cross-sectional area of various sections, it being assumed that, when the wire was worn to two-thirds of its original section, it should be scrapped.

As stated in the general section in the premises of the appraisal, a large amount of the material listed and priced and entering into the value of the electrical distribution system is new, and a small portion was not yet installed as of the date of the appraisal. The entire material, however, had been purchased, and was on the ground, and since it is not included in the stores, its value is included with the electrical distributing system.

Partially on account of the large amount of new construction, and also on account of the high scrap value of the copper which forms a large portion of the electrical distributing system, the present value of the electrical distributing system is relatively higher than that of many other portions of the property.

The depreciation rates which have been applied to the equipment included in this exhibit are as follows:

	Years Life.	Depreciation per Year.
Iron poles	35-40	3 to 2-½
Cedar poles	20	5
Pole brackets	25	4
Cross arms—wood	20	5
Cross arms—iron	30	3-⅓
Weatherproof cables	30	3-⅓
Lead cables	35	3
Transmission line material	20	5

Throughout this exhibit 15 per cent. has been added for contractor's profit, organization, engineering and incidentals.

Exhibit 3—Rolling Stock.

This exhibit has been divided into three divisions, passenger equipment, utility equipment, and miscellaneous equipment.

All the cars under passenger equipment have been divided into groups, depending upon the type of equipment and car body, and unit prices have been applied to the various groups, in order to obtain the cost new of the cars. To the cost new, as thus determined, 5 per cent. has been added for organization, engineering and incidentals.

The utility equipment consisting of the sweepers, sprinklers, and construction cars, have also been divided into classes or groups, and the total value determined by applying to the number in each class an appropriate unit cost. The miscellaneous equipment consisting of equipment such as that used in the instruction school, all fare registers and extra material, spare trucks, wheels, spare electrical equipment, etc., has been determined by listing the amount of the material found at the various car barns and applying thereto suitable unit prices.

The present value of all this equipment was determined as follows. The car bodies in all cases were depreciated by age, a life of 20 years being given to all car bodies in continual service, excepting those with a partial steel under frame, in which case the life was taken as 25 years. The life of car bodies in service during only summer or winter seasons was also taken as 25 years. The trucks and motor equipments were depreciated by inspection, which was supplemented by a knowledge of the age and length of service of the equipment in most cases. Consideration was also given to the suitability of the trucks for use with other car bodies.

In the case of old trail cars, some of the bodies of which were reconstructed from older cars, and whose actual age is in excess of the 20-year age of cars of this type, although the length of life since reconstruction is less than 20 years, the cars were depreciated to practically scrap value, it being assumed that in any case they will be replaced by a more modern type of car in one or two years, and for this reason only one or two years remaining life was given to this equipment in arriving at the present value of this class of rolling stock.

Exhibit 4—Power Plant Equipment.

A detailed field inventory was made of all equipment in the power plant and the various substations as of the date of the appraisal, and all the equipment found by this inventory has been listed and priced, and the value returned on the same. But there has been excluded from the apparatus so valued those items which were found to be unnecessary in the operation of the street railway company. To the quantities found in this inventory, there was applied present day prices for like equipment, in order to arrive at the cost new in place. To the cost thus obtained was added 10 per cent. to cover the cost of organization, engineering, and incidentals. The depreciation of

apparatus has been based on both the number of years which the equipment has been installed and the manner in which it has been maintained. The rates of depreciation generally applied are enumerated below, and in arriving at the dates of installation information was obtained from the records of the company and from other available sources. In general, the rates of depreciation that have been applied to the various parts of the power plant and substation equipment are as follows:

Machinery Foundations:	
These are depreciated at the same rate as the machinery which they support.	
Coal handling apparatus	6 %
Grates and Stokers:	
Maximum	50 %
This item is depreciated 10 per cent. per year for 5 years, and no further depreciation is applied if they are in use.	
Boilers and Settings:	
Horizontal tubular boilers	8 %
Water tubular boilers	3½%
Steel Smoke breeching	10 %
Stacks:	
Brick and concrete	2 %
Heaters:	
Open heaters	3 %
Closed heaters	6 %
Closed cast iron heaters	4 %
Pumps	5 %
Air compressors	5 %
Engines:	
Corliss, slow speed	3 %
Automatic high speed	5 to 8 %
Piping and Covering	3½%
Generators and Transformers:	
Slow speed	4 %
High speed	5 %
Transformers	5 %
Rotary converters	5 %
Switchboards, generator leads and wiring	3 %

Exhibit 5—Shop Equipment and Tools.

In the case of shop equipment and tools, complete lists of all such equipment were furnished by the railway company, showing in detail the material located at the various shops, car sheds, and other localities. These lists were taken to the various locations, and the material checked with the lists in order to ascertain their correctness. Unit prices were then applied to the detailed lists thus obtained, and the total appearing in the summary of this exhibit is the total obtained in this manner. The present value of this equipment was determined by inspection so far as the minor

items are concerned, and by inspection taken in conjunction with the ages of the larger pieces of equipment such as heavy machine tools.

Exhibit 6—Furniture and Fixtures.

Furniture and fixtures were listed in detail, since the railway company had no detailed list showing this equipment, and suitable unit prices were applied. The detail following the general summary shows the cost new, and the present value of the furniture and fixtures appearing in the various locations. The present value of the furniture was determined by inspection.

Exhibit 7—Real Estate and Buildings.

The present value of the real estate and buildings was determined by Mr. J. C. Forman, Assessment Commissioner of the City of Toronto. The value so returned does not include as one element the cost new of the buildings, and in order to determine this the additional amount of $262,215 was added to the value returned by Mr. Forman to represent the cost new. This amount is the difference between the appraised cost new value of the buildings alone, and their present value as determined by our independent appraisal. The cost new value of the entire realty thus arrived at is included with the cost new of the rest of the property, in order to determine the proper amount on which to estimate the cost of securing money. The present value, however, which is used in determining the entire value of the property when the physical value is taken in conjunction with the intangible value is that value returned by Mr. Forman, as his independent appraisal of the realty.

Exhibit 8—Stores.

The value of the stores appearing in this inventory is the value shown by the general stores account taken from the ledger balance of the Toronto Railway Company, as of June 30th, 1913. This amount was not checked in detail, although the major items as shown by the company's records were checked in the field and found to be substantially correct. In the case of purchase of the property, a detailed inventory should be taken of the stores as they exist at the time the property is turned over, and any difference between the value of the stores as they appear from such inventory, and the value returned herein should be made as an adjustment in the contract purchase price. Five per cent. has been added to the amount of stores to represent the expense of preparing bills of material, purchasing and cartage. Reference is again made to the fact that this percentage does not necessarily represent the actual expense to the company of acquiring these supplies as an operating company, but is a fair percentage, which should be added to this amount of capital expenditure on the assumption that the entire property is reproduced new, in which case it would be only fair to distribute the entire overhead expense amongst all items of the property by adding appropriate percentages to the various divisions of the inventory.

(b) *Intangible value:*

Due to the expiration of a large number of franchises under which public utilities have been furnishing service to communities, the mutual relations existing between the public utility and the community served have been subject to wide consideration. The result of the studies that have been made with regard to the operation of utilities, the profits resulting from their operation, and the expenses incurred in furnishing service, the changes necessitated both in the interests of a more modern service has brought about in recent years a more clearly defined understanding of the entire situation. The owners of the properties have been brought to realize that it would be necessary for them to treat fairly in a financial way with the public to which they must look for their revenue, and the public has been brought to realize that in general the operation of the public utility has not been as profitable as it had been led to believe was the case. In fact, in the case of many properties, whose operation and history have been carefully analyzed from the inauguration of service, it has been found that the properties have not returned a fair return on the capital invested year by year. Careful studies have been made of the operation of many properties, with the view of determining the capital that has been invested in the properties and the cost of operation, for the purpose of determining whether or not the operating properties have been making unreasonably high returns.

When such cases are considered in full detail, it is necessary to take into consideration the existing contracts, agreements, ordinances, or franchises under which the capital has been invested, and the properties developed. In case for any reason it becomes necessary to take up negotiations between the community and the operating company, it must be definitely understood that such negotiations can only be carried on in a satisfactory way when the fairest possible consideration is given to all conditions of the agreement under which the property is being operated.

In the consideration of such agreements, ordinances, or franchises, it is often found that, viewed with to-day's information with regard to public utility companies, the agreements contain stipulations which would not be written into agreements made to-day, and which in many cases do not fully serve the interests of the public as we now view them. On the other hand, it must likewise be conceded that at the time such agreements were drawn, a very inadequate conception existed as to the possibilities and future developments of these public utilities. In general, the result of this inadequate conception of the future of public utilities has resulted in the construction of large amounts of apparatus, which in later years has been discarded in favor of newer types, and frequently within the life of a given ordinance or franchise, no less than two complete changes in equipment have been made. The net result has been that on the average the profit accruing from public utilities has not been excessive in spite of the fact that the agreements, franchises and ordinances have not in all points fully protected the interests of the public as we see them to-day.

In entering into negotiations which seek the change of the present condition either in the way of relief from a supposed hardship imposed upon either of the contracting parties by the situation as it exists at present, or for the purpose of bettering the service or conditions in any way, it must be admitted that the contracts, agreements or ordinances as they exist to-day must be taken into account as an essential element to be considered in negotiations. In the case of a sale of property, the owners thereof will demand, and the public should grant that a fair monetary value should be given to the agreement or ordinances in case the community elects to possess itself of such franchise agreement before its termination. The operating company has a right to demand this, since supposedly its operation from the beginning of the franchise period has been carried on with the idea that it would continue in operation until the end of the period covered by the franchise agreement, and all its financing and general business arrangements have been determined accordingly. If in any particular case the franchise agreements have been such as to result in a profit, which in the light of to-day's knowledge appears to be excessive, it will nevertheless be necessary to reckon with the value of such larger profits throughout the remaining life of the franchise in negotiating with the company for a termination of the agreement. Anything less than this would constitute an abrogation of the contract entered into between the City and the railway company, at the time the agreement was made, and which it must be assumed was entered into with full faith by both the contracting parties.

No complete study has been made of the history of the Toronto Railway Company involving a study of the investment in the property year by year, and including a careful analysis of the operating expenses year by year. Therefore, we have not complete information and data at hand on which to base a complete analysis of the situation. Such a study as has been made of the situation shows clearly that on account of certain conditions in the ordinance agreement, which limits the area in which the company must build its tracks, and in which area it also has a right to charge the rates of fare agreed upon, and which confers unusual exemption from taxation and maintenance, the operation of this property apparently has been very profitable to its owners, and on account of the recent large development of the City, will continue to be profitable to its owners during the remaining years of the franchise period. The large profit to the operating company, however, is also attended by a reasonably large return to the city in the way of a percentage of the gross receipts, which must be paid to the City in accordance with the agreement. The agreement, however, does not provide relief in the way of requiring extension of service into areas outside of the old corporate limits of Toronto, and this reduced area of operation, taken into connection with the character of the service in certain respects constitutes on the part of the public sufficient cause for its entering upon negotiations to secure the property of the railway company before the termination of the franchise, with the idea that when the City is possessed of the property and franchises of the operating company, it will be able in its own way to rectify such shortcomings in the service as may now exist.

In entering into these negotiations it is assumed that the City of Toronto will be willing to reimburse the railway company for the physical property which will be turned over to it by the railway company, and also for a fair value of the estimated future returns that would accrue to the railway company in case it continued to operate its property until the end of the existing agreement.

Such negotiations can only be satisfactorily carried on and concluded in case each party to the negotiations fully recognizes the claims of the other party, and meets these claims fairly and reasonably. The City of Toronto must fully recognize the value of the property operated as a whole, which includes not only the value of the physical property existing to-day, but as well the monetary value as of to-day of the company's right to do business throughout the remaining term of the franchise period in accordance with the franchise agreement. On the other hand the company must realize that, if the value of the property has been fairly worked out, and the City has agreed to pay a fair sum for the property as a whole, the company should then turn over to the City *the property as a whole, including all franchise rights*, which as stated in the agreement gives the railway company the sole right to operate street railway systems in and upon the streets of Toronto within the specified area. Upon this basis the intangible value of the Toronto Railway Company has been considered.

The intangible value of the property as herein considered refers to the value to the operating company of its rights to continue to operate its property and receive therefrom such returns as will annually accrue to it if the operation is carried out under the terms and provisions of the agreement until its termination by regular course on September 1st, 1921. Under the terms of this agreement the railway company is given a practical monoply to operate a street railway system upon and along the streets within the City limits of Toronto as they existed September 1st, 1891. In accordance with this agreement the railway company is not required to provide all of the construction ordinarily provided by other traction companies, in that the City of Toronto is required to furnish the track foundation, the paving foundation, and paving surface, which relieves the railway company of the expense of making the excavation and furnishing ballast or permanent structure under the ties, and only requires it to furnish the ties, rails and fastenings.

The railway company, however, is obligated to pay to the City, in return for that portion of the track construction which is furnished by the City, a sum of $800 per mile of single track per year.

Moreover, the railway company is required to pay to the City a certain per cent. of the gross receipts from railway operation. The net profit obtained from the operation of the railway system under the terms of the agreement has been determined as follows: From the gross receipts there has been deducted the operating expense of the company including maintenance, taxes, expenditures for renewals, payments to the City on account

of paving, and payments to the city on account of the percentage requirement. A further deduction was made from the net receipts, of the interest on the investment required to furnish service. The net amount remaining after deducting all these amounts represents the profit accruing to the company from the prosecution of the transportation business over and above a fixed interest charge of 5 per cent on the capital invested in the business, and the present values of such net profit for the remaining term of the agreement is taken as the intangible value of the property.

In determining the intangible value it is assumed that the character of the service furnished by the railway company will be in substantial accord with the character of the service required by the spirit of the agreement.

One method of measuring the character of the service is by comparison between the operating expense of the company with that of companies operating in cities of a similar size. In making the comparison, however, it should be noted that the railway company serving a given community is in general required to extend its line into new territory, as the City limits may from time to time be extended, and thereby furnishes service in the less remunerative districts. In the Toronto case, in accordance with the present agreement, the railway company is not required to extend its track beyond the City limits of 1891, with the result that the conditions in Toronto differ from the conditions in other cities in certain particulars determined by these and other provisions of the agreement.

Although the ratio of the operating expenses to the gross earnings of the street railway companies of this continent, when all elements of operation are properly included, is generally approximately 70 per cent., there are certain conditions in the agreement between the City and the Toronto Railway Company which tend to materially reduce the expense of operation, so that an operating ratio of 55 per cent. has been found applicable to this company.

The reported operating ratio for the calendar year of 1912 is shown to be 53.4 per cent. This ratio is exclusive of the payment to the City for taxes and for pavement charges, both of which items would be included in the average 70 per cent. operating ratio above referred to. When the total of these two items, amounting to $143,000 is added to the reported operating expense of $2,866,550, the operating ratio is then found to be 55 per cent.

Of the expenditures covering the operation of its property, the payment of the Toronto system to the City of Toronto for taxes independent of franchise taxes on gross earnings, is but .95 of one per cent. of the gross income, whereas the average per cent. of the gross income paid by fifteen of the largest traction companies of the United States is found to be 6.35 per cent. In other words, the reported operating ratio of the Toronto Railway Company is 5.4 per cent. less than other cities because of the fact that its taxes are very nominal.

Again owing to the manner in which the Toronto Railway Company defends itself against suits for injuries and damages, it is found that its expenditure on this account is approximately 2 per cent. of its gross revenue, whereas the average of American cities is found to be 5.35 per cent. of the gross revenue. In this item we find a saving in favor of the Toronto Railway Company of 3.35 per cent.

The payment of $800 per single track mile to the City of Toronto for the maintenance of the paving and paving foundations is less than the actual cost of maintaining and renewing said work. A report furnished by the City would tend to show that this work costs on an average of $23,000 per mile, and assuming a life of twenty years for the pavement, the depreciation upon same would be $1,150 per mile per annum. The average expense to the City of maintaining this property over the past eight years on analysis is found to be $104 per mile, giving a total expense to the City of $1,250 per mile, for which the traction company pays $100 per mile, so that besides the saving of fixed charges, the traction company saves approximately $450 per annum per mile of the normal expense to a traction company in maintaining its track substructure and paving surface. The saving in expense of maintenance represents approximately 1 per cent. of the gross earnings.

In the matter of a renewal fund, it would appear to be the practice of the Toronto Railway Company to accumulate this fund by charging it against surplus rather than including it as an item of operating expense, and by reference to the balance sheet of the Company for December 31st, 1912, it will be noted that there existed a balance of over $600,000 applicable to the renewal of its property, being the unexpended balance of a fund aggregating a million and a half dollars, which has been accumulated out of surplus. This fund has, as above stated, been charged directly to surplus, and it would appear that the amount so charged for the year 1912 was approximately $200,000, or about 4 per cent. of the gross revenue.

In order therefore to place the operating ratio of the Toronto Railway Company on a basis comparable with that of other companies which operate under approximately 70 per cent. ratio, the following corrections become necessary:

Reported operating ratio as corrected		55%
Add—Taxes	5.4%	
Maintenance	1%	
Damages	3.3%	
Renewals	4%	
		13.7%
		68.7%

From the above it appears that the total operating ratio of the company as reported and as revised above is 55 per cent., and that this ratio is

comparable when the franchise conditions are taken into consideration with the ratio of approximately 70 per cent., which is generally applicable to street railway properties. Therefore under the existing franchise conditions, it is proper to use the operating ratio of 55 per cent. in determining the net receipts from operation, from which a still further deduction must be made of the amount of the franchise tax.

In order to determine the net earnings throughout the future years, an estimate has been made of the rate of increase of the gross earnings. A table accompanies this report showing the gross earnings of the company during the past 22 years, which indicates that the average rate of increase in the last seventeen years has not been less than 10 per cent. The growth of the population in the City of Toronto is shown both in a table and in a curve, which indicates that during the last five years the average rate of increase compounded has been 8.88 per cent., while during the previous ten years the average rate of increase was 7.55 per cent. During the last five years, however, there has been a large increase in the area of the City due to the annexation of outlying districts. However, if it be assumed that all of the population in the outlying districts that have recently been annexed to the City has accumulated in the last twenty years, in other words, in 1891 the population in the outlying districts was practically negligible, the average rate of increase in population in the present limits of the City of Toronto is found to be 4.35 per cent. The increase in population to be anticipated during the remaining eight years of the life of the franchise has been variously estimated from available statistics, and from the curve showing the increased population and area during the past twenty years, it is possible to project a study of the probable growth in the future and the line as shown with an increase of 5 per cent. compounded for the next five years from 1913, and 4 per cent. compounded for the remaining years of the franchise represents a very conservative estimate of the increase of population in this territory.

If the gross earnings of the property increase in such a manner that the ratio between the gross earnings in given years is proportional to the square of the ratio of population in the same years something over 10 per cent. increase in earnings should be anticipated for the coming five years, and something over 8 per cent. for the remaining years of the franchise. However, it is possible that if the City does not purchase the property of the Toronto Railway Company, then the City will proceed in its plan of constructing a subway on Yonge Street and connecting this subway with the City's lines in the outlying districts, thus competing in a limited area with the railway company within the territory of the old Toronto City limits, and for this reason, in estimating the gross receipts of the Toronto Railway Company during the remaining years of the agreement, the rate of increase has been decreased and 10 per cent. increase has been allowed for the first three years and 8 per cent. for the succeeding three years, and 6 per cent. for the remaining life of the franchise.

In estimating the future gross receipts, the receipts for the year ending December 31st. 1912, the fiscal year of the Company, have been taken

as a basis. The gross receipts for the remainder of the franchise period were estimated by increasing the gross receipts for the year 1912 by the percentage stated for the years and fraction of years. The amount which would be paid the City as franchise tax was then determined by taking the stated percentages of the gross receipts for the various given years as is shown in table VII. The net profit to the company was then determined by deducting the franchise tax from the net receipts from operation, that is, from 45 per cent. of the gross receipts, all of which is shown in detail in table VIII. The present value of the net profit for any given year was obtained by discounting the net profit for the given year to July 1st, 1913. In so doing it was assnmed that as the income was distributed throughout the year, the total income was available in the middle of the year. The sum of all such quantities becomes the present value of all future net earnings from the operation of the property after the payment of all operating expense, payments to the City for pavement and corporate taxes, and also payment to the City of the tax on the gross receipts of the company. The amount so found as shown by table VIII. is $15,701,106.

There yet remains to be deducted from this amount the present value of the future interest payments that must be met by the company. In order to arrive at the value of the investment during the future years, the amount of additional plant that will be required to handle the increased business has been estimated in the following way. It has been assumed that the company will replace the original trailers with approximately 50 motor cars during each of the next two years. The amount of rolling stock has further been increased directly in proportion to the increase in gross earnings, that is, if the increase in the gross receipts has been 8 per cent. in a given year, then the number of cars carrying that business has also been increased a like 8 per cent. There has further been added to the plant required the necessary power plant and substation apparatus needed to properly transport additional cars, and this has been added on the same basis as the increase in the number of cars. There has further been added all the additional track together with the necessary overhead electrical distribution system recommended in our report of last year, to be constructed within the City limits of Toronto as of 1891.

It is assumed that the investment necessitated by this additional trackage will be made within the next five years. The new capital necessary is shown by table V. and represents an investment of $7,100,000.00 within the next eight years, or an average investment of new capital $887,500 per annum, which amount is in addition to and entirely distinct from the moneys which must be expended to maintain the property now existing in a satisfactory manner. This latter expenditure is fully covered in the operating ratio assumed.

As stated above it is necessary to deduct from the present value of net earnings the present value of the interest that must be paid from year to year in order to support the capital invested from year to year at a given rate of 5 per cent. Table IX. shows the capital invested year by year,

and the interest that must be paid year by year on this capital investment. The present value of this interest has been obtained by discounting the interest which is assumed will be paid at the end of the year, to July 1, 1913, and the sum of all these present values represents the present value of the interest on all capital to be supported throughout the remaining life of the agreement, which according to this table amounts to $4,987,553.

The intangible value which represents the present value to the operating company of the net income after meeting all charges of operation, and in addition thereto the fixed charges on the capital providing the service will be obtained by substracting from the present value of the net income, amounting to $15,701,106, the present value of the fixed charges, amounting to $4,987,553, resulting in the value of $10,713,553.

The intangible value thus determined is seen to be the monetary value of the Company's right to do business for the unexpired period of the agreement, and it therefore follows that, if the City purchases from the railway company its property, and pays therefor a sum of money representing the present value of the physical property and of the franchise value, the railway companies should turn over to the City of Toronto all their titles to all the physical property considered herein, together with all rights, privlieges and grants required for the operation of surface railway systems across and along the streets of Toronto as of September 1st, 1891, thus giving to the City the right to operate all such surface railway systems in this area.

Respectfully submitted,

BION J. ARNOLD,
JNO. W. MOYES.

Chicago, Ill.,
September 20th, 191

Item
Track
Electrical Distribution Syst
Rolling Stock
Power Plant Equipment
Shop Equipment and Tool
Furniture and Fixtures
Realty and Buildings
Legal Exp., Carrying Cha Inc'd's on total at 5 per
Bond Discount at 5 per ce
Stores

SUMMARY OF EXHIBITS, TORONTO RAILWAY COMPANY REPORT.

PREPARED FOR MAYOR HOCKEN

m	Net Cost New	Eng. % Added	Total	Net Present Value	Eng. % Added	Total	Net Cost New	Depreciation	Net Present Value
	$	$	$	$	$	$	$	$	$
....	1,668,021 14	250,221 94	1,918,243 08	1,038,700 44	155,805 07	1,194,505 51	1,668,021 14	629,320 70	1,038,700 44
bution System .	940,692 46	141,103 54	1,081,796 00	790,991 95	118,650 05	909,642 00	940,692 46	149,700 51	790,991 95
. . ..	4,529,911 00	226,445 50	4,756,356 50	3,075,644 10	153,782 71	3,229,426 81	4,529,911 00	1,454,266 90	3,075,644 10
uipment.....	1,478,685 00	147,867 00	1,626,552 00	1,090,609 00	109,060 00	1,199,669 00	1,478,685 00	388,076 00	1,090,609 00
t and Tools....	163,648 16	8,182 41	171,830 57	104,324 82	5,216 24	109,541 06	163,648 18	59,323 34	104,324 82
ixtures.....	16,049 20	.....	16,049 20	12,969 99	.....	12,969 99	16,049 20	3,079 21	12,969 99
dings.....	2,408,974 00	.....	2,408,974 00	2,146,759 00	....	2,146,759 00	2,408,974 00	262,215 00	2,146,759 00
			11,979,801 35			8,802,513 37			
rrying Charges, al at 5 per cent.	598,990 07	.....	598,990 07	598,990 07	.....	598,990 07	598,990 07	.....	598,990 07
at 5 per cent...	628,939 57	.....	628,939 57	167,717 22	.....	167,717 22	628,939 57	461,222 35	167,717 22
.....	309,773 00	15,489 00	325,262 00	309,773 00	15,489 00	325,262 00	325,262 00	.....	325,262 00
	12,743,683 60	789,309 39	13,532,992 99	9,336,479 59	558,003 07	9,894,482 66	12,759,172 60	3,407,204 01	9,351,968 59

RECAPITULATION

Net Cost New and Eng. Org., etc., added ... $13,532,992 99
Net Present Value and Eng. Org., etc., added $9,894,482 66
Net Depreciation.. .... $3,407,204 01

TABLE 5.

TABLE OF NEW CAPITAL TO BE SUPPORTED.

	1913	1914	1915	1916	1917	1918	1919	1920	1921
	$	$	$	$	$	$	$	$	$
Cars—To replace trailers, 100 in two years, at $7,250 each, to meet normal increase	362,500	920,750	652,500	726,000	630,750	681,500	739,500	601,750	630,750
Track and Overhead Track—Per mile $14,000									
Overhead—Per mile 10,000									
$24,000	84,000	60,000	264,000	132,000	.....	.....	.....	.....	.....
Power—25 K.W. per car at $30 per K.W., $750	37,500	95,250	67,500	75,000	65,250	70,500	76,500	62,250	65,250
Total.	484,000	1,076,000	984,000	932,000	696,000	752,000	816,000	664,000	696,000

TABLE 8.

PRESENT VALUE OF NET EARNINGS.

Year	Gross Earnings	Operating Expense, 55 Per Cent.	City's Share of Gross Earnings	Net to Company	Present Value of $1.00 Due in Future Interest at 5 Per Cent Discount at Mid-Year	Present Value of Net Earnings
	$	$	$	$	$	$
1913	5,992,855	3,296,070	938,571	1,758,214	.9877	868,294*
1914	6,592,140	3,625,677	1,058,428	1,908,035	.9407	1,794,889
1915	7.251,355	3,988,245	1,190,271	2,072,839	.8959	1,857,056
1916	7.831,463	4,307,305	1,306,293	2.217,865	.8532	1,892,282
1917	8,457,980	4,651,889	1,431,596	2,374,495	.8126	1,929,515
1918	9,134,618	5,024,040	1,566,924	2,543,654	.7739	1,968,534
1919	9,682,695	5,325,482	1,676,539	2,680,674	.7370	1,975,657
1920	10,263,657	5,645,011	1,792,731	2,825,915	.7019	1,983,510
1921—8 months	7,252.984	3,989,141	1,190.597	2,073.246	.6904	1,431,369
	72,459,747	39,852,860	12,151.950	20,454,937	.....	15,701,106

* For 6 months only.

TABLE 9.

Present Value of Interest or Fixed Charges.

Year.	Present Value of Physical Property.	Increase per Annum.	Total Investment.	Fixed Charges 5 per cent.	Present Value of $1.00, Due in Future Interest at 5 per cent., Discount at Year End.	Present Value of Fixed Charges.
	$	$	$	$		$
1913—6 months	9,894,483	484,000	10,378,483	518,924	.9756	506,262
1914		1,076,000	11,454,483	572,724	.9291	532,118
1915		984,000	12,438,483	621,924	.8849	550,341
1916		932,000	13,370,483	668,524	.8428	563,432
1917		696,000	14,066,483	703,324	.8027	564,558
1918		752,000	14,818,483	740,924	.7645	566,436
1919		816,000	15,634,483	781,724	.7281	569,173
1920		664,000	16,298,483	814,924	.6934	565,068
1921—Sep. 1		696,000	16,994,483	849,724	.6710	570,165
		$7,100,000				$4,987,553