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SECRETARY'S EVIDENCE RE VALUATION OF CARS.

WEST OUTTRIM STRANWARD - Accountant.

Experience -

Secretary to Prahran & Malvern Tramways Trust from its inception to 1st July 1916.

Practising Accountant for 25 years.

President of the Incorporated Institute of Accountants of *Nelson* 1912/15.

Has made many investigations in connection with

important undertakings in which the question of Depreciation was involved, such as an enquiry on behalf of the State Government as to whether the Victorian Railways ^{Suburban} Passenger Service was carried on at a loss in the year 1908.

For many years made a study of the Depreciation as applied to Public and Private Undertakings..

I have made an examination of the Company's Exhibit A 1; (Shop Repair Book) and analysed the entries therein.

I am informed that the Company is in possession of no other statistical records which would assist in arriving at a valuation of its Rolling Stock.

ROLLING STOCK.

On 1st July 1916 the Board acquired the Melbourne Tramway & Omnibus Company's Rolling Stock as under:-

Standard Box Cars.

388 Imported or Built between 1885 & 1890
(84% of total)

38 Built between 1900 and 1907

36 Built in 1911 and 1913

462

Open Cars..... 2 Built in 1888

12-ft Small Cars 4 Imported 1885

Regis Cars..... 50 Built or made between 1901 and 1906.

6 Built in 1915 - X Coy could assume would not be scrapped in 1916.

56

TOTAL 524 Cars.

NUMBERS:

430 Built between 1885 and 1890; 90% of total.

30 Built in 1906 and 1907

20 Built in 1912

Total 480

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SECRETARY'S NOTES RE VALUATION OF CARS.

I have carefully considered the methods by which an equitable valuation of the Company's Rolling Stock can be arrived at, and have consulted a number of the best authorities upon the subject, including works by Floy, Hayes and Foster, and the proceedings in arbitration in connection with the acquisition of Tramway Undertakings by the Cities of Edinburgh, Bristol, Plymouth and Manchester.

In my opinion the most equitable principle upon which a valuation may be based is "that the Board should pay to the Melbourne Tramway & Omnibus Company Limited such price as will enable it to obtain the same car use as the Company obtained *at approximately the same annual cost* prior to 30th June 1916, taking into consideration the remaining useful life of the car, the probability of supersession and the cost of future annual maintenance."

I propose to deal with the valuation of Standard Cars and Dummies separately from the valuation of Bogie Cars. My calculations mainly deal with Cars and Dummies aged from 25 to 30 years, and if His Honor accepts the principles of valuation they can by similar processes be adapted to more recently built vehicles.

As there is no market for Cable Cars and Dummies, the ascertainment of their value must be arrived at by independent methods.

GOODWILL AND EARNING POWER.

As the Company was merely a tenant of the Tramslines under a Lease which expired on the 30th June 1916, no question of goodwill in connection with the purchase of its Rolling Stock can arise. The Board was (theoretically) free to purchase elsewhere or to build cars for itself; although as a matter of fact the brief period allowed by Act No. 2818 practically compelled the Board to purchase the Company's Rolling Stock. It also follows that the ~~private~~ earning capacity of the

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Company's cars when used in connection with the Board's Undertaking cannot be allowed to in any way ^{to} influence the compensation to be paid for their acquisition. The earning power of an asset does not determine its value.

If the Board did not acquire the cars their value would have been practically reduced to the scrap or break-up value.

CONSIDERATIONS WHICH DETERMINE VALUES.

In my opinion the considerations which should determine the value are:-

- (1) Residual or Scrap Value.
- (2) The remaining useful ~~or functional~~ life of the Cars.
- (3) The probable date of their supersession.
- (4) The increasing annual cost of maintenance of old as compared with new Cars.

Residual or Scrap Value.- It is generally agreed that the existing Cable System must be eventually superseded and some form of Electric traction adopted. When the conversion has been effected the existing rolling stock will be practically valueless.

I am guided to this conclusion by the experience of other Cities -

SYDNEY.- I hold letters from the N. S. W. Government Railways & Tramways which show that after the Sydney Cable System had been superseded, 12 trailing cars similar to those acquired by the Board from the Company were in 1905 sold to the Electric Supply Company of Victoria for £80 each and one for £50. The balance of the Cars and Dumpies aged 12 to 19 years were disposed of some time afterwards in a deteriorated condition, including wheels and axles but stripped of brakes and other fittings at from £3 to £5 per car.

ADELAIDE.- The Adelaide Tramways Trust a few years ago disposed of its superseded Horse cars, which would probably

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cost now about the same as the Melbourne Cable Cars, at about £10 each; and these cars are doing duty as Summer Houses and for other purposes. More detailed evidence upon this point will be put forward by another witness.

MELBOURNE. The Melbourne Tramway & Omnibus Company's omnibuses were I understand sold for a few pounds each, and many of them are at present held at Mountain resorts near Melbourne as monuments of the old 'Bus service.

BIRMINGHAM. The proceedings in Arbitration to fix the value of the Handsworth Cable cars aged ^{from} 8 to 21 years, acquired by the City of Birmingham show that an estimated value of £5 per car was allowed for in deciding the compensation payable for the rolling stock.

I am of opinion that upon the electrification of the Melbourne Cable System practically the whole of the Rolling Stock in question would share the same fate as that detailed in the above instances. Tramway Engineers agree that the dummies would be useless for conversion for electric traction and that the cars could not be economically used as trailers in an electric system. The use of trailers in electric tramways is not favored and in any case owing to their light construction and general design the cost of conversion would not commend itself to Electrical Engineers. It must also be remembered that 84% of the Standard Box Cars are 26 to 30 years old, and that from 60 to 90% of the material used in their original construction has never been replaced. I believe that owing to the constant strain and vibration to which they have been subjected their future life under electric traction conditions at high speeds would be comparatively brief.

Allowing for the fact that a very small proportion of the Cars and Dummies might be disposed of for use on the City of Northcote Cable Tramway - if that system were not

Operating efficiency may closely approach to the 100% standard whilst the remaining life is a small part of the whole. As an example a worn rail may give full service efficiency whilst its useful life may be but a fraction of a new one. So too a grindstone with half its useful life gone may render efficient service to the end.

There may be little difference between a new car and a well maintained old car of the same design from an operating standpoint; i.e. ability to render service, but there may be a wide difference in the cost of maintaining such operating efficiency apart from the remaining useful life of either, and the value of the old and the new implement will show an immense variation.

also converted to electric traction - I am of opinion that an average of \$20 per Standard Box Car and \$15 per empty would be a liberal estimate of the residual or scrap value.

Remaining Useful or Functional Life of Cars.

After weighing the results of my examination of the increasing annual cost of maintenance, reports of the Board's Engineers, the fact that about 85% of the original material from which the cars were constructed has never been renewed, I am of opinion that although the operating efficiency of the Cars is in all probability nearly equal to their original operating efficiency - the cars are well on their way to that point when the increasing cost of maintenance and renewals will render their ^{continued} ~~continuous~~ use ^{and burdensome} ~~uneconomical; and it would be cheaper if the Cable System still exists to replace them with new cars of new design.~~ It must be remembered that with machinery, and particularly in the case of rolling stock, the operating efficiency of an asset may be almost 100% up to a short period before its eventual break-up. In the case of an old implement however, the annual cost of up-keep eventually becomes so heavy that from a financial standpoint it is better to scrap it and instal another unit. (Take in attached slip)

This Statement (No. 1) prepared at my request by the Manager of the Repair Shops, Mr. J. Roberts, and handed me by Mr. Wilcox Secretary to the Company, shows that roughly the average cost of the parts of a Standard Box Car which have been renewed is \$42.17. 1 or 12% of the total cost new in December 1915. This shows that portions of the Car representing from 80% to 90% of its cost new ^{have} ~~has~~ been subjected to 25 to 30 years of wear and tear. Authorities agree that the physical life of a tramcar is strictly limited, and numerous cases could be cited in which the American Courts and British and Australian Income Tax Departments have allowed from 4% to 10% per annum Depreciation in connection with electric cars. Owing to the comparative lightness of a Cable Car as compared with an Electric Car and to the fact

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that it is drawn and not self-propelled, the annual Depreciation of a Cable Car would be very much less: still, I am of opinion that under all the circumstances 50 or 60 years at most should be accepted as the extreme theoretical life of a Cable Car. This would demand a minimum annual allowance of at least $1\frac{2}{3}\%$ per annum for Depreciation, omitting altogether the question of obsolescence.

H. Floy in his work entitled "Valuation of Public Utility Properties" page 24 states:- "Car bodies will in course of time become so racked that they must be abandoned because the new cost less than the cost of repairing the old".

H. A. Foster in his "Engineering Valuation of Public Utilities and Factories" states at page 148:-

"No property can ever have a physical value equal to its first cost, that is, basing the prices on those originally paid, but starts to deteriorate and wear out the minute it is installed and as it can never have repairs or renewals applied all at the same time there is always some part in disrepair to a greater or less degree."

and on page 156:-

"In the same way a car body becomes so racked by use that screws will no longer hold, the wooden parts become so decayed that it is no longer economy to repair it, and the cost of maintenance becomes so high that it is useless to retain the car in service. Such depreciation is termed decrepitude, a word somewhat new to the art but exactly describing the true meaning of this class of depreciation."

H. V. Hayes in his work "Public Utilities, their Cost New and Depreciation" states at page 166:-

"But with other classes of property, especially such as have moving parts, there is an increasing need of

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"repairs with increasing life, so that the cost of
"maintenance becomes, in time, a matter of serious
"importance in determining the useful life of a unit.
"It is true that, by constant and frequent repairs, the
"useful life of a unit might be greatly prolonged, but
"such increased useful life could be obtained only by an
"excessive cost of maintenance. As this cost of maintenance
"is a charge which must be borne by the public, no public
"service undertaking would have performed its proper duty
"to the public if it had not seen that the useful life of
"each plant unit was made no longer than could be justified
"by a full consideration of the economic conditions arising
"from the cost and annual charges of a new unit as balanced
"by the annual charges arising from the retention of an
"older unit in service."

and on pages 164 and 168 the same writer emphasizes that -

- (a) The physical life of a car is affected by decay of wood, loss of strength due to vibration and wear and tear, exposure to the elements &c.
- (b) The efficiency of a Car may be good up to the time it fails; nevertheless the value of the unit is always a diminishing quantity.

Assuming therefore a maximum life of 60 years for a Standard Cox Car costing £210 to build new in 1915, the allowance for depreciation alone in connection with a car aged 30 years would be 50%, thus reducing its value to ~~£105~~ £115. *including Scrap value* This method would fix the value of a car built in 1913 at about £204. (See page 15).

Probable Date of Supersession.

In my opinion the Cable System is likely to be replaced by some form of Electrical traction within a period of say 10 years. Should the present War terminate soon, that period is likely to be considerably curtailed. On the other hand circumstances might possibly combine to cause the existing system to be retained for a few years longer.

I base my opinion upon

(1) Public opinion, which for many years has been agitating for the electrification of the cable tramlines;

(2) The fact that all the tramways built ^{in Melbourne} during the last 25 years have adopted Electric traction, and that such method of propulsion has been adopted in connection with 101 miles of single track as against 92 miles of cable tramways.

From an Engineering point of view and from the standpoint of Public convenience, it is desirable that the whole of the tramways should be operated by a uniform ^{method,} ~~authority,~~ so that the rolling stock can freely travel to and from the points in the Metropolitan area and thus link up the outer Suburban Tramways with those in the City proper.

(3) The Royal Commission upon "Railway and Tramway Systems of Melbourne and Suburbs" after an exhaustive enquiry, emphatically recommended in the year 1911 (Page 42 of their Report) that "the Cable Tramways be electrically converted * * * * and that the overhead span-wire system be adopted". Parliament is about to legislate for the ^{creation} ~~existence~~ of a permanent body to control the entire tramway system of the Metropolis, and upon the establishing of this permanent body the conversion of the Cable Tramways to Electric traction will be certain to receive their earliest consideration.

(4) All the most important Cities in the World have adopted electric traction tramway systems, and where Cable systems previously existed they have all been replaced by Electricity with the exception of comparatively short lines of Cable traction in Edinburgh, San Francisco and Lima; where on account of the hilly contour of the streets cable traction has been retained. Only a very small proportion of the tramways of Edinburgh and San Francisco are operated by the cable system.

I have therefore assumed the probable life of the Cable System to be ten years, and it follows that although the Rolling Stock acquired by the Board from the Company would probably be capable of performing the work required of it for more than ten years it would nevertheless be scrapped at the expiration of that period.

The rolling stock is therefore obsolete and it is only a question of a few years when it will possess only a scrap value. If a sale on the open market were possible, the purchaser would give all these factors consideration and the price to be paid would be influenced accordingly. There being no market should not compel the Board to ignore them. This fact should not be disregarded in assessing the present value of the rolling stock; and I have shown two of several methods by which this contention can be allowed for. If therefore, to obtain a rough approximation of the present value, we assume the life of the Car to be 40 years from the year 1885, it would follow that approximately 3/4ths of its useful life has expired and its present value would be about 268. This method would fix the value of a Car built in 1913 at about 4179. (See Page 15).

Increasing Annual Cost of Maintenance of Old as Compared with New Cars.

I have devoted considerable time to the preparation of figures upon this head. Accepting for the present the Company's claim that the Cost New of a Standard Box Car should be taken at 2210, it is evident that cars aged 30 years cannot be valued at that sum. The Company proposes to allow a deduction of 15% off the Cost New, presumably as an allowance for Depreciation. In my opinion this is quite inadequate. I have consulted many authorities upon the annual allowance for Depreciation both for acquisition or Income Tax purposes, and find that in the case of Electric cars the percentage ranges from 4% per annum upwards. Owing to Cable Systems being out of date I can obtain no authoritative statements as to the depreciation which would be allowed in respect of Cable Cars except in the case of the acquisition in the year 1908 by the Birmingham City Council of the Handsworth Cable Car System.

The evidence in this case shows that Mr. A. Dickinson the Engineer to the Birmingham Tramway Company (the Owners) on behalf of the Company, deducted an average of 40% for depreciation on Cable Cars aged for 8 to 21 years. From some of the older cars he

allowed 52% depreciation. For instance a car estimated to cost new £290 was valued by him at £137.

Mr. S. Sellon M.I.C.E. a British Trolley Engineer of high standing, also on behalf of the Company (owners) deducted an average of 54% from the whole of the Cars. Cars which he valued at £311 new were reduced by him to £147.

After further evidence and cross examination the parties agreed to an all round valuation of £155 per car - that is, 50% was allowed off the whole of the cars assumed to be worth new £311 -. This compromise was adopted by the Arbitrator Mr. Graham Harris and included in his Award. A perusal of the evidence shows that Mr. Sellon on behalf of the Company allowed as much as 80% Depreciation from some of the older cars, and after averaging the varying rates on each of the cars he arrived at 54% before mentioned.

Under the heading of "Probable Date of Supersession" I have stated that my calculations produced a value of about £90 for a Standard Box Car. This however is on the assumption that the cars are all new. It is based upon the premise that the Board will be enabled to use the cars for an average period of ten years, incurring a liability for annual maintenance no greater than would be the case if new cars had been built by the Board. 84% of the Cars are however from 26 to 30 years old, and the cost of maintaining an old car must undoubtedly be greater than the cost of maintaining a new car.

Upon this point the Company's Car Repair Shop Manager can give no assistance. I have extracted from the Company's Exhibit "A 1" (Shop Repair Book) the following figures, ^{complete} details of which I can produce:-

The first statement marked A No. 7 and No. 8 show the cost of repairing 57 Cars built in 1885 and 1886 (Page 1 & 3) between the years 1898 and 1915, 17 1/2 years, was £12. 3. 8 per annum, whilst Mr. Roberts in his cross-examination quoting from the front page of this book states that the ~~only~~ annual average cost of repairing all the cars was £9. 8. 0.

The 57 cars selected by me (being the whole of the Cars on pages 1 and 3) aged about ²⁹30 years, were apparently all in constant traffic. Many of the balance of the cars (467) were either comparatively recently built or used as spares. The figures point to the conclusion that the balance of the cars must have cost considerably less than £2. 0. 0 per annum to maintain as compared with £17.3. 9 for a car aged ²⁹30 years.

My own calculations show a somewhat lower cost of annual repair for recently built cars, but in this case I have used the Company's own figures throughout.

Owing to the absence of fuller information the comparison cannot be accepted as entirely satisfactory, but is presented in corroboration of other figures I have compiled.

Statements B & C. - These statements show that the annual cost of repairing Standard Box Cars during the years 1912/15 (a period of 4 years) was as follows:-

60 cars, average 27 years in traffic	£ 14.11. 0
13 cars, about 10 years in traffic	11. 5. 0
9 cars, about 5 years in traffic	9. 4. 5

Statements D & E - show that the annual cost of repairing Dummies during the 4 years 1912/15 was as follows:-

68 Dummies, average 28 years in traffic	£ 11. 8. 4
12 Dummies, average 8 years in traffic	7.16. 4
13 Dummies, 3 1/2 years in traffic..	8.14. 3

Owing to the comparatively few Cars and Dummies constructed during recent years which have been in continuous traffic, it is very difficult to obtain a fair comparison between the cost of repairing old and new cars and dummies; but I have in the Schedules detailed the various methods adopted to arrive at figures which would point to some guiding principle.

The conclusion which presents itself is that the comparative-ly recently built cars and dummies cost from £3 to £5 per car per

annual loss to maintain than do cars and dummies aged from 25 to 30 years.

Statements 15, 16, 17 and 18. The company's rolling stock is

brought in for periodical repair about once every three years.

I have extracted the cost of this terminal repair during the years 1913, 1914 and 1915 in connection with about 300 cars and dummies, distinguishing the repairs to cars aged over 25 years and those aged about 8 years. The figures show that the cost of the periodical repair of the older vehicles ranged from £7/7/3 to £16/3/3 in excess of the cost of periodical repair of the newer vehicles.

This also points to the conclusion that the annual charge for repairs to old vehicles is approximately £2/10/- to £5 greater than the corresponding charge in connection with more newly built cars and dummies.

In before mentioned it is practically impossible to arrive at any ^{one} statement which would definitely prove how much more expensive it is to maintain old than new cars, but I am of opinion that the figures submitted justify an assumption that the difference can be safely taken at £ 2/- per annum. *See 'A'*

The present value at 5% of a sum of £2 per annum extra maintenance for a period of ten years is £15.442 and represents the capitalised value of the additional obligation for maintenance of new cars compared with old vehicles.

From the foregoing observations I have prepared two methods for valuing a Standard Box Car, and for the reasons mentioned have assumed the following facts:-

- (a) Estimated cost to produce new in 1915... £ 210
- (b) Total useful life of car 60 years,
- (c) Cable system to be superseded by electric traction in 10 years,

'A' The increased cost of repairs to old, compared with new Bogie cars, (See Page 20) suggests the probability of a larger difference

- (d) Scrap or Residual value of Car..... £ 20/-/-
- (e) Capitalisation of the estimated increased cost of aged as compared with new cars during next 10 years £15,442

~~No. 1 method values a Standard Box Car aged 30 years at £70.~~

~~No. 2 do. do. do. at £76.~~

~~More recently built cars and coaches would upon the same basis be valued at figures varying from £93 to £111.~~

ROUGH METHODS OF ASSUMING THE VALUE OF THE ROLLING STOCK.

N^o 1

In the foregoing observations I have shown the effect of rough methods of arriving at the value of a Standard Box Car.

On Page 8 it was submitted that on the basis of a total life of 60 years, cars would have the following values:-

Car built in 1885 (age 30 years) Cost New....	£ 210
Less $1\frac{2}{3}\%$ depreciation on cost less £20 Scrap value x 30.....	<u>95</u>
	£ <u>115</u>
 Car built in 1913 (age 27 years) Cost New....	£ 210
Less $1\frac{2}{3}\%$ depreciation on £190 x 2	<u>6.33</u>
	£ <u>203.67</u>

This takes no account of obsolescence, and assumes that the cars will render full operating efficiency until the years 1945 and 1973 respectively.

On page 10 the value, based upon a life terminating in 1925 was placed as follows:-

Car built in 1885 (age 30 years) Cost New....	£ 210
Less $2\frac{1}{2}\%$ depreciation on cost less £20 Scrap value x 30.....	<u>142.5</u>
	£ <u>67.5</u>
 Car Built in 1913 (age 2 years) total life 12 years, Cost New....	£ 210
Less $8\frac{1}{3}\%$ depreciation on £190 x 2	<u>31.66</u>
	£ <u>178.34</u>

This calculation gives effect to the ^{expected} ~~assumed~~ obsolescence of the cars in 12 years.

SUGGESTED METHOD (No. 2) OF ASSESSING THE VALUE OF THE
ROLLING STOCK ON A RENTAL-OBSCOLESCENCE BASIS.

The approximate methods suggested on the previous page would I believe meet ordinary requirements, and are in accord with the principles adopted in the City of Birmingham Arbitration Case, and also the method referred to in Authorities as the "50% standard" where plant of varying ages is valued at 50% of its "Cost to Reproduce".

I think however that a more accurate and equitable method can be arrived at.

On page 3 I suggested that the most equitable basis of compensation would be "that the Board should pay to the Melbourne Tramway & Omnibus Co. such price as will enable it to obtain the same car use as the Company obtained prior to 30th June 1916 at approximately the same annual cost, taking into consideration the remaining useful life of the car, the probability of supersession and the cost of future annual maintenance." This basis practically implies that the Company should receive compensation for its Rolling Stock at the value to the Company on the supposition that the Lease had still 10 years currency. As however, the Lease actually expired on 30th June 1916, the earning capacity of the cars (representing goodwill) must be ignored. Had the Company in 1885 assumed that cars costing £210 would in 1945 (60 years) only command a scrap value of £20 each, it would have written down the cost price less scrap value $\frac{1}{2}\%$ per annum, viz. £ 3.167.

Assuming the same original cost (£210) the annual interest charge at 5% would be £10.5.

The Company's annual Capital charges (excluding maintenance which will in future be borne by the Board) would therefore be £13.657 per annum. As the Board ^{is to} should enjoy the use of a ^{Car} car for a period of 10 years the capital charges upon which are £13.657 per annum, the Company should receive the Present Value of an Annuity of £13.657 per annum plus the Present

Value of £20 payable in 1925, less the capitalised value of its diminished service efficiency owing to age. The diminished service efficiency represents the difference between the annual maintenance of new and old cars.

The present value of the Car would then be arrived at as follows:-

The Present Value of an annuity of £1 payable for 10 years at 5% is £ 7.721
 The Present Value of £1 payable in ten years is 0.6139

Standard Car aged 30 years.

Present Value of £13,657 x 27.721.....	£105.445
Present Value of £20 (scrap value) x 0.6139..	<u>12.278</u>
	117.723
Less Capitalisation of additional maintenance of an old compared with a new car at £2 per annum (page 13).....	<u>15.442</u>
Present Value of Car.....	<u>£102.281</u>

Standard Car Built in 1913.

Present Value of ^{£13,657} £13,652 x 27.721	£105.445
Present Value of £20 (scrap value) x 0.6139	<u>12.278</u>
	<u>£117.723</u>

The Company should, as proposed by it, defray the cost of the current maintenance which had accrued at 30th June 1916 so as to place the Cars in a condition of first class efficiency.

The value of Standard Cars and Dummies built during intermediate years could be ascertained on a similar basis.

"COST OF REPRODUCTION" or "COST NEW"

On page 10 I stated that I accepted for the purpose of certain calculations the contention that the Cost New of a Standard Car in 1915 should be taken at £210. This figure is arrived at as an estimate of the cost of construction in December 1915, a period of abnormally high prices resulting from the present European War. Whether the estimate should be arrived at on the basis of War time prices or whether it should be calculated at pre-War prices, is a legal question. I am of opinion however, that, apart from the effect of the War, normal prices for Labor and Material should be used.

Floy in his "Valuation of Public Utility Properties" page 18 states: "Cost to Replace New, Replacement Cost or Cost of Reproduction" "These terms, so much in evidence nowadays and recognized by the Courts, refer to an assumed value based on the estimated cost of reproducing the property new on the basis of prices current at the time of estimate - prices which ~~fluctuate~~ fluctuate considerably are averaged for five years preceding the date of the appraisal and is made up to include everything that can be inventoried regardless of original cost, age, service value or present condition as effected by depreciation."

In the case of the National Telephone Co. and the British Post office which in 1913 determined the claim for compensation to be paid the Company for its Plant &c. - (a claim involving over twenty millions of money) Mr. Justice Lawrence stated that "In valuing the plant the Company took the average price of materials for a period of 12 years and for labor the average cost for five years"

I submit that in the present case, where the Company is claiming as present ~~and~~ value for the Cars a sum far in excess of their original construction^{al} cost, it would be equitable to base the cost of labor and material used in their construction upon the normal price or at a price averaged over a number of years as referred to in the authorities quoted.

VALUE OF BOGIE CARS.

The following is a list of the Bogie Cars:-

- 12 Bogie Cars made in 1901
- 25 " " built in 1902
- 5 " " " 1903
- 8 " " " 1906
- 6 " " made in 1915.

Note.- The 18 "Bogie" Cars "made" in 1901 and 1915 were constructed by joining two small cars originally built in 1885 and 1887 and most of the material was therefore more than 16 years old at the time of conversion.

In my previous remarks I have suggested a method for valuing Standard Box Cars, and on pages 11 to 13 submitted figures obtained from the Company's Shop Repair Book which pointed to the conclusion that the difference between the cost of annual maintenance of an old and a new car was at least £2 per annum.

I have arrived at a somewhat similar conclusion by an analysis of the cost of repairing Bogie Cars as shown by the Company's Bogie Repair Book.

INCREASED COST OF LABOR AND MATERIAL.

The Company's records show that the cost of a typical repair to a Standard Box Car increased from £38/15/5 in 1903 to £50/17/10 in 1915 or 31.26% owing to the increasing cost of the labor and material used in the repair. The increase for each year ^{is} ~~are~~ shown in Statement No. "A" attached.

I have assumed that the increase in the cost of repairing a Standard Box Car would be similar in the repair of a Bogie Car.

COMPANY'S EXPERIENCE OF COST OF REPAIRING BOGIE CARS.

Statement "B" attached shows that the actual cost of repairs ac. to Bogie Cars increased from £6.4. 0 in 1903 to £15.18. 7 per

car per annum in 1915. If we add to the cost in 1903 (£6.4/-) the increased cost of labor and material, the figure reached only £8. 2. 9. This suggests the conclusion that the advancing age of the Bogie Cars was the main cause of an increase of £7.15/- per annum in the cost of repairs.

DIFFERENCE BETWEEN THE VALUES OF OLD AND NEW BOGIE CARS.

The Company proposes to charge the Board the "Cost New" in 1915 (£300) less a "sentimental" allowance of 10% off all cars built prior to 1907 and 5% off the cars built in 1915.

If the Cars were new in 1916 the Board should expect to incur an annual cost for repairs &c. commencing at £8. 2. 9 per car.

The cars, however, are now about 13 years old and the Board will have to face an annual charge, commencing at £15/18/7 per car.

I am of opinion that, on the foregoing facts, a sum of £6 per annum may safely be assumed as representing the difference between the cost of maintaining a new Bogie Car and a Bogie Car aged 13 years.

Applying the suggested method (No.2) explained on pages 15 and 16 the valuation of a Bogie Car would be arrived at as under:-

Assumed Facts:-

(a) Cost New in 1915	£ 380
(b) Total useful life of Car	60 years.
(c) Cable System to be superseded in	10 years.
(d) Scrap or Residual value of Car	£ 25.
(e) Difference in cost of Annual Maintenance of a New compared with a Car aged 13 years..... (Page 20).. .. .	£ 6.

The Annual depreciation on £365 at $\frac{2}{3}\%$ (60 years' life) is	£ 6.083
The annual interest on £380 at 5% is	£19.
The Capitalisation of additional maintenance of £6 per annum for 10 years @ 5% is	£46.326

VALUATION OF BOGIE CAR AGED 13 YEARS.

Present Value of £25.083 for 10 years (x 7.721 =	£ 193.665
Present Value of £25 (scrap value) x 6139 = £.6139...	<u>15.347</u>
	209.012
Less Capitalisation of addition Maintenance.....	<u>46.326</u>
Present Value of Car	<u>£ 162.686</u>

The Value of a Bogie Car built in 1915 would be £209.012 and the value of Cars Built during intermediate years could be ascertained on a similar basis..

12 Logie Cars made in 1901.
 25 do. built " 1902.
 5 do. do. " 1903.
 8 do. do. " 1906.
6 do. made " 1915.
56

Note.- The 18 Logie Cars "made" in 1901 and 1915 were constructed by joining two small cars originally made in 1885 and 1887, and were therefore not new at dates of conversion.

INCREASED COST OF LABOR AND MATERIAL.

"A"

The Company's records show that the cost of a typical repair to a Standard Car increased by £12. 2. 5 between 1903 and 1915 owing to the increased cost of labor and material; or 31.26% as follows:-

Average cost in 1903..	£ 30.15. 5	<u>Increase or Decrease per cent</u>
1904..	37.12. 0	Minus 3.02%
1905..	37.11.10	Minus 3.02%
1906..	37.11.10	Minus 3.02%
1907..	39. 0. 1	Plus 1.76%
1908..	39. 9. 3	Plus 1.78%
1909..	39.14. 8	Plus 2.48%
1910..	39.14.10	Plus 2.5%
1911..	41. 9.10	Plus 12.18%
1912..	47.16. 0	Plus 23.29%
1913..	48.17. 4	Plus 26.04%
1914..	48.17. 7	Plus 26.07%
1915..	50.17.10	Plus 31.26%

I have used a typical repair of a Standard Car as applicable to a Logie car.

"A." "B"

ROGIE CARS.

20. 9. 16.

COST OF REPAIRING ROGIE CARS - COMPILED FROM
THE COMPANY'S RECORDS.

Year.	No. of Cars in stock.	Total cost.	Cost per Car.	Add increased cost of Labor and Materials.	Cost per car allowing for Labor and Materials increase?	Increase due to "ageing" of cars..
1903	42	260. 6. 6	6. 4. 0	--	6. 4. 0	- - -
1904	42	199.10.11	4.15. 0	3.02% ^H	6. 0. 3	1. 5. 3 ^H
1905	42	210.18. 0	5. 0. 5	3.02% ^H	6. 0. 3	<u>19.10</u>
1906	50 taken as 42	350. 0. 8	8. 6. 8	3.32% ^H	6. 0. 3	2. 6. 5
1907	50	430.19. 8	8.12. 2	1.76%	6. 6. 3	2. 5.11
1908	50	409.19. 5	8. 4. 0	1.78%	6. 6. 4	1.17. 8
1909	50	449. 0. 1	8.19. 7	2.48%	6. 7. 1	2.12. 6
1910	50	551.17. 2	11. 0. 9	2.5%	6. 7. 2	4.13. 7
1911	50	835.10. 6	16.14. 2	12.18%	6.19.2	9.15. 0
1912	50	710.9. 1	14. 4. 1	23.29%	7.12.10	6.11. 3
1913	50	728. 1. 0	14.11. 3	26.94%	7.16. 3	6.15. 0
1914	50	700.14. 6	14. 0. 3	27.07%	7.17.6	6. 2. 9
1915	56 taken as 50	796. 8. 5	15.18. 7	31.26%	8. 2. 9	<u>7.15.10</u>
		<u>6633.6.11</u>	<u>136.10.11</u>		<u>28. 0. 1</u>	<u>48.10.10</u>
Average per Car per annum		<u>10.14. 8</u>	<u>19.10. 1</u>	<u>10%</u>	<u>6.15. 4</u>	<u>4. 0.11</u>

H Decrease.

EXTRACTS FROM ACCEPTED AUTHORITIES UPON DEPRECIATION.

"VALUATION OF PUBLIC UTILITY PROPERTIES" by H. Floy.

1. "Cost to Replace New, Replacement Cost or Cost of Reproduction."
(Page 18). "These terms, so much in ^{evidence} existence nowadays and
"recognised by the Courts, refer to an assumed value based on the
"estimated cost of reproducing the property new on the basis of
"prices current at the time of estimate - prices that fluctuate
"considerably are averaged for five years preceding the date of
"the appraisal and is made up to include everything that can be
"inventoried regardless of original cost, age, service value or
"present condition as effected by depreciation"
2. (Page 24). "Car Bodies will, in course of time become so racked
"that they must be abandoned because the new cost less than the
"cost of repairing the old".

"ENGINEERING VALUATION OF PUBLIC UTILITIES AND FACTORIES" - by
H. A. Woster.

3. (Page 148). "No property can ever have a physical value equal to
"its first cost, that is, basing the prices on those originally
"paid, but starts to deteriorate and wear out the minute it is
"installed and as it can never have repairs or renewals applied all
"at the same time, there is always some part in disrepair to a
"greater or less degree."
4. (Page 156). "In the same way a car body becomes so racked by use
"that screws will no longer hold, the wooden parts become so
"decayed that it is no longer economy to repair it, and the cost of
"maintenance becomes so high that it is useless to retain the car
"in service. Such depreciation is termed decrepitude, a word
"somewhat new to the art but exactly describing the true meaning of
"this class of depreciation."

"PUBLIC UTILITIES, THEIR COST REVENUE AND DEPRECIATION" by B.S. Hayes.

"Life of Plant."

5. Page 166. - "But with other classes of property, especially such
"as having moving parts, there is an increasing need of repairs
"with increasing life, so that the cost of maintenance becomes in
"time, a matter of serious importance in determining the useful
"life of a unit.

"It is true that by constant and frequent repairs the
"useful life of a unit might be greatly prolonged, but such
"useful life could be obtained only by an excessive cost of
"maintenance.

"The same is true in the case of such elements as gradually
"become less efficient and must be subjected to frequent repairs
"in order to maintain a required standard of operation.

"The problem in all ^{such} cases becomes one of determining the
"life of a unit by a consideration of cost and annual charge upon
"a new unit and the cost of maintenance which may be expected to
"arise during succeeding years if the existing unit is retained in
"service"

The same writer emphasizes the facts that the

- Page 164 to 168.
- (a) Physical life of a car is affected by decay of wood - loss of strength due to vibration, wear and tear - exposure to elements etc.
- (b) The efficiency of a car may be good up to the time it fails - nevertheless the value of the unit is always a diminishing quantity.

SUGGESTED CROSS EXAMINATION OF COMPANY'S WITNESSES.

1. Re annual repair of Grips 24.

incorrect allowance made in Inventory - They discovered it themselves.

2. Company's Exhibit A 1 - Shop Repair Book.

Is the statement at front of book approximately correct?

Was the cost of repairing all cars from 1898 to 1915

(17½ years)..... £ 9. 8. 0 per annum,

ditto Dummies.... 9. 8. 6 " "

Answer - Yes.

3. What percentage of the cost of a Standard Car aged 30 years

(say \$210) has never been renewed?

The answer should be 80% to 85%.

4. Can the Company supply an approximate statement showing the

annual cost of repairing Cars and Dummies aged 30 years

for the last 5 years?

Answer - No.

5. And like statement in respect of Cars built since 1900 and Dummies

built since 1900?

Answer - No.

6. Can the Company supply approximate figures showing the Car Miles

per annum run by different cars and dummies - say old and

new vehicles.

Answer - No.

7. Is the annual maintenance and repair of a new car say 5 to 10

years old as heavy as that of a car aged say 30 years?

Answer - Yes.

8. Can they produce any figures to substantiate that answer?

Answer - No.

9. Are the present Cars and Dummies substantially the same as the 1884 Imported designs?

Answer - Yes.

10. After 10 years' practical experience can they suggest any substantial improvements in the design?

Answer - No.

11. Have cable systems in America and Britain built Cars and Dummies of late years of a substantially different design to the Melbourne Tramway & Omnibus Co. Rolling Stock?

Answer - Yes.

12. Re Shop Charge 20% included in Cost now £210.

Cross examine on the lines of Mr. Pringle's report dated 3rd October 1916.

13. Would it not be economical to operate a larger proportion of Regie Cars at busy periods?

14. If entirely new Rolling Stock was to be built would you adopt the present design?

15. Would you not provide for better lighting - different brakes - Windshields &c.?

16. Would it not be a very expensive work to adapt the existing Rolling Stock to meet the requirements mentioned in Question No. 15?

8. Can they produce any figures to substantiate that answer?

Answer - No.

9. Are the present Cars and Dummies substantially the same as the 1894 Imported designs?

Answer - Yes.

10. After 30 years' practical experience can they suggest any substantial improvements in the design?

Answer - No.

11. Have cable systems in America and Britain built Cars and Dummies of late years of a substantially different design to the Melbourne Tramway & Omnibus Co. Rolling Stock?

Answer - Yes.

12. Re Shop Charge 20% included in Cost now £210.

Cross examine on the lines of Mr. Fringle's report dated 3rd October 1916.

13. Would it not be economical to operate a larger proportion of Begie Cars at busy periods?

14. If entirely new Rolling Stock was to be built would you adopt the present design?

15. Would you not provide for better lighting - different brakes - windshields &c.?

16. Would it not be a very expensive work to adapt the existing Rolling Stock to meet the requirements mentioned in Question No. 15?

8. Can they produce any figures to substantiate that answer?

Answer - No.

9. Are the present Cars and Dummies substantially the same as the 1934 Imported designs?

Answer - Yes.

10. After 30 years' practical experience can they suggest any substantial improvements in the design?

Answer - No.

11. Have cable systems in America and Britain built Cars and Dummies of late years of a substantially different design to the Melbourne Tramway & Omnibus Co. Rolling Stock?

Answer - Yes.

12. No Shop Charge 20% included in Cost now £210.

Cross examine on the lines of Mr. Fringle's report dated 3rd October 1916.

13. Would it not be economical to operate a larger proportion of Regie Cars at busy periods?

14. If entirely new Rolling Stock was to be built would you adopt the present design?

15. Would you not provide for better lighting - different brakes - Windshields &c.?

16. Would it not be a very expensive work to adapt the existing Rolling Stock to meet the requirements mentioned in Question No. 15?