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EDITORIAL NOTICE.

The news issues of the Street Railway Journal are devoted primarily to the publication of street railway news and current happenings related to street railway interests. All information regarding changes of officers, new equipments, extensions, financial changes and new enterprises will be greatly appreciated for use in its columns.

All matter intended for publication must be received at our office not later than Wednesday morning of each week in order to secure insertion in the current issue.

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Contents of this Issue

Separate Car Acts in Montgomery and Columbus

The City Council of Montgomery, Ala., has passed an ordinance requiring the Montgomery Street Railway Company to provide separate cars for the transportation of whites and negroes. The company is given thirty days in which to comply with the conditions of the ordinance. The ordinance passed by the Council of Columbus, Ga., differs from that passed by the Montgomery Council in that it provides for the separation of the whites and blacks in the same car, and does not require the operation of special "black" cars. By the terms of the latter ordinance the motormen and conductors are compelled to assign seats to passengers, the front half of the car being reserved for the whites and the rear half for the negroes. If a passenger refuses to take a seat assigned him he is liable to a fine, or if the motorman or conductor fails to assign a seat he is liable to a fine.

Rapid Transit Commission for Cleveland

At a recent meeting of the City Council a resolution was introduced calling for the appointment of a rapid transit commission. The object of the commission, as explained in the resolution, is to arrange, if possible, private rights of way for the suburban electric lines from the city limits to the Public Square, in order to allow them to make the same time in the city as outside, bringing the suburbanites into the heart of the city at steam railway train speed. The resolution states that there are many streets in Cleveland traversed by suburban cars which travel at a rate of speed exceeding that fixed by the city ordinance covering this point. This, the resolution states, is a menace to the safety of the public and should not be allowed. It is conceded, on the other hand, that the suburbanites and also the citizens living in the outskirts of the city have the right to be brought down town and taken back to their homes with as much dispatch as possible. The resolution further states that the increased population in the outskirts demands speedier service. The commission, as set forth in the resolution, is to consist of five members, whose duty it shall be to arrange a special service, if possible, and one that will prevent accident.

Verdict in Favor of the Brooklyn Rapid Transit

The Appellate Division of the Supreme Court in Brooklyn has decided, in a test case submitted, that the Brooklyn Rapid Transit Company has a legal right to charge a 10-cent fare to Coney Island. The case was that of Arthur Barnett, who got a judgment for $65 against the company for being ejected from a car after refusing to pay an extra 5 cents. Justice Hirschberg writes the decision, and his associates concur except Presiding Justice Goodrich, who was absent. The decision, which is quite voluminous, sustains these points:

First—That the Brooklyn Heights Company legally leased the Sea Beach Railroad.

Second—That this lease carries with it the right to charge an extra 5-cent fare.

Third—That the Sea Beach road received its charter before the One-Fare law was passed.

Fourth—That the One-Fare law did not refer to roads with a steam railroad franchise.

In closing Justice Hirschberg says:

"From the statutes and decisions cited it would seem evident that the defendant is entitled to make the charge complained of unless prohibited by the fact that it operates a street railway in connection with the Sea Beach road. As Section 101 of the Railway law does not apply to the latter road the 5-cent fare provision can have no force in this connection. There is, consequently, no express legislative prohibition, and surely there is no occasion for a forced construction of the law for the sake of creating one. No reason can be suggested for such a construction of the Railway law as would permit the defendant to convey its passengers from the Brooklyn Bridge to Coney Island at a charge of two fares, provided the passengers were subjected to the annoyance and inconvenience of alighting at the junction of the two roads and there purchasing a ticket and boarding another car, but which would deprive it of the right to charge the second fare merely because it had voluntarily constructed a temporary union of the two roads at that point in order to promote the comfort of passengers by affording a continuous and uninterrupted transit."

The application of former Senator McNulty to annul the franchise of the company for charging the extra fare is still pending before the Attorney-General. He refused to become a party to the test case before the Appellate Division.

New York Railroad Commissioners Report on Brake Tests

On July 23 the State Board of Railroad Commissioners, of New York, issued a report on the official test which it made of automatic street-car brakes to supplant the hand brakes now in use. The tests were made nearly a year ago on Lenox Avenue, New York City, the Metropolitan Street Railway Company granting the Commission permission to make the test on its lines and with its cars. In its report the Board says:

"The Board has devoted much time to this test, and while nothing has been brought forth that will revolutionize the manner of stopping a car, the opportunity is afforded to present to the railway officers and to the public facts and figures showing what the best appliances known to-day can do in the matter of stopping a car quickly. While these results are very satisfactory, there is still room for much improvement, and the Board feels that its action in holding a public test will result in still further improvements in brakes or in new inventions which will reduce the distance within which a car can now be stopped, and it has the satisfaction of knowing that it has done all in its power to bring about the adoption of better brakes than those now used by the majority of roads in this State, and thus reduce the number of accidents.

"It is not the intention of the Board to recommend any particular brake for any class of service, leaving the selection to the judgment of the railway officers themselves. The Board will, of course, exercise fully its powers under the law to require of the companies the use of sufficient and safe equipment for the public service. After a careful consideration of the whole subject of brakes for electric cars, the Board has determined that, except in special cases where the liability of accident is very remote, the ordinary single chain and spindle hand brakes, now generally used, should be replaced by brakes made by one of the following manufacturers, or any other which, in the judgment of the Board, is hereafter shown to be equally efficient:

"Air brakes: The G. P. Magann Air Brake Company, the Standard Air Brake Company, the Christensen Engineering Company, J. E. Reyburn. Electric brakes: The Electric Selector & Signal Company, the General Electric Company. Friction brakes: The Peckham Motor Truck & Wheel Company, the J. G. Brill Company. Hand-power brakes: The Sterling Supply & Manufacturing Company, M. H. Vogel, the Sauvage Street Car Brake Company."

Department of Blanks and Forms

The secretary of the Street Railway Accountants' Association of America has issued the following circular:

(CIRCULAR NO. 14.)

New Orleans, La., July 16, 1900.

To the Members:

The value of the Department of Blanks and Forms can be greatly enhanced, from year to year, by the addition of the new forms issued by your company, and the refiling of those blanks reissued. Therefore, it is hoped and anticipated that you will cooperate with the secretary in the effort to make the department a continual advantage of membership in the association, and keep it sensitive to the changes of your blanks and forms.

As the rubber stamp comes naturally within the meaning and intention of this collection of forms, a separate book is to be devoted to rubber-stamp impressions, and there is no doubt that it will not be the least interesting of the whole. It is preferred that the impression be made upon white paper 4 ins. wide by 6 ins. long; each impression on a separate slip of paper. Print on one side only.

Electric lighting in many instances is managed in the offices of street railway companies. Electric lighting blanks are, therefore, of interest to those companies, and if your company has this adjunct, please include the blanks in your package.

Experience has shown the need of the following suggestions, and they are given with the hope that they will be heeded in forwarding your package:

1. Do not fold the blanks; rolling is preferred.

2. Write in ink the name of your company upon all blanks where same does not appear.

3. The term "blanks and forms" covers everything printed in use by your company, books, circulars, rubber stamps, tickets, transfers, statements and reports.

4. Please send at least two copies of all forms, except of rubber stamp impressions.

5. Address your package to W. B. Brockway, Secretary, Post-office Box 630, New Orleans, La., and advise by letter of its forwarding.

It is appreciated that you will be put to some trouble to comply with this request, but it is believed that you will do it willingly, for you understand the importance of the collection.

The companies that complied with the request made Circular No. 6, Nov. 15, 1898, will consider this request to apply to their issue and reissue since that date. But the companies which have joined since then will please include their entire issue at the present time. Yours truly W. B. Brockway, Secretary.

C. N. Duffy, President.

Some General Conditions Governing Power Station Design *

BY PHILIP DAWSON

At the present moment when electric traction is making such rapid strides, the question of the source of supply of power is a very important one. In this paper it is proposed briefly to consider this question from the economical point of view. This is the most important one, and the engineer's knowledge and experience should be used to design and construct the source of supply of electrical energy in such a manner as to furnish the board of trade unit at the switchboard at the lowest possible cost, interest on capital, depreciation and sinking fund included. It may be argued that the cost of the unit at the switchboard being low, it does not necessarily follow that the cost of the power, say, per car or per train mile will also be low, as it is possible that in order to secure cheap current the power station may be so located as to cause great expense in feeders, sub-stations and loss in the transmission. In the numerous cases, both in Great Britain, on the Continent and in America, which have come under my notice, I have never found this to be the case. This applies to power supply stations intended for traction and power primarily and lighting secondarily. It may be mentioned at once that the demand for current for both traction and power transmission purposes is increasing so rapidly that lighting will shortly in any case be only a secondary consideration.

The combination of a lighting and traction station is, therefore, not to be recommended, and good results cannot be expected. The case is, however, entirely different where traction and lighting are combined, and the best results are then obtainable; that is to say, where the station has been designed by experienced traction engineers for traction and lighting.

It may be of interest to consider what are the differences between a station designed for lighting and one designed for traction and power transmission.

The average number of hours per annum during which a lighting station will be running full load, will probably never be equivalent to more than three months' continuous running per annum; that is to say, taking the total kilowatt-hours generated in one year, and seeing how long the plant under consideration would have to run its full capacity continuously to generate this amount, this time would probably never exceed three months. Taking a representative traction station, the time of continuous running would probably be at least nine and in some cases ten and even eleven months.

A lighting plant must in three months earn enough money to pay working expenses and to pay interest and allow for depreciation and sinking fund for a whole year, whereas a traction plant has from nine to eleven months to do the same thing.

A lighting plant is, on an average, practically at a standstill eighteen hours a day, while a traction plant is running eighteen to twenty hours a day. Economical boilers, engines and electrical generating and transmission devices are, therefore, far more important in a traction than a lighting plant, because it is well known that running at very light loads and keeping the fires banked and the boilers, steam pipes, engines, etc., hot, uses very nearly as much fuel as running them at full load.

Furthermore, whereas in a lighting plant there is ample time to overhaul the plant and execute necessary repairs, the men during the day have little or nothing to do and can well do this work. In a traction plant there is little or no time to do this. The conditions are quite, if not more, arduous than on a ship.

* Paper read at the meeting of the Tramways and Light Railways Association, London, June 27, 1900.

There at least every few days or few weeks the whole plant is entirely shut down for several days and can be taken to pieces and overhauled.

Unexpected and rapid overloads must be able to be supported by the traction plant, which is not generally the case in lighting.

In a traction station it will be seen that a far greater figure is cut by the cost of generation pure and simple than in a lighting station, and that the question of interest on capital expenditure and sinking fund is relatively smaller in the former than in the latter.

The following figures, which are the result of actual experience, may be of interest, and show the influence of continuous running on the cost of production:

COST IN PENCE PER BOARD OF TRADE UNIT (KW-HOUR)

	Lighting. Pence.	Traction. Pence.
Fuel	0.3 to 2.2	0.09 to 0.5
Oil waste and stores	0.05 to 0.38	0.005 to 0.2
Wages and salaries	0.28 to 1.60	0.03 to 0.4
Maintenance	0.054 to 0.6	0.0025 to 0.06
Total	0.684 to 4.78	0.1275 to 1.16

The difference which exists between a plant working practically continuously and only intermittently is at once seen in the average amount of coal consumed per unit generated. The type of engine used must, however, also be taken into consideration.

Thus, taking the published results of British electric-light plants, we find that the cost of coal per unit generated varies approximately between 0.3d. and 2.2d. Comparing this to traction plants, we find the cost of coal varying between 0.09d. and 0.50d. per unit generated. Again, considering the item of wages and salaries in a lighting station, we have 0.3d. to 1.6d.; in the case of traction, this is 0.03d. to 0.40d. per unit. Comparing the total cost of production of one Board of Trade unit generated in a lighting station and in a traction station, interest and sinking fund excluded, in the former the unit varies from 1.00d. to 4.00d, as compared to 0.25d. to 1.00d. for traction purposes. The cost of power when generated for traction and power purposes is one-quarter of that when generated for lighting only.

The amount to be added for interest and sinking fund, of course, depends on the length of the concession, on the terms of final purchase and on the life of the machinery employed. The cost of producing power varies with the amount to be produced, decreasing as the amount increases. This shows the advisability of concentrating as much power as possible in one station, and reducing the number of units.

In considering the various items which go to make a complete power or traction installation, including the system of feeders, distributors, track and overhead line, the cost of the power station is but a comparatively small item. The saving which can be effected by a properly designed station is very great, and a little extra capital expenditure is in many cases well justified.

The total cost of running an electric tramway or railway varies between 2.50d. and 8.00d. per car mile, according to circumstances; the electrical energy at the power station required varying from 0.49 units to 1.4 units per car mile, according to the profile of the line and the weight and speed of the cars.

The cost of power varies between 10 and 30 per cent. of the total working expenses, all charges included, and if it can be reduced by ¾d. to 1d. per unit or we may say per car mile, as one unit at the switchboard is a fair estimate of the average power requisite at the switchboard per car-mile run, it is well worth doing.

In the early days, before polyphase high-tension currents were known, the situation of the central station was practically imposed, very little latitude being possible, owing to the maximum distance of economical transmission being limited. Electricity works being most required in crowded centers, it was not only difficult to obtain a site at all, but the cost of the ground was very great. Hence the necessity of crowding the greatest amount of power into the smallest possible space. The plants being mostly used for lighting, and only running a few hours each day, highly economical engines and boilers and labor-saving appliances were of but little advantage. At present, circumstances have altered; electricity can economically be transmitted to any distance, and is utilized—and will be more and more so every day—firstly for power purposes, and secondly for lighting purposes.

The initial cost of a plant may be roughly divided into four parts: Land and buildings; plant, including all machinery in station; mains, feeders and distributors; miscellaneous, which includes such things as meters, instruments, cost of provisional order, and such like.

According to Emile Garcke's figures in the Manual of Electrical Undertakings, the average cost of existing British plants expressed in percentage of total capital expenditure is approximately as follows:

Land and buildings	19 to 23 per cent
Machinery and plant	35 to 37 per cent
Various remaining items	4 to 14 per cent

As regards the first item the above average includes several old lighting stations, and there is little doubt that if a new plant was installed the cost of land could be materially reduced.

The question of system of generation, whether in several large stations generating continuous current or in one large station generating either continuous or polyphase currents, is of great moment.

As already stated, in a traction station much greater capital expenditure is justified, and coal-handling appliances can be installed which enable one or two men to look after the largest boiler-room. Automatic lubricating system and ash conveyors, etc., enable one or two men to be sufficient in the largest engine-room. It will be evident that the item wages and salaries will be far greater in several than in one station. Also, the waste of coal, etc., will be far greater. From a careful study it is nearly certain that for anything above 5000-kw capacity, one polyphase station operating rotary converter sub-stations is the best. Large units are also always advisable. It interests me to see that the sizes I recommended several years ago are generally being adopted. For reference, it may, perhaps, be advisable to append this table:

SIZES OF ENGINES RECOMMENDED FOR USE IN POWER STATIONS

Maximum Power Required. ihp.	Number of Egines.	Power of each Engine. ihp.
200	2	200
400	3	200
600	3	300
1,000	3	500
1,500	4	500
2,000	4	750
5,000	6	1,000
10,000	6	2,000
20,000	6	4,000
40,000	9	5,000
60,000	11	6,000
90,000	10	10,000

All engine builders who have had experience in tramway work now make an entirely different kind of engine for traction from that which they supply for lighting stations. The conditions under which a tramway engine works are, if anything, more onerous than those of a rolling-mill engine. A slight variation, either in number of revolutions per minute, or in angular velocity per revolution, is of the greatest importance in a traction station, whereas it is of small importance in a rolling-mill.

A uniform speed is especially important where compound-wound dynamos are run in parallel direct on to the line. If the momentary difference in speed between two engines exceeds very narrow limits, the voltages of the machines differ, and cause very heavy currents in the equalizing bars and largely increased core losses, hence great waste. If the difference becomes too great, one of the generators may even be reversed. Where polyphase machines run in parallel, constant speed is of even greater importance to keep the machine in step. In cases where shunt-wound generators with heavy batteries of accumulators run in parallel on the line, the question of engine regulation is not so important.

A traction station where compound-wound dynamos are used should be so arranged that, if the normal load be suddenly thrown on or off an engine, the speed shall not vary more than 2 per cent either way. In some cases a maximum variation of 1½ and 1¼ per cent is all that is allowed. Where polyphase currents are used, constant speed is of even greater importance; and a guarantee should be required that under no circumstances shall the angular velocity during one revolution vary more than ½ per cent, and in some cases not more than half of 1 per cent. With heavy fly-wheels and governors properly designed for tramway work, it is quite practicable to fulfil the above conditions, or, expressed in a different way, in polyphase work the engine should not produce by variation of angular velocity a phase displacement of more than 5 degs. per half cycle.

From careful comparison of many existing systems it may be taken that the total cost of power, all fixed charges included, for one large station, as compared to that for two or more smaller stations, together equal in power to the larger one, is from 30 to 75 per cent lower.

Profits on Tramway Undertakings*

BY C. H. GADSBY, Wh. Sc., M.I.E.E.

All tramway directors and managers and the members of municipal tramways committees are alike interested in the great question of establishing in the working of their undertakings as great a difference between gross receipts and working expenses as it is possible to obtain, and I think, therefore, I need offer no apology for bringing this subject before those of you who have done me the honor of coming to hear this paper. My only regret is that in the short time at my disposal it is impossible to go more fully into a subject so worthy of investigation and requiring so close a study of detail.

It is an easy matter to increase the gross receipts upon almost any tramway by increasing the services or by affording additional inducements to the traveling public. It is also an easy matter to reduce the working expenses by curtailing the services, employing cheaper labor, and by many other means, some only temporary, others permanent. The problem is—how to increase the gross receipts without at the same time unduly increasing the working expenses. It is not sufficient merely to establish a low *ratio* between working expenses and gross receipts unless at the same time the actual *difference* between them is great.

Naturally the first direction in which one turns for improvement is toward increased gross receipts. Such an increase may be effected by raising or reducing the fares according to circumstances, by increasing the services, by putting on better cars, by better heating and lighting, by better attention, and by numerous other means, but of course the increase of service is the one to which receipts respond most readily.

The table A shows the increments in receipts upon a certain English steam tramway resulting almost entirely from the gradual and judicious adoption of more frequent service. In this instance it will be seen that the mileage has been doubled in seven years; the number of passengers has been more than doubled, as have also the gross receipts, while the working expenses have been increased only about 70 per cent, and the resulting net receipts have been multiplied by 3½. This has been effected without any change of system, without any unusual development in the district or any extension of the line. There has been a substitution of a portion of double line for single, to permit of the more frequent service, but the improvement may be justly attributed simply to the increased service.

TABLE A

Year	Mileage	Passengers	Gross Receipts	Receipts per Car Mile	Working Expenses	Expenses per Car Mile	Ratio Receipts to Expenses	Net Receipts
			£	Pence	£	Pence	Per Cent	£
1893	260,153	4,079,993	17,939	16.5	12,327	11.3	68	5,612
1894	267,150	4,250,343	19,187	17.2	12,793	13.7	62	6,394
1895	370,373	5,286,608	23,271	15.07	14,022	9.08	60	9,249
1896	418,840	6,425,348	28,033	13.6	14,984	8.5	53	13,049
1897	470,612	7,450,492	32,316	11.5	16,908	8.6	52	15,408
1898	497,813	8,144,917	35,393	17.06	19,861	9.5	56	15,532
1899	523,073	8,818,647	38,453	17.6	20,438	9.3	53	18,015

It is interesting to note that in this case the receipts per car mile have increased from 16.5d. to 17.6d., while working expenses have fallen from 11.3d. to 9.3d., and the ratio of working expenses from 68 per cent to 53 per cent.

It is not to be expected that the gross receipts can be increased in the same proportion as the mileage, and consequently, as a general rule, the receipts per car mile are reduced. It is a knowledge of this fact that has in many instances led tramway managers to adopt the policy of restricting the mileages in an endeavor to secure high receipts per car mile.

Receipts per car mile on British tramways vary from a lower limit in the region of 7d. to a higher one approximating to 2s. per car mile. Except under very exceptional circumstances any manager working a line so as to obtain gross receipts anywhere in the neighborhood of this higher limit does not fully appreciate the necessities of his district or of the earning capacity of his system.

I consider that for electric and cable lines any rise in receipts per car mile above 9d. should be at once checked by an increased mileage.

In the case of horse tramways, a similar process should be applied whenever the receipts rise above 12d., and in steam lines when above 14d. or 15d. Take an example: Suppose we have a system running 1,000,000 car miles per annum, with gross receipts at 12d. per car mile:

	Per Annum
Total gross receipts will then be	£50,000
Suppose working expenses are at 60 per cent, and therefore amount to	30,000
Net receipts will be	£20,000

Let now the mileage be increased 20 per cent, that is to 1,200,000 car miles per annum, and suppose the total gross receipts increase only at the less ratio of 15 per cent, and that in consequence of standing and managerial charges being spread over a greater mileage, the working expenses increase only 15 per cent also. We shall then have

	Per Annum
Total gross receipts	£57,500
Total working expenses	34,500
Net receipts	£23,000

In this case the gross receipts per car mile work out at 11½d., that is by increasing the mileage 20 per cent we have reduced the receipts per car mile from 12d. to 11½d., but have at the same time made an extra £3000 per annum clear profit.

It may be of interest to compare the working expenses of tramways with different motive powers.

Table B may be taken as a fair average of the working expenses of a horse tramway. It is derived by taking the average of the actual figures on five representative town tramways in this country for the year ending June 30, 1899. From this it will be observed that the average total working expenses amount to 9½d. per car mile, whilst horse power with renewals amounts to 4.19d. per car mile, and traffic expenses to 3.05d.

TABLE B

Operating Expenses on English Horse Tramways

Line	Maintenance of Permanent Way	Horse Power	Renewals of Horses	Repairs of Cars	Traffic Expenses	All Other Expenses	Totals	Mileages
	£	£	£	£	£	£	£	
A	2,223	21,418	1,797	3,430	18,824	4,676	52,368	1,502,448
B	113	4,614	315	412	3,884	2,356	11,694	293,343
C	1,656	15,491	2,000	2,164	12,178	2,496	35,985	870,286
D	1,504	9,467	1,224	1,148	8,108	1,671	23,122	646,150
E	2,010	11,938	2,711	3,445	8,495	8,335	36,934	749,461
Totals	7,506	62,928	8,047	10,579	51,489	19,534	160,103	4,061,688
Average pence per car-mile	Pence 0.44	Pence 3.72	Pence 0.47	Pence 0.63	Pence 3.05	Pence 1.15	Pence 9.5	

Table C shows a similar statement of working expenses for steam tramways derived from the actual figures for representative tramways in this country. The striking figure in this table is that engine power costs 3½d. per car mile while repairs cost 1¾d. per car mile, together making 5¼d. The permanent way repairs are naturally heavier than for horse traction, the traffic expenses are lower, chiefly on account of the drivers' and conductors' wages being spread over a greater mileage in consequence of the higher speeds than with horse traction. The total costs amount 10¾d. per car mile, or 1d. per car mile higher than for horses, so that the advantage of steam over horse working is due to the higher receipts per car mile consequent upon the use of larger cars.

TABLE C

Operating Expenses on English Steam Tramways

Line	Maintenance of Permanent Way	Locomotive Power	Repairs of Engines	Repairs of Cars	Traffic Expenses	All Other Expenses	Totals	Mileages
	£	£	£	£	£	£	£	
A	3,291	1,586	1,486	581	4,474	1,610	13,128	248,735
B	3,627	16,335	7,990	1,739	6,051	2,879	38,621	883,991
C	625	1,048	282	....	3,948	2,568	8,471	188,348
D	2,139	8,223	4,030	1,130	3,178	3,058	21,798	472,652
E	984	1,748	889	388	1,446	736	6,191	181,739
Totals	10,666	28,940	14,677	3,838	19,097	10,851	88,209	1,975,465
Average pence per car-mile.	Pence 1.30	Pence 3.51	Pence 1.78	Pence 0.46	Pence 2 32	Pence 1.31	Pence 10.7	

Table D gives the working expenses for eight electric lines in this country. All of the lines are operated on the overhead system, some by their municipal owners, and others by companies. It is in this case somewhat difficult to apportion the costs on account of the lack of uniformity in the allocation of charges.

*Paper read at the meeting of the Tramways and Light Railways Association, on June 29, 1900.

It will be noticed that the cost of motive power is much lower than with horses or steam, being only 1.36d. per car mile, or with engine and dynamo repairs 1.685d.

TABLE D

OPERATING EXPENSES OF ELECTRIC TRAMWAYS IN GREAT BRITAIN

LINE	Maintenance of Permanent Way	Motive Power	Repairs of General Plant	Repairs of Cars	Traffic Expenses	All Other Expenses	Totals	Mileages
	£	£	£	£	£	£	£	
A	1,377	1,722	954	1,401	3,887	1,855	11,046	283,718
B	811	939	159	427	3,703	927	7,676	239,472
C	350	1,545	5 5	700	2,206	924	5,725	204,257
D	557	3,4 4	330	1,307	3,349	2,792	11,739	267,750
E	172	856	709	201	1,413	1,231	4,582	135,740
F	12	1,104	250	336	1,535	454	3,691	161,156
G	2,121	1,700	394	460	7,784	1,398	13,857	564,389
H	4,362	6,191	535	2,430	9,768	4,971	28,257	1,160,279
Totals	9,662	17,465	3,836	7,262	33,595	14,552	86,573	3,016,761
Average pence per car-mile	.765	1.38	.305	.576	2.67	1.15	6.896	

It might be expected that the items for car repairs would be higher than with horse or steam traction on account of the repairs of motors and electrical equipments being now included, but as a fact the figure per car mile is about the same. I think this is accounted for by the fact that although the expenditure on each electric car is greater than on each steam or horse car, the charge per car mile is not greater on account of the greater daily mileage run by an electric car.

The item for traffic, which, of course, consists chiefly of drivers' and conductors' wages, is much the same for all three systems.

The total expenses of 6.8d. per car mile is somewhat higher than is generally expected with electric traction, this being due to the inclusion in the list of a number of small undertakings recently started, upon which it is reasonable to suppose improvement will be effected. When data are available from the many larger municipal undertakings just open or undergoing conversion, it is evident that an average total expense between 5d. and 6d. per car mile will be easily attained. In some cases in the table this has already been done, in the instance of line H the figures work out at 5.8d. per car mile, and on line G at 5.75d., while at Leeds, which is not included in the list, total working expenses are reported well under 5d. per car mile.

Table E gives the operating expenses per car mile well in detail for twenty-three American electric roads, and it is interesting to observe how closely this agrees with English working, notwithstanding the very different conditions.

Four years ago I had some difficulty in persuading a director of a certain large tramway undertaking in this country that there would be any reduction of working expenses by the adoption of electric traction, and at that time the figures I have given were not available. It is now scarcely necessary to point out that these figures show beyond doubt the great saving to be effected by the adoption of electric traction. This is the means that will be taken to reduce working expenses on every horse and steam tramway throughout the country during the next five or six years.

Having adopted electric traction there is still necessity for carefully watching operating expenses. In the first place the expenditure on track repairs may be anything from .05d. per car mile to 1.5d. It is necessary to keep sufficient men on the track to

TABLE E

OPERATING EXPENSES ON AMERICAN ROADS

DISTINGUISHING NO. OF ROAD	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11
Miles of track (as single)	48.6	13.65	11.15	6.29	20.56	64.71	12.93	10.5	17.0	4.75	11.25
Number of cars. Open	71	20	2	15	46	39	15	13	25	9	10
" " " Closed	45	12	11	10	53	78	12,	8	21	4	10
" " " Plows	7	3	2	+3 freight 1	2	18	2	2	4	1	1
" " " Sweepers	2	----	----	----	1		----	----	----	----	----
" " " Sprinklers	1	----	1	1	----	----	----	----	----	----	----
Car-miles per annum	1,721,147	401,284	350,635	267,229	1,308,660	2,814,072	254,835	337,260	583,951	117,598	300,408
Passengers per annum	6,383,503	2,600,458	1,661,703	1,049,044	5,538,585	10,854,971	631,836	629,655	2,061,094	487,954	1,181,558
Average number of employees	200	65	45	30	186	470	60	24	75	15	33
DETAILS OF OPERATING EXPENSES—	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence
Road-bed and track	.025	.405	.175	.085	1.290	.475	.555	.340	.395	.185	.005
Building repairs and fixtures	.020	.020	--	.125	.055	.025	.180	.020	.010	----	.005
Electric line construction repairs	.010	.175	.045	.080	.165	.075	.245	.020	.130	.065	.235
Car repairs	.315	.455	.250	.640	.450	.420	.655	.045	.185	.365	.075
Repairs to electric gear on cars	----	.160	.185	.325	.205	.340	.550	.175	.430	.120	.065
Electric motive power	.555	1.500	1.485	.610	.630	.955	1.680	1.210	1.195	2.045	1.680
Wages	2.675	2.875	2.395	2.845	2.935	3.155	2.980	1.855	2.660	2.660	2.975
Removal of snow and ice	.030	.050	.020	.010	.045	.100	.025	----	----	.035	.015
Damages, gratuities, etc	.095	.035	----	.140	.045	.185	.150	----	.145	.005	.015
Insurances	.565	.495	.330	.055	.045	.045	.195	.105	.475	.055	.085
Salaries	.245	.365	.540	1.005	.785	.260	1.240	.135	----	.635	.665
Horsing expenses	.050	----	----	----	.015	.075	----	----	----	.045	----
Legal expenses	----	.315	.270	----	----	.020	----	----	----	----	----
General expenses	.345	----	----	----	----	----	1.000	485	----	----	----
Miscellaneous other expenses	----	.635	.240	2.045	1.175	.440	.140	1.725	.930	.590	.050
Total operating expenses per car-mile	4.930	7.515	5.935	8.015	7.840	6.520	9.595	6.965	6.460	6.755	5.870
Gross receipts	9.330	10.650	9.300	10.455	10.740	9.440	10.640	7.725	8.960	9.920	9 580

DISTINGUISHING NO. OF ROAD	No. 12	No. 13	No. 14	No. 15	No. 16	No. 17	No. 18	No. 19	No. 20	No. 21	No. 22
Miles of track (as single)	25.5	7.2	7.25	16.85	12.46	1.5	10.24	11.46	5.25	4.11	16.77
Number of cars. Open	39	16	9	16	14	----	7	26	2	2	52
" " " Closed	34	6	9	8	13	3	6	20	3	3	39
" " " Plows	4	1	1	1	1	----	----	2	----	----	4
" " " Sweepers	----	----	----	----	----	----	----	1	----	----	----
" " " Sprinklers	----	----	1	----	----	----	----	----	----	----	----
Car-miles per annum	1,181,206	212,323	241,532	289,290	297,265	49,385	183,060	490,656	61,320	3,916	921,468
Passengers per annum	4,466,080	1,136,548	1,099,843	1,126,875	1,987,519	101,958	629,082	2,823,684	157,555	6,669	5,345,848
Average number of employees	165	23	27	30	45	7	27	75	8	5	150
DETAILS OF OPERATING EXPENSES—	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence	Pence
Road-bed and track	.260	.370	.040	295	.815	.305	.205	.385	.775	----	.190
Building repairs and fixtures	----	.050	.015	.010	.020	.125	.020	----	.005	----	.020
Electric line construction repairs	.045	.040	.045	.185	.095	.105	.060	.105	.095	.405	.145
Car repairs	.325	.320	.355	.170	.245	.245	.095	.435	----	----	.340
Repairs to electric gear on cars	.240	.200	----	.160	.505	.120	.135	.130	----	----	.295
Electric motive power	1.100	1.850	1.450	1 235	1 890	1.125	2.190	1.490	1.050	1.785	1.025
Wages	2.610	2.470	3.110	2.290	3.100	1.465	2.215	3.565	2.580	3.160	3.640
Removal of snow and ice	.030	----	.010	.025	.030	----	.035	.035	.050	----	.010
Damages, gratuities, etc	.025	----	.565	.045	----	----	.015	.020	----	----	.035
Insurances	.080	.400	.055	.290	.415	.050	.210	.140	.025	.920	.265
Salaries	.225	.890	1.060	.300	1.130	1.625	.360	.360	----	----	.615
Horsing expenses	----	----	----	----	----	----	.190	.055	.495	----	.070
Legal expenses	----	----	----	.020	----	----	----	.190	----	----	----
General expenses	----	----	----	.230	----	----	----	.050	----	8.685	.545
Miscellaneous other expenses	.340	.465	1.405	.440	1.020	.275	.995	.400	----	----	1.120
Total operating expenses per car-mile	5.280	7.035	8.125	5.695	9.310	5.455	6.725	7 360	5.075	14.955	8.315
Gross receipts	9.300	12.40	11.08	8.670	14.260	5.240	8.305	14.005	5.340	16.545	13.695

keep pace with the wear, and the old proverb, "a stitch in time saves nine," is eminently applicable to track repairs, but it is at the same time an easy matter to waste money by having too many men on the work, who will always find or make something to do.

Then, again, the item for motive power may be anything from .5d. to 2.0d. per car mile. The first care in this respect should be as to the consumption of current upon the cars, which may on level roads with small cars and careful manipulation of the controller work out as low as .6 B. of T. units per car mile, or may, on heavy roads, with careless driving, amount to 1.3 or 1.4 B. of T. units per car mile.

Having reduced the consumption of current upon the cars, the next point is to secure its economical production. To effect this it is necessary to see that the fuel is of the most suitable character, having due regard to cost, and remembering that the lowest priced fuel is not always the cheapest, and that the furnaces are of the best type for dealing with it. It is also of the utmost importance for economical production that the engines and dynamos are of the proper power, so as to be fairly fully loaded without risk of injurious overloading in the heavy fluctuation of traffic.

In table F I give the sizes of a generating plant I have found suitable for operating lines with various numbers of cars under ordinary conditions.

TABLE F

Generating Plant for Various Numbers of Cars in Service on Electric Lines Under English Conditions

No. of cars	5	10	15	20	25	30	35	40	45	50
No. of sets of generating plant, including reserve	2	2	2	2	2	2	3	3	3	3
Power of each set in kilowatts	60	125	175	225	275	300	175	200	200	225

No. of cars	55	60	65	70	75	80	85	90	95	100
No. of sets of generating plant, including reserve	3	3	3	3	3	3	3	3	3	3
Power of each set in kilowatts	250	250	275	275	300	300	325	325	350	350

It is, of course, important that the plant shall be of the most economical description, but judgment must be used in selecting the plant, as to whether it shall have simple, compound or triple expansion engines, and as to whether it should be even condensing or non-condensing, as particularly in small plants in districts where fuel is cheap it may be found that where repairs, attendance, water, etc., are taken into account, it may be cheaper to adopt a non-condensing engine using 25 lbs. of steam per ihp per hour than a condensing engine using, say, 18 lbs. of steam per ihp per hour.

Then, again, there is the all-important matter of traffic expenses, which generally amount to about half the total cost of operating electric cars. Wages and hours for drivers and conductors are now fairly uniform throughout the Kingdom, and there is not much scope for cutting in this direction, and it is in the careful arrangement of shifts, and in the reduction of lost time at end of stops that reductions may be made. On many lines with short branches a very large proportion of the men's time is wasted while the cars are standing at termini. Cars should, as far as possible, be kept moving all the time, only sufficient time being allowed at the ends of the journeys to allow for turning the trolley pole and loading. In this way a good deal more mileage will be got out of both men and cars.

With the higher speeds in America it is common practice to get 100 to 120 miles per day out of a car, while in this country there are plenty of instances where electric cars are only doing 35 to 40 miles per day. Even with the limitations of speed to which we are here subjected, much better than this should be done.

These remarks have been based upon the operation of overhead trolley lines, but apply generally to electric conduit lines upon which, if substantially built, the working expenses will be much the same, the only difference being a small increase for repairs and maintenance of the conduit, conductors and collectors.

I have not included any statement as to the operation of cable lines, although these are worked at remarkably low rates, as low, in fact, as many electric lines, chiefly because there are only three systems of any magnitude in operation in this country, and there has been very little recent development in them.

I think we are justified in drawing from this small investigation the following conclusions:

1. That it is generally possible by increased services to increase the gross receipts.

2. That the operating expenses do not increase at the same rate as the mileage, and generally at a less rate than the receipts.

3. That services judiciously increased generally result in larger net profits.

4. That electric traction constitutes the readiest means of increasing the receipts, and at the same time of reducing working expenses.

5. That on tramways already equipped in this country there is scope for reduction of operating expenses and increase of profits.

I have to acknowledge my indebtedness to the Street Railway Journal, New York, to the compiler of "American Street Railway Investments," and to the officials of the various undertakings, whose figures have been cited, for their kind assistance in the preparation of this paper.

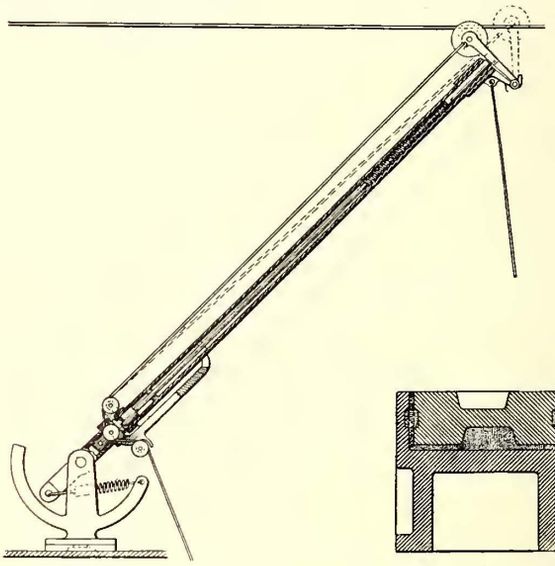
Street Railway Patents

[This department is conducted by W. A. Rosenbaum, patent attorney, 177 Times Building, New York.]

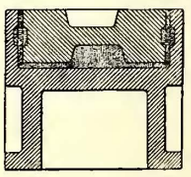
UNITED STATES PATENTS ISSUED JULY 17, 1900.

11,842. Reissue Fare Register; J. F. Ohmer and H. Tyler, Dayton, Ohio. App. filed May 11, 1897. The most important feature of this invention consists in actuating the total or trip registering device by means of mechanism arranged to be engaged or operated in common by each one of the individual fare indicator and register operating devices. The invention is an improvement upon the register described in patent No. 560,529.

653,649. Underground System of Electric Railway; C. A. Balph, Pittsburgh, Pa. App. filed Sept. 14, 1897. The main conductor is carried in a rubber or leather tube and connects with the sectional conductor by means of plugs carried by the latter and passing through the wall of the tube.



PATENT NO. 654,050



PATENT NO. 653,845

653,694. Car Fender; G. B. Quarrier, Los Angeles, Cal. App. filed April 5, 1900. Details of that type of fender in which the obstruction releases a latch to throw the fender into operative position.

653,769. Car Step; S. B. Fuller, Pawtucket, R. I. App. filed Sept. 13, 1897. Auxiliary steps are fitted with gearing so that the motorman or conductor can fold them up or open them at will from the platform, such steps being adapted for the higher cars.

653,780. Emergency Brake Setting Mechanism; W. H. Sauvage, Denver, Col. App. filed Sept. 12, 1899. By the movement of one lever the motorman can throw down the fender, apply the brakes and open the sand-box.

653,845. Railway Track Structure; H. O'Shea, Johnstown, Pa. App. filed Nov. 7, 1899. The plate which carries the track grooves at crossings, frogs, etc., are made double, i. e., with the grooves on both sides, so that the plate can be reversed when one side is worn out.

653,879. Motor Vehicles; L. J. Phelps, Melrose, Mass. App. filed May 19, 1900. The weight of the operator is utilized to keep a constant friction on the controller shaft and thereby hold it at any point to which it may be moved.

653,930. Fender for Tramway of Like Vehicles; J. Vonholt, Hamburg, Germany. App. filed Oct. 30, 1899. This fender is an elastic frame arranged at an angle and fitted with a number of vertical rollers so that the obstruction will be pushed to one side.

653,958. Convertible Open and Closed Car; F. Hoffer, Cohoes, N. Y. App. filed April 10, 1900. The side panels are made in sections hinged together so that they may be folded to occupy a small space beneath the roof of the car, when the car is operated as an open one.

653,975. Guard-Rail Fastener; D. F. Vaughan, Haddonfield, N. J. App. filed March 3, 1900. Details.

654,039. Spring Box for Frogs, Switches, Etc.; W. Wharton, Jr., Philadelphia, Pa. App. filed May 31, 1900. A special method of forming the box, for economy of manufacture.

654,050. Trolley Pole; C. A. Brown, Lorain, Ohio. App. filed Aug. 22, 1899. When the wheel leaves the wire it releases a catch which allows a spring to lower the pole.

654,105. Electric Railway Appliance; D. E. Shoop, Turtle Creek, Pa. App. filed Dec. 9, 1899. This trolley runs on top of the wire, and in order to pass crossing wires there are two trolley wheels on the same axis, which shift from one wire to another at the crossing.

PERSONAL MENTION

MRS. J. C. HUTCHINS, wife of Vice-President Hutchins, of the Detroit, Mich., Citizens' Street Railway Company, is dead.

MR. CHARLES L. HENRY, general manager of the Union Traction Company, of Anderson, Ind., had his leg broken below the knee a few days ago by a kick from a horse.

MR. A. A. McLEOD has resigned as president of the American Railways Company, of Philadelphia. William F. Harrity, vice-president and general manager of the company, has been tendered the place, and it is believed that he will accept it.

MR. HENRY C. PAGE has been appointed superintendent of the entire Lynn & Boston Railroad system. Mr. Page was formerly superintendent of the Salem division of the system, which position he has held for the past sixteen years. W. S. Wolcott has been appointed acting superintendent of the Salem division to succeed Mr. Page.

MR. ABRAM Q. GARRETSON, of Jersey City, who has just been appointed by Governor Voorhees to fill the vacancy caused by the death of Justice J. H. Lippincott, in the Supreme Court, has resigned from all the corporations of which he is a director. Among them are the North Jersey Street Railway Company, Newark Passenger Railway Company, and Newark Plank Railroad.

MR. J. D. NEWTON, who has been a division superintendent of the Washington Traction & Electric Company, of Washington, D. C., since the purchase by the company of the Anacostia road, has resigned. Mr. Newton has been engaged in street railway work in the District since 1888, and was the superintendent of the old Anacostia street car line for years. When the Anacostia road was purchased by the Washington Traction & Electric Company Mr. Newton was made division superintendent of the Congress Heights, the Anacostia and the Belt lines. He was transferred from the Anacostia division to the City & Suburban line in the same capacity a short time ago.

MR. E. C. FOSTER, vice-president and general manager of the Lynn & Boston Railroad Company, has just been appointed general manager of the Massachusetts Electric Companies, and will perform his dual duties for the Boston office of the latter company. Mr. Foster was born in Hancock, N. H., Oct. 23, 1852. He was educated in the public schools of that town and at Appletons Academy. At the early age of fifteen he decided to enter business, and secured a position as a clerk in a grocery store. He resigned this position after a year and went into the milk business for himself. After three years of this, he resigned to accept a position as a conductor for the Lynn & Boston Railroad. He was then nineteen years old. Two years later he resigned this position and spent two years in California. On returning to the Bay State he was again appointed a conductor on the Lynn & Boston, and in April, 1883, he was made division superintendent. In 1892 he was elected general manager of the company, which position he still fills in connection with his other offices.

MR. C. D. WYMAN has resigned as general manager of the New Orleans City Railroad Company to accept a position with Stone & Webster, of Boston, Mass. Mr. Wyman accepted the management of the New Orleans property in 1896, succeeding Mr. H. M. Littell, who was manager of the lines during their equipment with electricity. Mr. Wyman gained an enviable reputation while in New Orleans, greatly perfecting the street-car service in that city, and devoting considerable time to the development of pleasure traffic. He has been a prominent figure in social events at New Orleans, and was a member of several prominent clubs, among them the Progressive Union and Boston clubs. Mr. Wyman will be employed as an expert by Messrs. Stone & Webster, who now control valuable properties in all parts of the country. He will supervise the operation of the numerous lighting and railway plants controlled by Messrs. Stone & Webster, and this work will give him a larger field of operation without being too closely confined to the small details connected with the everyday operation of railway and lighting plants. The following resolutions were adopted by the directors of the company, at a meeting held July 11, to consider Mr. Wyman's resignation:

"Resolved, That the resignation of Mr. C. D. Wyman as general manager of this road (to take effect Aug. 1 next) be accepted with regret, and that the secretary be and is hereby instructed to convey to Mr. Wyman our approbation of his efficient and faithful services in behalf of this company during the period of his connection therewith, and to express our best wishes for his continued success in his new home."

On July 18 Mr. Wyman was tendered a banquet at the West End Hotel by the officials and employees of the company, who generally expressed regret at losing such an efficient employee. Among those present at the banquet were: C. D. Wyman, general manager; Captain John G. Wood, secretary-treasurer of the company; H. J. Dressel, superintendent of trains; John R. McGivney, assistant superintendent and purchasing agent; T. H. Tutwiler, engineer; E. B. McKinney, chief engineer of the power house; C. V. Cosby, assistant, H. A. Ferrandon, auditor; Joseph Bein, cashier; T. C. Rojo, master mechanic; Max Plohm, director of amusements; W. H. Renaud, Jr., claim agent; Judge Lawrence O'Donnell, attorney, and T. Tranchina, manager of the West End Hotel. Captain Wood, secretary-treasurer of the company, acted as toastmaster, and he called upon Judge Lawrence O'Donnell to offer a toast suitable to the occasion. Judge O'Donnell, in opening his remarks, called attention to the fact that the occasion was not one for rejoicing. On the contrary, the officials should regret the cause which brought about the little dinner party. He spoke of the career of Mr. Wyman since his arrival in New Orleans, his energy, fairness and executive ability, and he concluded his remarks with a most touching and appropriate tribute to the friendship for a man among men.

C. D. WYMAN

In reply, Mr. Wyman spoke of his fellow-workers as friends. Were a novelist writing the story of his arrival, he would say that upon a dark and rainy night a lonely passenger dragged his way down a dreary street, looking for a place he could call home. This passenger came into the city as a stranger, with only the acquaintance of two or three people and a very slight knowledge of the work before him. He found a people who met him more than half way and helped him to gain a success. The office associates gave him their confidence, and he had tried to merit it. The real success of the company was, first, due to the faithfulness and honest work of the officials, and he retained for himself a very small part of the credit, for if this force had not come to his assistance there would have been no success. Men might make riches or a great name, but the accumulation of true friends was a pleasure more precious and sincere than the gaining of fame. He compared his friendship for the office force to the meeting of ships at sea, which speak and separate, but to him these friendships are like the association of a single crew whose lives have been so closely interwoven that associations are never forgotten. The shallow things of the heart murmur, but the deep feelings lie dumb, and he found this doubly so when he tried to express his sincere thanks for the very elaborate illustration of good-fellowship which he was shortly to leave. One by one he spoke to the officials surrounding the table, and to each paid some pretty tribute and expressed some thanks for some almost forgotten kindness.

The Knoxville Traction Company, of Knoxville, Tenn., is now using a new and novel kind of transfer. A park coupon is attached to each transfer, and ten of these are good for a ride on the merry-go-round, and five are good for a ride on the gravity road at Chilhowee Park in the afternoon. The transfers are not good for use after these coupons have been detached, and when they were first put in use a number of passengers had to pay an extra fare because they had been detached.

NEWS NOTES

[News notes for this department are solicited.]

LOS ANGELES, CAL.—The Los Angeles Railway Company has subscribed $5,000, and the Los Angeles Traction Company $1,000 to the fund for the erection of a convention hall at Los Angeles.

SAN FRANCISCO, CAL.—An appeal has been made by W. T. Baggett, representing the Bay & Coast Railway Company, to the street committee of the board of supervisors for passage to print of an ordinance granting the company a franchise to enter San Francisco. The route described in the application is from the county line, south of Ingleside, thence irregularly in a northeast direction to Islais Creek and thence through San Francisco and the Potrero to the Mission.

HARTFORD, CONN.—The residents of Hartford were treated to an exhibition of baseball between teams representing the Hartford Street Railway Company and the Hartford police department on July 18. Six innings were played, and the score stood 25 to 5, in favor of the police.

HARTFORD, CONN.—The employees of the Hartford Street Railway Company gave a dance at the Casino last week. Before the dance the Street Railway Band gave a concert on the green, which was enjoyed by a large number.

COLUMBUS, GA.—The employees of the Columbus Railroad Company, both railway and lighting departments, enjoyed a barbecue on July 13 tendered by President Flournay of the company. The affair occurred at Mr. Flournay's home in Wynnton, and was thoroughly enjoyed by all.

ATLANTA, GA.—As the result of a caucus between members of the City Council an entirely new electric lighting franchise has been adopted in favor of the Atlanta Railway Company. The franchise is given for a period of twenty-five years.

EAST ST. LOUIS, ILL.—An extension of time has been granted the East St. Louis Electric Railway Company to lay tracks in certain sections of the city. In consideration of the grant of further time the company agrees to pay $9,789 to the city, which amount will be returned to the taxpayers who paid for the elevation of the street. For this work the company was not taxed, as it had rails laid on the street.

CHICAGO, ILL.—The annual meeting of the stockholders of the Chicago Union Traction Company was held July 24. The old board of directors was re-elected, but the meeting of the board, for organization, was postponed until next week. The company reports the income account for the year ended June 30, 1900, as follows: Gross earnings, $7,477,398; operating expenses, $3,761,797; net earnings, $3,715,601; other income, $868,351; total income, $4,583,951; total deductions from income, $3,979,876; balance $604,076; dividends on preferred stock, 5 per cent, $600,000; surplus, $4,076. Following are particulars of traffic: Car mileage, 29,691,850; passengers carried, 20,849,562; per cent of transfer passengers, 38.71 per cent; proportion of expense to earnings, 50.31 per cent; proportion of expense to gross receipts, 45.07 per cent; proportion new income to gross receipts, 7.24 per cent.

CHICAGO, ILL.—President J. M. Roach, of the Union Traction Company, was waited upon by a delegation of seventeen of the oldest employees of the North Side street railways at his office last week. The men presented him with a roll containing the names of nearly 2000 employees, who wished to express their thanks for the recent raise in their salaries. The list was headed by the following greeting: "We, the undersigned employees, appreciate the stand you have taken in the matter of wages, and take this means of conveying to you our appreciation and to express our heartiest thanks. We wish to assure you that as far as we are concerned your efforts in our behalf will not be wasted, and the future shall prove that no man has a more loyal set of men in his employ than you have."

Mr. Roach assured the committee that he would look after the interests of the men, and do for them anything within reason. The recent rise in wages, he said, was not final. If the men should act in such a manner that a saving to the company would result, it would assuredly result in profit to them, and if at any time they had any suggestions to offer for the betterment of the service and the better care of the public he would be pleased to hear from them.

ELKHART, IND.—The Indiana Railway Company, which owns the local electric lines at Elkhart, Goshen, Mishawaka and South Bend, and the interurban line between the towns, is preparing to establish a baggage system on the interurban lines.

INDIANAPOLIS, IND.—The Indianapolis Street Railway Company has purchased both the Martinsville gas and Commercial electric lighting plants. The plans of the company, in regard to this purchase, are not known.

SHELBYVILLE, IND.—On July 17 the City Council passed an ordinance extending the franchise granted March 20 to the Shelbyville Heat, Light & Power Company 240 days. The company has experienced considerable difficulty in securing other franchises for its new line, and this has prompted the Council to grant an extension of time for beginning construction work here.

WICHITA, KAN.—Arrangements have been completed between the Wichita Electric Railway & Light Company and the promoters of the carnival for displaying similar floats on the street car lines to those which made such an impression in Milwaukee and New Orleans. The subject of the floats will not be given out until the carnival week.

LOUISVILLE, KY.—The franchise for operating a street railway on Frankfort Avenue, from the old city limits to the new limits, a distance of 5860 ft., has been sold to the Louisville Railway Company for $250.

WEBSTER, MASS.—The Railroad Commissioners are inquiring into the causes of the accident here on July 4, so as to determine who was responsible for the catastrophe.

SPRINGFIELD, MASS.—The Selectmen of Agawam, Mass., have dismissed the petition of the Hartford & Springfield Street Railway Company for permission to lay tracks in the streets of the town. The Hartford & Springfield Street Railway Company is a Connecticut corporation and recently succeeded to the rights of the Springfield & Southwestern Street Railway Company, under the charter of the Suffield & East Granby Street Railway Company, and the name of the company was changed to the Hartford & Springfield Street Railway Company by permission of the Superior Court of Connecticut.

DETROIT, MICH.—A resolution has been introduced in Council by Alderman Beamer requesting that the street railway company consider the acceptance of a new thirty-year franchise covering all lines in the city with the general rate of fare to be eight tickets for 25 cents, with universal transfers. Governor Pingree, the advocate of municipal ownership, says: "On the face of it the proposition may be considered the next thing to municipal ownership."

ST. LOUIS, MO.—It is reported that the St. Louis & Illinois Electric Railway, which wants a franchise in St. Louis, and has a bill pending in the City Council, will be a rival to the St. Louis Transit Company. It is said that it will connect with the electric and steam railways east of the river. It is also rumored that the St. Louis & Suburban will be taken into the combination.

LIBERTY, MO.—The organization of the Kansas City, Liberty & Excelsior Springs Railway Company has been perfected, and it is stated that work on the construction of an electric line between the points named will begin soon. The officers of the company are: J. S. Chick, president; Charles H. Scott, vice-president; C. B. Leavel, secretary; J. P. Bauserman, treasurer, and Charles L. Leiteh, chief engineer. Surveys are expected to be made at once to select a route. The capital stock of the company is $1,000,000.

OMAHA, NEB.—At a recent meeting of the City Council the Omaha, Council Bluffs & Suburban Railway Company was granted permission to lay several additional short lines.

EXETER, N. H.—An innovation is being planned for Hampton Beach in the shape of Sunday services to be held in one of the Exeter, Hampton & Amesbury Street Railway Company's buildings. A prominent religious worker has broached the subject to Superintendent McReel, and he has granted the free use of the building and the piano to any clergyman who desires to start the movement.

CAMDEN, N. J.—The Camden & Suburban Railway Company has made application to the Council of Riverton for permission to construct an electric railway on Broad Street, in that borough, to connect with the company's line in Palmyra, and with the lines of the Camden & Trenton Street Railway Company. The Council has decided to consider the application on Aug. 9.

BROOKLYN, N. Y.—Alfred R. Goslin, Charles Thomas Davis and Eugene L. Packer, who were convicted recently of conspiracy to "bear" the stock of the Brooklyn Rapid Transit Company, have obtained from Justice Bischoff, in the Supreme Court, a certificate of reasonable doubt as to the legality of their conviction, in order that an appeal might be taken. Justice Bischoff fixed bail for Goslin, who was sentenced to six months in the penitentiary and to pay a fine of $500, at $12,000; and for Packer and Davis, who were each sentenced to three months' imprisonment and a fine of $250, at $5,000 each.

NEW YORK, N. Y.—A Third Avenue trolley car became unmanageable in Park Row July 18, and smashed into the rear platform of a horse car of the Dry Dock, East Broadway & Battery line. The platform was squashed like a crushed strawberry box, the car pitched onto the sidewalk and two passengers painfully bruised. A wheel was taken off a wagon standing nearby, and the driver was thrown into the street. The collision threw the horses of the horse car against an electric car in front, and one of them was crushed to death.

BROOKLYN, N. Y.—An accident occurred on a siding of the Kings County Elevated Railroad at Georgia Avenue and the Eastern Parkway July 17, in which three empty cars were hurled from the track into the street and wrecked. The accident was caused by some misplacement of the switch.

BROOKLYN, N. Y.—At 6 p. m. on July 19 the Rockaway express of the Long Island Railroad ran into the Bay Ridge elevated train on the Fifth Avenue branch of the Brooklyn Elevated near the Fulton Street station, killing the motorman and injuring several passengers. The Bay Ridge train was stalled, owing to the fact that the fuse on the rear car burned out, and no warning was given to the Long Island train, which followed at a headway of five minutes. None of the injured were seriously hurt.

ALBANY, N. Y.—At the annual meeting of the stockholders of the United Traction Company, held last week, the retiring officers were re-elected, and in addition J. W. McNamara was elected second vice-president. The directors also declared a regular quarterly dividend of 1¼ per cent, payable Aug. 2. The total earnings for the six months ending June 30 are $640,000, considered a handsome showing for the first half year of the new consolidated company. On the basis of these figures the aggregate earnings for the year are placed at $1,400,000.

STATEN ISLAND, N. Y.—Thirty passengers in a trolley car of the Staten Island Midland Railroad Company's line jumped or were thrown in a heap upon a macadam roadway at Concord, S. I., on July 17, and many were hurt. The car was descending a short but sharp grade in Richmond Road when it left the rails. It jumped a deep gutter, climbed the bank at the right side of the roadway, just missed a big telephone pole and crashed through a high board fence. The car ran diagonally up the embankment and when its impetus was checked settled back and careened toward the roadway, almost overturning. The passengers, men, women and children, were badly frightened, and as the car threatened to overturn they jumped or were thrown out into the roadway.