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Correspondents in other Principal Cities of the World.

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EDITORIAL NOTICE

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Anarchism and Those Who are Responsible for It

Anarchism seems to be, and is, an anomaly when it exists in this country. American conditions never created it, and we never heard of a person whose family had been in this country for two generations who was willing to accept the appellation, or any who could even speak the English language at all intelligently who would acknowledge that he was an anarchist. It is an exotic, produced under the oppressive conditions of continental governments and entirely out of place in this land of ours, yet it exists here. In coming it has invaded a country where the opportunities for individuals are freer than they are or have ever been in any other place in the world, and one of the ablest and most beloved men who has ever occupied the Presidential chair has just been stricken down in its name.

* * *

While the nation is awaiting with anxiety the outcome of the horror which was perpetrated last week it may not be amiss, in fact, we believe it a duty, to endeavor to point out some of the reasons why this un-American doctrine, this gospel of hate and discontent, should exist among us. No man, and no body of men, except those brought directly from the dregs of foreign tyranny, proclaim their allegiance to the anarchistic doctrine, but it is no secret that the fundamental elements of this creed, which are envy, hate, slander and disregard of law, are openly preached in the market place and from many political rostrums. We do not say that every man who practices these doctrines appreciates their logical outcome. Nevertheless the responsibility for holding them is greater with the intelligence of the individual who avows them, even if his actions are not openly violent.

* * *

The followers of this gospel of hate and pessimism may be broadly divided into three general classes, according to their training and intelligence. The first of these, and the most educated, are the carpers at corporations, especially those of a quasi-public nature. This class improves all opportunities to denounce every act of these semi-public bodies as jobbery and fraud and a theft from the public. The members belong to no political party and affect to be above them, but undertake to dictate the policy of both. No burden is too excessive or no tax is too heavy, in their opinion, for the corporation within the power of the State, and every attack made against corporate rights, either in the municipal or State Legislature, or by the newspapers, is justified, in their minds, as a compensation for what they imagine have been past abuses of the company attacked. Most of these men claim to be of higher intelligence than the rest of mankind. From their training, as well as from their business interests, one would expect to find them among the defenders of invested capital, instead of its enemy, when the object of attack is a railroad or other large corporation. Some of them occupy high positions in institutions of learning. All of them would scorn to be called anarchists, but in the fundamentals of their doctrines the two do not differ from each other.

* * *

The second class of enemies of law and capital is those who go a step further and openly approve and participate in violations of order against any alleged enemy of what they affect to call the public's rights. In this class are the men who join and abet strikes, overthrow cars, stone defenseless passengers, destroy property in other ways, and assail the inalienable rights of any American citizen to go in search of work and perform his duties and obligations in a lawful and proper manner. In doing this they simply use force where those first mentioned would employ invective and legislative means, and are, without doubt, largely strengthened in their hostility to the offending corporation by being taught by the press, as well as the highly moral discontents, that the corporations long ago forfeited any right to protection. This class includes also Governors and Mayors who will not repress disorder and violence of this kind, yellow periodicals that openly encourage the turbulent, and private citizens who either acquiesce with or assist the breakers of the law. This

class goes a step further than the first mentioned, and typifies a lower grade of intelligence, but is the logical outcome of the underlying doctrine of discontent.

* * *

Finally, we find the avowed anarchist who proclaims himself the enemy of all laws, property and persons more fortunate than himself. These are the men that meet in dark tenements, that plot against life and prepare bombs with which to hurl destruction against organized government. They personify the doctrine of malice in its most hideous form. Their extremely low grade of intelligence does not allow them to stop at either of the points which halt their predecessors. They feel as if they must act against all property and law, where the other classes simply slander or direct their attacks against the unpopular. The difference is in degree rather than in nature, and is caused by a difference in education, not in heart.

* * *

Which, then, is the most responsible? Is it not those men whose advantages should make them the bulwarks of invested capital, slow to believe stories of wholesale corruption and ready to treat fairly the business propositions of their fellow citizens? It is the opposite course pursued by such persons which leads the less educated to believe that they are, in fact, being robbed in one form or another by the more fortunate, which incites them to resent this supposed injury by violence, and which finally instills in their minds the idea that all riches are ill-gotten, that all law is unjust, and that all courts are corrupt.

Hearing on the Franchise Tax in New York

About two and a half years ago the business men in New York were startled to learn, upon reading their daily papers, that a plan had suddenly been adopted by the New York State Legislature to relieve the taxpayers, of the different cities, of a large part of their burdens by a novel expedient which oppressed nobody; this was simply to raise some tens of millions of dollars annually by taxing the franchises of the street railway, telephone, telegraph and other companies who are using public streets. The measure was adopted while the legislators were busy packing up their personal belongings prior to an adjournment, with hardly a word of discussion, without listening to practically any testimony, and with no definition of what a franchise comprised. The bill was avowedly a pet one of the Governor, and, like his famous charge up San Juan Hill, was over before many people knew that it had commenced. To be sure, the discovery was made, after the bill had been passed and the Legislature had adjourned, that the bill was so faultily drawn that it could never be enforced, and the law makers had to be called back to Albany in special session by the commanding general to remedy this defect. Still military surprises, even when led by the most astute commanders, do not carry success at the first assault. The military balloon, as at San Juan, was sent up again, the defenses were reconnoitered somewhat more carefully, and a substitute bill, was passed to remove some of the legal errors of the first bill and make it more easy of enforcement.

* * *

The author and the sponsor of the bill retired some time ago from the New York political arena, one to the occupation of a private citizen, the other to the Vice-Presidency, and to both the Ford franchise bill is of historic interest only, a thing of the past, grown dim, though perhaps not forgotten. The legacy has remained to New York State, however, its citizens, taxpayers, wage-payers and judiciary to trouble and worry them. Ever since the bill was passed the courts have been endeavoring to find out what it means and whether it is constitutional. The best legal talent has been devoted to the purpose, but as yet no definition of a franchise or any practical plan of determining its value has been elucidated. The State assessors claim to have a method of their own by which the values of the franchises have been appraised, but refuse to disclose their methods, and the arbitrary figures

which have been placed on the different properties indicate that, whatever the method employed is, a large factor in it has been the caprice of the person making the appraisement.

* * *

In the meantime the expenses of the State Board of Assessors, the cost of legal advice and other charges incidental thereto have resulted in a large expenditure to the authorities which, as yet, has not been recouped by any receipts to the local municipalities to whom the tax is paid. The companies affected have also necessarily been to a large expense in defending themselves against this inquisitorial assault in which they are not allowed to prove their innocence, for the reason that the assessors refuse to disclose their method of appraisal. So the hearings continue as to the constitutionality of the act before the referee appointed to hear the evidence, and who is to submit his opinion of it to the Supreme Court.

* * *

Much interesting testimony has been presented, however, to the referee, and we hope that some of the facts placed before him by counsel and by the street railway companies will receive more than passing attention from the public. A particularly clear elucidation of the practical conditions surrounding the cost of street railway installation and maintenance was presented last week before the referee at Albany, and is given more fully elsewhere. We believe that the benefit to the public would be immense if some of the statements made by Mr. Vreeland could be impressed upon some of our municipal ownership advocates. He described most clearly the cost of making the preliminary experiments as to motive power on his road, as a result of which large amount of machinery, rails and other apparatus had to be discarded before they were worn out, simply because they had become antiquated through advances in the art, as well as the expense of buying out, at what he called "nuisance rates," of horse railways, whose owners either could not or would not equip electrically, but whose cars running over short sections of track also used by the cars with modern equipment prevented high speeds. These are facts which those who demand municipal ownership do not realize. The investment made by the company in carrying out these improvements, as well as many others, is fairly a portion of its investment, though not represented by tangible assets. It is not fair, then, to claim either that a company's property is represented by the cost of duplicating the present plant, or to demand that it should be taxed on this investment freely made to advance the art. It seems strange that a mind should become so warped that it can not grasp this idea. For such we recommend a treatment made up of doses from the testimony submitted by the counsel for the companies to the Governor at the time that bill was under consideration by him, and since then before the referee. This treatment might have to be given homeopathically, as the capacity of such persons for this sort of truth is limited, but with an increase in their receptivity for knowledge the doses might be made larger until they could take a broad-minded view of the situation.

* * *

There were other points, however, which Mr. Vreeland brought out in the address mentioned, besides the fact that the investment in a property of this kind should not be reckoned in the actual money which would be required to replace it at the present time. He showed that the earning capacity of a property depends largely upon the way in which it is managed, so that a franchise in one set of hands, if gaged by the earning power, would have a different value than if in the control of others. To tax this increment is to levy a tariff on ability, not on property. The same condition exists in every line of business, but outside of New York State it is not usual to demand that a man should be taxed in proportion to his brains or his honesty rather than on his property, although these two qualities may constitute important aids to the extent, and consequently to the value, of the business carried on by him.

New York State Convention

The New York State Street Railway Association, which is the oldest and largest of the State organizations in the country, held its nineteenth annual meeting in Rochester, Sept. 10. Actively supported as this association is by the largest companies in the State, its discussion and action on railway subjects are always regarded with the highest respect by railway managers in other States, and indeed in other countries. The meeting at Rochester was no exception to this rule, and although the phrase is somewhat hackneyed, it is safe to say that the convention will be generally regarded as one of the most successful in the history of the association. The actual business transacted was considerable. Not only were seven papers read and discussed, but the committee on a standard code of rules made its report, presenting a complete set of regulations applicable to all roads, irrespective of size and representative of the combined knowledge of the principal companies among the members. In addition, a profitable discussion on how to increase the efficiency of employees was held, which occupied two hours, and formed one of the most valuable features of the convention.

* * *

When it is remembered that this programme was followed out in a convention lasting only a day and a half, and without interfering in any way with the most hospitable entertainments provided by the hosts of the association, the Rochester Railway Company, and that, in addition, the delegates were afforded ample time to inspect the quite elaborate exhibits presented in connection with the convention, the reader will realize that the programme was well arranged, and that the association was most expeditious in carrying out its business. In fact, the promptness and snap of the members of the association, and their readiness to co-operate in the objects for which the association was formed, has always characterized the meetings of this body, and to these qualities have largely been due the success and prestige attained by it. While the attendance cannot be said to have been very large, in respect to the number of companies represented, many of the member companies had at the convention a large number of its engineers and operating managers (the representatives of the two New York and Brooklyn companies occupied nearly an entire car in going to Rochester), and the members made up in enthusiasm and action what they lacked in quantity.

* * *

The Rochester Railway Company was, of course, well represented, not only in numbers, but by its officials, and extended a most cordial hospitality to the visitors. The attractive suburbs of Rochester made the trolley excursions, as well as the special entertainments given to the ladies, extremely pleasant, while the annual banquet was an excellent one, and characterized by witty speeches and general good fellowship. The association is, indeed, fortunate in comprising among its numbers so many good hosts and companies who know what a good time is, and how to give it to others.

* * *

The first paper, that presented by Mr. Green, and published elsewhere, was an argument against what is practically the universal system at present of rail bonding, and advocated a return to the use of a supplementary, which Mr. Green urged had been unsatisfactory in the past only because it had not been made large enough. The entire argument hinged on the liability of rail-bonds becoming defective, and the consequent interruption to the return circuit. While, of course, there is always danger of this, we believe that with modern methods of bonding and a careful inspection of the return circuit, which should always be periodically made, even when a supplementary is used, the trouble from this source is practically very slight. Again, on city roads, the cross connections usually used, as well as those provided by every axle and by every piece of special work, together with the overhead return feeders usually used, prevent any great trouble being caused by trouble with two or three bonds, while, on the other hand, a defective

connection between the supplementary, if used, and any particular rail would be liable to cause nearly, if not quite, as much trouble as with the bonds used at present. Again, we can easily imagine that managers of roads having long lines of exposed track would look askance upon a method which would afford so great an opportunity to professional copper thieves, or others feloniously inclined, as an exposed supplementary. We do not, therefore, believe that the paper, though an interesting contribution to the literature on bonding, will effect a revolution in this department of track construction.

* * *

The treatise by Mr. Hoopes, which was the second paper presented on Tuesday morning, went quite carefully into the subject of third-rail construction, which he recommended as cheaper than the trolley system, as well as more desirable for high-speed roads operating over their own right of way. There is no difficulty from a mechanical or electrical standpoint in employing the third rail, and the three objections which we have always understood are alleged against the system are danger of accidental contact with the third rail, loss of power through leakage, and trouble in winter through the coating of the rail with sleet. Mr. Hoopes believes that there is nothing in the first objection, provided the company owns the property over which its lines run, fences it in, and runs its cars over cross roads by momentum. Ignoring entirely the legal liability of a railroad company in case of accident from a live rail to a person crossing the track, and so far as we know, this question has not been settled, the Baltimore & Ohio Railroad Company has thought it advisable to go to considerable expense in protecting its third rail, even going to the trouble in stations of putting it into what is practically a slotted conduit. The subject of leakage is not discussed by Mr. Hoopes, but he acknowledges that considerable trouble has been given by sleet, and states that this trouble has not been entirely overcome. This opinion is in line with the experience of elevated roads on the subject and, so far as we know, no entirely satisfactory sleet cutter has yet been devised. The location for the third rail recommended by Mr. Hoopes, which is a distance of 26 ins., or practically half the gage, outside of the outside track rail, has many advantages over a center position. The chemical analysis for securing the highest conductivity to the rail recommended by him calls for only .09 per cent of carbon, .44 per cent of manganese, .088 per cent of phosphorus, and .08 per cent of sulphur. This is somewhat higher in carbon and manganese than the Manhattan third rail, and we imagine that there should be no difficulty in getting mills to roll this rail. It is interesting to note that Mr. Hoopes does not consider it necessary in the Albany & Hudson installation, from the experience of which we imagine the paper was compiled, to use any feeders with sub-stations from 10 miles to 12 miles apart.

* * *

The association was fortunate in securing from Mr. Barnes, electrical expert of the New York State Railroad Commissioners, a paper on the subject of brakes for street cars, and, as it was read by Colonel Cole, of the Commission, it may fairly be considered as representing the unofficial opinion of that body. Mr. Barnes points out the necessity, with the modern long, high-speed cars, of the best braking apparatus, and evidently believes that the best is none too good. He referred to the tests of brakes made under the auspices of the Board a year and a half ago, and replied to some of the criticisms directed against this report. In this connection it might be well to say that we believe the greater part of the criticism directed against this report on braking efficiency was due largely to a misconception on the part of the public as to the real value of the test. It was not to determine the most desirable brake for street railway purposes, but simply the quickness with which a brake can be applied and a car stopped. This is undoubtedly an important element in the value of a braking system, but it is not the only factor, as reliability, ease of inspection and repair, cost and many other things affect the determination of the best brakes. In the discussion on Mr. Barnes' paper

a number of the delegates present brought out the importance of frequent brake inspection, Mr. Vreeland giving a very striking example of the necessity of doing this. We think an almost equally important factor in good brake operation is the instruction of the motormen in making emergency stops. A man may not have to do this in practice oftener than once a year, but it is a very desirable accomplishment if it has to be done. It is also desirable for a motorman to know how long it takes to make an emergency stop. Some men have pretty hazy ideas on this subject, and we know of one motorman in a damage suit who said that he could stop his car, when running at high speed, within 10 ft. if necessary. This might have been an excellent claim to make for a brake by a sales agent, but in this particular instance it resulted in the loss of the suit by the railway company, as the car was not stopped within the prescribed distance. Practice in making emergency stops might cause a few flat wheels, but the training might prove of the highest value, and to save wheels an old car might be used for the purpose.

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The president's address was, as usual, replete with food for thought, and indicated that the association, as well as the different member companies, have enjoyed their share of the general prosperity during the past year. It, with the three other papers referred to above, are published elsewhere in this issue, while the remaining papers, with the discussion, will be printed next week.

The Rochester Convention

The Street Railway Association of the State of New York held its nineteenth annual meeting at Rochester, Sept. 10 and 11. The entire attendance was in the neighborhood of 200 persons. The headquarters of the association were at Powers Hotel, and the place of meeting and exhibit at Fitzhugh Hall, only a short distance from the hotel.

After a meeting of the executive committee, the business of the association was opened about 10:30 a. m. by President Rogers, who first asked the secretary to call the roll of members. The minutes of the previous meeting were then read, after which the president presented the following address:

ADDRESS OF THE PRESIDENT

Gentlemen.—Before extending a formal welcome to the delegates and guests upon this occasion, I consider it my duty to briefly allude to the overshadowing calamity that has overtaken us in the attempted assassination of the beloved President of this nation, William McKinley. The dastardly and cowardly act of the treacherous would-be assassin who, while accepting the friendly greetings of the chief executive, aimed a revolver at his breast, is an act so despicable that words fail properly to express the feelings of every true American citizen. The entire nation is watching the outcome of the terrible deed with bated breath, and the hope and prayer of the world at large is that the life of the great and good man may be spared.

It affords me great pleasure to meet with and welcome you once again to our annual meeting. In accepting Mr. Nicholl's very kind invitation to hold our nineteenth annual convention in the beautiful city of Rochester, we realized that we were making no mistake. However, the preparations and plans that have been made for the entertainment by Mr. Nicholl, the Rochester railway, the committee of citizens and the supply men of the city are far beyond our expectations. The attractions, together with the able papers which are to be read and discussed and the many topics of interest which will be presented for our consideration, will make this one of the most interesting conventions we have held. But this result can only be attained by a free discussion of the papers and topics presented.

I would call your attention to the very instructive and interesting display of exhibits at this meeting. The supply men have done much in the past toward the success of our association, and we owe them a debt of gratitude for the interest and attention that they have always taken in our meetings and affairs. Many of the present members of the association have joined through their efforts.

The street railways of this State have carried, during the past year, over one billion passengers. The net earnings from operation are the same as the year previous, \$.0155 per passenger. There seems to be considerable development in the freight and

express business on trolley roads. The increase in this State in this class of receipts during the past year was nearly \$50,000 over the previous year. While there is a considerable increase in the floating and funded debts of the street railways of the State during the past year, there is a decrease in the amount of interest paid for the same period, which signifies an increased confidence on the part of investors, and consequently we are now able to borrow money at a much reduced rate.

Some time in the early eighties steam railroad building had its great impetus in this State. The West Shore, Lackawanna, Nickel Plate and other large projects were carried into execution. This year seems to mark a new era in street railway building. Never before were so many long interurban lines contemplated.

A number of certificates have been granted by the Board of Railroad Commissioners, among which are the Buffalo, Niagara Falls & Rochester Railway Company to build from Rochester to Lockport, Buffalo and Niagara Falls; also, Genesee & Orleans Railway Company to build from Batavia to Lake Ontario; the Syracuse, Skaneateles & Moravia Railroad to build from Moravia, through Skaneateles, to Syracuse; the Golden Bridge Electric Railroad Company to build from Golden Bridge to Danbury, Conn. They have now before them for consideration many propositions for long interurban lines, among which are an application of the Rochester & Eastern Rapid Railway Company to build from Rochester, through Canandaigua, to Geneva; the Lyons & Sodus Bay Electric Railroad to build from Lyons to Sodus Bay on Lake Ontario; the New York & Port Chester Railroad Company to build from the end of the underground tunnel in New York at about 129th Street and Third Avenue, through Mt. Vernon and Port Chester, to the State line of Connecticut.

In addition to the numerous applications for certificates for new roads, there are many projected extensions of existing electric railways for considerable distances through the State.

Many important consolidations of interurban lines are now taking place in our State in connecting up smaller roads. These extensions and consolidations, connecting towns with towns and villages with villages and both with cities or with the trunk line which leads to them, can not help but work to the advantage of the public.

The success of the interurban trolley roads has opened up a new field for the promoter. A number of the proposed interurban franchises now in their hands are purely speculative. It would be a detriment to interurban development to give life to the hopeless and worthless propositions, but this apprehension is needless, as this State is to be congratulated upon having an able Board of Railroad Commissioners, which is alert, wise and painstaking in its administration and oversight over our affairs.

The large number of interurban roads which are now pushing their way through the country is a favorable commentary on the growth of the electric railway industry. The modern street railway is no longer a tramway. It installs the heaviest tracks, employs large and commodious cars and runs them into the country upon well-ballasted and thoroughly constructed tracks, in many instances on its own right of way, and in many cases at nearly as high speed as the steam roads.

The modern interurban road should be well equipped, and, where the traffic will allow, double-tracked on its own right of way, at as near a minimum grade as possible. In many instances these features have been recognized by the trolley roads, and much of the work now under way and contemplated is equal to first-class steam railroad construction. This class of work leads to public comfort, confidence and financial stability. The interurban road builds cities and towns, makes travel a pleasure, is conducive to good health, helps to correct the morals and to benefit the public in general. This growth of long suburban and interurban lines carries with it the promise of a new and great public usefulness and certain new needs and responsibilities which must be carefully studied and considered. The same question is always before us: How can the electric road best serve the public? It is the duty of the management to study the needs of the public and endeavor to meet them. Those who neglect this duty will soon come to grief. The opening to habitation and developing of unused suburban districts and furnishing easy and cheap means of transportation to our cities seems to be the work of the trolley expansionists. This work is in its infancy and an immense work of development still remains to be done. In this rapid and almost startling development there must be experimental work, and we may be able to assist one another through our association as to the best methods of caring for the different problems as they present themselves.

A decade ago a horse car with straw on the floor was accepted with little apparent inconvenience and the public seemed to be satisfied. But as we have advanced and the numerous conveniences and comforts have been offered to the public, they have

become more and more critical, much more is demanded and expected of us, and in many cases properties have been financially crippled in their endeavor to meet this public demand.

No doubt the small roads of our State have had, and are having, a struggle for existence. In most cases this fact is not recognized by the public until the receiver takes charge of the road or reorganization takes place. This class of roads must be assisted in every possible way by the public and relieved from the heavy penalties imposed upon them in the shape of heavy taxation, paving and requirements for expensive construction. The burdens on small roads must be lightened if the people using the same want rapid transit. Financial men are not putting their money into this class of enterprises from purely philanthropic sentiment. The capitalists will withdraw from this class of investments, which means abandonment, or the local people must take up the burdens unless they are treated fairly. Some years ago money could be obtained to build roads in small cities, but such is not the case at present, and this result has been brought about by the heavy obligations placed upon them.

I have called your attention a number of times to the injustice of the law in regard to the obligations of street railways to pave. The decision of the Court of Appeals, in *Conway vs. The City of Rochester*, holding that the general law requiring street railway companies to pave, in all cases, between their tracks and 2 ft. outside, was varied by previous special legislation, and could not be changed by any municipality, notwithstanding such obligation would be prohibitive of any future railway construction, and was destructive of the value of many street surface railways. The Legislature recognizes the fact that the street railways in small places can not afford to build and operate a railway and also pave the streets, and has, very wisely, amended Section 93 of the railway law, which now permits the question of paving and percentages in cities of the third class, towns and villages to be adjusted between the street railways and these municipalities by contract. It is the duty of the officials in these municipalities to treat the small roads in their midst with liberality and fairness. The city or town may apparently lose revenue that might be collected, but would it not gain, although indirectly, in allowing the roads to expend their money, otherwise paid to the city, in expanding its system and improving its property and service, thereby increasing the value of real estate by the extension and development of the street railway?

Population and increased valuation will follow the trolley car. Many times the municipal officials are over zealous in their efforts to exact other unjust provisions from street railway companies. Much care should be displayed in accepting new franchises which are unfair and unworkable in their terms. In many instances the propositions and terms suggested in these franchises are not only ridiculous but fatal to the corporations which undertake to build under them.

The result of adopting a 3-cent fare zone in Lorain, Ohio, and its failure to be appreciated by the public, illustrates its impracticability in American cities. If this plan were to be put into operation it would result in crowding the laboring classes into limited quarters near their place of work, preventing them changing homes, and would bring about the same conditions which now exist in European cities.

One of the unlooked for increases in our revenue is the pleasure travel by trolley during the hot summer evenings to keep cool. Many residents of crowded cities find this the cheapest and most convenient way of enduring city life, during the heated term. This is also true of the residents of provincial cities having one or more popular interurban lines, properly conducted, built and operated with a view to comfort and an eye to beautiful scenery with a pleasure resort or resting place along the line. The trolley manager has learned to cater to this class of travel. The development of parks and pleasure resorts still continues to be a strong feature in the operation of the trolley road.

Many bills have been introduced in our Legislature intended to protect the public, but "self preservation is the first law of nature" applies with force to street railway managers in providing against accidents. Every manager should be alert to the responsibility and neglect no opportunity to provide safeguards for the safety and comfort of his passengers and provide against accident to the public in every possible manner.

It is the duty of every street railway manager to give to his patrons the very best that his road can afford and at the same time keep in advance of what the traffic demands. The successful manager must enthruse a spirit of loyalty and confidence in himself and his road; every person connected with the property should have the success of the enterprise at heart. With this spirit existing, results will be surprising. This has been the policy of the street railway of recent years, and the result is noticeable in the class of men in our roads and the spirit of emulation existing

among them. The aid societies and social clubs connected with our roads have done much toward fostering this community of interests. Too much attention can not be paid to this department. The good will and co-operation of our employees, the city officials and the public is to be desired.

The chairman of the rules committee will undoubtedly present for your consideration a very complete set of rules for motormen and conductors. Plenty of time and discussion should be devoted to the consideration of these rules. I would suggest that this committee be continued, and the rules applying to other departments of our roads should be taken under consideration.

In 1895 this association recognized the necessity of formulating a standard of accounts; several meetings of the executive committee were held and a standard form was submitted to the Railroad Commissioners and adopted.

Later on the Street Railway Accountants' Association was formed, with the result that its standard form of accounts, with a few changes, has been adopted by the Railway Commissioners' Association of the United States. It is to be hoped that the committee on standardizing of street railway equipment, appointed at the last meeting of the American Street Railroad Association, will submit a report and some practical results will be attained. Consolidation of roads and connecting up of different lines make it almost imperative that something tangible be produced in this direction.

I would suggest, if the tread of travel on our streets could be reversed, it would be a saving of many accidents. Nearly all persons, especially the ladies, in alighting from a car use the right hand to steady themselves, and upon alighting they find themselves facing backward. This benefit would also apply to the general public, as the same habit exists in alighting from a carriage. If travel was reversed the left hand would be used as a support in alighting and then the dress or parcel would be carried by the right hand of the passenger, who would face in the direction in which the vehicle was going. This is the custom in England and Canada, and if this radical change could be brought about in this country, I believe it would be of great benefit to our street railways in preventing accidents.

As the population in our large cities increases, a congestion at one or more points has naturally been the result, and this increase of travel has produced a great menace to the street railways. The use of electricity, high speed and large cars has done much to relieve the situation, but at the same time has added to the burden of traffic on the streets.

The railways in that portion of the city of New York on Manhattan Island have, during the past year, made great advances in their improvements, which I reviewed in my last annual address, and the city is now enjoying the benefit of a thoroughly equipped homogeneous electrical system. The lines on Broadway, Columbus and Lexington Avenues are now operated by an underground current of electricity, resulting in the installation of better methods of traction on 25 miles of the heaviest traffic lines in the city, and an economy in operation of 5 cents per car mile on about 10,000,000 car miles per annum. At present, work is still being carried on in the construction of new terminal extensions for electric roads, which will facilitate handling passengers, from the principal ferries without the existing methods of transfer.

In my address last year I referred to the abuse of the use of the transfer, especially in New York City. A change may be noted in the method of issuing transfer tickets in New York restricting passengers to a continuous ride either north or south, thereby preventing the use of the ticket for a return ride to the territory of the starting point. The increase in traffic should be highly satisfactory. The comparative traffic figures of the combined Metropolitan system with its allied lines, now all under the control of the Metropolitan Street Railway Company, continues to show a marked increase. A total of 598,308,091 passengers have been carried for the year just ended, of which 397,941,318 were cash passengers, and 192,376,773 were transfer passengers. These returns show an increase over the preceding year of 19,566,334 passengers carried, of which 13,303,006 were cash passengers and 6,263,328 were transfer passengers.

The construction of the subway tunnel has been expeditiously carried on. The structure already gives evidence of great thought in design in the completeness of the plan for transportation purposes. While its operation is still distant, the activity in construction is especially cheering to the suburban New Yorker.

When the new East River Bridge, now undergoing construction, is completed and the prospective tunnels are constructed, the congested condition of street car traffic in the city of Brooklyn will be greatly relieved, particularly at the New York terminal of the Brooklyn Bridge. This, with the many important contemplated improvements now under way under the present progressive management of the Brooklyn Rapid Transit Company, will afford the

public of the City of Churches an unexcelled street car service.

The manner in which the Buffalo Railway Company is handling the traffic in connection with the Pan-American Exposition is an illustration of what can be done in transportation of large crowds rapidly and comfortably, and is another example of the trolley development.

I must again call your attention to the unfairness of the law taxing street railways 1 per cent on gross earnings, while other public corporations are taxed one-half of one per cent. It is our duty to endeavor to have this unjust tax law corrected.

Your attention has often been called to the benefits to be derived by the interchanging of experiences and ideas at these meetings, and I trust that you will not wait for an invitation to express your opinion on the various subjects as they are presented. In case some subject not on the list should occur to you, I hope you will present the same for the consideration of the convention. It is desired that the men connected with the smaller roads, also those in subordinate positions in the larger ones, will give us the benefit of their ideas.

In closing, I wish for the street railways of the State during the forthcoming year the same full measure of prosperity, success and development that has been meted out since last we met.

The papers read included articles by Alfred Green, master mechanic of the Rochester Railway Company; Maurice Hoopes, of J. G. White & Company; Franklin E. Morse, superintendent of power of the Brooklyn Rapid Transit Company; Charles R. Barnes, electrical expert of the New York State Railroad Commission, and D. W. Patterson on "The Claim Department."

Owing to the limited amount of space available in this issue, only three of these papers are presented this week. The others will be published next week, with a full report of the discussion on all the papers and the topical discussion on "How to Increase the Efficiency of Employees," held Tuesday afternoon.

THE WEDNESDAY SESSION

Wednesday morning the convention was opened by the reading of a paper by Le Grand Brown, chief engineer of the Rochester Railway, on "Steel Tie Concrete Construction," as exemplified by the very interesting construction of that kind going on in Rochester at the present time. This paper, which will appear in a following issue, elicited a short, but pithy, discussion, and was followed by a paper on the use of boosters in series, with the return circuit, by W. J. Davis, Jr., of the General Electric Company. President Rogers spoke of having put one in use at Binghamton. The rules which had been formulated by the committee on rules, consisting of E. G. Connette, Oren Root, J. C. Brackenridge, Edgar S. Fassett and J. P. E. Clark, were discussed. Suggestions were offered, and the committee was continued.

J. A. Powers then addressed the convention in behalf of the Hudson Valley Railway Company, extending an invitation to the association to hold its next convention at Caldwell on Lake George, which invitation was unanimously accepted.

A motion was carried instructing the president to appoint a committee on accidents. A similar motion was carried providing for a committee on economical use of current by motormen.

The following papers were read by title only, and ordered printed, on account of a lack of time for the full reading: "Steam Railroad Crossings," by T. J. Nicholl, of Rochester; "The Rochester Railway System," by C. A. Ingle, of Rochester; "General Track Construction," by E. A. Packe, of Brooklyn. These will appear in a following issue.

The nominating committee made a report, and its recommendations for officers for the ensuing year were adopted unanimously. The officers are G. Tracy Rogers, of Binghamton, president; E. G. Connette, of Syracuse, first vice-president; A. B. Colvin, of the Hudson Valley Railway, second vice-president; H. A. Robinson, of New York, secretary and treasurer; executive committee, G. Tracy Rogers, H. H. Vreeland, T. J. Nicholl, W. Caryl Ely, J. L. Great-singer.

The convention then adjourned, and a group picture was taken of those present.

The Social Side of the Convention

The Rochester Railway Company arranged a very attractive programme for the entertainment of the delegates and others in attendance.

On Tuesday morning, while the delegates were in attendance at the business session, an informal reception to the visiting ladies was held in the parlors of Powers Hotel, where they met a committee of Rochester ladies. In the afternoon the ladies partici-

pated in a tally-ho trip around the city, visiting Genesee Valley Park, Highland Park, Seneca Park East, and the falls of the Genesee River. This trip was a most enjoyable one.

In the evening a long line of brightly illuminated electric cars left the corner of Main Street and State Street, for Ontario Beach, to take the visitors to the banquet. On the way they passed through Lake Avenue, in sight of the State Industrial School, the Eastman Kodak Works, and St. Bernard's Catholic Theological Seminary, and arrived at Ontario Beach in time for the banquet, which began a little after 7 o'clock. The party returned to the city by electric cars.

On Wednesday afternoon a train of special cars took the party to Sea Breeze, a resort on Lake Ontario. Arriving there, about 2 p. m., the visitors sat down to a lunch the entertainment committee had provided. Mr. Vreeland being called upon for a few remarks, took occasion to thank the Rochester members and other local people who had provided so well for the enjoyment of the convention visitors.

After the lunch some of the party went by lake steamer to Ontario Beach, and thence by special car back to the city, and others remained at Sea Breeze, returning to the city by the route over which they came.

Thus ended the most successful convention ever held by the Street Railway Association of the State of New York. The New York State conventions are always pleasant and profitable, and this one was exceptionally so. The results in the way of papers presented and profitable discussions may well be coveted by the national association. The papers are usually short, covering a few points in a practical way, and eliciting a valuable discussion and exchange of experience. The State association being small, and the members well acquainted with each other, the restraint in discussion is by no means as great as in a national body, and the discussions at this convention were especially suggestive and valuable.

The Banquet

At 6:15 Tuesday evening four special cars of the Rochester Railway, including one parlor car, were drawn up in front of Powers Hotel to take the visitors to Ontario Beach for the annual banquet. About 200 boarded the cars and enjoyed a ride through one of the most delightful semi-suburban, semi-rural districts to be found anywhere, to Ontario Beach on Lake Ontario, where the banquet was served on the veranda of the Ontario Beach Hotel. After the dinner had been served, President Rogers called the assemblage to order and made a few remarks, after which he introduced Hon. Charles J. Bissell, the toastmaster. Mr. Bissell made one of his characteristic speeches, and then introduced the Hon. Merton E. Lewis, who responded to the toast, "The City of Rochester." W. Caryl Ely spoke on the "Pan-American Exposition," and Hon. George Raines took "The Other Side" as his subject. E. G. Connette, of Syracuse, chose as his theme "Toreador, the Hero of Many Struggles," in which President Rogers appeared as the hero. An elaborate display of fireworks was given during the evening on the hotel grounds.

An Oasis in the Mountains

An oasis is usually spoken of as being in a desert, but to anyone visiting Butte, Mont., and noting the barren surroundings, the first sight of Columbia Gardens, maintained by the Butte Electric Railway Company, that name seems a very fitting one to apply to this bright spot among the forbidding mountains. The above company has recently sent the STREET RAILWAY JOURNAL a copy of a booklet on Columbia Gardens, and the book bears as much evidence of enterprise and good taste as has been shown in the laying out of the gardens themselves. To anyone who has never visited the mining regions of Montana it is impossible to realize how much such an elaborately planned and beautifully maintained park such as Columbia Gardens of the Butte Electric Railway means to all the residents of that prosperous mining camp. The carrying out of this enterprise is due to the energy of J. R. Wharton, manager of the Butte Electric Railway. The park was planned three years ago, and the results attained in that time have been wonderful. It hardly needs such an attractive booklet as the company has recently issued to get the residents of Butte to go to Columbia Gardens, but Manager Wharton believes in attractive advertising, as is evidenced by the amount of it which he does in Butte and neighboring camps. The present booklet is but carrying out further the advertising methods he has used heretofore by placing attractive pictures of Columbia Gardens in places where they can be seen by the patrons of the Butte Electric Railway.

The Exhibits at Rochester

As previously announced in these columns, the local committee decided to add one feature to the Rochester convention, which has proved very popular at meetings of the National Association, but which has never been carried out to any extent at State conventions. This was to arrange an exhibit of street railway supplies, and was most successfully carried out. The main floor of Fitzhugh Hall, the building in which the business sessions of the association were held, was selected for this purpose. The hall was tastefully decorated with bunting, and in all some forty exhibits were presented. The exhibit feature was in charge of F. D. Russell, of the Rochester Car Wheel Works, and to him and his fellow committee members great credit is due for the success of this portion of the convention. Particulars of some of the most prominent exhibits follow:

The Atlas Rail-Joint Company, of Chicago, displayed samples of all its principal joints, which have stood up so well in electric railway service.

The Maltby Lumber Company, of Bay City, Mich., made an instructive exhibit of cross sections of wood poles taken from service, and showing the state of preservation.

The Monarch Engine Stop, made by the Monarch Manufacturing Company, of Waterbury, Conn., was shown by the Rochester Engineering & Supply Company, of which Jefferson Young is president. The same company had on display the New York asbestos air cell covering, the Cameron steam pump, the Merwath metallic gasket, and the Monitor water purifier.

Giles S. Allison, sales agent, 57 Broadway, New York, had a small exhibit of some of the apparatus for which he is agent. The Security register, giving a printed record of its readings, attracted special attention, as well as the model of poles made by the Electric Tripartite Steel Pole Company.

The Peckham Manufacturing Company, New York, exhibited the Ruggles rotary snow plow in model form, and some interesting photographs of the plow at work in various places. The exhibit was explained by Captain Ruggles, the inventor of the plow, and a resident of Rochester.

C. J. Wichmann, tailor, of Rochester, exhibited some of his work, of which the uniforms furnished to the Rochester Railway were of chief interest.

The J. T. Schaffer Manufacturing Company, of Rochester, N. Y., had on display the large wheel press about to be shipped to the New York shops of the Rochester Car Wheel Works.

The first familiar object to greet the out-of-town street railway man upon his arrival at the convention hall was a display of Taylor trucks on the sidewalk in front of the building. A pair of the new Taylor short-wheel base swivel trucks and a standard single truck were the types shown.

George W. Lord, Philadelphia, maker of the famous Lord's boiler compounds, occupied a space among the exhibitors. Souvenir maps were given out.

The Glazier Headlight Company, Rochester, N. Y., made an extensive exhibit of headlights for all purposes, including electric cars.

The Philip Carey Manufacturing Company, of Lockland, Ohio, which makes asbestos and magnesia coverings for use in steam plants, had a representative line of its various covering materials.

The Peerless Rubber Manufacturing Company, New York, occupied a large space with samples of its famous "Rainbow" packing and covering for pipes. A handsome pocketbook was given away to delegates.

The New Process Rawhide Company, Syracuse, N. Y., made a display of its pinions, which are used by over 200 electric railways, and known the world over.

The Fidelity & Casualty Company, which insures against boiler and engine accidents, etc., occupied a booth in the convention hall, and distributed literature.

C. B. Fairchild showed the plans and drawings of his emergency pavement brake, with which he is equipping a number of cars operating over heavy grades. This brake, once released, sets itself and acts by bringing a large bearing surface on the pavement. It is intended for emergency use on heavy grades.

The Trojan Trolley Tender Company, of Troy, N. Y., placed a sample of its trolley catcher on exhibition the second day of the convention.

The Ham Sand Box Company, of Troy, showed the working mechanism of one of its boxes.

The American Car Seat Company, Brooklyn, N. Y., had some samples of its rattan seats in the exhibit hall, which were well thought of.

The Rochester Automatic Oiler & Supply Company, which makes a self-filling oil can, had an exhibit of interest to power house and car shop men.

The Force Feed Lubricator Company, Rochester, N. Y., had a handsome line of appliances for force feed lubrication.

The Napier Saw Company, Rochester, N. Y., which makes hack saws and other types, had a display of its product in convention hall.

Nemes Brothers, Troy, N. Y., exhibited the Nemes grate bar.

E. C. Stearns & Company, Syracuse, N. Y., had an operative exhibit of the Milloy automatic trolley catcher, which attracted much attention. The exhibit also contained the Green roller-bearing equalized tension, trolley base and the Milloy ball-bearing harp.

The Electric Storage Battery Company, Philadelphia, had some samples of its central station types of cells in the exhibition hall. The members of the New York Association have many kw-capacity of these batteries in use.

The Rochester Sash Lock Company, Gerald E. Merchant, general sales agent, which makes an automatic sash lock especially applicable to railroad coach windows, took advantage of the opportunity to present its device to New York street railway men.

The Lorain Steel Company, Johnstown, Pa., is electrically welding some track for the Rochester Railway, and delegates were invited to inspect the work going on in Parcels Avenue. Besides this, H. F. A. Kleinschmidt, superintendent of the track welding department, made a small, but extremely interesting, exhibit of the joints and various parts used in making an electrically welded joint, and also of the electrically-brazed bond terminal, used for connecting around special work where the track is not welded. The welding of a rail-joint takes fifteen minutes, total time, of which the current is on, two and one-half minutes. The current at 500 volts is 250 amps.

The Gold Street Car Heating Company had an exhibit in charge of John E. Ward, a familiar face at conventions.

Sargent & Greenleaf Company, lock manufacturers, had a handsome display of locks.

The Chapman Valve Manufacturing Company occupied a space in the convention hall, and distributed 3-ft. extension rules as souvenirs. Herbert E. Stone was in attendance.

The Universal Safety Tread Company, 45 Broadway, New York, which makes a large quantity of goods for railings, made a display of safety tread applicable to car steps and stairs.

The Bierbaum & Merrick Metal Company, Buffalo, made an exhibit of samples.

The Consolidated Car Heating Company, of Albany, N. Y., had an exhibit, the most interesting feature of which was the special heater designed for the Manhattan Elevated, of New York, and for which the company has an order for over 21,000, the largest heater order ever placed, by a large margin.

The Brady Brass Company, Jersey City, N. Y., had a handsome display of bearings and bearing metal, which was looked after by D. M. Brady, E. F. Wilmerding and C. P. King.

The Rochester Car Curtain Company, which makes the curtain adopted by the Rochester Railway, presented for inspection its curtain, which has special provision to insure close fit in the girders without sticking.

The George W. Knowlton Rubber Company, Boston, presented a line of samples of its rubber goods, used for packing and similar purposes.

The Ramapo Foundry Company, which makes brake-shoes, car castings, grate bars and manhole and subway castings, exhibited its diamond S brake-shoes, with skeleton steel insert, and the Ross-Meehan shoe.

C. T. Ham Manufacturing Company, Rochester, N. Y., had a fine display of lanterns and headlights.

Hale & Kilburn had one of their well-known walkover seats on display, and some well-prepared reading matter, giving their points of superiority.

The Johnson Compound & Supply Company, of Rochester, N. Y., occupied a space devoted to boiler compounds, and especially to sumac.

The Hohmann & Maurer Manufacturing Company, Rochester, N. Y., had a fine line of boiler room thermometers on exhibition.

Garvin & Watters, of 23 Reynolds Arcade, Rochester, showed a model of an improved rail-joint.

The Weber Railway Joint Manufacturing Company made a small exhibit, and distributed literature.

The G. P. McGann Air Brake Company, of Detroit, occupied a space, and General Manager Rutherford distributed literature.

The Speer Carbon Company, of St. Mary's, Pa., displayed samples of brushes.

Third-Rail Interurban Railways*

BY MAURICE HOOPES

In preparing this paper the writer assumed that, if he is fortunate enough to have it interest any, they will be those who are seeking information as to the conditions under which the third-rail system is a desirable one, and some general ideas as to the costs and methods of construction. He will attempt, therefore, to treat the subject with this in view, and to avoid discussion of details.

The use of an insulated conductor laid on the ties naturally suggested itself to the engineers who made the earliest investigations in search of the best system of supplying electric power to moving cars, and there were several experimental installations of third-rail conductors. These were followed by commercial developments of the system, and it has now been in everyday use on the tunnel and elevated railroads of the United States and Europe for approximately ten years. That it has not been more generally applied to the operation of surface railways has been due to the fact that not until very recently has there been any considerable amount of work done in the electrical equipment of the class of surface railways that are suitable for third-rail operation. The bulk of the surface railway work previous to the past two or three years was done upon ordinary street railways or upon suburban or interurban roads built entirely or in a large part upon the highways. A road to be suitable for operation by the third-rail system must have very much the greater part of its route located upon its own right of way, in order that the conductor rail may not be exposed in public places. Roads using city railway tracks for terminal purposes are not necessarily barred from this class, but it is desirable that between the termini there be very few places where third-rail construction is impossible.

So far as the writer knows there are to-day but two systems of surface railways operating with the third rail. The first of these is that of the New York, New Haven & Hartford Railroad. This company has one line from Hartford, Conn., through New Britain to Bristol, with a branch from New Britain to Berlin, including approximately 22 miles of single track. The same company operates a second of its lines in this manner, this being the line from Pemberton, Mass., along the south shore of Massachusetts Bay, through Nantasket to a junction with its steam road at Braintree, a distance of about 15 miles. Both of these are reconstructed steam lines. The second system is that of the Albany & Hudson Railway & Power Company, extending from Albany to Hudson, New York, over a road 37 miles long, 35 miles of which are operated by the third-rail system.

The Albany & Hudson Road offers a fair example of the conditions under which the third-rail system of operation is preferable to the trolley. It is a high-speed interurban road, running cars weighing approximately 30 tons, at speeds reaching 50 miles per hour, and over sections of track which are necessarily rather crooked. Overhead trolley operation of such a road would be extremely difficult, principally because of the large percentage of curves in the line.

The third-rail system is preferable to the overhead trolley, in the case of roads where its use is possible, for the following reasons:

1. Lower cost of construction.
2. Very greatly lower maintenance cost.
3. More reliable operation due to the absence of delays caused by trolleys leaving the wire and wrecking sections of the line.

The statement that third-rail construction is cheaper than trolley construction is usually doubtfully received. When one considers the fact that with special low carbon rail he can obtain a given conducting capacity for about 60 per cent of the cost of the same capacity in copper, the truth of the assertion is more readily apparent.

In further support of the statement the writer has made as to the lower cost of the third-rail system, he gives the following comparative costs.

COMPARATIVE COST OF 80-LB. THIRD RAIL AND EQUIVALENT OVERHEAD TROLLEY CONSTRUCTION FOR 1 MILE OF TRACK

THIRD RAIL	
Extra length 500 ties (9 ft. 3 ins., instead of 8 ft. 0 ins.), at 7½ cents...	\$37.50
500 insulators and fastenings, at 50 cents.....	25.00
62.86 tons 80-lb. low carbon rail, at (\$35, \$2 freight).....	2,325.82
Splice-plates and bolts—176 joints, at 60 cents.....	105.60
Bonds—352—425,000 cir. mil bonds in place, at \$1.....	352.00
Cable for crossings—200 ft. 1,000,000 cir. mil paper, lead and jute, with terminals and installation, at \$1.20	240.00
Erecting rail	100.00
	\$3,410.92

* Paper read at the Rochester meeting, New York State Street Railway Association, Sept. 10-11.

TROLLEY

(Span construction and assuming one line of poles chargeable to transmission line.)
 Necessary bare copper trolley and feed-wire to give .04025 ohms per mile, thus equalling 80-lb. rail—1,413,600 cir. mil = 22,774 lbs., at 17 cents \$3,871.58
 Fifty 30-ft. x 8-in. chestnut poles erected, at \$5..... 250.00
 Labor and material for erection of above feeder and trolley wire.... 300.00

Total cost of trolley construction..... \$4,421.58
 Total cost of third-rail construction 3,410.92

Saving, third rail over trolley..... \$1,010.66
 Or 23 per cent.

In explanation of the above comparative statement it should be said that it is based upon the use of a rail having a resistance of 12.9 microhms per cu. cm. giving for an 80-lb. rail .04025 ohms per mile. It also assumes the bonds and cable to have the same resistance per unit of length as does the rail. From the above it will be noted that a mile of third-rail construction costs, approximately, 23 per cent less than a mile of trolley construction of equivalent conducting capacity.

As has been said, it is necessary with any road that practically the whole of the portion operated by third rail be upon private right of way. This right of way should be fenced in with standard railroad fencing, as is that of ordinary steam railroads, and at all crossings cattle guards should be placed. These precautions are necessary upon any railroad, but are more especially so upon one with third-rail equipment.

Upon a road using street railway tracks for its termini it is, of course, necessary to equip the cars for both trolley and third-rail operation. Upon the Albany & Hudson road the third-rail shoes are hinged upon the trucks, and are folded up when the car enters either city. The cars are provided with trolleys, and operate with them through the city streets. In addition to the third-rail shoes, the only extra equipment required by the ordinary trolley cars consists of a so-called "commutating" switch upon each platform. The shoes upon each side of the car are in separate circuits, and these two, with the third circuit from the trolleys, are led to a special platform switch, leaving it within the power of the motorman to supply his motors from either the right-hand shoes, the left-hand shoes or the trolleys. The third rail is located uniformly upon the east side of the track, and, so far as is possible, the stations are all upon the west side. The motorman, therefore, draws his power from the shoes on the east side of the car, the shoes on the west side being disconnected, and left folded against the sides of the trucks. It requires, approximately, fifteen seconds at each of the two city limits to remove the shoes and place the trolley upon the wire. It would, of course, be possible to operate through the streets of intermediate villages by making the same change from third rail to trolley and from trolley to third rail in passing through each. This becomes objectionable, however, if it is necessary to do it frequently, and unless a road may contain long unbroken stretches of third rail, the use of the system becomes of questionable value.

The danger of the third rail is exaggerated in the minds of every one inexperienced in the actual results had from operation. The railroad manager interested in selecting a system is invariably over cautious in this matter. The experience of the two surface roads to which the writer has referred is sufficient to justify the statement that the third rail introduces an element of danger that is not great as compared to the other dangers that already exist in the operation of every railroad. Upon each of these roads the rail is protected only by being located upon private right of way, which right of way is carefully fenced. At stations, however, the rail is necessarily exposed, and has no other protection than a fence behind, making it impossible for pedestrians to find a way across it. Signs warning against trespassing, stating that the road is operated by an "electrical rail" are conspicuously placed at all stations and highway crossings. The writer considers that no existing system of protection for the rail is desirable. Moreover, he is satisfied that the conditions do not warrant the greatly increased expense of installation and maintenance, and the decreased reliability of operation introduced by the sectional third-rail systems. In these systems the main conductors are entirely insulated, and the third rail divided into sections, only the section from which a car is drawing its power being alive, the remaining sections being automatically disconnected from the main conductor.

Although it is not the writer's intention to impose upon you a detailed description of construction, it is thought that perhaps a few words on this subject may be of interest.

The location of the third rail, as related to the track rails, is varied in different roads. In some construction the third rail has been placed midway between the two track rails. This position has the advantage of putting it least in the way of both trainmen and trackmen, and the rail thus located is more easily cleaned of sleet and snow.

The disadvantages of the location, however, more than outweigh the advantages, and such is the opinion of the engineers operating the systems where the third rail is placed in the middle of the track. These disadvantages are:

1. That it is extremely difficult to disconnect a car from the rail by removing the shoes, which are under the car, in the event that it is desirable to do so.

2. In order to keep the surface of the third rail low enough to avoid the possibility of its being struck by the bottoms of motors oscillating upon their spring suspensions, and to leave sufficient clearance for the purposes of insulation, it is necessary to crowd it down to a point where it is difficult to get suitable insulators underneath, and to where the elevation of its head is so little above that of the rails of intersecting tracks that the third-rail shoes have insufficient clearance in passing over these intersecting tracks. It will be readily seen that if the third-rail shoe on one end of the car touches an intersecting track rail, the third rail will be "grounded" through the medium of the live shoe on the other end of the car, and the car cable which connects the two shoes together. To avoid this the head of the third rail should be several inches above the head of the track rails, thus allowing plenty of vertical play for the shoes, to compensate for the inequalities of the third-rail surface, and ample clearance between the shoe, in its lowest position, and the head of the track rail.

These reasons make it undesirable to install the third rail between the track rails. The best location for the third rail is outside one of the track rails, and elevated several inches. Upon the Albany & Hudson road the third rail is 26 ins. outside one track rail, and is elevated by the height of the insulators, which is 6 ins. above the track rails. This position was selected as one which would allow the rail to clear the cylinder of steam locomotives, and would leave room for the trackmen to work on the adjacent track rails. The third-rail insulators are most conveniently mounted upon the ties. For this purpose special long ties should be inserted at regular intervals, 10 ft. being a good spacing with heavy rail. For the third-rail location above described, these ties should be 9 ft. 3 ins. long. The third-rail ties should have sawed faces, in order to present a plane surface for the insulator, and in order to obtain a uniform height of the insulator seats. The ties should be of a wood that will hold the insulator lag bolts, and it is questionable whether or not cedar is suitable for this purpose. The insulators are of a variety of makes and designs. It is more difficult to secure one that is mechanically strong than one that offers sufficient insulation. The insulating materials most generally used are wood and various forms of vitrified clay and artificial stone. The material is usually worked into large insulating blocks, which are placed upon the ties, either directly or with base castings. The rail is held upon the insulator by a casting of some form or other, and generally this casting is used to peccicoat the upper parts of the vertical faces of the insulating block, and thus reduce surface leakage. The rail is allowed to sit very loosely on the insulator, that it may be perfectly free for longitudinal movement, and that the insulator may sink with the tie under the weight of a car without the necessity of pulling the rail down with it, or breaking.

The conductor rail should be of a special mixture, giving the highest possible electrical conductivity. In the writer's experience this has been obtained by a steel giving the following analysis:

Carbon .....	.09 per cent
Manganese .....	.44 per cent
Phosphorous .....	.088 per cent
Sulphur .....	.08 per cent

This rail gave a resistance of 12.9 microhms per cu. cm, and was, consequently, of about 7.25 times the resistance of commercial copper. This mixture can, of course, be improved upon by further decreasing the carbon and other alloying elements. An analysis of a sample of standard 80-lb. track rail resulted as follows:

Carbon .....	.47 per cent
Manganese .....	.76 per cent
Phosphorous .....	.104 per cent
Sulphur .....	.03 per cent

This rail gave a resistance of 18.2 microhms per cu. cm, or a ratio to copper of 10.17.

As stated, a better mixture than the one first mentioned can be had. The difficulty, however, is to induce the rail manufacturers to do the necessary experimenting. It is usually troublesome to get them to quote fair prices upon the special rail. It will be seen that by the use of the special low carbon rail a saving in weight of, approximately, 30 per cent is obtained over the standard rail. At one time the writer was unable to secure from any mill the special low-carbon mixture he desired, but did induce one to roll him, without increased charge, an 80-lb. rail out of the standard 50-lb mixture, which contains, approximately, .40 per cent of carbon, and which gave a resistance of 16.5 microhms per cu. cm. Within reasonable limits it is desirable to make the third rail of a size sufficient to

supply the necessary conducting capacity. As will be noted, an 80-lb. rail of the special low-carbon mixture mentioned above is, approximately, the equivalent of 1,413,000 cm of copper. The writer would advocate varying the size of this rail, within the limits obtainable from the rolling mills, to give the carrying capacity required. On the average high-speed interurban road an 80-lb. rail gives, approximately, the desired conducting capacity with sub-stations located at the usual intervals of from 10 miles to 12 miles. This, then, requires no overhead copper, with the exception of the high-tension lines.

Splices in the third rail should be of a nature to preserve the alignment and surfacing of the joints without preventing easy expansion movements. These conditions are best obtained with a four-bolt plate, approximately, 20 ins. long, neatly fitting the rail, but not wedged in tight enough to prevent sliding. Unless the plate fits well, and holds the rail in good surface, with high speeds the shoes will jump badly at the joints. In this connection it may be worth while to state that it is desirable to arrange the spacing of shoes so that the two on one car will not strike joints at or near the same time, otherwise bouncing at joints will result in breaking the supply circuit and consequent arcing. Unfortunately, the standard length of interurban cars is such as to throw the king bolts not far from 30 ft. apart, and it becomes difficult to locate the shoes to accomplish the object desired.

Some of the elevated railway engineers have found it necessary to anchor their third rail to prevent its creeping. The Albany & Hudson rail has been laid for some fifteen months, and is anchored at no point, and has made no trouble whatever from creeping. This is somewhat remarkable, in view of the fact that some of the rail is laid upon 3 per cent grades. To obtain this condition, it was necessary that each rail take care of its own expansion, and that the joints be not tight enough to concentrate upon the curves the expansion of the tangents.

The third rail should be bonded to a capacity which will make it impossible for any current that can be supplied the rail to overheat the bonds. The writer has been in the habit of bonding an 80-lb. rail with two 425,000 cil. mil copper bonds. These bonds can be put in the base of the third rail, because of the absence of any interference from splice plates, and this is the better location for them.

At highway and farm crossings the continuity of the rail is, of course, broken. The electrical circuit is completed by the use of underground cables. Because of the fact that these cables are not likely to be disturbed by digging in the highway, and because they are easily dug up, it seems unnecessary to provide a conduit for them. They can be laid in a trench and covered with a pipe to avoid the possibility of tools injuring them, in the event that it becomes necessary to uncover them, and they are thus very cheaply installed. Lead-covered paper cable, with the lead enclosed with a wrapping of jute to avoid abrasion, seems to be satisfactory. Rubber cable is, of course, not so absolutely dependent upon its lead sheath as is the paper, but, on the other hand, it is much more expensive, and more susceptible to damage by extreme overloads. One million circ. mils is a good size of cable to use in connection with an 80-lb. third rail. It is impossible to connect this cable directly to the rail in a way that will properly care for the expansion movements of the rail and protect the end of the cable. A much better plan is to terminate the cable alongside the end of the third rail upon a post, planted in the ground, leading it up to a brass terminal. From this terminal to the rail connection can then be made by flexible bonds, arranged with U-bends, to admit of at least 12 ins. longitudinal movement of the third rail.

Third-rail shoes are usually adjusted to allow, approximately, 2 ins. vertical play, 1 in. above and 1 in. below the normal third-rail elevation. It, therefore, becomes necessary to provide the ends of the rail at crossings with inclines to receive the shoe and elevate it to its working height. The inclines upon the Albany & Hudson road are constructed by sloping the end of the rail to a pitch of 1 in. in 20 ft. The lower end of this end rail is supposed to be adjusted to a height that will just receive the shoe. In order to provide a safeguard against the shoe striking the end of this depressed end rail, in the event that the former hangs abnormally low, a cast-iron tip is bolted to the end of the rail. This will lift the shoe, if it is even 3 ins. below its normal position. An incline for the end rails of 1 in. in 20 ft. seems to be sufficient for speeds up to 60 miles per hour, and is probably all that would be required for even greater speeds.

Although the operation of the third-rail system seems to be extremely satisfactory under nearly all conditions, it becomes very difficult in a sleet storm. There is as yet no approved method of removing the sleet from the rails. At a time when the temperature of the air has been below freezing long enough for the rail to likewise reach a temperature below 32 degs., a rise in temperature, with accompanying rain, results in the formation of a film of ice upon the rail which it is a difficult matter to remove with a hammer and cold

chisel in anything but extremely small chips. To construct any cutter or scraper to remove this at a reasonable speed has so far proven almost impossible. That the work should be so difficult seems strange to one uninitiated, but he rapidly gains respect for the difficulty when he meets it in a practical way. The scrapers in use last winter were greatly superior to those of the previous winters, and, doubtless, a satisfactory one will be evolved soon; meanwhile third-rail roads are subject to a revision of their schedules in bad sleet storms, and especially is this so with roads operating on long headway. With very frequent service, as exists upon the elevated roads, there is much better opportunity to prevent the formation of ice.

Snow offers practically no greater difficulty than it does upon any other railroad, as it is easily removed from the rail, and there is no trouble about maintaining contact between the shoes and the third rail.

The writer is satisfied that the following years will witness many important installations of the third rail upon existing and new surface railways. That the system is superior to any other for the operation of a large class of roads is, in his mind, unquestionable.

Brakes for Electric Street Surface Cars *

BY CHARLES R. BARNES,

Electrical Expert of New York State Railroad Commission.

The members of this association, while not posing as philanthropists, have done more to better the condition of their fellow men than any body of individuals in the State of New York. During the few years that this association has been in existence, its members have transformed the horse car systems of the cities of this State to the complete and efficient electric railway systems of to-day. With the expenditure of large amounts of money and the united energies of all, the track and roadbed of the old systems have passed through different stages of improvement and reconstruction, until to-day the 9-in. girder rail, weighing 90 lbs. to 120 lbs., has replaced the old strap rail of the horse car days. Most of this rail is laid upon first-class ties, and in many cases with solid sub-structure. The junctions and crossings of different lines, which were formerly made by the construction foreman with the aid of a blacksmith, have been replaced by the modern "special work," which is the result of the combined efforts of the best engineering ability and the modern equipped rail-making plant. The dilapidated horse car, which was rarely, if ever, washed except by nature, has given way to the modern electric car, with its double trucks, upholstered seats and curtained plate-glass windows, with the appearance and comforts of a steam railroad drawing-room car. The methods of operation have been changed so that most of our roads to-day are operated on a schedule and under rules, the completeness of which challenges steam-road operation. On most roads extra precautions are taken in operation by the use of block signal systems, derail switches at steam-road grade crossings, and by having inspectors stationed at different points on the lines. These different betterments and improvements were brought forcibly to my mind a short time ago while calling upon the president of one of the prominent surface railroads in this State. In his office were hanging two pictures, one a photograph of an old horse car with a pair of mules, the driver with his Buffalo Bill hat holding the reins in one hand and his "persuader" in the other. A glimpse through the window of this car showed the floor covered with straw, which was intended to keep the feet of the passengers warm. The other was a photograph of a modern electric car with double-truck equipment, the car body nicely painted and lettered, the straw of the horse car replaced by electric heaters. Instead of the Buffalo Bill driver there was a uniformed motorman standing on the front platform with one hand on the controller, the other on the brake. All that might be said or written upon the subject of the improvements made in street surface railroading would not impress me as the study of these two pictures did, the electric car being as much improvement upon the old horse car as the latter was upon the prairie schooner. There was scarcely a resemblance between the two pictures except in one particular, and that was the brake handle. It required a close scrutiny of these pictures to distinguish any difference between the two methods of stopping these cars, and, gentlemen, while these two pictures faithfully represent the result of your efforts in the improvement of the method of transportation and the movement of cars, it also faithfully reflects the limited improvement made in the manner of stopping a moving car.

* Paper read before the New York State Street Railway Association at Rochester, Sept. 10, 1901.

With the advent of the electric car, accidents on street railways were largely increased. It was thought when we had the single-truck, 16-ft. car, with an equipment which would make a maximum speed of 15 miles an hour, that perfection in street surface railroading had been reached. During the period of introduction of the electric car into cities a large number of accidents occurred, caused by cars striking vehicles and pedestrians. But people gradually became educated to the dangers of the new method of propulsion and exercised more care and judgment in driving on the streets or using the crosswalks where these cars were operated. Then came the increase in weights of cars, and in capacity of equipment, and with the increase in number, weight and speed of cars followed an increase in the number of accidents occurring on your roads. The accidents not only increased in number, but also in variety.

In the early days of the electric car, head-on and tail-end collisions rarely, if ever, occurred, while to-day they are of such frequent occurrence that it occupies a large portion of the time of the State Railroad Commission in investigating them, and accidents on the electric railways of to-day are by no means confined to head-on or tail-end collisions. A large number of accidents occur at grade crossings where steam and electric railroads intersect, and where electric roads intersect each other. A number are caused by cars running away on heavy grades and by misplaced switches. Many of these accidents are attended by serious results, in many cases killing and injuring passengers and causing serious financial losses to the railway corporations. A large proportion of this class of accidents could be avoided if the car could be stopped in a shorter distance than can be done by the present appliances in use for that purpose. When this is said, it is no reflection upon the operating officers, or the method of operation, but inventions or improvements in the means of stopping cars have not kept pace with the improvements of equipment of the cars in other directions.

Three years ago the present Board of Railroad Commissioners, recognizing the rapid increase in the number and variety of accidents occurring on street surface railways, and studying the problem with a view of suggesting a remedy, decided that the brake systems then in general use were largely responsible for these accidents, and, with a view of stimulating improvement in the method of stopping cars, and to bring about the adoption of improved braking systems, arranged a public competitive test of brakes for street surface cars. The result of this test was published by the Commission in book form. It was not the intention of the Commission to enter into a scientific investigation of the question of stopping a car, but rather a practical comparative test of the appliances in use at this time for this purpose.

The apparatus used to record the result of these tests was necessarily crude, there being at that time no fund available for the construction of a recording apparatus. The clock-work movement on the recorder which was used varied somewhat. This was due mainly to the shock or jar of the cars while in operation. The curves recorded by this instrument were faulty and received a number of criticisms, to which, in a degree, they were entitled, but the recording of the distance in which the various stops were made was perfect. A special pair of wheels in contact with the rails and bearing no part of the weight of the car, but with friction sufficient to avoid slipping, furnished the motor power for the movement of the recording apparatus. This was effected by sprocket chain and gears, in such a manner that the measurement of distances recorded on the machine from the signal to the point where the wheels ceased to revolve was absolute and perfect.

The criticism on this report in the main was a fair one. The discrepancy in the time movement was discovered before the curves were reduced, but as the element of time did not enter into any of the computations and did not in any manner affect the results, Professor Thurston and myself thought it best to publish the curves in the report as they were reduced from the instrument sheets; and, while they were not perfect as far as the time element was concerned, they did show approximately the time in which the different stops were made.

That the decision of the Railroad Commission to hold this public test of brakes with the idea of creating general interest in the subject was a wise one is shown by the fact that at the time the test was made there were very few cars in the State outside of the borough of Manhattan equipped with any other than the ordinary hand brake. To-day there are in operation in this State about 9000 passenger cars on surface railroads, and of these a considerable number are equipped with some kind of improved braking system. There is hardly a city street railway in the State to-day but what has some cars equipped with an improved brake, and the number so equipped is continually being increased.

The brakes, in addition to the ordinary hand brake, in use in this State at the present time, are the Sterling, air, friction, rail

and wheel, and electric brakes. On some roads with heavy grades special safety appliances, such as the Flood emergency brakes, are used.

The Sterling brake is too well known to require any description on my part, except to say that its construction is such that by means of gears the power exerted on the brake handle is multiplied. The air brakes in use, while manufactured by different concerns, can be divided into two classes, one known as the independent compressor system, the other as the air-storage system. You are all familiar with both of these systems, and your time will not be taken up by an extended description of them. All of the friction brakes in use in this State are operated upon the same general principle of applying the power of the revolving axle to the brake-shoe. There are not many rail and wheel-brake equipments in use, but those that are used are constructed on the principle of forcing one side of a specially constructed shoe against the face of the wheel and by the movement of the wheel producing a pressure of another face of the shoe on the rail. The only electric brake used to any extent is the one known as the General Electric Company's brake. In this system the motors are converted into generators, and the current produced in this manner is used to energize two discs, one of which is stationary and is set facing another disc, fastened to the axle of the car. By magnetic attraction the faces of these discs are brought together, thus retarding the motion of the axle. The Flood emergency brake, as its name implies, is to be used only in cases of emergency. It consists of a pointed shoe, which is carried outside of the wheels and is suspended near the rail. By means of a trip on the car platform this shoe is dropped to the rail and the wheel rides upon it clear of the rail; thus, the shoe, which is fastened to the truck, carries the wheel and the weight of the car, producing a friction between the shoe and rail.

All of these brakes are a decided improvement on the ordinary hand brake, and all have their commendable qualities. The difference in the weight and speed of cars, however, is such that while one of these brakes may be a good equipment for a certain kind of car at a certain speed, it would not be for other cars in a different service.

The most efficient brake for safety and economy is the one which nearly brings the wheel to a stop and yet does not actually stop its revolution. This, in the cases of the air, the friction, the Sterling and the rail and wheel brake, depends upon the skill and carefulness of the motorman. In theory the principle upon which the General Electric brake is constructed approaches this condition more nearly than any of the others. On this theory the power for the operation of the brake decreases as the speed of the axle diminishes, to a point where it is nearly at a standstill, when there is no current produced and the braking power is removed. This allows the momentum of the car again to revolve the axle, when the same operation is repeated.

If a brake could be constructed which would, in actual operation, produce the results which this theory holds forth, it would be the ideal brake as far as controlling the movements of a car by means of wheel friction. A brake which would operate in this manner would do away with that costly element in the operation of electric roads, flat wheels. With the use of the air, friction or Sterling brakes, as at present constructed, the number of flat wheels depends almost entirely upon the experience, skill and judgment of the motorman.

The ideal emergency stop of an electric car, to prevent an impending accident, should be made in the shortest distance possible. This should be accomplished at a rate which will not fracture or pull out the king-pins of the car, nor throw passengers from their seats. The device which best fulfils these conditions will most nearly approach the much needed and much sought for perfect brake.

By these statements no disparagement is intended toward the braking systems which have been produced up to the present time. On the other hand, full credit should be given to every one who has in any way aided to bring about the improvements thus far made in braking systems; but my desire is to impress upon the minds of the members of this convention that perfection has not been reached in this direction. It is conceded that the members are deeply interested in this important subject, and past experience has shown that when anything is really needed to increase the comfort or safety of passengers on electric railways, the electric railway men of the State have encouraged invention, and have been generous and enterprising in their patronage of all practical, serviceable devices. Realizing this, I am satisfied that the ideal method of stopping a car will be forthcoming in the near future.

A word on the question of expense of maintenance of an improved brake: I heard a railway manager say that improved brakes were all right, but that they were too expensive to maintain. I left his office and went to the claim department to investigate an accident on his road, and found there several rooms

filled with attorneys, clerks and stenographers. I then went to the shop to investigate a claim "that the brake did not work," made by the motorman concerned in the accident, and found a well-equipped shop with a force of men for inspecting and repairing motors, controllers and trucks. When I inquired for the man who had charge of the department of brakes I was told that there was no man in special charge of the brakes; that the cars were inspected by the regular inspection crews, and if the brakes were out of order they were reported so by the motorman running the car.

I would not assume to make a suggestion on the line of economy in the operation of a railway in this state, but it seems that the statement, made by a manager of one of the large roads in this State, that they "could not afford to adopt a certain brake because the expense of mechanics to keep them in repair would be too great," is not a sufficient reason for not equipping his cars with an improved brake. If I were asked to give advice I would say: "Put overalls on some of your attorneys and you will not only save money, but add to the safety of your passengers by the change." In other words, closer attention to details of brake mechanism will reduce the number of accidents and the volume of expense in damage suits.

Track Bonding*

BY ALFRED GREEN
Master Mechanic Rochester Railway Company

Track bonding, or the negative side of a street railway circuit, has been a subject of a great deal of controversy. In my opinion, it has been similar to a child that was born a cripple, for every few months there has been a consultation of doctors as to what was best to do. It has also passed through the different stages of whooping cough, scarlet fever and measles, and has grown to an age where it has become unhealthy and weak. In my opinion, the subject is not one of complications, but one that needs a little common sense, in order to make it a success.

We, indeed, would be surprised at anyone writing an article on our positive or feeder circuits, because we know that by putting up wire of the necessary cross section, and making a proper joint, we can figure our loss for anything we may require, but with the negative, or return, side of our street railway circuit it has been a different subject entirely, all because too much stress has been placed upon one point, and that is, the amount of carrying capacity we have in the rail itself.

We have never taken into consideration that the serious part of this is, that the rail is broken every 30 ft., or, with our last type of rail, every 60 ft., and to make this joint perfect as to its conductivity, we have tried all manner of schemes, but I want to say right here, that as far as my experience is concerned, we are not as far advanced in regard to this matter as we were ten years ago. At that time they used a copper bond, riveted around the fish-plate. The bond was then attached to a supplementary wire that ran along the rail to the power house. This our theoretical electrician considered a waste of copper, which meant a great deal of money, but the only mistake that was made was that the supplementary wire was not large enough. But we passed from that stage to the iron rivet with the iron wire wrapped around the rivet head, then came the channel pin with the slot for holding the wire, and from that to the copper bond behind the fish-plate, if it were possible to put it there, and added to that was the plastic bond. But with all of those supposed improvements in regard to the bond, it is self-evident that they are not a success, or else there would not be the amount of controversy that there is to-day in regard to track bonding. Furthermore, it is impossible to make a bond that will be a success, especially in paved streets, where the pavement has to be taken up to examine the joints and give them the proper amount of care.

The bond of to-day, no matter whether it is a copper or a plastic bond, is a luxury, for the former will corrode, the plastic bond will harden, break and fall out, the joints will become loose, and by so doing the resistance of the joint will be increased.

In all past experience it has proved that we have placed too much reliance on the amount of material in the rail for carrying this current back to the power house. If this rail was continuous, then we would not need the bond, and the different subjects written upon the ground return would be entirely unnecessary. It was very amusing a short time ago to read an article in one of the electrical papers, where some good soul had written to the paper, and told it how he had run a supplementary wire beside the rail, and what great success he had had with it. In the next column of the same paper were the comments of the different bond manufacturers, in which

* Paper read before the New York State Street Railway Association at Rochester, Sept. 10, 1901.

they tried to prove how foolish the writer was to spend so much money on a return circuit by using a continuous wire, whereby if he had used a bond, whether copper or plastic, he would have gained some splendid results without the extra cost. Such, however, is true to a certain extent, could we have all of the rail-joints exposed, so that they could be examined at short intervals, tightened and properly taken care of, if we could have them where they are not exposed to the rain water, and filth of the street. If we could have them where it was impossible for them to corrode, if plastic, so that it would not harden, disintegrate and break, then there is no doubt in my mind but what the theory advanced would be a perfect success, but the tracks of a street railway company are not so situated. They are exposed to the heat and the cold, which causes expansion and contraction, and, as I have said before, they are exposed to the dirt, slush and mud, which causes corrosion, and every time that a car passes over a joint it must stand the pound of the weight of the car and its equipment, and until the time that the rail is made practically continuous there is no bond made, or ever will be made, that will give the necessary satisfaction. Furthermore, the negative side of a street railway circuit should, in reality, be better than the positive side, for the simple reason that you have the loss in your feeder, and the fall of potential through your motors, therefore you have not got the same e. m. f. to send that current back to your generator that you had to send it out over your line to the motors.

Theory is a very good thing in its place, but how often has it failed in practice. Several years ago a long article was written on the resistance of long and short bonds, which, in one sense, was very good, for we know as we increase the length of a load we also increase the resistance. Furthermore, we know that the shorter the bond, the nearer the end of the rail we must attach the same, and nearer the point of vibration.

Thousands of dollars have been spent upon this bond system, and with all of our years of experience we are practically no further advanced than we were years ago, and in order to get the results that we desire we must do one of two things. Either make the rail itself continuous, something that can be done in paved streets by electrical welding, or else come to a continuous copper circuit without running the risk of broken joints. There is no doubt in my mind but that we will come yet to a supplementary wire, perhaps run a tile duct beside the rail, and have enough connections to that rail to make the circuit complete under all circumstances. If we would use a copper wire wherever that wire is attached to the rail, both wire and rail could be amalgamated, so that there is no possible chance for corrosion. I can not, and never will, believe that you can bond the joints of the rail, no matter what cross section that rail may have, so that it will be a perfect success, and until we get out of our present way of doing things there will always be an opportunity for controversy. We must make our negative side of our circuit just as complete as our positive side, and when we do that we will wonder why we have not saved the many thousands of dollars that have been spent in trying to utilize that which has cost all street railway companies no end of trouble. So, in my opinion, no matter what theorists write in regard to this subject, we will still have to get down to good, hard common sense, and do that which we know will be a success.

J. G. Brill Company to Build a Plant in England

G. Martin Brill, president of the J. G. Brill Company, of Philadelphia, stated this week to a representative of the STREET RAILWAY JOURNAL that the company had definitely decided on the construction of a factory in England. Mr. Brill said:

"We have been considering the matter seriously for a considerable time, and now can say that the question of the exact location for the erection of the plant is the main thing to be decided. Otherwise everything is settled. Some British capital will be interested in the enterprise, and, in the first instance, we propose to devote our attention to the manufacture of trucks for the British market.

"John A. Brill, vice-president of the company, has been in Europe for some months back with a view to going into the question of a suitable site for the projected English works, and my last advices from him state that he had inspected some land at Preston, Lancashire, and was also going to look over some ground in the Midland and Southern districts of England. However, we will have further details when he returns from Europe on the Cunarder 'Servia,' sailing from Liverpool Sept. 17.

The Rapid Transit Subway Construction Company, of New York, has let a contract for eight 7500-hp engines to the Allis-Chalmers Company.

Programme of the Accountants' Convention

Secretary Brockway, of the Street Railway Accountants' Association of America, has made public the programme of the fifth annual convention of the association, which will be held in the Madison Square Garden, New York City, Oct. 9, 10 and 11. A particularly interesting and valuable meeting is assured, as will be seen from the programme below:

Tuesday, Oct. 8.—Annual meeting of the executive committee.

Wednesday, Oct. 9, Madison Square Garden, 10 a. m.—Address of welcome by Hon. Bird S. Coler, Comptroller City of New York. Annual address of the president. Annual report of the executive committee. Annual report of the secretary and treasurer. Appointment of convention committees, resolutions and nominations. Paper—"Car Mileage and How to Arrive at It Easily," by J. M. Smith, comptroller Toronto Railway, Toronto, Canada. 2:30 p. m.—Paper—"Capital Accounts from the Viewpoint of the Investor and the Public," by Col. T. S. Williams, vice-president Brooklyn Rapid Transit Company, Brooklyn, N. Y. Report—"Standard Blanks and Accounting for Material and Supplies," by F. E. Smith, auditor Chicago Union Traction Company, Chicago, Ill., chairman.

Friday, Oct. 11, Madison Square Garden, 10 a. m.—Paper—"Consumers' Accounts, Electric Lighting Companies," by S. E. Moore, comptroller United Traction Company, Pittsburgh, Pa. Report—"Standard System of Accounting for Electric Light Companies," by G. E. Tripp, general auditor Stone & Webster's Companies, Boston, Mass., chairman. Annual Report—"Standard System of Street Railway Accounting," by C. N. Duffy, auditor Chicago City Railway, Chicago, Ill., chairman. 2:30 p. m.—Paper—"Conductors' Accounts," by Elmer M. White, cashier Hartford Street Railway, Hartford, Conn. Report—"Standard Unit of Comparison," by H. C. Mackay, comptroller Milwaukee Electric Railway & Light Company, Milwaukee, Wis., chairman. Reports of convention committees. Election of officers.

As will be noticed, the address of welcome will be delivered by Hon. Bird S. Coler, Comptroller of the City of New York. The acceptance by Mr. Coler of this duty indicates the high opinion of the work accomplished by the association held by prominent auditors in this country.

The headquarters of the Accountants' Association, as previously announced, will be the Fifth Avenue Hotel, corner of Twenty-Third Street, Fifth Avenue and Broadway. The Madison Square Garden, in which the convention will be held, is within a few hundred feet from the hotel. The rates are: European plan, \$2 and upward per day, and American plan, \$5 and upward per day. The rates of fare on the railroads will be the customary one and one-third fare on the certificate plan.

Large Contract in London

Mention has already been made of the contract secured by the British Thomson-Houston Company for the equipment of the Great Northern & City Railway, one of the underground roads of London. Electrical equipment is to be provided sufficient for the operation of a three-minute service between Finsbury Park and Moorgate Street, each train consisting of seven cars, the two end cars as well as the center car being equipped with motors. The schedule time for the journey of 7 miles will be thirteen and one-half minutes, allowing for three intermediate stops of twenty seconds each. The weight of the train will be approximately 200 tons.

This road will be of more than ordinary interest, from the fact that it is the first electric railway in Great Britain to be operated entirely on the train-control system.

The exact number and type of boilers to be used has not yet been fully decided upon. It can be stated, however, that the boilers will be fed by three vertical duplex pumps, and the feed-water heater, which is to be vertical, will have a capacity of 7500 gals. per hour. The economizer will consist of 480 tubes, arranged in sections, ten tubes wide. All the steam-pressure piping will be of heavy lap-welded pipe, tested to 500 lbs. per sq. in.

There will be a Hunt coal-conveying plant of the noiseless automatic gravity bucket type, sufficient to handle 30 tons of coal per hour. There will also be two vertical three-throw single-acting lifting pumps, a storage tank of 21,000 gals. capacity, a water-softening plant to treat 8500 gals. per hour, and two receiving tanks, each of 4700 gals. capacity. The economizer, mechanical stokers, coal conveyor and lifting pumps are all to be operated by electric motors.

The engine equipment will consist of four vertical cross-compound condensing Musgrave engines, developing 1250 ihp as a

normal load, and 1875 ihp as a maximum, when running at 100 r. p. m., and working with a steam pressure of 150 lbs. per sq. in. Each engine will be arranged to drive an 800-kw generator, which will be mounted on the main crankshaft between the engines. The specifications call for a speed variation of not more than 2½ per cent either way between full load and no load. There will also be two vertical tandem compound non-condensing auxiliary engines, capable of developing 83 ihp continuously.

The condensing plant will consist of four surface condensers with combined air and circulating pumps. The engine room will be provided with a 30-ton overhead traveling crane, operated by three electric motors.

The main generators will be four in number, with fourteen poles and a capacity of 800 kw; voltage, 525 no load, 575 full load, when running at 100 r. p. m. There will also be two auxiliary generators of the same type, each 50-kw capacity; voltage, 550 no load, 575 full load, running at 400 r. p. m. These two generators are intended to supply current for the lighting and power required at night for the stations and repair-shop tools, etc., when the main generators are shut down.

The switchboard will consist of four main generator panels, four main feeder panels, two auxiliary generator panels, three auxiliary power panels, three auxiliary lighting panels, and voltmeter equipment. These panels will be equipped with magnetic blow-out circuit breakers, Thomson astatic instruments, wattmeters, switches, etc., all of the G. E. standard pattern.

The third rail to be of channel section, weighing 80 lbs. per yard. The resistance of the material, as specified, not to exceed 0.32 ohms per mile per sq. in. of cross-sectional area. The bonds will be of the copper plastic type, and the rails will be supported every 2 yards on porcelain insulators of the double-petticoat type. At intervals the collector rails of the up and down tracks will be interconnected, an automatic circuit breaker being placed in each interconnecting circuit, so as to enable either pair of rails to be isolated from the other when desired.

There will be thirty-six motor cars, each mounted on two four-wheel trucks, each truck carrying one G. E. 66 geared motor. Each car will have four collector shoes and the usual controllers, circuit breakers, etc., making a complete motor-car equipment. The brake equipment will be of the Christensen type.

The repair shop is to be equipped with lathes, wheel press, drilling machines, shaping machines, etc., all driven by an electric motor.

Franchise Tax Hearing in Albany

Another hearing on the Franchise Tax act in New York State was held at Albany, Sept. 4, before ex-Judge Robert Earl, of the Court of Appeals, acting as a referee, in the Assembly Parlor of the Capitol. The evidence that ex-Judge Robert Earl collects regarding the methods used by the State Tax Commissioners in appraising the value of the property of corporations under the Franchise Tax act, and his opinion on the evidence, will be submitted to the Special Term of the Supreme Court. Another hearing will be held Sept. 17, after which it is thought the counsel of the State and of the corporations will make their arguments. It is expected that ex-Senator Hill will then, in behalf of the corporations of the State, attack the constitutionality of the law. The chief witnesses at the hearing last week were H. H. Vreeland, president of the Metropolitan Street Railway Company, and George E. Priest, president of the Board of State Tax Commissioners. The corporations were represented by ex-Senator David B. Hill, William H. Page, Jr., and ex-Judge Charles F. Brown, representing the Metropolitan Street Railway Company; Frank H. Platt, representing the Consolidated Gas Company, of New York; Charles N. Collin and John L. Wells, representing the Brooklyn Rapid Transit Company; William N. Dykman, representing the Brooklyn Union Gas Company and some street railways of Brooklyn, and H. J. Hemmens, of the Consolidated Telegraph and Electric Subways. The State was represented by Deputy Attorney-General Cowan, Deputy Attorney-General Martin and J. Newton Fiero.

In the examination of President Priest an effort was made by the counsel for the corporations to bring out the methods used by the Board in determining the valuation of the properties of the companies. In reply to questions the witness stated no separation was made between the tangible property and the special franchises in making the assessment. He also stated that where several franchises existed the values of each were fixed separately.

Mr. Vreeland's testimony was in the direction of elucidating the position of his road in regard to the tax. His testimony, as given in the *New York Tribune*, was as follows: "When I became president, in June, 1893, of what is now the Metropolitan Street

Railway Company, the Broadway cable line had been partially constructed, but was operated by horses. In July the cable line was put in operation. The next step was the construction of the Columbus and Ninth Avenue and the Lexington Avenue lines, which also were cable lines. At that time electricians said it was impossible to have underground electric power. We expended about \$500,000 in investigation. It was then decided afterward, by electrical engineers, that it was possible to use electricity. We had constructed the Lenox Avenue for either cable or electricity.

"It cost us about \$75,000 more to give the road this double character. We then experimented with electrical traction on the Lenox Avenue line. During a year of operation the whole theory of operating such a road was changed, to have it conform with other electrical lines in the United States. A year later, in 1895, we were asked if we were willing to say that the electrical system was a success from a commercial point of view, and the answer was in the affirmative. Since that we have made constant additions to the electrical transmission of power. We added at first the Second Avenue, Eighth Avenue and other lines. We could not put up an overhead trolley; that was forbidden by the city. We therefore had to meet the novel electrical experiment of putting the electricity underground. Lastly, we started in to change our cable system in Broadway and Lexington Avenue and other lines to electrical power. The cable was in good order, but we could not exchange cars. We have put in electrical power at a cost of \$6,000,000 and also at a loss of \$6,000,000 in equipment. When I took charge of the roads there were only four transfer points. In 1900 we had 275 transfer points, and that year gave 160,000,000 transfers. There was no legal obligation for us to grant these transfers. At present we have three hundred transfer points. This present year we have carried 395,000,000 cash passengers. Fifty per cent of those passengers took transfers, so that the average fare we received was 2½ cents a passenger."

Judge Brown asked: "What was the effect of the change to the electrical system?"

"On the Madison Avenue line the gross receipts, under the cable system, were \$760,000, and the operating expenses were 70 per cent. Under the electrical system the gross receipts increased to \$2,000,000 and the operating expenses decreased to 35 per cent."

"How many systems of railroad do you operate?" inquired Mr. Page.

"Sixteen," answered Mr. Vreeland.

Mr. Vreeland then gave a statement of the various franchises which would be employed by a car in running along Broadway.

"What would be the effect if the lines of the Metropolitan system were operated separately?" asked Mr. Page.

"They would not pay expenses," answered Mr. Vreeland.

"That is objected to as immaterial and irrelevant," said Mr. Fiero, for the State.

"There are some franchises which could not be used," said Mr. Vreeland, "unless they were employed by a company like the Metropolitan, having lines all over the city. If the lines leased by the Metropolitan were operated separately their gross receipts would be decreased 40 per cent and the net receipts still more, because no railway now owns its own cars or has a power house."

"State the economy of the present system of consolidation," said ex-Judge Brown.

"Each road," answered Mr. Vreeland, "would have its separate staff of officers. For instance, the wiping out of the staff of the Third Avenue system saved us \$100,000 a year, and the cost of electrical power to the Third Avenue was 6 cents a mile, whereas to the Metropolitan it was only 1½ cents a mile."

"In what condition did you find the Broadway line when you took it?"

"The Bleecker Street and another line had the right to run upon Broadway. This limited our speed to the horse cars. We had to buy the lines at nuisance rates. They don't pay expenses now."

"Did other companies occupy your lines?"

"Yes; and we had to buy the Tenth Avenue at an exorbitant price in order to get the horse cars off our cable line from Fifty-Third to Sixty-Fifth Street."

"What has been the effect of a transfer system?"

"It will make two lines make more money. The crosstown cars contribute to the gross earnings of the longitudinal lines and the latter to the former. Many passengers take our crosstown cars and go two blocks in order to reach a longitudinal line in preference to taking the elevated lines. The Third Avenue company's stock was sold at \$50 a share. In a week's time the value of the stock doubled, owing to people learning that the Third Avenue had become the property of the Metropolitan Street Railway Company. For a year after we bought the Second Avenue it did not pay expenses; but nevertheless its stock doubled in value."

"Can you tell us something about the bonds of your company?"

"No bonds of the Metropolitan company, I believe, have sold at less than par."

"What would you say about estimating the value of a franchise by its gross earnings?"

"I think," answered Mr. Vreeland, "that you can not safely or justly eliminate the personal element. The Third Avenue Company was wrecked by the men who had charge of it from its organization. Now, under the care of the Metropolitan, its expenses are from 10 per cent to 15 per cent less. It is all a matter of business ability and ingenuity."

"J. P. Morgan & Company occupy a building and lot at the corner of Broad and Wall Streets. The business done in that house amounts to many millions a year. The volume of this business depends not only upon the location of this site, but upon connections which it has established throughout the world. Within one hundred yards of the corner of Broad and Wall Streets may be another lot with a building of equal size and desirability, but the business done by the banking house in that may be only one-tenth of the amount done by J. P. Morgan & Company. We have expended large sums in experiments intended to lower the cost of transporting people—\$800,000 on compressed air alone."

"And you still have hopes of its paying?" interrupted Senator Hill.

"Yes," answered Mr. Vreeland, with a laugh.

"Do you think a line from South Ferry to Fifteenth Street would pay expenses?" asked Mr. Cowan.

"I do not," answered Mr. Vreeland.

"What is the length of time your leases of other railways run?"

"About 999 years," answered Mr. Vreeland.

"Do you think of abandoning your leases and returning to the past chaotic system?"

"That depends upon the present action," replied Mr. Vreeland.

"You do not mean that, Mr. Vreeland, do you?" said Mr. Cowan, in a surprised way.

"I may in regard to certain lines. We have over ninety miles of street railways operated by horse power. They do not pay expenses, and it would cost \$150,000 a mile to convert them into electrical lines."

"Can you not convert the Fulton Street line, for instance, into an electrical line?"

"We can not."

The hearing was then adjourned.

The Plans for the Consolidation of the Everett-Moore Properties

At a meeting of the directors of the Detroit United Railways, held three weeks ago, H. A. Everett, E. W. Moore and Ralph A. Harmon were appointed as syndicate managers for the purpose of formulating plans for the consolidation into one company of the various roads recently acquired by the syndicate in Michigan, also for the purpose of eventually consolidating all the Everett-Moore properties under one controlling head. Last week the syndicate managers addressed a circular to the stockholders of the Detroit United Railways, announcing that the majority of the stockholders had consented to the terms of the proposed consolidation, and requesting those who had not yet done so to forward their certificates of stock to the Guaranty Trust Company, of New York, the headquarters of August Belmont, Walter G. Oakman and George W. Young, who had been appointed trustees for the stock. As outlined in the circular, the Michigan corporation will have \$12,500,000 capital stock, and will issue bonds to the amount of \$50,000,000, to be divided as follows: \$17,767,000 to retire liens on property of the Detroit United, \$17,500,000 to provide for future extensions and improvements, \$2,983,000 to meet the obligations of the Detroit United and for other corporate purposes, and \$13,750,000 to go for the purchase of the properties of the Detroit United. The Michigan corporation will assume all debts of the Detroit United, and the stockholders will receive \$105 in the bonds of the Michigan company for each share of stock. In event of the consummation of the plan for a controlling company, each stockholder will receive, in addition to the bonds mentioned, stock or securities, or both, of the controlling corporation. Stock so received is to be held for five years by voting trustees. In case the holders of 90 per cent of the stock approve of the form of the consolidation, the stock of the Michigan corporation will be delivered to the controlling company. The roads controlled by the Everett-Moore syndicate are as follows: Detroit United Railways (including Michigan interurbans); Toledo Railways & Light Company; Toledo, Fremont & Norwalk; Sandusky, Norwalk & Southern; Sandusky & Interurban; Lorain & Cleveland; Cleveland Electric Railway; Cleveland, Painesville &

Eastern; Cleveland & Eastern; Cleveland & Chagrin Falls; Chagrin Falls & Eastern; Northern Ohio Traction Company. It is stated that the controlling company will have a capital stock of \$125,000,000.

Street Railway Patents

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

UNITED STATES PATENTS ISSUED AUG. 27, 1901

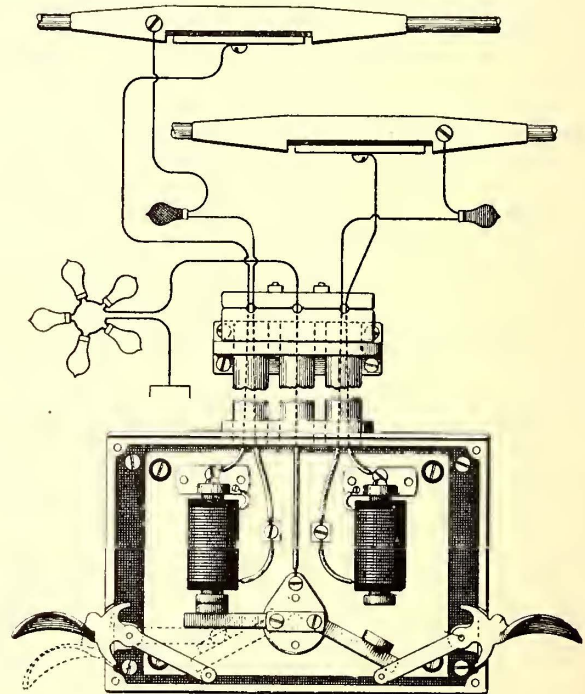
681,228. Combined Car Replacer and Wheel-Shoe; J. Jones, Washington, Ind. App. filed April 20, 1901. A curved shoe, the convex side of which is used to elevate the wheel and the concave side is placed against the rim of the wheel and secured, to act as a skid for a broken wheel.

681,262. Railway Track Structure; W. E. Prindle, Johnstown, Pa. App. filed Dec. 3, 1900. The crossing plate is secured by bolts passing through buttonhole openings, so as to be readily removable.

681,342. Car Truck; E. Peckham, Kingston, N. Y. App. filed June 6, 1901. Equalizer bars carry equalizer springs, which support the truck frame, and a set of auxiliary springs is interposed between the ends of the truck frame and the journal boxes.

681,350. Street Car Fender; C. T. Stoelting, St. Louis, Mo. App. filed May 6, 1901. The forward end of the fender is supported on trucks, and the basket is made of springs, so shaped as to afford an easy cushion.

681,361. Car Fender; J. B. Wood, Cranston, R. I. App. filed Jan. 31, 1901. By means of a crankshaft the fender can be thrust forward or retracted by the motorman at will.



PATENT NO. 681,371

681,293. Electric System for Railways; D. S. Bergin, Chicago, Ill. App. filed May 23, 1901. One conduit is located within another; the sectional conductors are located in the outer conduit and connected with the main conductor in the inner conduit by plungers passing through the roof of the inner conduit.

681,371. Signalling Apparatus; G. E. Painter, Baltimore, Md. App. filed Jan. 26, 1901. An apparatus for suburban trolley lines, whereby patrons can set a signal at night to stop a car, and the trolley automatically restores the signal to its normal condition.

681,410. Electric Traction Road; L. Dion, Boston, Mass. App. filed Jan. 28, 1901. A closed conduit having a series of pockets projecting toward the roadway surface, a conductor in the conduit and armature members projecting from the conductor into the pockets and detachably secured to the conductor.

681,453. Controller for Electric Railway Motors; F. A. Merrick and E. W. Stull, Johnstown, Pa. App. filed Sept. 28, 1900. The power, speed and braking effort of four or more motors are controlled by a single drum.

681,629. Vehicle Axle; C. A. Dahlhaus, Brazil, Ind. App. filed Nov. 30, 1900. The axle is T-form in cross-section, except the spindles at the ends, for the wheels.

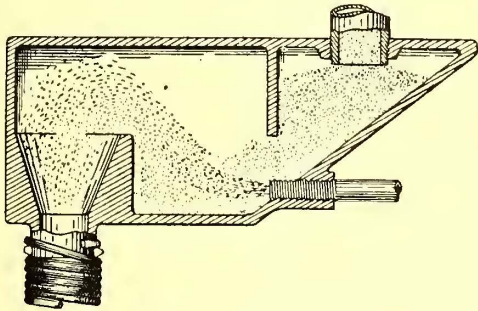
UNITED STATES PATENTS ISSUED SEPT. 3, 1901

681,784. Car Seat; H. S. Hale, Philadelphia, Pa. App. filed June 23, 1899. Hinged arms are directly pivoted to the ends of the seat; brackets are connected to the ends of the seat-back, and extend forward and outward to a hinged joint at the upper free end of the hinged arms.

681,796. Track-Sanding Device; W. H. Kilbourn, Greenfield, Mass. App. filed Dec. 5, 1900. A hopper having a sand outlet and a feed-box mounted to reciprocate beneath the hopper, and constructed to deliver sand from both of its ends.

681,824. Switch Mechanism; C. F. Gay, Spokane, Wash. App. filed Dec. 11, 1900. A projection from the car wedges under the point of the switch tongue to open it.

681,891. Trolley Arm for Electric Cars; J. F. Snow, Pawtucket, R. I. App. filed Feb. 19, 1901. The wheel is carried by lever vertically pivoted on the upper end of the trolley arm and restrained by springs.



PATENT NO. 682,150

681,906. Traction System for Use with Cable Roads in Handling Coal; J. G. Bezanson, Somerville, Mass. App. filed May 4, 1901. The invention consists in merging in one rail the adjacent rails of two parallel tracks, so that a single rail will serve the purpose of both tracks, thus enabling a car to be built narrower than if a double-track system of ordinary construction were used.

681,933. Trolley; H. Smith, Watervliet, N. Y. App. filed Jan. 7, 1901. The wheel is mounted in swinging axle boxes, so as to be self-adjusting to bends in the wire.

682,032. Switch Turner; E. B. Clark, Pittsburgh, Pa. App. filed Dec. 18, 1900. The switch point is moved by the rotation of a disc set horizontally in the roadbed; shoes carried by the car can be thrust into contact with the disc on either side of its center to cause it to rotate in either direction.

682,056. Contact for Underground Trolleys; J. S. Garzousi, New York, N. Y. App. filed July 10, 1901. The contact comprises a frame sliding freely on a plow, and having contact points at its ends to connect with the main and return wires at the different points of their length.

682,058. Railway Switch; J. W. Gordon, Marietta, Ohio. App. filed April 10, 1901. Details.

682,149. Aerial Wire Rope Tramway; J. H. Montgomery, Denver, Col. App. filed Dec. 20, 1900. Details of the disposition of the guide sheaves which support the cable on the line of poles.

682,150. Track Sander; C. B. Nichols, Westport, Ohio. App. filed Jan. 25, 1901. A blast of air is directed through the sand-box to drive the sand toward the outlet passage.

682,151. Street Railway Switch; F. G. Smith, Bloomfield, N. J. App. filed Feb. 1, 1901. A lever system whereby the motions are mainly obtained by pulling instead of pushing.

PERSONAL MENTION

MR. J. T. BURKE has retired from the management of the San Jose & Santa Clara Railroad, of San Jose, Cal.

MR. R. H. BEACH, manager of the railway department of the General Electric Company, returned last week from a four-week tour in Mexico.

MR. IRA A. McCORMACK, general manager of the Cleveland Electric Railway Company, has returned to Cleveland after an extended pleasure trip to the East.

MR. WILLIAM B. TAYLOR has resigned as general manager of the Colonial City Traction Company, of Kingston, N. Y., and has accepted a position with the North Jersey Street Railway Company.

MR. ELMER P. MORRIS, of the Morris Electric Company, New York, has been enjoying a short trip to Cuba, where he was the guest of General Manager Greenwood, of the Havana Electric Railway Company.

MR. E. W. MOORE, of the Everett-Moore syndicate, left Cleveland, Sept. 4, for New York, where he has several business engagements. After transacting his business in New York, Mr. Moore will start on an extended pleasure trip.

MR. E. H. LONGACRE, for a number of years superintendent of the electric lighting department of the Northern Ohio Traction Company at Akron, has resigned to accept a position with the Cleveland Construction Company, of Cleveland. Mr. Longacre will have his headquarters at St. Marys, Ohio, on the Western Ohio Railway, which is being built by the Cleveland Construction Company.

MESSRS. THOMAS MOODEY AND JOHN HAHN, of the contracting firm of Hahn Brothers, of Canton, Ohio, who are doing construction work on the Canton & Akron Electric Railway, were seriously injured a few days ago by the collapse of a temporary arch on a bridge which they were superintending. They were buried beneath timbers, and each sustained several broken ribs.

MR. GEORGE BULLOCK, president of the Bullock Electric Company, of Cincinnati, Ohio, who has been in England for the last two months, in connection with a proposition to build a plant on the other side for the purpose of manufacturing Bullock apparatus for the British and other European markets, returned last week to the United States. While nothing exactly definite has been decided upon, it may be said that negotiations are progressing satisfactorily for the establishment of works in the United Kingdom.

MR. A. J. NELLES has resigned as secretary, manager and purchasing agent of the Hamilton, Grimsby & Beamsville Railway Company, of Hamilton, Ont. Mr. Nelles has been connected with the company for six years, and previous to his connection with the company he was located at Brantford, being the local manager of the Toronto, Hamilton & Brantford Railroad. Before becoming connected with the latter company Mr. Nelles was connected with the Grand Trunk line. Mr. Nelles has become identified with a syndicate that proposes to build a new railway, but further than this no announcement of his plans for the future have been made.

MR. W. S. BARSTOW, who has been connected with the Edison Electric Illuminating Company, of Brooklyn, and its successor, the Kings County Gas, Electric Light & Power Company, from 1889 to 1901, has opened an office as consulting engineer at 11 Broadway. Mr. Barstow has long been prominent in the electric lighting field, and recently he has attracted the attention of street railway men through the able manner in which he arranged



W. S. BARSTOW

for the supply of extra current to the lines of the Brooklyn Rapid Transit Company, from the high-tension generating stations under his supervision. He expects to devote a considerable portion of his time to the development of street railway undertakings, and has already been retained by Spencer, Trask & Company as consulting engineer for all of their numerous electrical properties, both railway and lighting. Mr. Barstow graduated in 1887 from Columbia University, and after two years' work in the Edison Machine Works at Schenectady, he joined the Brooklyn company. His intimate connection with the financial and technical difficulties encountered by public electrical enterprises gives his opinion upon these matters great weight. He is remarkably well fitted to completely examine and report on plants already constructed, or new properties, and is capable of reorganizing and placing on a paying basis old ones. Mr. Barstow already has many friends in the street railway field, and he enters into his new work with the backing of some of the ablest financiers of the country. It might be added that Mr. Barstow has been the efficient and successful chairman of the committee on papers and meetings of the American Institute of Electrical Engineers for some time past. He has also been prominent for many years in the affairs of the Association of Edison Illuminating Companies.

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

WALL STREET, Sept. 12, 1901.

The past fortnight in the money market has witnessed the expected decline in the surplus reserve of the local banks, and it has also witnessed the progress of the various relieving agencies, some of which were expected and others which were not. When the fearful news was received from Buffalo after the close of business on Friday afternoon it became evident that extraordinary measures would have to be adopted to avoid not only a speculators' panic, but a serious strain upon the whole credit system. The Clearing House committee met the emergency promptly and effectively by placing the sum of \$25,000,000 at the disposal of the market, to be loaned to all responsible borrowers. As it happened there was no demand for these emergency credits, because the over-Sunday loans had all been provided for on Friday and because confidence had returned by the time business was resumed on Monday. But the bank officials, as soon as the worst was over, set about at once to find means for more permanently improving the situation, which was greatly embarrassed by the heavy shrinkage of the reserve appearing in Saturday's statement. The Treasury was the most logical quarter to appeal to, because it is the altogether unnatural state of the public revenue which has been one of the principal sources of drain upon the banks. In response to the formal request of the chairman of the Clearing House committee, Secretary Gage has authorized the purchase of \$20,000,000 government bonds other than the 2 per cents, the terms for whose redemption were already before the public. He has also authorized an increase of \$5,000,000 in the government deposits with the banks, which, presumably, will be made immediately. These measures will no doubt meet all present exigencies of the market, while they are further reassuring as indicating the intention of the Treasury to do all in its power to minimize the disturbing effects of the redundant federal revenue. Meanwhile the other ameliorating influences in the situation, which were anticipated a fortnight ago, have begun to show themselves more definitely. Sterling exchange has fallen sharply, until it has come within a fraction of the gold-import point, and the beginning of imports is probable before the end of another fortnight. Liquidation of loans and contingent liabilities has also continued, the movement being accelerated by the recent break in stocks. Consequently, while the crop-moving demands from the West and South are heavy, and will keep so for another two months, the outlook in the money market is distinctly brighter than it was a fortnight ago, and the fears of a serious stringency are correspondingly diminished.

Rates on all classes of loans have undergone a substantial rise. Call money during the last week has gone freely at 5, and even 6, per cent, while time money is quoted rather stiffly at 5 per cent for all dates.

The Stock Market

The general stock market, after passing through a violent convulsion when the death of the President was feared, has enjoyed a recovery almost commensurate with the previous decline. This improvement has been logical in so far as the President is now pronounced to be out of danger, and, furthermore, since money conditions, which were a source of great uneasiness, have taken a decided turn for the better. Nevertheless, the manner in which the market withstood last Saturday's shock and the rapidity with which the losses were repaired, has been a revelation to the greater part of Wall Street. This exhibition of recuperative power would not have been possible had not stocks been held, to an unusually large extent, by the larger financial interests. Even those who take a pessimistic view of the future, and look upon the present level of prices as too high, are willing to admit the force of this observation. Under the existing technical conditions, the argument for the decline depends wholly upon the assumption that the syndicates and financial magnates have taken on a larger load than they cared to, in order to support the market, and that they will have enough stocks to sell around the prevailing prices to prevent any material rise. This theory also takes account of the fact that there is no public interest in the speculation, and it presumes that investors consider the current level too high for their operations. On the other hand, the line of optimistic reasoning is that the larger interests who own such a large part of the supply of stocks are at least prepared to hold them until outside conditions are propitious to disposing of them to better advantage. Practically all the recent developments have been favorable to

this side of speculative opinion. The steel strike is on its last legs, railroad earnings and the general volume of trade continue at a maximum, and finally, as we have already seen, there is good warrant for an easier feeling with regard to the money outlook. But whichever of these conflicting views may ultimately gain the upper hand, it is reasonably certain that for the present they will strike a pretty even balance, keeping the movement of the market irregular and confined within narrow limits.

The local traction stocks, following the course of the general market, have fallen off decidedly during the last two weeks. The unfavorable report of Brooklyn Rapid Transit for July has aroused an unfavorable sentiment toward the stock, especially as it follows the already disappointing proof that little progress has been made in the much-talked-of reduction of the company's operating ratio. Our information is that local politicians who, some time ago, acquired large holdings of Rapid Transit, have been the most prominent sellers in the recent market. The same clique are considerable owners of Manhattan, and it is suggested that their sales of Brooklyn were made to strengthen their position in the Elevated company. At all events, Manhattan appears to be very closely held, and has withstood the recent decline better than the other tractions. Considerable attention was paid in the market for Metropolitan stock to the statements of President Vreeland at the recent franchise tax hearing. In referring to the increased profits under electrical equipment, he said that, in the case of the Madison Avenue line, the gross receipts under the horse car service were \$760,000 and the operating expenses were 70 per cent; while with electric cars the annual revenue has risen to \$2,000,000 and the operating ratio has fallen to 35 per cent. Mr. Vreeland further said that \$100,000 a year was saved by abolishing the former staff of the Third Avenue Company. Twin City Rapid Transit has continued its remarkable advance, reaching a point very much above any previous record. The reason for the movement apparently lies in the extensive plans which the company has under way to supply power for the street lighting of St. Paul and Minneapolis. This power will be developed at a new plant on the Mississippi River, and it is said that the cost will be less than that on any electric street railway, or in any electric lighting company, in the country.

The Curb Market

As usual, there is very little to note in the way of actual dealings in the curb tractions, but a number of important changes have occurred in prices. Two hundred shares of United Railways of St. Louis preferred sold on Sept. 6 at 81 $\frac{7}{8}$ and 82, and 500 sold yesterday at 82. This is the highest figure reached during the present year, and it reflects a growing confidence in the investment merits of the company's securities. The bid price on Syracuse Transit preferred was raised to 62 last Friday, and since then to 63, but no offerings have been attracted. In anticipation of the purchase, formally announced yesterday, by a Philadelphia syndicate of the New Orleans traction properties, the stock of the New Orleans City Company has gone up from 27 to 33. The purchase price is said to be 35. Rochester Passenger was bid up from 26 to 30 during the past week. On the other hand, Columbus common is weaker around 45, and Indianapolis Street Railway has declined sharply from 47 to 45.

Philadelphia

The much-talked-of consolidation deal between the Philadelphia Company and the Consolidated, of Pittsburgh, has at length been consummated. The transaction involves over \$30,000,000, and when finally carried out it will give the Philadelphia Company control of practically the whole traction system of Pittsburgh and Allegheny. It is figured out that holders of Pittsburgh Consolidated common will receive an equivalent of \$25 a share under the merger. In this expectation the stock has been fairly active in the market, and strong around 23 $\frac{1}{2}$, while the preferred has gone up to 62 in sympathy. The elaborate story which was circulated a week ago about a \$100,000,000 combination, to include the Union Traction, of Philadelphia; the newly chartered traction companies of that city; the Philadelphia Electric, Electric Company of America, and the American Railways has been emphatically denied. It served the purpose, however, in combination with strong speculative operations, to put the price of Union Traction shares up to 31, the highest they have touched since the break following the new rapid transit franchise grants of three months ago. A reaction to 28 $\frac{1}{2}$ has occurred during the past week, partly on the recognized falsity of the various "bull" rumors affecting the property, and partly on the weakness in the general market. Philadelphia Traction, after selling up to 98, has fallen off to 97 $\frac{5}{8}$, on small dealings. On scattered and unimportant

transactions American Railways is down to 40, against 42 two weeks ago. No dealings were recorded in Indianapolis street railway stock, but the 4 per cent bonds have sold in small lots at 83 and 83½. Sales of \$10,000 Consolidated of New Jersey 5s were reported last Thursday at 109½, and \$2,000 more at the same price last Monday.

Chicago

The traction issues of Chicago show irregular changes in prices, as compared with a fortnight ago. A reaction in Union Traction common and preferred has followed the absence of confirmation of the rumor that new interests are seeking to get control of the road. City Railway, after selling around 210 two weeks ago, is back now to 208. The declaration of a quarterly dividend of 2¼ per cent, or at the rate of 9 per cent per annum, was considered favorable, as it had been feared that after the recent increase in the capital issue the cut in the dividend would be greater. According to the best information the company is now earning about 10 per cent on the total issue of \$18,000,000. South Side Elevated has been firmer, on the increase in the dividend rate. Interest in the elevated situation centers particularly in the efforts of the Metropolitan and the Northwestern to reach out for new business in the suburbs. The Douglas Park extension of the Metropolitan will be completed early next year, and it will secure a good deal of the business which now goes over the Burlington & Quincy Railroad. The Northwestern will either buy outright or lease the Evanston branch of the St. Paul road, or else secure the use of its present right of way. This will give the Northwestern a good share of the heavy Evanston traffic, which will probably be increased by the diversion of a part of the travel now going over the Chicago & Northwestern Railroad.

Stock Quotations

The following table shows present bid quotations for the leading traction stocks, and the active bonds, as compared with a week ago; also the high and low since Jan. 1, 1900:

	Jan. 1, 1900		1901	
	To Date		Closing Bid	
	High	Low	Aug. 27	Sept. 11
American Railways Co.....	48¾	27	40	40½
Boston Elevated	192	195	178	167
Brooklyn R. T.	88¾	47½	75¼	67½
Chicago City	285	200	209½	207
Chicago Union Tr. (common).....	..	..	17¾	17
Chicago Union Tr. (preferred).....	..	..	60	58
Columbus (common)	48	20	47	45
Columbus (preferred)	103	80	102	102
Consolidated Traction of N. J.	69½	57	66	66
Consolidated Traction of N. J. 5s.....	110	..	108¾	109¾
Consolidated Trac. of Pittsburgh (common).....	30¼	20¼	23¾	23½
Indianapolis Street Railway.....	48¾	15	46	45
Lake Street Elevated	16¼	6½	13	12¾
Manhattan Ry.	131¾	84	119¾	116¾
Massachusetts Elec. Cos. (common).....	43¼	15	38¾	38¼
Massachusetts Elec. Cos. (preferred).....	96	70	93	a94
Metropolitan Elevated, Chicago (common).....	37½	24½	36	37
Metropolitan Elevated, Chicago	98½	70	91	93
Metropolitan Street	182	143¾	167¼	164
Nassau Electric 4s	97½	..	97½	97½
New Orleans (common)	33½	18¼	30	33
New Orleans (preferred).....	108	90	101	107
North American	*106	*74	101¼	96
North Jersey	36	21	22½	22½
Northwestern Elevated, Chicago (common).....	52	..	38	41
Northwestern Elevated, Chicago (preferred).....	97½	..	85	88
Rochester	31½	12	26	30
St. Louis Transit Co. (common).....	35	16½	27¼	26
South Side Elevated (Chicago).....	119	93	108	110
Syracuse (common)	b23	10½	23	23
Syracuse (preferred)	b65	25	62	63
Third Ave.	135½	45¼	122	120
Twin City, Minneapolis (common)	105¼	58½	100¾	102
United Railways, St. Louis (preferred).....	82	..	80½	80
United Railways, St. Louis, 4s.....	91½	..	89	89
Union Traction (Philadelphia).....	40½	24¼	30	29
United Traction (Providence).....	110	107	109	109

a Asked. b Bid. * Quotation of new stock. † High quotation previous to the issue of new stock.

Iron and Steel

With the indications that the cause of the striking steel workers is steadily weakening, confidence is growing in the iron market, especially with regard to providing for future requirements. The leading authorities report the beginnings of a demand to meet consumptive wants, both for the remainder of this year and for the first six months of 1902, and they expect that this buying movement will increase from now on. A good part of the orders not executed on account of the strike are still being held on the books, and when the mills resume they will be rushed to their utmost capacity to do this postponed business. Meanwhile current consumption continues heavy in all lines. In steel rails the manufacturers will probably, owing to the pressure of work, have to carry

over into next year many orders which were promised for fulfillment before the end of December.

Quotations are \$15.75 for Bessemer pig, \$25 for steel billets and \$28 for steel rails.

Metals

Quotations are as follows: Copper, 16½@16¾; tin, 25¼; lead, 4¾; spelter, 4.05.

MOBILE, ALA.—The consolidation of the Mobile Light & Railroad Company and Mobile Street Railroad has been perfected, so it is said. The consolidation does not include the Mobile Gas Light & Coke Company and the Electric Lighting Company, of Mobile, as it was announced some time ago that it would.

WASHINGTON, D. C.—A suit in equity has been filed in the Supreme Court of the District of Columbia by certain minority stockholders of the City & Suburban Railway, asking that a receiver be appointed for that road. The information sets forth that the road is insolvent and is being operated at a loss.

CHICAGO, ILL.—The directors of the South Side Elevated Railroad have declared a quarterly dividend of 1 per cent on the stock, thus putting it on a 4 per cent basis. This carries out the promise made at the last annual meeting of stockholders that the rate would be increased some time during the year. The dividend is payable Oct. 1.

CHICAGO, ILL.—Articles have been filed at Springfield increasing the capital stock of the Northwestern Elevated Railroad from \$10,000,000 to \$25,000,000. The increase is made in connection with the purchase of the Union Elevated.

CHICAGO, ILL.—The first refunding mortgage of the Northwestern Elevated Railroad Company for \$25,000,000 to the Illinois Trust & Savings Bank, as trustee, has been filed for record. The mortgage will secure an issue of 4 per cent convertible gold bonds, payable Sept. 1, 1911.

CHICAGO, ILL.—The directors of the Chicago City Railway Company have declared a dividend of 2¼ per cent on the increased stock, payable on Sept. 30. While this is at the rate of 9 per cent a year, it is understood that no decision has been reached as to the permanent rate of dividend on the stock. At the 9 per cent rate the company's dividend requirements are \$1,620,000, or precisely what they were when 12 per cent was paid on the old stock. When on July 1 the stock was increased from \$13,500,000 to \$18,000,000 the proceeds of the new issue were used to retire \$4,610,500 of 4½ per cent bonds which matured on that date. The company has this saving of interest, and can easily pay 10 per cent on its stock unless it has decided to accumulate a large cash surplus.

NEW ORLEANS, LA.—The trustees' pool of the New Orleans City Railway stockholders have asked for an extension for ninety days. E. C. Jones & Company, it is understood, have offered to buy the stock subject to examination.

STOUGHTON, MASS.—William Odlin, of Andover, has been appointed receiver of the Stoughton & Randolph Street Railway Company by Judge Colt in the United States Circuit Court. The company, which was organized in 1898, operates a line between Randolph and Stoughton. The indebtedness amounts to \$150,000.

DETROIT, MICH.—It is stated that the Everett-Moore syndicate is negotiating for the purchase of the Sandwich, Windsor & Amherstburg Electric Railway, which runs along the Canadian side of the Detroit River for 15 miles, and is valued at between \$350,000 and \$400,000.

MINNEAPOLIS, MINN.—The Twin City Rapid Transit Company has declared the regular quarterly dividend of 1¾ per cent on the preferred stock, payable on Oct. 1.

NEW YORK, N. Y.—The Third Avenue Railroad Company reports earnings as follows:

	1901	1900
Quarter ending June 30		
Gross receipts	\$603,382	\$584,086
Operating expenses	163,373	341,856
Earnings from operation	\$440,009	\$242,230
Receipts from other sources	377,392	2,548
Gross income	\$817,401	\$244,778
Interest and taxes	440,822	333,149
Net earnings	\$376,579	Def. \$88,371
Year ended June 30		
Gross receipts	\$2,242,635	\$2,123,834
Operating expenses	1,095,560	1,315,444
Earnings from operation	\$1,147,075	\$808,390
Receipts from other sources	413,090	31,626
Gross income	\$1,560,165	\$840,016
Interest and taxes	1,763,294	712,325
Deficit	\$203,129	Sur. \$127,691

The general balance sheet as of June 30 shows as follows: Assets—Cost of road and equipment, \$24,958,096; stocks and bonds, \$10,455,290; new construction on lines, to be distributed, \$5,527,223; supplies on hand, \$99,250; open accounts (due by companies, etc.), \$10,369,415; cash on hand, \$783,332; Metropolitan Street Railway, lessee, Third Avenue Railroad Company, lessor, construction account, \$7,116,167; open accounts, \$234,423; profit and loss (deficiency), \$650,854; total, \$57,194,054. Liabilities—Capital stock, \$15,995,500; funded debt, \$40,000,000; interest on funded debt, accrued, \$825,000; open accounts, \$373,254; total, \$57,194,054.

WATERFORD, N. Y.—A special meeting of the stockholders of the Hudson Valley Railway Company will be held Sept. 14 for the purpose of voting on a proposal to increase the capital stock of the company from \$2,600,000 to \$3,000,000.

BROOKLYN, N. Y.—The Brooklyn Rapid Transit Company reports earnings as follows:

	1901	1900
July		
Gross receipts	\$1,203,761	\$1,145,188
Operating expenses, including taxes.....	758,495	670,648
Net earnings	\$445,266	\$474,540

CLEVELAND, OHIO.—An important step was taken on Aug. 29 in the amalgamation of the Everett-Moore properties into the Lake Shore Electric Railway. The directors of the Lorain & Cleveland, Sandusky & Interurban, Sandusky, Norwalk & Southern and the Toledo, Fremont & Norwalk companies met on that date and unanimously voted to consolidate. Formal notices to the stockholders to meet Sept. 19 to vote on the proposition were authorized, and temporary officers of the consolidated company were elected as follows: Barney Mahler, president; J. B. Hanna and W. H. Price, vice-presidents; F. W. Coen, secretary; C. H. Stewart, treasurer; B. Mahler, J. R. Hanna, H. A. Everett, E. W. Moore, C. H. Stewart, J. B. Hoge, W. H. Gawne, H. W. Price and J. H. Harding, directors. The consolidation will give a total mileage of about 159 miles. The total capitalization of the company will be \$6,000,000, of which \$1,500,000 will be preferred stock and \$4,500,000 common. This will be apportioned among the several companies as follows: Lorain & Cleveland, \$1,000,000, 5 per cent preferred stock and \$1,000,000 common; Sandusky & Interurban, \$350,000 preferred and \$1,000,000 common; Sandusky, Norwalk & Southern, \$70,000 preferred and \$200,000 common; Toledo, Fremont & Norwalk, \$2,000,000 common stock. The balance will remain in the treasury for the present.

TOLEDO, OHIO.—The stockholders of the Toledo, Columbus, Springfield & Cincinnati Railway Company have voted to increase the capital stock of the company from \$100,000 to \$5,000,000, and also authorized an issue of \$2,500,000 worth of bonds. An engineer has started on the Toledo end out of Lima and a number of right-of-way men are now at work. C. H. Wells, of Milwaukee, has the contract for a construction of part of the road. The stockholders of the Lima, Lewiston & Bellefontaine Railroad have confirmed the sale of the road to the Toledo, Columbus, Springfield & Cincinnati Railroad.

CLEVELAND, OHIO.—The receipts of the Cleveland, Elyria & Western Railway for the month of August were \$27,250,000, as compared with \$17,750 for the same month in 1900. Nine miles of road have been placed in operation since that time. The receipts for the last week in August were \$5,958.52, compared with \$4,159.23 for the same week last year.

CLEVELAND, OHIO.—Below is given a comparative statement of the earnings of the properties of the Everett-Moore syndicate:

August	1901	1900
Cleveland Electric Railway	\$205,813	\$181,009
Detroit United Railways	281,849	256,081
Rapid Railway system	41,221	37,879
Northern Ohio Traction Company.....	56,451	48,608
Cleveland, Painesville & Eastern	19,409	16,838
Toledo Railway & Light Company	94,848	85,450

PHILADELPHIA, PA.—Reports of deals involving the Widener-Elkins-Dolan interests in Philadelphia, Pittsburgh and Wilmington crystallized Sept. 5 in the semi-official announcement that a satisfactory offer had been received for the electric railways of Pittsburgh controlled by the Philadelphia syndicate; that the United Gas Improvement Company had practically secured the valuable plant and franchise of the Wilmington Coal Gas Company, and that the Union Traction Company would not figure in the rumored consolidation of the Philadelphia Electric, Kensington Electric and American Railways companies and the Electric Company of America, under the name of the Pennsylvania Light, Power & Transit Company. That the Union Traction Company will not be merged into the projected light, power and transit company seems certain. Vice-President George D. Widener made the following statement: "The affairs of the Union Traction Company are in excellent shape, financially and physically. Local political conditions can not affect the property or restrict its earning capacity. The company will not be leased, sold, reorganized or merged. We can not prevent persons from submitting all sorts of propositions any more than we can prevent the publication of the many absurd articles that have been printed concerning the property. No person actively identified with the management of the Union Traction Company is in any way identified with the proposed Pennsylvania Light, Power & Transit Company, of which concern I know absolutely nothing."

DOYLESTOWN, PA.—The stockholders of the Quakertown Traction Company have authorized an increase of from \$150,000 to \$300,000 in the capital stock of the company, and of a like amount in the bonds of the company. Within a few days the transfer of a majority of the stock will be made to the people interested in the Philadelphia & Lehigh Valley Traction Company, providing for a link in the latter's route from Chestnut Hill to Allentown. A new company will be chartered to build a line from Perkasio to Doylestown, the incorporators including C. Taylor Leland and William H. Shelmerdine, of Philadelphia; William H. Sponsler, of Pittsburgh; Edward Sponsler, of Harrisburg; Samuel H. Kramer, of Perkasio.

QUAKERTOWN, PA.—The stockholders of the Quakertown Traction Company have authorized an increase in the capital stock of the company from \$150,000 to \$300,000, and an increase in the bonded indebtedness from \$150,000 to \$300,000.

Tables of Recent Traction Earnings

NAME	LATEST GROSS EARNINGS			LATEST NET EARNINGS	
	Week or Month	1901	1900	1901	1900
American Rys. Co.....	July	\$89,657	\$83,718	\$.....	\$.....
Binghamton Ry. Co....	July	22,480	19,875	12,328	11,351
Brooklyn R. T. Co.....	July	1,203,761	1,145,189	445,266	474,541
Chicago & Mil.El.Ry.Co.	July	23,459	18,378	15,770	13,232
Cincinnati, Newport & Covington Ry. Co....	June	72,201	73,965	42,452	42,700
City Elec. (Rome, Ga.)..	July	3,873	.....	e 260	.....
Cleveland El. Ry. Co....	July	210,329	181,856	101,210	87,977
Cleveland, Painesville & Eastern.....	July	19,143	16,605	11,393	11,057
Consolidated Tr. (Pittsburgh)	July	304,388	282,986	169,299	160,113
Denver City Tramway...	July	143,223	119,910	64,320	59,026
Detroit United Ry.....	July	291,388	231,247	148,427	110,615
Duluth Superior Tr.....	July	45,983	.....	23,866	.....
Herkimer, Mohawk, Ilion & Frankfort Ry. Co..	May	4,508	4,146	1,935	908
International Tr.....	July	528,936	250,999	287,601	127,152
London St. Ry.....	July	15,303	11,159	6,531	3,818
Montreal Street Ry.....	June	180,371	168,244	.....	.....
Northern Ohio Traction..	July	66,898	54,468	33,414	21,587
Olean St. Ry. Co.....	June	4,822	5,060	2,125	2,195
Richmond Traction Co..	July	23,543	20,979	8,569	11,434
Rochester Ry. Co.....	May	80,401	75,749	32,900	26,011
Scranton Ry. Co.....	July	64,195	59,196	32,299	27,794
Southern Ohio Trac. Co.	Aug.	39,915	30,201	21,465	14,996
Syracuse R. T. Ry. Co...	June	56,952	48,211	26,010	21,305
Twin City Rapid Transit.	July	290,649	249,842	155,299	129,331
United Tr. Co. (Albany).	July	134,370	126,121	54,732	47,466
United Tr.Co.(Pittsburgh)	Mar.	157,792	148,009	70,741	65,511

NAME	Period Ending	GROSS FROM JULY 1 TO LATEST DATE		NET FROM JULY 1 TO LATEST DATE	
		1901	1900	1901	1900
American Rys. Co..	June 30	\$844,297	\$778,042	\$.....	\$.....
Binghamton St. Ry	June 30	190,910	176,210	86,835	79,108
Brooklyn R. T. Co.	June 30	1,201,198	1,175,195	413,953	437,583
Chicago & Milwaukee El. Ry. Co..	a July 31	88,920	71,565	46,829	40,828
Cincinnati, Newport & Covington Ry. Co.....	a June 30	384,638	369,938	223,546	220,145
City El.(Rome,Ga.)..	a July 31	24,138	.....	e 2,970	.....
Cleveland El.Ry.Co	a July 31	1,264,620	1,147,653	565,227	511,572
Cleveland, Painesville & Eastern ..	a July 31	84,592	74,854	40,614	35,715
Denver City Tramway	a July 31	838,502	722,301	378,268	304,849
Detroit United Ry..	a July 31	1,554,934	1,381,976	717,462	603,864
Herkimer, Mohawk, Ilion & Frankfort Ry. Co.....	May 31	48,895	47,026	20,247	21,063
International Tr..	May 31	2,698,332	2,331,632	1,303,216	1,085,748
London St. Ry. ..	a July 31	75,416	60,629	26,698	13,475
Milwaukee El. Ry. & Lt. Co.....	d June 30	918,104	830,674	426,071	389,333
Montreal Street Ry.	* June 30	1,349,214	1,256,116	.....	.....
Olean St. Ry. Co....	June 30	52,018	48,700	25,790	22,529
Richmond Trac.Co	c July 31	175,594	164,197	66,948	77,064
Rochester Ry.....	May 31	898,156	835,543	337,248	328,021
Scranton Ry. Co...	July 31	374,723	345,044	175,982	144,013
Seattle Elec. Co...	d May 31	514,386	412,705	193,192	97,253
Southern Ohio Tr..	a Aug. 31	218,736	188,056	96,257	89,168
Syracuse R. T. Ry.Co	June 30	621,299	552,403	280,469	233,268
Twin City R. T. Co.	a July 31	1,748,182	1,575,641	924,502	807,433
United Tr. Co. (Albany).....	June 30	1,340,356	.....	186,131	.....
United Tr.Co.(Pittsburgh).....	Mar. 31	1,434,145	1,321,158	634,423	604,154

* Nine months. † Caused by strike of employees. a From Jan. 1. b Three months. c Ten months. d Five months. e Excluding taxes.

NEWS OF THE WEEK

CONSTRUCTION NOTES

LITTLE ROCK, ARK.—It is stated that Mrs. J. R. Miller has made a new proposition to the Aldermanic street railway franchise committee. She proposes to give the city a cash bonus of \$100,000 for the charter and to duplicate in all its terms the franchise which has been asked by the Little Rock Traction & Electric Company. This could not, of course, take effect until after the expiration of the present franchise, which has seven years to run.

CLYDE, COL.—A company has been organized to build an electric railway from Clyde, 28 miles from Colorado Springs, to Pike's Peak, a distance of 11 miles. The Mantiou & Pikes Peak Cog Road has for ten years monopolized the extensive tourist travel to the summit of the mountain.

TAMPA, FLA.—Hon. John P. Martin, of Xenia, Ohio, who is identified with several electric railway projects in that State, has secured franchises for a system of electric railways touching Tampa and St. Petersburg and skirting Tampa Bay Coast, in Florida. The construction of the roads will involve an expenditure of \$25,000,000. With A. V. Abbott, of Chicago, engineer for the project, Mr. Martin has just been making a survey of the projected lines.

CHICAGO, ILL.—The Metropolitan West Side Elevated Railroad will shortly use the tracks of the Chicago, Burlington & Quincy Railroad between Berwyn and Chicago, the Chicago, Burlington & Quincy discontinuing its suburban service between these two points. It is thought to be only a matter of time before all of the elevated railway companies will have connections with steam railroads interested in suburban traffic.

BELLEVILLE, ILL.—The Belleville Traction Company has received an electric locomotive, which it is proposed to use for handling freight on the old Day line.

EDWARDSVILLE, ILL.—The first car of the Belleville Traction Company's electric railway between Edwardsville and Collinsville has been operated. Connections have now been completed to the crossing of the Clover Leaf Railroad tracks at the city limits, and work on the line in Edwardsville will be commenced at once. The cars will be running to St. Louis, via Collinsville, by Sept. 15.

MUNCIE, IND.—The company that is building an electric railway from Muncie to New Castle has petitioned this city for an independent route into the city, asking not to be compelled to use the tracks of the Union Traction Company, as the Council now requires.

KOKOMO, IND.—The company which proposes to build an electric railway from Indianapolis to Peru has completed its organization. The road will parallel the Lake Erie & Western Railroad from Peru to Noblesville, then go to Westfield and parallel the Monon from there to Indianapolis. The company will be incorporated at once.

AURORA, IND.—The Cincinnati, Laurenceburg & Aurora Electric Railway Company has obtained all the rights of way for the extension of its line from Aurora to Vevay via Rising Sun, with the exception of crossing Wilson Creek.

LA PORTE, IND.—The La Porte County Commissioners have granted to the Chicago, Valparaiso & Michigan City Railway Company, which intends to connect Chicago, Valparaiso, La Porte, Hobart, Crown Point, Hammond, Westville, Michigan City and Hesston with an electric line, a franchise to construct and operate a road on the highways of that county.

INDIANAPOLIS, IND.—The Indianapolis & Martinsville Rapid Transit Company has been granted a fifty-year franchise in Mooresville. Work on the power house began Sept. 1. It is thought cars will be running by the first of the year.

INDIANAPOLIS, IND.—The Indianapolis, Danville & Western Traction Company has secured the entire right of way for its proposed road to connect Indianapolis and Danville. The company has recently been granted a fifty-year franchise in Danville, and it is probable that the power house of the company will be located at that place. David Cohen, of Cincinnati, is president of the company, and W. T. Williams, of Cincinnati, secretary of the company.

WABASH, IND.—The Common Council has granted city franchises to the Fort Wayne & Southwestern Traction Company and the Wabash & Rochester Railway Company. Each franchise is for fifty years, and the provisions concerning the maintenance of the streets and operation of cars are ironclad.

AUBURN, IND.—The City Council has granted the Garrett, Auburn & Northern Electric Railway Company a franchise in every way acceptable to the company. The company now has a franchise and right of way from Auburn to Hamilton via Garrett.

PORTLAND, IND.—The City Council has granted the Eastern & Indiana Traction Company a franchise to use the streets of the city. Peter Schwab, of Hamilton, Ohio, is president of the company. The line will connect Portland and Richmond.

DES MOINES, IA.—The Des Moines City Railway Company is considering plans for constructing an elevated line into the State Fair Grounds. The present Fair Ground line extends to the southwest entrance to the Fair Grounds, and is three-quarters of a mile from the central part of the grounds. The plans under consideration provide for elevating the line over the fences, barns, etc., and extending it to the main entrance of the Exposition Building, where a loop will be made and the second or return track would be constructed parallel with the line into the grounds. It is also suggested that the elevated line should run in a great loop around the grounds, so as to land the people at most any point within the main portion of the grounds. The street railway officials are anxious to make these improvements, and have

talked the matter over with the State Fair Board. It is understood that there is one hitch in the proceedings, however, which may prevent the construction of the line, and that is over the matter of a franchise. The company wants a perpetual franchise, while the State Fair officials are only in favor of granting the said franchise for a limited period. It is thought that the matter can be compromised.

THIBODEAUX, LA.—The franchises have been secured for the proposed electric railway to connect New Orleans, Thibodeaux, Lockport, Napoleonville, Donaldsville and other towns, but the company has not yet been organized to build the line. Plans are being developed, and it is expected that conditions will warrant the placing of contracts by November or December. About 130 miles of line will be constructed. L. H. Lancaster and C. P. Young are interested in the project.

BIDDEFORD, MAINE.—The capital stock of the Biddeford & Saco Railroad Company is to be increased to provide funds for paying for improvements, including an extension of the power house. The stockholders have vested the directors with power to provide for and negotiate the increase.

ROCKLAND, MAINE.—The Rockland, Thomaston & Camden Street Railway Company has purchased what is known as Oaklands, a wooded area of some 75 acres, situated along its line in Rockport. There is about ½ mile of shore frontage, and it is the purpose of the company to convert the property into a fine pleasure resort, after the plan of the park at Merrymeeting.

LOWELL, MASS.—The Boston & Northern Street Railway Company has applied to the Council for franchises for the construction of electric railway lines in parts of the city now without connections, and for a crosstown line.

GRAND RAPIDS, MICH.—The Grand Rapids, Holland & Lake Michigan Railway Company is erecting a large addition to its car houses at Holland, and, in connection with the car houses, is also building a machine shop.

LANSING, MICH.—The Lansing Electric Street Railway Company has applied to the Common Council for an amendment to its franchise permitting it to carry freight during certain hours of the night.

GRAND RAPIDS, MICH.—The work of laying the single track of the Grand Rapids, Holland & Lake Michigan Railway from Grand Rapids to Holland has been completed and a trial trip has been made over the line. The road has not yet been ballasted the entire distance, but the car was run the entire length, and a large force of men is at work finishing the road, which it is expected will be completed and regular cars run on or before Oct. 15. The double track will then be laid as soon as possible. It is just ten months and one week since the ground was broken, and the company is quite jubilant over the result of its work. The road runs through a prosperous farming country, besides connecting Grand Rapids with the popular resorts at Macatawa Park and Ottawa Beach. It will undoubtedly prove a popular and profitable line. The Grand Rapids, Holland & Lake Michigan and the Grand Rapids, Grand Haven & Muskegon Railways will arrange for the construction of a joint station in the downtown district of the city of Grand Rapids. The exact location of this station has not yet been determined.

FARMINGTON, MO.—A meeting of the promoters of the St. Francois County Electric Railroad was held here on Sept. 3, and arrangements for beginning work on the proposed line were perfected. The line will be finally located in about three weeks; plans and specifications will be made and contracts for grading will be awarded. The contract for the complete construction and equipment of the road will be awarded shortly thereafter. About 14 miles of line will be constructed.

STEVENSVILLE, MONT.—George T. Baggs, of Stevensville, has applied to the Council for a twenty-year franchise for the construction of an electric railway in Stevensville. If the franchise is granted work will be begun within one year, and the road will be completed within two years. On securing the franchise from the town, Mr. Baggs will ask the County Commissioners for a right of way. It is possible that Mr. Baggs will also conduct a lighting enterprise in conjunction with the proposed railway.

PRINCETON, N. J.—The Princeton Street Railway Company has been incorporated, with a preliminary capital stock of \$1,000. The purpose of the company is to construct an electric railway at Princeton. The incorporators of the company are: Albert S. Leigh, Albert D. Cook, Joseph S. Hoff, Myron E. La Vake, T. Coleman Du Pont, John B. Hoefger and Wilbur F. Sadler, Jr.

TRENTON, N. J.—It is expected that the new electric railway now being built by the Johnson interests from Trenton to Princeton and Lawrenceville will be ready for operation by the latter part of this month. The track laying is now completed from Sugam Avenue, the line's Trenton terminus, to Princeton, and the overhead wires are now being strung. The construction of the power house is progressing rapidly, and the force employed in constructing it has recently been increased.

CAMDEN, N. J.—The Camden & Trenton Railway Company has filed a map of its proposed route through this city and between Trenton and Camden. The company is laying tracks east from Camden as fast as the county builds the road, and passengers will soon be carried direct from Trenton into the new terminal at Camden. The routes now covered by maps filed by the Trenton-Camden Company cover the entire city.

ATLANTIC CITY, N. J.—The Chelsea Heights Traction Company has been formally incorporated, with a capital stock of \$25,000. As previously stated, the purpose of the company is to build an electric railway from Atlantic City to Pleasantville, a distance of 7 or 8 miles. The total number of miles of track to be laid is about 12, as there will be numerous short-branch lines. The officers of the company are: Kennedy Crossan, president; E. Clarence Crossan, secretary and treasurer; Joseph Thompson, solicitor.

JAMAICA, N. Y.—It is reported that the Long Island Electric Railway is to be doubled tracked. The lines of the company extend from Brooklyn and Jamaica to Far Rockaway, and they play an important part in transporting as far as Far Rockaway a vast throng of summer pleasure seekers, who find at Rockaway Beach a pleasure resort filling every want. The residents of New York proper who desire quiet, while still not wishing to be removed to far from the city proper, find in Far Rockaway and adjoining towns a haven which is all that could be desired.

BROOKLYN, N. Y.—The Brooklyn Rapid Transit Company last week placed orders for one hundred new cars. The cars are of the new type recently described in these pages, and will have individual seats made by the Haywood Brothers & Wakefield Company, Wakefield, Mass. The windows in the new cars are large and the sills low, thus making the cars practically convertible. The order for the cars was divided between the Laclede Car Company, St. Louis, Mo., and the John Stephenson Company, Elizabeth, each company receiving an order for fifty cars. The contract for the trucks, one hundred sets, was awarded to the J. G. Brill Company, of Philadelphia.

UTICA, N. Y.—The Utica & Mohawk Valley Railroad Company has had plans prepared for the construction of a large car house to be used in storing cars on the Little Falls-Oneida line. The building will be 250 ft. by 70 ft., with a capacity of fifty cars. It will be a brick structure.

GLOVERSVILLE, N. Y.—The Mountain Lake Electric Railroad has been completed and placed in operation. The road extends from Gloversville to Mountain Lake, a distance of 5½ miles. The officers of the company are: Samuel Elmer, president; James G. Haggart, vice-president; William E. Keith, secretary, attorney and treasurer; Alfred J. Keith, superintendent.

CANANDAIGUA, N. Y.—The officers of the Ontario Light & Traction Company, which was incorporated Aug. 29 to construct an electric railway from Canandaigua through Shortsville, Manchester, Palmyra, Marion and Williamson to Pultneyville, on Lake Ontario, are: John Raines, of Canandaigua, president; Barnet H. Davis, of Palmyra, first vice-president; Ledyard S. Culyer, of Pultneyville, second vice-president; J. L. Burnett, of Canandaigua, secretary; J. H. Pardee, of Canandaigua, president and general manager. The officers, together with William L. Parkhurst and Walter H. Knapp, of Canandaigua; Hon. F. W. Griffith, of Palmyra, and J. M. Stoddard, of Shortsville, constitute the board of directors.

BROOKLYN, N. Y.—The Brooklyn Rapid Transit Company will this fall lay new rails across the Brooklyn Bridge, both on the suspended structure and at the approaches.

BUFFALO, N. Y.—Preliminary surveys are being made for the Buffalo Valley Railroad, and it is said that the detail plans for the construction of the road are being perfected. The road will extend from Buffalo to Java, the completed line being 65 miles long. The country through which the new line is proposed to be run is one of the most fertile in Western New York. The produce and creamery stuff now goes East and South, but, with the construction of the line to Buffalo, a nearer and better market will be had, which will undoubtedly cause greater activity among the people of that section. George A. Ricker, of Buffalo, is engineer for the company.

BATAVIA, N. Y.—The Council has decided to grant the application of the Buffalo & Williamsville Electric Railway Company for the right to extend its lines through this place. A clause providing that another railway desiring admission to Batavia shall have the right to operate over the lines of the Buffalo & Williamsville Electric Railway will be embodied in the ordinance.

NORTHPORT, N. Y.—It is reported here that the plans of the Northport Traction Company, in which officials of the Long Island Railroad are interested, and which will, in fact, really serve as a feeder for that company's lines, have been changed, and that the road will be constructed this fall. The original plan of the company, as previously announced, was to perfect plans this winter and construct the line next spring, having it completed in time to accommodate the summer visitors. It is said that arrangements have been made with the Northport Electric Light Company to supply power for operating the road.

NEW YORK, N. Y.—The Metropolitan Express Company, which operates the express service over the lines of the Metropolitan Street Railway Company, described in these pages a few weeks ago, is in the market for twenty-five express cars. They will operate over both overhead and underground trolley lines.

DURHAM, N. C.—It is now reported that the Durham Traction Company has awarded the contract for the construction of its lines, and that construction work will be begun at an early date. The name of the contractor is not given. About 8 miles of line will be constructed within the city limits, and a park is to be laid out a few miles from the city.

TOLEDO, OHIO.—The Detwiler-Griffin syndicate, of Toledo, which is building a number of electric railways in Northwestern Ohio, has arranged for the financing of the Toledo & Indiana Railway. Construction work on the road is being pushed rapidly.

TOLEDO, OHIO.—The directors of the Toledo & Bryan Air Line Electric Railway Company will meet this week and authorize the placing of contracts for the construction of the road. The officials claim the road will be built, despite the opposition of the Toledo & Indiana Railway, which is building over the same route. Thirty-two right-of-way deeds have been filed for record.

TOLEDO, OHIO.—O. F. McCormick, one of the promoters of the Toledo, Columbus, Springfield & Cincinnati Railway Company, states that the company is meeting with surprising success in securing private right of way. About 75 per cent of the right of way from Lima to Toledo is under contract, and franchises have been granted in all the towns in this portion of the route. Work of construction is being pushed between Lima and Westminster. It is claimed the Cincinnati, Hamilton & Dayton Railway (steam) is backing the Detwiler syndicate, which is promoting a line which will parallel the Toledo, Columbus, Springfield & Cincinnati Railway.

SALEM, OHIO.—It is stated that H. G. Folts, of Salem, who some time ago secured franchises for a road from Salem to Lisbon, Leetonia, Columbiana and East Liverpool, has joined interests with a Cleveland syndicate which is represented by C. E. Jones, and which has been working on the project for some time. The combination indicates that such a road will be built.

CIRCLEVILLE, OHIO.—The Scioto Valley Traction Company, which is an Everett-Moore project, is having difficulty in securing right of way between Circleville and Chillicothe, so that this part of the line may be abandoned for the time being. Some time ago the company bought up the franchises and rights of way of the Columbus & Southern Railway, a rival project, but it is now found that few of them are of any value, and a number of property owners are now holding out against the building of the road.

ZANESVILLE, OHIO.—Col. D. Boone, promoter of the Black Diamond Traction Company, incorporated some time ago in this city, claims his company will build a system of roads in this State which, in point of mileage, will be second to none. Briefly, he proposes to make several of the larger towns in this section of the State pivots for a system of lines which will connect all the smaller surrounding towns. The pivot towns are to be Zanesville, Caldwell, Barnesville and Athens, and the lines thus far marked out on the map are as follows: From Zanesville, lines are to radiate to Coshocton, Newark, New Lexington, Cambridge and McConnellsville. From Caldwell, lines are to radiate to Athens, Philo, Barnesville and Piedmont. From Barnesville, to Woodsfield, Caldwell, Piedmont, Millersville and St. Clairsville; and from Athens to Pomeroy, McArthur and Logan. In a word, there will be about 1000 miles of traction lines, according to Col. Boone. Figured at \$7,000 per mile for track and equipment, exclusive of power houses, Col. Boone's project will cost about \$7,000,000.

CLEVELAND, OHIO.—The daily papers in several of the larger cities in this section continue to publish ridiculous tales regarding alleged purchases of traction lines by the Everett-Moore syndicate. During the past week it has been reported that the syndicate has absorbed the Little Miami Traction Company and Western Ohio Railway; that it is building a line from Toledo to Fort Wayne, Ind., and that it is backing the Central Indiana Traction Company, which is building an electric railway through Indiana, and which it was stated would connect with the last-mentioned line at Fort Wayne. We are authoritatively informed that none of the above stories have any foundation. The Little Miami Traction and the Western Ohio roads are being built by the Pomeroy-Mandelbaum syndicate, which is entirely separate and distinct from the Everett-Moore syndicate. According to Mr. Everett, the syndicate has no interests in roads west of Toledo, and has no connection with the Central Indiana Traction Company. It has been reported that the Toledo, Napoleon & Defiance Railway, a road projected from Toledo to Defiance, has been turned over to Cleveland capitalists, but Mr. Everett states that he knows nothing concerning the matter. A short time ago Mr. Moore had a conference with the Detwiler syndicate relative to the purchase of the Toledo & Maumee Valley Railway, a loop line running out of Toledo on both sides of the Maumee River to Perrysburg, but thus far nothing had come of the matter.

NORWALK, OHIO.—The Council has granted a franchise into the city to the Norwalk, Ashland & Southern Railway.

HARRISBURG, PA.—The Common Council has passed finally the ordinance granting the Harrisburg Traction Company right to use the new Market Street subway, now under construction, upon payment of \$5,000 to the city. The company will rearrange its Hill line and lay double track through the subway.

MARIETTA, OHIO.—The Washington County Traction Company has been incorporated by local people to build an electric railway from Marietta to Newport, a distance of 15 miles. Work on the line will be started at once. The company was incorporated with a capital stock of \$250,000.

CLEVELAND, OHIO.—The Cuyahoga County Commissioners have finally granted a twenty-five-year franchise to Daniel Gindelsperger, Fred. Green and others for the construction of a second electric railway from Cleveland to Akron by way of Brecksville and Richfield. The grantees have posted a cash forfeit of \$2,000 with the County Treasurer to insure the building of a portion of the road by July 1, 1902. T. L. Childs, a competitor for the same franchise, claims he will build a road on a private right of way.

CLEVELAND, OHIO.—The Northern Ohio Traction Company has placed a contract with C. H. Guard, of Monroe, Mich., for the construction of 10 miles of the Canton, Massillon & Akron Railway, the southern extension of the Northern Ohio Traction line. This line will be a part of the proposed direct line from Cleveland to Wheeling, W. Va. Work has already been started.

TOLEDO, OHIO.—The village of Custar has granted a perpetual franchise through this town to the Toledo, Columbus, Springfield & Cincinnati Railway. The Detwiler syndicate, which proposes to build a similar line, offered \$5,000 for the franchise, but failed to secure it. The Toledo, Columbus, Springfield & Cincinnati Railway Company is meeting with remarkable success in securing franchises.

LIMA, OHIO.—Stockholders of the Lima, Lewiston & Bellefontaine Railway Company have agreed to the terms of a plan for merging the property into the newly organized Toledo, Columbus, Springfield & Cincinnati Railway Company.

AKRON, OHIO.—The Northern Ohio Traction Company has applied to the Akron Council for a franchise to extend one of its city lines to the Summit County Fair Grounds.

TOLEDO, OHIO.—The development of the interurban business at Toledo will soon necessitate the building of another large bridge over the Maumee River. At present the one existing bridge is scarcely able to take care of the traffic, and four or five new lines are seeking entrance to the city from the east.