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STREET RAILWAY THE JOURNAL.

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The Directory of Street Rallways. Readers will confer a favor by sending us promptly changes in their own road, no matter how slight, and also those in other roads that come under their observation. We shall also be much obliged for having

our attention called to any errors that may be noticed in the directory. Contributions. Those interested in street railways will greatly assist us in making the Journal of value if they will send us such items of news as come under their observation, results of tests, questions of practical interest to street railway men, contributions giving their ideas and the results of their experience in practical matters pertaining to the ser-vice, and in short everything you would like yourself to read if contributed by others.

THE STREET RAILWAY JOURNAL, 113 Liberty St., New York.

NEW ADVERTISEMENTS.

JAMES RAYMOND is in readiness to take contracts for building steam and street railroads, bridges, etc.

S. D. Kimbark advertises a specialty of iron, steel and nails, railway equipment and supplies.

THE CHICAGO LUBRICANT MFG, Co. call attention to the merits of their lubricant. JOSEPHINE D. SMITH shows some new designs of lamps and head lights for street cars.

TOM L. JOHNSON gives a cut of his new No. 3 fare box. THE STREET RAILWAY SUPPLY Co., of Cleveland, make a change in their adver-tisement.

THE BROOKLYN RAILWAY SUPPLY CO. have a new advertisement giving several testimonials in regard to their sweepers.

THE CAB TRAOK FRICTION APPLIANCE
CO. change their advertisement of the "Reliable Sand Box."

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NEXT ANNUAL MEETING.

The next regular meeting of the Association will be held in Philadelphia, Pa., the third Wednesday in October, (the 19th), 1887.

Communications concerning Membership, Reports, etc., should be addressed to the Secretary. Communications on subjects for discussion should be sent to the committees.

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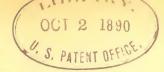
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Vol. III.

NEW YORK & CHICAGO, AUGUST, 1887.

No. 10.

E. P. HARRIS, Editor and Manager. GEORGE L. FOWLER, Mechanical Editor.

We notice that double-deck cars are used by the cable road in St. Louis. We believe they would prove popular in various places. Why not?

Experiments are in progress with the storage battery for propelling street cars in Jersey City, New York, Philadelphia and Lowell. The three first already report satisfactory results.

The article of Mr. Bly concerning the liabilities of street railway companies for injuries to children, to be found in this issue, is much less dry than the most of us find the average reading matter on legal subjects.

President William Bracken, of the Julien Electric Co., states that his company will guarantee that their cars will not cost over \$4.10 per day, running 90 miles in that time, and carrying all the passengers that can be crowded into them.

With the shortest hours and most humane treatment possible in large cities, the life of the street railway horse is exceedingly short. The best of care cannot prevent the occurrence of times when the faithful animal is subjected to treatment so cruel that the only reason it is lightly considered is because it is so common.

President Richards, of the Metropolitan road of Boston, sets forth in a letter in the Boston Herald his reasons for exchanging his shares in the Metropolitan road for 8 per cent preferred stock in the West End road, which, at 25 per cent premium allowed for Metropolitan, makes the guaranteed dividend equal to 10 per cent on Metropolitan stock. He speaks in glowing terms of the huge consolidation.

The "land question," so far as cities are concerned, is likely to be solved much more quickly by the inventors and developers of street railway motors than by Henry George and Dr. McGlynn. If you want a house and lawn near your place of business, the street railway can practically bring it to you, with all its snrroundings. Distance is not measured in miles, but in minutes.

The best interests of the street railway business, as well as of cities and towns in which they are located, would be served by a little more care than is always exercised in the granting of franchises. The success that has so uniformly followed the establishment of street railways, intelligently projected and managed, has attracted to the business numerous adventurers without capital or legitimate backing. The reasonable desire for a street railway in small towns sometimes leads to hasty action which so far as the future welfare of the place is concerned defeats the very object sought to be gained. The granting of a franchise should certainly be conditioned upon some sort of guarantee of good

The Bentley-Knight electric road now building through Fulton street, New York, to run from river to river through the busiest part of the city, will be in some respects the most important test of electric power for street railways yet made. It will be subjected to all the trying conditions of the busiest streets in American cities. Its completion will be looked for with interest by those controlling millions of dollars' worth of street railway property, and with most perfect confidence by those who have given most careful study to electricity. The immense traffic on the streets through which it passes so retards construction that it is difficult to say when the road will be in running order.

The horse, obedient and uncomplaining, has served us well and faithfully on the street railway. But flesh and blood are not iron. The horse's strength and endurance are not equal to the requirements of the modern street railway in large cities, even if the desired speed could be maintained. During the hottest weather of June and July, the deaths among the horses in New York city alone have averaged forty a day, probably over 1,500 horses having been lost in these two months in this city. The losses in horse flesh of the Belt Line alone will probably aggregate \$40,000 since the burning of their barns in May. While this may be accounted for in part by the fact that their 700 horses were mostly green and were put onto a hard route, it is not strange that the Belt Line people are seriously considering electricity.

An experiment will be made in a few days which may have a bearing upon the electric street car question. experiment is designed to test the merits of what is called the "foot principle" as an auxiliary to driving wheels where the latter are caused to slip on a slippery track, or where their traction is insufficient for heavy grades. The Pole motor has two mechanical feet which are placed on the ground under 500 lbs. pressure, and push the car forward very much like horses' feet. It has been demonstrated that where the driving wheels were locked they could be made to slide by these feet, and it is claimed that a grade of 3-10 in. to the foot can be ascended without any difficulty, regardless of the condition of the track.

In another column we publish an account of the street railway management in Paris, in which some of the causes, if not the sole cause, of the failure of the companies are set forth. There has been a tendency toward this same kind of regulation and supervision in this country, and, though there may be no great danger of its being carried to the same lengths as in Paris, it would be well for our meddlers to remember that here the street car is a necessary of life for every class in the community; that they will not be run unless there is a chance of doing so at a profit; that those who are engaged in the business know more about it than the public or the politicians; and that hampering the owners will result in nobody's profit and to the possible injury of many.

We give elsewhere a brief description of an electric railway that is being exploited in Europe. It is interesting to note how the lack of a demand is always accompanied by a lack of development. While the device in question may work, it it is readily seen that its introduction, in this country at least, would be an absolute impossibility, on account of the exposed position of the conductors. Here there has been a loud and clamorous call for an efficient electric motor, and as a result we have a number of roads already equipped, running and making money; the inventors having been guided by the requirements that have been imposed upon them by the street railway officials. Abroad a different state of affairs exists, and the work of development has been done by electricians who have received no suggestions from men who are thoroughly familiar with street railway requirements, simply because these men do not yet feel the necessity of the new form of motor.

The sermon preached by Labor Commissioner Peck in his report to the State Legislature, preceding as it does his text, reminds one of the fellow who, passing along the road, had his attention attracted by a bull on the other side of the fence. The thought occurred to him that it would be high sport to take him by the horns and hold his nose to the ground and see him squirm. The idea so amused the pedestrian that his laughter was intense, in fact he lay down upon the ground and gave himself up entirely to mirth. The result of his experience, however, when he tried to put his idea into practice, is matter of history which we do not here need to repeat.

The similarity lies in the fact that when Commissioner Peck comes to call his witnesses and gives a synopsis of the facts brought out by them, the text is so utterly insignificant as to show beyond a doubt that his rantings must be the result of a disorganized liver or other ulterior causes, and that his tirade would not be at all appropriate after the facts were given.

Speaking of the recent decision of the Supreme Court of the State of Iowa, the Des Moines Register laments the blow which that decision strikes at the growth of the city, and deplores the stupidity of the early Board of Aldermen, who for immediate advantages, gave away in an unwarrantable manner the future privileges of the streets. It says, "If the principle upon which this opinion is founded is correct, a City Council, it seems, fully twenty years ago, when the city had five or six thousand people in it, delivered over for thirty years the streets and alleys of the place to the corporation, simply by way of getting the young Des Moines a street railway before it needed it." It continues, "It is all out of joint with the times. One of the greatest protections against monopolies with their increasing enterprises is competition."

The mournful tone of this editorial is not surprising in view of the alacrity with which certain municipalities have trodden under foot past contracts made with street railroads. We do not understand this to be a question of what the young City Council could do or what it was desirous to do, it is simply a question of what it did do; and it is proven by reasonably good evidence that for the sake of an immediate street railroad it granted exclusive rights in its streets for the next thirty years. Whether this was a good bargain or not, it is rather late to consider, but that it was a bargain there is no reasonable doubt, and we do not understand it to be out of joint with the times, even in Iowa, to live up to and fulfill the conditions of a bona fide contract.

Jacob Sharp.

A CATECHISM.

- Q. When the waiter at the hotel table is very slow, looks very sour, and seems to say by his looks, "This is a very dry crowd," and so fails to do what he is engaged to do by the proprietor, what is usually done by the guest?
 - A. He gives the waiter a quarter.
 - Q. What is this called?
 - A. It is called "tipping the waiter."
- Q. When a railroad superintendent takes great interest in the device or the goods which his road stands in need of when shown him by the supply man, but is very slow, looks sour and seems to say by his looks or does say with his tongue, "Where do I come in?" and so fails to do what the company has engaged him to do, what does the supply man sometimes do?
- A. He sometimes hands the superintendent twenty or fifty dollars.
 - Q. What is this called?
- A. It is called "standing in" with the superintendent.
- Q. When the New York aldermen decline to vote for a franchise the granting of which is both in the interest of the public and of the property holders, and so fail to do what they are entrusted to do by their constituents, what did Jacob Sharp
 - A. He gave them \$20,000 apiece.
 - Q. What was this called?
 - A. It was called "fixing the aldermen."
- Q. What single word describes the act of the hotel guest, the supply man and Jacob Sharp?
 - A. Bribery.
 - Q. What is bribery?
- A. Bribery is the bestowal of gift or favor for corruptly securing certain ends.
- Q. Should bribery be lightly regarded in some cases?
- A. It should not. Striking as it does at the very fundamental principles of integrity, on which manhood, society and business are founded, it merits the severest condemnation of every man who respects social or business honesty.
- Q. Why is the case of Jacob Sharp of peculiar interest to street railway men?
- A. Because the attitude of the New York Board of Aldermen in refusing to honestly grant a franchise which should be granted is so similar to the attitude of other boards of aldermen in other cities where franchises are asked for.
- Q. What is the right course for a street railway company to pursue in such cases?
 - A. We give it up.

Exclusive Right in Streets.

We print elsewhere in this issue a somewhat lengthy but very interesting decision of the Supreme Court of the State of Iowa in the cases of the Des Moines Street Railroad Co. vs. the Des Moines Broad Gauge Street Railway Co., and the case of the Des Moines Street Railroad Co. vs. city of Des Moines, et al.

Des Moines passed an ordinance whereby it granted to the plaintiff's assignor, a company organized as a street railway company, the right to lay a single or double track along all of its streets, and the same ordinance provided that "the right herein granted to said company to operate said railway shall be exclusive for the term of thirty years."

Many other provisions were made, but the only one of importance in the case is, "And the city of Des Moines shall not until the expiration of said term of years. grant to or confer upon any person or corporation any privileges which shall impair or destroy any privileges herein granted to said company.

It appears that at the time of this ordinance there had not been conferred upon the council of Des Moines the express power to grant such an exclusive privilege, but, after the company had begun to construct its tracks, by Section 464 of Iowa Code of 1873, there was conferred upon city councils "the power to authorize or forbid the laying down of tracks," and on this account the ordinance referred to was re-adopted.

The decision is to the effect that the terms of the ordinance were sufficient to guarantee to plaintiff the exclusive right to the streets of Des Moines for the said term of thirty years, and that by assumption, as well as re-adoption, the ordinance had all the authority it would have had if passed subsequent to 1873, and in short that the exclusive right to the streets for the said term was by it guaranteed.

The justice of this decision in this particular case seems very apparent in view of the fact that the plaintiff had not only laid the two miles of track especially stipulated for in the original ordinance, but had complied with the spirit of the act to the extent of laying some ten miles of track and expending \$200,000. At the same time, for the first fourteen years, the road is said to have been run at a loss. It is gratifying to note that this decision involves the principle that where it is necessary to encourage such an enterprise as the street railroad, a city has power to guarantee it exclusive privileges for a term of years, which privilege is as sacred when attacked by the city itself as by a rival company.

Certain Elements in the Mechanical Traction Problem.

There are certain elements in the mechanical traction problem, the importance of which seems to be generally underestimated where they are not, in fact, wholly ignored. Perhaps the chief of these is the apparently unaccountable variation in the amount of power required to haul the car, even where the passengers are seated and the load is comparatively unyielding. Of course, matter can be put into motion for traction by a power sufficient to haul upon a given diameter wheel that load, minus the amount of friction of the journal.

It is a matter of common observation, It appears that in 1866 the Council of however, that, when starting a car, the

draft is not merely very heavy at first and then uniformly light. It is claimed by some engineers that a diagram which would be produced by the use of a dynamometer upon a tape, showing the exact strain at every instant, would be a system of acute angles, these angles being entirely disproportionate to the strain supposed to be necessary to overcome the inertia of the body to be pulled. might be illustrated by the fact that a car weighing say 9,000 lbs. upon a 30 in. wheel will haul at 600 lbs. strain. One second after the car has been started, 40 lbs. will be required, and then the strain will become 200 lbs., then falling to 40, then becoming 300, thus showing a system of jerks.

While this statement seems entirely unaccountable, that it has some foundation in fact will be generally admitted, we think, by the closest observers. Moreover, a heavily loaded car in which more than half of the passengers are standing has a peculiar fluidity about it, the swaying of the passengers making a yielding load which requires an increased power for what might be called the second start. This, in addition to the complication given above, increases the duration of the most acute strain necessary to bring the whole load into general motion. The nervous and muscular system of an animal, as a horse, corresponds in its resources of power very closely to those irregular requirements. The fluid nature of the body of an animal is under the control of its nervous system, and is capable of being thrown or vanked forward, the total value of his weight (minus a very small fraction) being made available in starting the load, and continuing its motion. Such conditions as these are among those which must be met by the successful mechanical motor.

New York Labor Bureau on Street Railway Employees.

"Street Car Employees" is a title of a department in the report of the Commissioner of the Bureau of Labor of the State of New York.

The Commissioner states that "it was not the intention of the Bureau to have taken up the question of conductors and drivers of street railway cars, their wages, hours of labor and general conditions, the present year, but circumstances of a peculiar if not an extraodinary character rendered it, to his mind, important that this subject should receive prompt attention." He proceeds thus to indicate what these circumstances are:—

"It was during an afternoon's session of the investigation held in New York, the fore part of December in last year, that three men hurriedly passed into the room, and, casting furtive glances at the door as well as at those assembled, crowded their way to the rear. It was not till the last witness had closed his testimony and left the room, that one of these men ventured to state the object of the visit of himself and companions. It soon transpired that two of them were conductors and [one

a driver of street cars. They had learned of the investigation being held and that it was a channel through which their supposed or real grievances could be brought to the attention of the Legislature. Several days had elapsed before, as they put it, 'they could summon courage sufficient to appear as they had.' Their countenauces were expressive of the fear that was within them, and the repeated assurances made on that point were, under the circumstances, unnecessary and superfluous.

"The really extraordinary character of testimony given by one of these men at that time, in addition to the thought impressed upon me of the possible existence of any system of railroad management that resulted in creating such apparent and humiliating fear in the minds of its employees, determined my action."

The profound logic which the Commissioner brings to bear on this question may be inferred from a few quotations.

"There is abundant evidence to warrant the conclusion that but for the certainty and fear of exposure of their inhumane and unjustifiable management and treatment of employees, these companies would not so readily have acceded to the just demands of outraged labor, and consented to a reduction of the hours of toil without an equivalent reduction of wages."

"I am constrained to say that, in no other trade or occupation at which men labor for a livelihood, do I believe there exist grievances approximating in the slightest degree, in number and gravity, to those resulting from the general managements of street railroads of this State. In many instances these grievances are more than ordinary abuses, they amount to They are unwardownright outrages. ranted by any existing circumstances, and unjustifiable from any standpoint, save that of avarice and that love of tyranny and general inhumanity so prevalent and characteristic of large corporations."

Some of the "more than ordinary abuses," "downright outrages," to which "outraged labor" has been subjected in the person of the "abused" and "tyrannized" street railway employee, are referred to at length. Requiring of bonds is one of the hardships, an "entire week under instruction" spent by a new man with "no pay whatever" is another outrage. Compulsory uniforms, the necessity of owning a watch, the requirement on some roads of a deposit of 25 cents for a register strap, the alleged necessity on the part of the conductor to furnish kindling wood and matches rather than to devote the necessary time to ask for them, being compelled to pay for fire shovels in case one is lost, paying for lamp chimneys in case one is broken through their own carelessness, the strictness of rules requiring the registration of fares, all of these are treated of under separate headings and discoursed upon at length. The Commissioner treats of the social ostracizing of discharged employees as follows :-

"The testimony of several employees is to the effect that the fact of their having

been conductors has injured them socially, and while this assertion might, under ordinary circumstances, seem light and trivial, I am forced to say that, after listening to the brutal opinions of heartless officials, it assumes a very serious aspect. Were it not for the fact that corporations generally are held in such utter detestation by the public, this practice of discharging men and placing them under suspicion would be of such a serious nature as to justify the unfortunate man in seeking redress in an action at law. Certainly no man would rest under such an imputation, if it were made by a private business concern."

The Commissioner goes on to say:-

"I cannot close this portion of the report without calling attention to a fact which well nigh seems incredible. I discovered, during the investigation in Brooklyn, that the Atlantic Avenue Railroad Co. has had in practice for years a system of counting the returns of its conductors which practically prevents the employee from having any voice whatever in deciding whether they are correct or not."

Then follows a description of the Richardson register, which, like all other registers, has concealed mechanism for tallying the fares rung.

One of the principal red rags, in the Commissioner's eyes, seems to be the fact that the New York and Brooklyn street railroad companies are so careful of and merciful to their horses, providing them with the "finest and most comfortable stables," etc. Various other similar "outrages" are referred to, the nature of which may be inferred from the above, one of them being that "spotters" are employed.

A report so utterly trivial and so obviously prejudiced and unfair, would be unworthy more than a passing note in these columns, except that it comes from a legally constituted State Bureau. Far from having anything like the judicial tone that should characterize such a document, it is purely that of a demagogue. The inferences drawn and charges made by him are totally unsupported by fact. Were the street railroads of New York and Brooklyn to appoint a person to so formulate the grievances of their employees as to make them appear utterly ridiculous, he could scarcely have done this work more thoroughly than Commissioner Peck has done it. Any thinking street railroad employee must consider it a misfortune to have had his case championed by one who seems to speak no other language than that of the blatant agitator. The conclusion to a fair minded reader can hardly be otherwise than that if these are the worst grievances of New York street railway employees they certainly are a well treated and fortunate class of laborers, which, by the way, is very near the fact.

It has now become an undisputed fact that the street railway is the greatest factor in 'promoting the growth of the residential population wherever its lines extend.—C. A. Richards. Editorial Correspondence.

A New Electric Tramway in Paris.

There is in operation at the Paris Railway Exposition a new electric tramway for which it is claimed that it embodies the most advanced practice that has yet been reached in Europe, and upon which patents have been procured in the United States with a view to its introduction there. The short strip of road in operation is well built, a heavy grooved girder rail of iron being placed upon cross-ties that are fully equal in point of size to anything that we use upon our heaviest steam roads. The space between the ties is filled with gravel.

The surface system of conduction is used. Two wooden stringers of sufficient height to come to the grade of the street are placed about four inches apart and running the length of the track, in a central position between the rails. They are protected from the weather by a coating of asphaltum paint. These serve to carry the conductors transmitting the power. The conductors consist of bars of 1 in. by 5-16 in. iron screwed down to the upper face and close to the inner edge of the stringers just referred to. These are auxiliary, and are fed at intervals by connections with the main conductor leading off from the dynamo, and which is an insulated copper wire. Insulation between the two iron conductors is obtained by blocks of wood put in between the stringers like a pavement

The motor is placed underneath the car, with its shaft running longitudinally, and at a slight inclination. This shaft carries a worm on its outer extremity, which meshes in with the gear keyed to one of the axles. This latter runs in oil, and the shaft passes through a stuffing box to prevent leakage.

The current is taken up by a pair of shoes running on the iron conductors, and attached to the car by a flexible connection. It will be understood that one conductor is used for the return current.

Reversal and the handling of the car generally are accomplished by a lever upon the platforms, and the ordinary hand brake.

As to the action of the device, it has certainly been demonstrated that the car may be run and a speed of ten miles an hour obtained. Considerable difficulty has, however, been met with, from the interest taken in the device by the visitors. On Sundays they flock to the sides of the track. and all hands amuse themselves by making a living contact between the iron conductors, resulting in shocks to themselves and a slight loss of electricity to the exhibitors. The small boy, (he may be fifty years old) has also discovered that the electric current will heat a nail to a red heat, and will melt a copper sou. The result of this discovery has been an innumerable number of electric experiments upon the conducting of metals, to the ruination of several sous and the establishment of a permanent connection between the conductors by the molten metal running in between the insulating blocks. One genius who had read the books, even went so far as to pour water over the stringers to see if it would boil. It did not boil, but it is needless to add that a heavy shower makes a connection that is no mean exhauster of electricity; though this has not in this case been measured. Besides that, the water rusts the conductors and makes the contact of the shoes less efficacious than it would otherwise be.

Yet we are credibly informed that this is considered a step ahead of what European practice has evolved in the past in the line of direct acting conductors.

G. L. F.

Personal.

E. P. Harris is on a Western trip.

JOHN A. BRILL is on an extended trip West.

J. H. SILVER has just returned from his ranch in Colorado.

John Stephenson and his family are pleasantly situated at New Rochelle.

E. L. Powers, of the Western office of the Street Railway Journal, is on a trip East.

George Pardy, of San Francisco, the low-pressure compressed air engineer, is on a trip to Eastern cities.

CHARLES B. ALLYN, of the Brooklyn Railway Supply Co., is about making a trip through the South and West.

J. COLLIER, one of the directors of the Melbourne, Australia, cablercads, recently called at the Street Railway Journal office.

E. PECKHAM, Manager of the Peckham Car Wheel Co., of Syracuse, has just received five new patents on steel tired car wheels.

CHARLES CLEMINSHAW, who has been promoted to the presidency of the Troy & Lansingburgh road, is not a stranger to the street railway public.

C. B. FAIRCHILD has just returned from a trip as far west as Omaha. He reports a very strong and active desire on the part of street railroads for a cheap and practical cable system.

DEACON WILLIAM RICHARDSON, President of the Atlantic Avenue Railroad Co. of Brooklyn, has returned from his six weeks' trip abroad, He does not approve of the underground railroad system in London.

W. L. EVERIT has just returned from a trip to Florida and various parts of the South. He reports street railway business good in that section, and expresses himself as very much pleased with the class of men he found engaged in street railway business there.

At the annual meeting of the American Railway Publishing Co., publishers of the Street Railway Journal, held July 12th, E. P. Harris was elected President; J. H. McGraw, Vice President; H. M. Swetland, Treasurer; S. J. Clark, Secretary; H. V. Condict, Attorney.

W. A. STILES, Secretary and Treasurer of the Van Depoele Electric Co., in an interview with a Chicago Times reporter,

states that electricity is admirably adapted for use on the proposed Chicago elevated railroad. He also gives various interesting figures as to the economy of electricity for street railroads.

CHARLES J. LUCKNER, who has for the past three years been associated with the Chicago City Railway Co. as Track Master, has just accepted a position as Superintendent of the Citizens' Railway of St. Louis. Mr. Luckner is a thoroughly competent man, and the best wishes of his former employers and friends go with him.

CORRESPONDENCE.

A Correction.

EDITORS STREET RAILWAY JOURNAL:-

I observe an error in our quarterly report published by you in the JOURNAL for July. The loss by operation for the three months ending March 31 should be \$10,-304.50, and not \$19,304.50, as shown.

C. F. NAETHING, Sec.

Forty-second St., Manhattanville & St. Nicholas Ave. Ry. Co.

Track Brakes.

The following is from a car-wheel maker:—

EDITORS STREET RAILWAY JOURNAL:-

Considering the legitimate causes that wear out a street car wheel, a great saving might be effected by the general use of the San Francisco brake, which impinges on the rail between the wheels, and not upon the tread of the wheel. It is very powerful, and easily renewed by blocks of wood at slight cost. We are not interested in it, and this suggestion may not seem good for car-wheel makers. But, if reduced cost of running roads helps dividends, it prompts starting enterprises in new localities, and so widens our market.

Cost of Running Steam Motors.

In response to a letter from us relative to cost of running the steam motors on the Concord, N. H., horse railroad, we are in receipt of the following:-"It cost for coal, oil, and engineers' wages \$11.82 per day, a run of 110 miles, for our two steam motors, 50 miles for one, 60 for the other. That is their regular work. We haul from one to four cars as the occasion may require. Our cars will seat from 28 to 40 passengers. When crowded we frequently carry 75. It makes no difference to the motors as to the loads. They always haul what we hitch to them. Our repairs cost about \$60 per year apiece. Steepest grade, 6 ft. to 100 ft., of about 250 ft. long; the sharpest curve, 80 ft. radius.

"Moses Humphrey, Pres."

Automatic Gate Wanted.

EDITORS STREET RAILWAY JOURNAL:-

Our line is to run through the Park Grounds of Asylum, University Grove and the Park at Lake Lorraine, and, as we are not allowed to run a fence through said grounds to protect the premises, we are in search of an automatic self-opening gate of some description—some gate that would not require the time to stop to open and close. Can you cite us to some parties who handle a gate of this description? Any information will be thankfully received, as we are at a loss to know how to manage this unless we succeed in finding some such gate.

Yours truly, T. & C. H. R. E. & M. Co.

[If any of our readers can give information regarding such a gate, we shall be glad to receive it. EDS.]

Power Needed for Different Grades.

EDITORS STREET RAILWAY JOURNAL:-

I write to ask if some of your readers can give mearule for obtaining the amount of power required to haul a street car on different grades. I have made use of the following:—

Multiply the number of feet rise to the hundred by 20, and add the power required to haul the car on level track. That is, take a 5 ft. grade, for example; multiply 5 by 20, giving 100. To this add say 11 lbs. per ton for T rail, or 15 lbs. per ton for flat rail, which in the latter case would give 115 lbs., the amount of power required to haul a car weighing one ton up a 5 ft. grade. I find this corresponds very nearly with the data given in Haswell, etc., though I do not find any rules given for this particular purpose.

If any of your readers have a better rule, I shall be very glad to learn of it.

F. B. C.

New York.

How to Organize a Small Company.

EDITORS STREET RAILWAY JOURNAL:-

Have you available any documents which you could give or loan me which would serve as models in the organization of a new electric street railway company, which I propose to form here? The first line built will be about one and one-third miles long, on the main business and residence street of this, a thriving manufacturing city of 11,000 inhabitants. If it succeeds, we shall probably build a cross-town line of about the same length. I have investigated the matter of electric railways, electrically and mechanically, and think I will have no trouble in managing that part. but as I am not a street railway man, I do not know the best form of organization. Of course it must conform to the new State law which we have here, but I would like some information regarding the usual number of officers, their proper rates of salary, etc., for a small road of this kind. Hoping I am not troubling you too much, I am Very truly yours,

S. O.

[We have no form such as you refer to. We are informed that the offices of President, Secretary and Treasurer of small roads, running say half a dozen cars, are

usually filled by large stockholders of the company, who receive no compensation for their services. The Treasurer usually employs a clerk to receive and keep account of affairs, paying of course according to the amount and character of the work. Superintendents of horse railroads receive say \$15 a week for roads which employ 50 horses, \$18 for roads with say 75 horses, and \$20 for roads with 100 horses. Of course, these bills are only approximate, and would vary according to the character of the work to be done, the expense of living in each locality, and various other conditions. Eds.]

Low-Pressure Air as a Propelling Power.

EDITORS STREET RAILWAY JOURNAL:-

The introduction of mechanical means for moving street cars has so clearly demonstrated that animal haulage is neither economical nor suitable for the traffic of the busy lines, that not a Board of Management throughout the country governing the welfare of a company anxious to keep abreast with the times, can afford to ignore the all absorbing question, What is best to replace the horses?

We have the cable cars, and many of the principal cities point with pride to the many excellences of this service, the wonder being that the system had not long before obtained recognition. But, like most improved methods, it languished till the times were ripe to receive it, when the merit that was in it sprang, almost with a bound, into universal acknowledgment, and those who had done the most to retard have been found the foremost to promote the progress of the new idea.

The writer remembers well the sneers and jeers which accompanied the balky efforts to drag the cars up the grade on Clay street, in the city of the Golden Gate, when the cable system, after years of slumber, was revivified; but the times were ripe, it was no longer possible to ignore the system, there was a place for it, it must be prepared to fill it, it was amongst others the only system that even suggested the probability of success, it was no longer spurned as a visionary scheme, the hill had to be climbed, interests were at stake, patiently were the minor details corrected, defects overcome, unfriendly criticisms silenced, and at last the merit that was in the idea being fully developed and recognized, the cable cars were there to stay. Others quickly adopted the new method, and wherever in the city there was a hill to climb and a sufficient traffic could be relied upon, the cable moved up and down. Property interests advanced, new residence locations became quickly settled, and consternation reigned among the stockholders of the horse car lines.

The new power, however, could not be availed of out of its special sphere. Long, sinuous lines with branches, running through settled districts, could not be equipped as cheaply as short, straight lines. In such lines the mechanical diffition.

culties were immeasurably increased, wear and tear of the cable became a formidable item, enhanced value of real estate could not be calculated upon, whereby profits enough could be made to build the road, and although these lines saw their dividends everywhere cut down, and in cases entirely taken away by the new competing service, still they were unable to adopt it themselves.

The long, sinuous lines, the moderately graded lines and those confined to the settled districts, though readily acknowledging the inferiority of their service in comparison with the new method, still retained their horses. Electricity was tried as a substitute, but it was not quite developed into a practical system; steam was proposed, but it found no favor; gas motors were talked of, and motors of various kinds presented themselves and vanished. Nothing seemed exactly suitable as an equivalent for the cable until compressed air received a thorough overhauling, and again presented itself in a new garb, claiming popular favor.

Compressed air had been used and was not a novelty, but the method of using it hal not developed its full merits. It had been used at very high pressures, in heavy, cumbrous motors, economy had been sacrificed to the mistaken view that the motor should travel long distances; not until a changed view obtained, did the system gain friends. The short haul system was promulgated, a low pressure of air advocated, light and shapely motors proposed and frequent replenishing of the motive power from an underground pipe, always accessible from one end of the line to the other, was given as the key to the success of the new system. At once the proposition was acknowledged to be practicable by the best engineers; those having an acquaintance with compressed air as a motive power became enthusiastic advocates: experiments were made, details designed and tested, and the conclusion established without dissent that the new system, though not a rival to the cable for the heavy grades, was by far the most promising system for the lighter grades offered, to supplant animal haulage.

It is cheap, quite as economical as steam itself directly applied. It is thoroughly effective, nothing is liable to get out of order, its method of use suggests no disadvantages from climatic influences, the cars will carry a cool atmosphere on the hottest day, due to the expanded air diffused within their interior, exhausted from the engine; the control of the cars will be perfect, being supplied with brakes actuated by the same air which supplies the engines; the system of replenishing the receivers will consume absolutely no time whatever, for it is done only when the cars are of necessity stopped for passengers; and finally the system serves for the longest lines, the most sinuous routes, main lines and branches, and is capable of being put in service without disturbing the track on existing lines, no costly experimenting following its adopWith all these advantages favoring the system, it may be asked, Why has it not been adopted? The answer will be well understood by those having experience in promoting new systems and mechanical methods. The times must first be ripe. The exigencies of a special case must lend courage to the first adopters. All may give it kindly encouragement and commend it to their neighbors, but few possess the enterprise to lead the way.

There yet will be a case where the very existence of a line will depend on its adoption of improved methods, and as was the case with the cable on Clay Street Hill, only one system will fill the requirements; that case of exigency will soon occur, and compressed air on the low pressure method of application will, from sheer force of circumstances, be adopted into use. It will be well received, will be a permanent institution, and owing to its great economy will finally render possible the further reduction of fares whilst maintaining higher rates of dividends and promoting the public comfort and convenience.

Following is an approximate estimate for a line with 100 motor cars, 20 hours' service per day, allowing 4 steam H. P. to each motor and 3 lbs. of coal per H. P. per hour: Fuel, 12 tons at \$5, \$60; water, oil and lights, \$10.50; two engineers, at \$3.50, \$7; three firemen, at 3.50 each, \$7.50; valve men and machinists, five at \$3 each, \$15; total, \$100, or \$1 per day per car.

GEORGE PARDY.

San Francisco, Cal.

ELECTRIC RAILWAYS are to be introduced into New South Wales.

The Paris Omnibus System.

BY GEORGE L. FOWLER.

Paris is intersected in every direction by a multitude of omnibus and street railway lines, both of which are comprised in the omnibus system. While their multiplicity and the irregularity in the naming and direction of the streets, may cause a confusion in the mind of the stranger, the system is in reality exceedingly simple, and easily mastered by a slight attention to the details. For instance, every line has a distinct and separate letter by which it is indicated. The letter A belongs to an omnibus line starting from the church of the Madeleine and running to Auteuil, a suburb outside of the fortifications; so that if the stranger desires to go to either of these points, it is simply necessary to wait along the route that is clearly indicated on the maps, which are readily procurable; and when an omnibus appears with the letter A in a conspicuous place at the front end of the paneling, over the windows, it will be at once recognized as the proper conveyance. After exhausting the alphabet, combinations of two letters are made. The tramways are indicated by T A, T B, etc.

Of course to the regular traveler, or those who are thoroughly familiar with the city, such letters are useless, in view of the fact that the vehicles are literally covered with the names of the places which are passed. These really tend to confuse the mind, and it would be difficult to pick out the proper vehicle from the mass that are passing. For instance, suppose a traveler to be standing before the Grand Opera and desires to go to the corner of Rue Hauteville and Boulevard des Bonnes Nouvelles. He simply takes omnibus E, regardless of the fact that it is lettered

MADELEINE-BASTILE;

Opéra; Boulevard Montmartre; Porte St. Martin; Place de la République; E; and that the Boulevard des Bonnes Nouvelles or the Rue Hauteville are not upon the list. It goes without saying that a key or guide is necessary, but there is rarely any need of referring to it upon the street.

Another feature of the management that will strike the American as odd is the system of never crowding, and at times actually compelling people to walk. street cars and omnibuses have stations at which they stop and at which there is always a crowd. It is not necessary, however, to go to the station, unless one be near it, in order to take the car. At the station each passenger is given a number. which is called out by the conductor on the arrival of the car. The holder then enters and takes a place upon the roof. platform or inside as he may elect, until the car is filled, then the sign "Complet" is dropped, and the whole police force of the city would be called out, if necessary, to prevent another passenger from entering.

On a recent occasion, on a rainy day, I had the pleasure of drawing a number just 127 behind the first called. It was necessary to wait and see car after car roll away with its load and not a passenger standing inside. Six are allowed to stand on each platform, but none on the roof or inside. Imagine such a condition of things in New York or Boston during the rush trips. But they have no rush trips here. People do not do business in one place and live in another. The owner of the store occupies the floors over it, and his clerks may live over him. Therefore the transit lines are no more crowded at night and morning than during the day, and there is no great extra rush of business. If the car is full, people will wait, for their turn is assured by the number. There is no hurry, and unless it be raining they will walk, or perhaps hiss at a cab and ride. These cabs, of which there are some 15,000 in Paris, do a great, if not the greater, portion of the passenger traffic of the city. Their charge is only thirty cents for any distance inside of the fortifications.

The patience, the waiting, the quiet acceptance of the police and street car regulations can all be readily explained from a standpoint that recognizes the education and temperament of the people. But it is difficult to understand how it happens that in a city of nearly three millions some management does not arise that will run cars and omnibuses at intervals sufficiently short to accommodate the de-

mands of travel, and not compel short trip passengers to walk and those desiring to go to a distance to take a cab. But everything must be done by rule, and the rules are as the laws of the Medes and Persians, that altereth not.

The fare on the cars is thirty centimes, or six cents, for an inside seat or a place upon the platform, and one-half that for the seats upon the roof. The payment of the higher fare in either place entitles the passenger to an exchange ticket good from the connecting point with another line, so that it becomes possible to go from almost any part of the city to another upon the payment of a single fare.

It will be noticed that it was said in an early part of this article that a passenger need not take the car or omnibus at the station unless he be near by. Within a block or so from the station no one is allowed to enter the car, and it will not be stopped. This is to prevent late arrivals at the station from walking down the line and taking an empty place in a car to which they would not be entitled by their number. Another novelty is the fact that the cars rarely come to a full stop except at the stations to allow passengers to enter or leave. Ladies leave the car while it is in motion as well as gentlemen, and frequently while the horses are upon the trot. This is rendered possible by the construction of the car, which will be explained in a future article.

There is not the same variation in the class of passengers carried as will be found in America. In New York the millionaire may ride beside a porter or a rag-picker. In Paris the millionaire takes a cab or uses his own carriage, while the porter and rag-picker walk. The cars are supported by the well-to-do but not affluent class. The workman who is skilled at his trade and earns from eighty cents to one dollar per day, has no spare change to pay six cents a day car fare. He lives near his work and walks to and fro.

This much may be seen by the casual observer, and it would seem that the companies are standing in their own light when their methods of operation are looked upon in the light of the skillful manipulation of money making investments. But the managers are not free agents. Whichever way they may turn they are brought face to face with the police regulations. Do they wish to crowd their cars, do they wish to put more cars on a certain line, or use relays of horses, or make any change, the inexorable and unyielding regulations of the Paris police hold them in check until the matter has been investigated and the permit granted by the proper authorities.

For instance, there were over 70,000 visitors at the Railway Exposition in the Bois de Vincennes on a recent Sunday; and the only road over which the great majority of these visitors could or would travel was running cars under ten minutes headway. These cars accommodated fortyeight passengers, and not one more can or would be admitted. So in the whole day this road could not possibly have delivered,

between the hours of ten in the morning and eight in the evening, more than 2,880 passengers; while had they the facilities and the right, they might have carried thirty thousand.

There is no doubt but that had the management known of the crowd and made suitable application in advance, the right for an increase would have been granted. But the rush was not anticipated and the companies are not prepared. Every car must be inspected, numbered and licensed by the police, and a license is granted for three months. It will therefore be seen that it will not be profitable for a company to pay a three months license of fifty dollars for the sake of the chance of two or three rush trip days. As long, therefore, as the present regulations are enforced there can be no very great improvement in transit facilities.

The police do not stop at the regulation of the number of cars that may be run upon a line. They dictate who may be hired as drivers and conductors: the method of numbering the cars; the fares that may be collected; the sizes, dimensions and construction of the cars; they issue a long list of rules and regulations for the guidance of the conductors and drivers, even going so far as to prescribe the size of the whip that the driver shall use. The company is compelled to maintain the stations, and at points the police may indicate. Thus the manager of a street railway is a mere figure head; he does what the police allow him to; if more cars mean more money, he is held back; if a variation in construction would lead to a greater economy, he must ask for a permit; and finally all ambition is taken away by the heavy license fees, (\$200 per car per year), and the fact that the profits above a certain figure are due to the city of Paris. Handicapped in this way, on every hand, it is not to be wondered that the companies fail to make money and are now in a state of bankruptcy.

In order to convey some idea of the rigidity of these rules, we give a few, taken at random, from the police ordinances:—

"No number except that of the police, which has been affixed and authorized by us, can be placed upon the inside or outside of the cars."

"Each year, or oftener if deemed necessary, there shall be a general visit of inspection paid to the stables."

"Drivers must not crack their whips unnecessarily in order to make a noise or attract the attention of passers."

"When a driver is discharged he must report the fact at police headquarters within twenty-four hours."

"Drivers are forbidden to take off their coats in hot weather."

Thus every minutia is provided for.

There are also suitable regulations forbidding the abuse of the horses; compelling the company to keep the cars and stations in a "clean and healthy condition at all times;" requiring them to use only strong and healthy horses; and not allowing the use of any vehicles that are weak-

ened or unsafe. The effect of this is everywhere apparent; the horses are beauties; the cars strong, clean and comfortable, and the employees neat and well dressed.

But the continual hampering of the management has proven to be a fatal blow to the success of the roads as a money making venture. Whether this checking is the result of intention or ignorance cannot be said. There is this about it, however; the old regal notions of the divine rights of the rich and powerful have not been eliminated from the minds of the rulers, despite the "Liberty, Equality, Fraternity," that meets the eye at every turn. The carriage is therefore the Parisian's delight; he gives it the right of way over the foot passenger, and should the latter be struck he is fined for his carelessness in getting in the way of the carriage. The omnibus and street car are the vehicles of the plebeians, and it would not do for the gay and brilliant boulevards to be too crowded by them. So no encouragement seems to be granted to the buses and cars, while the cab is carefully cherished.

Infant Passengers.

BY MYRON T. BLY, OF THE ROCHESTER BAR.

—In New York it has been held by the Court of Appeals that the degree of care which a person owing diligence for the safety of others, must exercise, depends upon the hazards involved, and therefore the same degree of care for the safety of passengers is not required of a horse car company as of a steam railway company. 51 N. Y., 49.

—In other States, however, there is a tendency to place street car companies in the same category as other common carriers of passengers, and to hold them to the exercise of the same degree of care and caution, and responsible for the same degree of negligence, as steam railway companies. 60 Cal., 606; 27 Mich., 503.

—As to infant passengers, the rule stated in the last paragraph has been maintained by the courts quite universally, the reasoning being, that "street railway companies hold themselves out as carriers of passengers for all who may come," and "do not reject a child because he is young." 27 Mich., 503.

-Moreover, in speaking of infant passengers on street railway lines, one court has said: "This mode of transit is supposed to be specially adapted to the needs of those classes of the community whose physical strength and capacity is least, .

. . and it cannot be held that a parent is guilty of negligence in permitting a child who lacks the judgment and descretion of an adult, to accept the invitation, unless the car would be to the child a dangerous conveyance, notwithstanding any oversight the company may be expected to provide." Id.

-The precise age at which a child may be permitted to travel by itself, has never

been fixed and cannot be well fixed, on account of the different degrees of intelligence manifested by different children, of the same age. The presence of a child upon a street car is open to explanation, and the question of its parents' negligence in permitting it to go at large may be made, therefore, one of fact, for a jury, and would not be a question of law. 42 Ill., 174.

—But a conductor or driver would be warranted in refusing to receive as a passenger, unaccompanied by parent or guardian, a child of such tender years and manifest immature experience that the car would be a dangerous conveyance for it. 27 Mich., 503.

-Having once received it on board the car as a passenger, the company is bound to the highest care and vigilance to secure its safety. 75 Pa. St., 367.

-And if the child is of such tender age that it cannot take proper care of itself, the conductor must look out for it. Id.

—For if a child has not the ability to foresee and avoid danger to which it may be exposed, negligence will not be imputed to it, if it unwittingly exposes itself to danger. "A boy's capacity in the measure of his responsibility." Id.

—It has been held that a street railway company was liable for a child's injuries, even though the child was not a paying passenger, if the driver allows it to ride in a position of danger. 74 Pa. St., 421.

—In a case where a child, five years of age, accompanied by one of eleven, caught a ride on the front platform and the driver allowed it to ride there, and it was injured while trying to get off the moving car, it was held that the company owed a duty to the child, and was liable. Id.

-Even in the face of the fact that the child attempted to get off against the remonstrance of the driver. Id.

—Because the court held that it was the driver's duty, if the child got on without his invitation or permission, to compel it to go inside or else bring the car to a full stop and put it off. Id.

-Moreover it appeared that the elder child pushed the little one off, but, as the elder was not the guardian or protector of the younger, only a companion, it was held that this negligence of the elder could not be imputed to the younger. Id.

—This was a case in which, on all equitable grounds, the company should have been absolved from responsibility. But having reached the conclusion that "the driver was guilty of culpable negligence," in allowing the child to ride on the front platform, and that the child was not guilty of contributory negligence, the court could not render any other decision. Wherefore a driver should not, under any circumstances, allow a child of immature years to ride on the front platform. Id.

—And as these notes are primarily designed for the information of street railway managers, it is proper to state the sever-

est rules of law which have been decided against them, on the principle that an attorney always wants to know the worst side of his client's case. One opinion contains this language—perhaps uncalled for:—

"It is high time that the directors of a passenger railway company should understand that it is their duty not only to make and publish rules forbidding their conductors and drivers from allowing children to get on and off the front platform, or to ride there, but to see that these rules are rigidly enforced by their employees. Under no circumstances should they permit children to get on and off the front platform of a street car, much less to ride in a place of so much danger to life and limb. If they do, negligence is imputable to the company, and it will be held responsible for any injury occasioned thereby." 74 Pa. St., 421.

-Before his retirement from the bench. Judge Cooley, in writing an opinion of the Supreme Court of the State of Michigan, suggested the query, whether a street railway car is a dangerous conveyance for a child lacking judgment and discretion, not withstanding any oversight which the company may reasonably be expected to provide; and in language, possibly more becoming the dignity of the bench than that last cited, he suggested the further query, "If it is thus dangerous, the question may be a serious one, whether it may not become the duty of the Legislature, out of regard to human life, to prohibit by law the reception upon the cars of such children, unless attended by parents or guardians." 27 Mich., 503.

—And he laid it down as a matter of law, that it is the duty of a street railway company to provide vehicles which *insure* security to their passengers, and not to suffer them to occupy unsafe places on such vehicles. Id.

—Yet, if this duty is neglected and an adult passenger is injured, he cannot recover damages of the company, if his own neglect of the duty of self-preservation contributed to the injury; but duty can only be predicated of one who has capacity to understand and ability to perform it, and therefore a child not of sufficient age or discretion to understand the danger in riding upon the front platform of a street car, cannot be charged with negligence in so doing. Id.

—Furthermore it is explicitly held that a street railway company does not do its duty by warning a child not to ride on the platform, but should compel it to occupy a proper place inside. Id.

—And while the fact that the front platform is not enclosed with a screen or fender, may not be negligence in itself, yet it is a matter to be taken into consideration with the other facts attending an injury to a child, the front door being open and the car full of passengers. 75 Pa. St., 367.

—There is a peculiar case, where it appeared that a boy of fourteen was walking

along the street with a can of water, and a thirsty street car driver asked the youngster for a drink. The horses were on a walk and the boy stepped onto the front platform and handed over the can. The driver quenched his thirst and returned it with the request that the boy hurry off. This was the boy's story. The driver whipped up his horses, paying no attention to the boy's request to stop, and he fell off. It was held by the court that the driver acted within the scope of authority, and the company was liable. 12 Hon. (N. Y)., 435.

—But a newsboy who jumps aboard to sell papers is not a passenger, and the company owes no duty to look after his safety, and if he is injured by the absence of a step, it is his own lookout. This is a Canadian decision, and as it does not fully comport with the decisions of our State courts, it would not be best to allow newsboys to take whatever liberties they choose, on the supposition that they are running their own risks. 38 Upper Canada, Q. B., 172.

—A decision highly favorable to the companies, as to the class of claims with which these notes have to do, is in a Massachusetts case, where it was held that the refusal of a conductor or driver to stop the car when requested, by a child six and a half years old, will not justify the child in leaving the car by getting off the front platform while in motion. 112 Mass., 38.

—But the conductor claimed that the boy got up and attempted to alight without signaling, although he knew how to do so and had traveled alone before. Id.

—And it appeared that there was nothing about the boy that would call the attention of the conductor to any special incapacity, and therefore it was held that the company was not bound to take any unusual or extraordinary care of him or to take more care for his safety than for the safety of an ordinary passenger. Id.

—But where a child of thirteen said to a companion, so that the driver heard, that he was going to get off there, and the driver slacked, but before the car came to a full stop he jumped off and was injured, it was left for the jury to say whether the boy had been so negligent as to prevent his recovering damages. 75 Pa. St., 83.

—An adult would have been precluded from recovering, but a child will not be held to the same degree of care as an adult. Id.

--And in a case where a boy of ten explicitly asked the driver to stop, and the driver slacked, and the boy jumped and was injured, it was also left to the jury to say whether he should recover. 75 Pa. St., 367.

—For it is the duty of a street railway company to cause its cars to come to a full stop to permit passengers to get off. 38 N. Y., 131.

-And in the case of a child of eight, desiring to board a car, the driver reached

out and grabbed it, in order to help it on without stopping the car, it was held that he was acting within the scope of his employment, and as he let the boy slip from his grasp and injury resulted, the company was liable. 26 N. Y., 49.

—It would be better for drivers and conductors to keep within the letter and spirit of the law, as it has been most stringently laid down in regard to children, than to observe the law as decided in cases favorable to the companies. They should constantly bear in mind:—

First. That a child, a sick or aged person, or anyone laboring under some disability which is manifest and apparent, is entitled to more care than an adult or one in good health and of good physique. 36 N. Y., 33.

Second. That a passenger belonging to one of these classes, is entitled to more time to get off and on and more consideration when crossing the track. Id.

Third. That such haste in starting up or such speed in driving as would be reasonable in case there were only healthy a lult passengers on board, might be negligence and carelessness in case of children or infirm persons. Id.

And finally, that in case of very young children, unable to take proper care of themselves, the company is bound to take the highest care and vigilance to secure their safety in boarding the car, while riding, and until they have left it and are on terra firma. 75. Pa. St., 367.

The Ammonia Motor.

The Ammonia Motor, invented by Mr. P. J. McMahon, has been sold by the Standard Fireless Engine Co. of New Orleans to a syndicate formed for this purpose in Philadelphia, the New Orleans company, however, retaining a half interest. It is hoped that the ammonia motor will be in operation very soon, where its merits may be judged of by enterprising street railway people.

The Pole Motor.

The peculiarity of the Pole motor is the foot action. This foot is not a mere strut, but a foot placed upon the ground that is held down by pressure and pushed against. Experiments have proved that a steam cylinder brings a foot down with such force and such rapidity as to be totally useless. Even the air cylinder fails in this respect, being too sudden. The system of cams, however, with counterspring beams, is claimed to operate to a nicety. The foot action of this motor and the driving wheels are operated by a system of friction brakes which have the benefit of a fly-wheel weighing 300 lbs. and running 180 revolutions per minute, thus carrying the machine over the point of pressure on the foot in something the same way that a punching machine is carried over the point of greatest resistance.

Peckham's Improved System of Interterchangeable Car Wheels and Axles.

This system is designed by the inventor* to cheapen the cost per mile for wheels and axles, besides giving an increased ease of draft to the car of from twenty to twenty-five per cent; and also to prevent concussions, noise and crystallization caused by contact of wheels with uneven places in the track, switch crossings and rail ends, and to enable railroad companies to do their own repairs. These advantages are obtained by the construction of the wheels and axles as hereinafter shown and described.

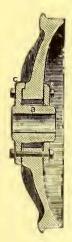


FIG. 1.

The wheels are constructed in two parts as shown in Fig. 1, the web being separate from the hub, which (the latter) is pressed rigidly upon the axle, where it remains until the axle is worn out or broken.

The web portion is secured to the hub by clutch jaws and bolts, and can be readily removed when broken or worn out, and a new one put in its place.

To prevent jars, vibrations and conse-

hardened steel bushings (see Fig. 3), which are secured in their places by self-locking collars shrunk on to the ends of the journals. The surface of these bushings being much harder than the axle, will greatly reduce friction and insure an increased ease of draft of the car of at least 25 per cent, as has been fully demonstrated by dynamometrical tests with tubular axles provided with case hardened spindles invented by Mr. Peckham, and now being manufactured by the National Tube Works Co. of Boston.

As the webs of the wheels and the bushings of the axles are interchangeable, and when worn out can be easily renewed by the railroad company without special machinery or skilled labor, all machine shop and other expenses for renewals are saved, and as no wear comes upon the hubs of the wheels or body of the axles, and they are relieved of crystallization by the fibrous cushion, they are practically indestructible.

This system is therefore claimed to be a very economical one, both as to saving in cost of wheels and axles and power required to draw the car. Though some points in this calculation are yet to be determined by practical experiment, it is believed that the system will save at least one-third in cost of equipment and one-fourth in draft. The first cost of a set of wheels and axles is about 25 per cent more than the ordinary wheels and axles, but, as only the wearing parts of the wheels and axles have to be renewed, the saving in expense for renewals will soon more than make up for this increased first cost.

The Julien System

ON THE FOURTH AVENUE ROAD OF NEW YORK.

Satisfactory results are being obtained from the use of the Julien storage battery

structed by the John Stephenson Company for the West End railroad of Boston, Mass.

An English Street Car Wheel.

The special feature of the wheel which we illustrate is that it is built up of separate parts. The hub is of cast iron, in which are set flat wrought iron spokes. A cast wheel tire is bolted to the spokes by eight bolts, which press through lugs cast on the inside of the tire for this purpose. There is no rim to the wheel, the tire itself forming the rim. The wheel weighs on-

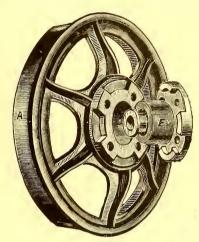
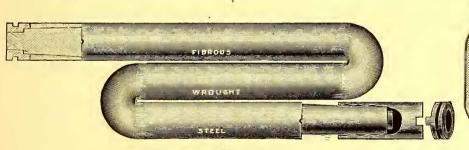


FIG. 2.

ly 163 lbs. It is claimed to be strong as well as light, and that when the tire is worn out it can be easily and quickly replaced by a new one. The wheel is made by Thomas Frith & Sons, Lim., of the Norfolk Works, Sheffield, England, and was

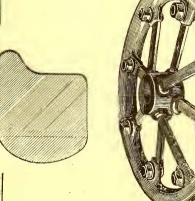


FIG, 3,

quent crystallization, caused by rigid metal contact of wheels and axles (as ordinarily used), a fibrous rubber or paper cushion is firmly inserted between the hub and web, and secured in its place by a loose hub flange. See Fig. 2.

The axles are constructed of soft fibrous iron or steel, selected solely with a view to toughness (as the wear of the journals does not have to be taken into consideration); and as no allowance has to be made for repeated turnings of journals or crystallization, they can be made of much less diameter than ordinarily used, and one-third saved in weight. These journals are turned to a standard size and encased in case

cars on the Fourth avenue road in New York. The equipment of the car has been materially changed since the experiments on Eighth avenue, of which an account was given in these columns. The car makes a speed of fifteen miles per hour when desired; is in perfect control of the driver, and is guaranteed to cost not over \$4.10 per day, as against \$7 and upwards for horses. The cost to equip a road with storage battery cars is said to be less than the cost of horses and cars, and it is thought that the amount realized from the sale of horses will usually be sufficient to equip present cars with this system of propulsion. A Julien electric car with Sprague motor is being con-



shown by them at the Manchester Exhibition. A perspective view of the wheel is given in the larger cut; the smaller is a section of the tire.

Double-Decker Society.

Soon after the new double-decker cable cars were put on the road a decided increase in night travel made itself manifest to the careful observer. These parties gradually increased in numbers, and those who participated in them spread among their acquaintances the tidings of the new pleasure. With the enterprise characteristic of St. Louis, the feasibility of uniting

*E. Peckham, Syracuse, N. Y.

social enjoyment with physical relief was quickly perceived, and a number of clubs of young people were formed, who met several nights a week, and indulged in one, two or three round trips in an evening, greatly to their own enjoyment, and with a result highly beneficial to the cable company.

The first club to spring into existence was organized within the aristocratic precincts of Vandeventer place, and assumed the name of "The Fad." This club is composed of thirteen members, the odd individual performing the ungrateful but necessary functions of chaperone. Twice a week this club assembles on the corner of Grand avenue and Morgan street, at 8 o'clock, and takes two round trips, alighting at their starting point at 10.30. Several of the members are the happy possessors of baujos, and one gentleman is an alleged performer on the flute. During the first eastern trip the party is quiet and recluse, but when Jefferson avenue is reached on the return the music strikes up some well-known tune, and the remainder of the journey is enlivened by college songs and snatches from Gilbert and Sullivan

The sentimental couples are picked up all along the line of the road, carefully avoiding the cars occupied by the clubs, and greatly preferring those bearing a small number of passengers. At first they are extremely sensitive to observation, and preserve a most decorous demeanor toward each other. But as the hour grows late and the influence of propinquity and opportunity asserts itself, they become indifferent to and finally oblivious of observing eves, and scenes from Romeo and Juliet are nightly enacted before the amused and unsympathetic eyes of the conductor and belated citizen. From the best sources it is learned that the average of prospective marriages in the district traversed by the cable has increased nearly 40 per cent since the introduction of the seductive double decker, and that there is no prospect of any diminution in the present percentage. When the sentimental field is enlarged by the establishment of other cable lines, St. Louis will doubtless become the most matrimonial city in the country, and all through the influence of the humble and hitherto innocuous street car.-St. Louis Republican.

Traction Rope Railways. III.

BY D. J. MILLER.

DISCUSSION BY MR. AUGUSTINE WRIGHT.

I have listened with interest to the paper just read, describing Mr. Miller's Duplicate Cable System, and will attempt to follow the same in what I may say.

In "Wood's Treatise on Railways," there will be found the following: "In the year 1788, Mr. Reynolds completed, at the Ketley Iron Works, an inclined plane, formed of a double iron railroad, by which a loaded boat in passing down a frame, constructed for the purpose, drew up the boats which

were empty. Since that time many inclined planes have been made upon railroads for the purpose of drawing up the empty carriages by the gravitating power of the loaded carriages down the plane."

. . "In 1808, Mr. Cooke erected an engine upon Bertley Fell, in the County of Durham, to draw the loaded carriages up the Capetts Colliery, across the Durham and Newcastle turnpike road, in a steep ascent; and since that time they have been much used upon the railroads in the neighborhood of Newcastle."

The members present are doubtless all aware that when the Liverpool & Manchester Railway was about completed the question of motive power had to be considered. It was the original intention to operate that road by horse power, but the cost of construction proved so great that it became evident that all the toll earned by horse transportation would not suffice for maintenance and interest on the investment. The Board of Directors thereupon decided to refer the question, "What under all circumstances is the best description of moving power to be employed upon Liverpool & Manchester Railway," to a committee consisting of Rastrick, Walker and (Robert) Stephenson, three of the most eminent engineers in England. Rastrick and Walker reported in favor of stationary engines, Stephenson in favor of locomotives. I have that report in my library, and it is very interesting at this day. The plan proposed was to have a train moving toward the power station draw a tail rope. The next train in the opposite direction would be drawn by the tail rope of the first train and draw behind it a rope to be used by the next train in the opposite direction, etc.

The cable system of to-day originated with the construction of the Clay Street Hill Cable Railway in 1873, by A. S. Hallidie and a few friends, in San Francisco. The grades of Clay street were so steep that property was not worth much, but the chances of success in the proposed cable road were considered so slight that property owners preferred to donate money, not deeming the stock of any value. The road was an immediate success, and the system was introduced upon other roads in San Francisco. The steep grades, 17 feet in 100, of San Francisco were very favorable for cable operation, as compared with horse power.

I agree most heartily with all Mr. Miller says of our fellow member, Mr. Charles B. Holmes, of Chicago. It required no ordinary amount of pluck and determination for Mr. Holmes to peril his business reputation and advise his company to risk millions in the construction of a cable road in Chicago, when the variations of temperature, the climatic and traffic conditions were so great. I, for one, must admit that the venture did not meet with my approval. I did not believe it possible to use a cable twenty-five thousand feet long and in addition to moving all the cars with their loads propel another cable passing around five curves of about 50 feet radius and angles of 90 degrees. It is estimated that twentyeight horse power is required for each curve, but this rope does the business. As to the amount of débris that drops into the conduit through the slot opening in the street this will vary not only with every city, but with each block of any street. If the adjoining streets are unpaved each vehicle will carry a greater or less amount of mud on to the paved street, where it drops off. I am informed that the average depth of mud dropping into the Chicago City Railway conduit does not exceed 1½ or 2½ inches deposit in winter months.

Cutting the Carrying Sheaves .- Ordinarily there are provided 165 carrying sheaves per mile of single track cable railway. The tendency was to make these carrying sheaves of the largest possible diameter, thus lessening the amount of power requisite to propel them. With the same size journal, it is evident that the amount of power required to turn the sheave will vary inversely as its radius. For instance, suppose that your journal is one inch in diameter. If the carrying sheave be 12 inches in diameter, and it required two pounds pull to turn it, should you substitute a carrying sheave of 24 inches diameter, one pound would suffice; but this leverage works both ways. Suppose you get a pound of ice or frozen mud on the rim of your carrying sheave. If one pound pull suffices, ordinarily applied to the circumference, to revolve the sheave, it is obvious that it will not revolve against the level of one pound of ice, and the cable would in a short time cut into and ruin the sheave. The carrying sheaves upon the Chicago City Railway were first made 16 inches in diameter, but the ice, etc., stopped their turning, and sheaves of 12 inches diameter have been substituted. The resonant ringing sound of which Mr. Miller speaks is attributed frequently to the method of carrying or supporting the sheave. If it is supported by wire lugs on the wire yoke the vibration is thought to be increased. To lessen this noise Messrs. Knight & Bouticon, engineers of the Grand Avenue cable road in Kansas City, support the carrying sheaves on brick piers.

Regarding the construction, I should differ from Mr. Miller. To my mind, each cable road should not be built and planned entirely to withstand the street traffic. Where great variation in temperature exists, any structure strong enough to withstand the contraction and expansion of the paving or material composing the street surface will have abundant strength to carry any ordinary street traffic. The various roads have cost from \$30,000 to \$105,000 per mile of single track for street work.

Regarding the Duplicate Cable System I would say that it is, in my opinion, simply increasing the first cost as a matter of insurance against detention, and I question whether it is worth the cost. This system is in use upon the Tenth avenue road of New York City and was put in upon the Kansas City Cable road, but afterward abandoned. The reasons given were as follows:

'1st. It took more time to change from one cable to the other than was required to repair a damaged cable.

"2d. The idle cable got cut and chafed by the running cable to such an extent as to render it useless when most required.

"3d. The idle cable by lying in the tunnel got covered with grit and dirt, which is very injurious to it. This objection could be overcome by moving the idle cable slowly with special engines erected for that purpose.

"4th. It involved increased expenditure of capital and labor for which there was no adequate return."

Carrying Sheaves.—Regarding this question, Mr. Henry Root, engineer of the Market street road in San Francisco, informed me that ordinary carrying sheaves had been running since 1878 in that city. The carrying sheave should be accurately balanced and trued up on emery wheels.

REPLY TO MR. WRIGHT—BY MR. MILLER.

Eugineer Wright very honestly admits that the construction of the cable roads in Chicago did not meet with his approval, which is putting it very mild, to say the least.

Mr. Wright remarks "that it is estimated that 28 horse power is required for each curve," presumably referring to the curves on the Chicago road. We take it for granted that he means the power required to move the cable, cars and passengers. For the four curves on the State street road, with nine miles of single track, it required about 115 horse power to move cubles, carrying and guiding pulleys, independent of driving machinery or cars.

Mr. Wright says, "Ordinarily there are provided 165 carrying sheaves per mile of single track," and we presume that he has reference to wheels as spaced in Chicago, namely, at intervals of 32 feet. In New York we place them at intervals of 35 feet.

We judge that the information given by Mr. Wright in regard to hanging the pulleys is second hand, and that he does not speak from personal knowledge on this subject. In our experience we have found that a wheel attached to the truss of the road-bed, or resting on supports independent of the iron structure, or connected to the iron structure of the track with a block of wood inserted to break the metallic connection between the cable, track-rails and slot-rails, really has no effect on the resonance of the carrying pulleys. The ringing sound will be more or less controlled by circumstances; for instance, by the cable being filled with tar or running empty, new or worn cable, and also design of carrying pulley. A new rope with no tar will make considerable noise, whereas a worn cable well filled with tar will make comparatively none. The only way that the noise can be prevented is, as we stated, by filling the carrying pulley with some non-metallic substance. However, the ringing is not sufficient to make any material difference in a street with much traffic

As regards Mr. Wright's knowledge of the duplicate system, we find from his own remarks that this is extremely limited, and

the four objections which he has taken from the STREET RAILWAY JOURNAL (published at No. 113 Liberty street, New York City) are mere assertions made by a party in Kansas City, and these were fully answered about a year ago.

It must be remembered that the inventor of the duplicate cable system was never in Kansas City until the cable road there had been in operation some six months, and we think Mr. Wright somewhat unjust in quoting but one side of the controversy. If duplicate cables are a failure, then the whole cable system is a failure, for the reason that with single rope roads two cables are often operated in the same conduit, and under the same conditions as the duplicate cables are operated in the duplicate system, and we are pleased to inform Mr. Wright that the duplicate cables have been in successful operation on a section of the Chicago roads for four years.

The saving in the pay-roll with the duplicate system will more than pay the interest on the investment for the second rope, to say nothing of the great advantage of keeping the road in constant operation without the use of horses.

Our paper was not intended to describe the duplicate system particularly, but we consider the notice justified by the unquestioned success of the Tenth Avenue cable road.

Owing to the first cost, it is only practicable to adopt the cable system on lines carrying from two thousand to three thousand passengers per mile per day. The small additional cost for the second cable is but a "drop in the bucket" where so large an outlay is to be made, and when the objections to the single rope are considered, chief among which is the frequent stoppageand consequent detention of traffic, we fail to see the economy of doing without the second rope. Were cheapness the principal desideratum we would not construct a cable road.

It is not the investment alone, but the percentage to be realized on the investment, that is the question to be considered.

—Engineering Society Journal.

Important Legal Decision.

The following important street railway decision has been rendered by the Supreme Court of Iowa:—

Des Moines Street Railroad Co., appellant, vs. Des Moines Broad Gauge Street Railway Co.; Des Moines Street Railway Co., appellant, vs. city of Des Moines et al.; Des Moines Street Railway Co., appellant, vs. Des Moines Broad Gauge Railway Co. Appeals from Polk Circuit Court.

These cases are submitted as involving the question as to the respective rights of the plaintiff, the Des Moines Street Railway Co., and the defendant, the Des Moines Broad Gauge Railway Co., to occupy certain streets in the city of Des Moines.

The first case is an action to enjoin the defendant, the Des Moines Broad Gauge Railway Co., from interfering with the plaintiff in laying its tracks upon certain streets and for a decree that it has no rights in these streets.

The second is an injunction to prevent the city and city officers from interfering with the plaintiff in laying its tracks.

The third pertains to a different street, but involves substantially the same legal questions.

The decree rendered is quite lengthy and we cannot properly set it out in full. It enjoined the defendant, the Des Moines Broad Gauge Railway Co., from occupying a portion of one street, and gave the plaintiff an exclusive right therein. It allowed the defendant to occupy other streets and made various provisions in regard to occupancy. Both the plaintiff and the Des Moines Broad Gauge Railway Co. appeal, the former perfecting its appeal first.

the former perfecting its appeal first.

Kauffman & Guernsley, Parsons & Perry for appellant, Baylies & Baylies for appellant

ADAMS, C. J.—The plaintiff's claim is that it has for the present, under the ordinance of the city, an exclusive right to furnish to the city of Des Moines its street railway service, and to occupy for that purpose without hindrance or competition by any other street railway company so many of the streets as may be necessary, and that it will continue to have such right for a limited time to come if it complies with its obligations, express and implied, arising under the ordinances in question. If this claim shall be sustained, the determination thus made will dispose of the other questions in this case.

other questions in this case, In 1868 the council of Des Moines passed an ordinance whereby it granted to the plaintiff's assignor, a company organized as a street railway company, the right to lay a single or double track along all its streets. The same ordinance provided that the right herein granted to said company to operate said railway shall be exclusive for the term of thirty years." Many other provisions were made not important to be set out. The plaintiff relies upon the provision above quoted as being sufficient, so far as its terms are concerned. to give the exclusive right claimed, and insists that the provision is valid, if not originally for want of legislative power, yet subsequently by such grant by the Legislature, and by ratification of the ordinance by the council. The defendant company obtained an ordinance in 1886 and proceeded to occupy certain of the streets with its track. It denies that the right

claimed by the plaintiff under the ordinance of 1866 appears to be given even by the terms of the ordinance. Its position is that the exclusive right granted pertains merely to the operation of the railroads which the plaintiff's assignor should build, and not to the streets, and that the plaintiff's right is not interfered with by occupancy of other or the same street, if the plaintiff is not hindered in the operation of its road.

In our opinion, however, the meaning of

In our opinion, nowever, the meaning of the provision is the same as if it read "the right herein granted to said company to operate said railways shall be exclusive" of other street railways. It was not necessary to provide by ordinances that other persons should not run cars on the plaintiff's assignor's track, nor obstruct its cars, and no one we think looking at the ordinance can suppose that that was all that was intended. So far the plaintiff's assignor's right would be exclusive by reason of the mere right of property and without any ordinance.

If anything more were necessary, we find it in the very section of the ordinance under consideration. It is provided in the same section and same sentence as follows: "And the city of Des Moines shall not until the expiration of said term grant to or confer upon any person or corporation any privileges which will impair or destroy the

rights and privileges herein granted to said

Company."
The right granted was to lay and operate a track on all the streets of the city. The construction and operation of a rival railway would impair the plaintiff's rights. It might not constitute a physical interference, but it would impair if not destroy the plaintiff's enterprise so far as the profits were concerned, and those we may assume constituted the sole object of the enter-We cannot think that there is auy reasonable doubt about the meaning of the We think that the city undertook to exclude rival companies, which would interfere with the profits of the company for whose benefit the provision was intended.

The defendant company's next position is that the provision in question is void for want of power iu the city to make such provision. The fact is that there does not seem to have been, as early as 1866, any legislative grant to the city of power to confer upon an individual or corporation an exclusive right. The plaintiff contends that no such legislative grant was necessary, and adduces some very able arguments in support of its position. We do not find it necessary to determine this question. It was afterward provided in Sec. 464 of the code that the city council shall have "power to authorize or forbid the location and laying down of tracks for railways and street railways." The plaintiff contends that the power to forbid is sufficient to enable the city council to make a granted right practically exclusive for such time as it may see fit by withholding the right from others. This of course cannot be denied. The doubt, if any, is as to whether the council, having the power to make a granted right practically exclusive by withholding it from others, can bind itself by contract to withhold it for a limited time from others, if it shall deem it necessary to make such contract in order to secure a service to the public which it might not otherwise be able to do.

The question presented calls for a construction of the provision of statute which gives the "power to authorize or forbid the laying down of tracks." The plaintiff contends that we have virtually placed a construction upon this statute in the construction given to words of similar the construction given to words of similar import in the charter of the city of Burlington. The case relied upon is Burnington and Henderson County Ferry Co. vs. Davis, The case relied upon is Burlington 48 Iowa, 133. In that case it was held that the power to grant or refuse a ferry license involved the power to make a ferry license

exclusive for a limited time.

The defeudant contends that that construction is not authoritative even in respect to that charter, because the decision of the case might have been placed upon other ground, and besides it is said that the same or similar words should not be so construed when applied to a street railroad.

The court having elected to put the decisiou in that case upon the ground upon which it did, it appears to us, that the con-struction should be deemed authoritative so far as the precise question is concerned which was before the court. Whether the case of a ferry stands upon such peculiar ground that a court would be justified in finding in given words a power to grant an exclusive license more readily than it would find in words of similar import respecting a street railway, the power to graut an exa street railway, the power to graut an ex-clusive right of construction and operation, is a question upon which much might be said. A ferry is looked upon as an exten-sion of a highway. It must be maintained in a safe way, and at stated times, so that the public can rely upon it. It is not prob-able that the requisite service could always

be secured without contract, and in some instances we presume a contract could not be obtained which did not provide for an exclusive right. As to a street railroad, it is said that there is no such exigency, as street railroads furnish only one mode of travel in the midst of others. But street railroads are certainly coming to be regarded as of great importance, if not indispensable. The tendency of modern cities is to spread over large areas for the purpose of securing better light and air. made possible principally by the cheap and easy mode of transit which street railroads furnish. They are not simply a present convenience, but they anticipate and promote the growth of cities. They create to mote the growth of cities. some extent their own patronage by the promotion of the growth and the distribution of the population. Without question they are of sufficient importance to call for very careful consideration both by legislatures in the enactment of statutes concerning them, and by courts in construing the same.

We are justified in assuming that Iowa has to-day a considerable number of cities contemplating the inauguration of street railroad service. In many, probably, if not in most instances, the lines must at first be operated at a loss. In the case at bar it is said that the lives were operated at a loss for fourteen years, being nearly half of the time during which the city undertook to provide an exclusive right. The losses were sustained and additional tracks laid involving an investment of over \$200,000, in reliance upon the future. Almost immediately after the plaintiff's road became remunerative the defendant company sought an opportunity to compete and to divide the very patronage which the plaintiff at its loss had aided in creating. The question presented is as to whether there is any way in which cities can contract against themselves so as to furnish any security that the losses of the early years may be repaired by the profits of the later ones. The defendant company contends that there is

Its position is that it would be unsafe to allow a city to contract even for a limited time, because it cannot anticipate its own wants, and the power if given would be improperly exercised. Its argument is that city councils as a rule have neither sufficient honesty nor foresight. It cites and quotes largely from an opinion by Judge Brewer in Jackson County Horse Ry. Co. vs. Rapid Transit Co., 28 Fed. Rep., 306. In that case the learned judge said: "The city may to-day determine that one street railroad will answer all the wants of the public and so give the privilege of occupying the streets to a single company. years hence, its judgment may be that two

railroads are needed.

It may be conceded that the future growth and wants of a city cannot be fore-The most that can be said is that they may ordinarily be predicted with reasonable approximation for a limited From this we are inclined to think it follows that an ordinance providing for an exclusive right in perpetuity, however necessary it might be to contract for the service involved in the exercise of the right, would be unreasonable and might be declared void. In Dillon, Mu. Cor. Sec. 715, the author commenting upon Davis vs. the mayor of New York, 14 New York, 533, says: "The judgment of the court rests upon the sound principles that the powers of a corporation in respect to the control of its streets are held in trust for the public benefit, and cannot be surrendered or delegated by contract to private parties, and hence the resolution of the city council authorizing private persons to construct and operate a railroad upon cer-

tain terms without power of revocation and without limit as to time, was not a license or act of legislation, but a contract, void, however, because if valid it would deprive the corporation of the control and regulation of its streets.

In the case at bar, the time limited was thirty years, which does not seem to be unreasonable, and especially in view of the fact that the lines were operated at a loss for fourteen years. Possibly thirty years or any shorter time should be deemed too long in any case if the contract were such that the street railroad could be required to meet the public wants as the same should arise. In the case at bar, two miles only of track were especially stipulated for, but it is not denied by the plain-tiff that the acceptance of the ordinance which allows its assignor to lay a track upon all the streets raised an implied contract upon the part of its assignor to lay so much track as reasonably might be demanded by the public. At the time of the commencement of this coutroversy, the plaintiff and its assignor had in fact laid ten miles of track and was contemplating the laying of still more. be that neither the plaintiff nor its assignor did all that it should, but such question is not before us. The ordinance appears to us to be reasonable, and our holding is, that, under our statute which empowers cities to authorize or forbid the laying down of a street railroad track, a city council may make a reasonable provision by contract for present and future street railroad service and may secure the company contracted with against the impairment of its profits for a limited time, and against interference with its extension during the time, if a larger and better or more immediate service cau thus be obtained. This question has never before been determined by this court. But the ruling in Burlington & Henderson County Ferry Co. vs. Davis, 48 Iowa, 133, goes far toward supporting the view which we have expressed. So also as having a slight bearing upon the case, city of Davenport vs. Kelly, 7 Iowa, 102; city of Dubnque vs. Stout, 32 Iowa, 80; city of Burlington vs. the Burlington

Street Railway Co., 49 Iowa, 144.
In New Orleans Gas Co. vs. Louisiana Light Co., 115 U. S., 699, and in Boston & Lowell Railroad Co. vs. Salem & C. Railroad Co., 2 Gray, 1, cited by plaintiff, the question was essentially different, but there is much said in the course of the opinion showing the view those courts took in regard to the importance sometimes of securing a service to the public by contract even though the contract should for a limited time grant an exclusive right.

Other courts have held somewhat different views, supported by more or less weight of reasoning. Some of the reasoning, however, we think, cannot be allowed much weight as applied to the condition and

policy of Iowa.

Having reached the conclusion that nnder the section of the code above cited the power has been conferred to make the contract in question, we have to consider whether it appears that the city council, after the code took effect, ratified the contract which it had previously (and as we will assume without power) undertaken to make.

There is no question but that the council nndertook to adopt an ordinance purporting to revise and readopt certain ordinances, including the one under which the plaintiff's assignor commenced the con-struction of the road. It is claimed, however, that this ordinance is void because it embraced as many subjects as there were ordinances referred to.

For the purposes of the opinion it may be conceded that what purports to be an

ordinance did not take effect as such. But it appears to us that it has the force at least of a resolution so far as the provision in question is concerned. The plaintiff's assignor acted upon it and expended money not only in laying additional track but in paying for street pavement. feel justified in saying that every one un-derstood that the ordinance of 1866 was ratified and binding upon the city and the plaintiff's assignor, and what was done afterwards was done with that understand-

It is true that it is provided in the socalled ordinance relied upon as an act of ratification that "all ordinances granting privileges or which expired after a term of years, shall not be enlarged or abridged by their incorporation into these revised ordi-nances." The defendant relies in part upnances." ou this provision. It insists that if the plaintiff is sustained it would follow that an ordinance granting a privilege would be enlarged.

In one sense this might be true, but not, we think, in the sense of the provision. In our opinion the meaning of the provision is that the ordinances thus revised should not be enlarged beyond the original inten-

The court having reached the conclusion that the plaintiff's right is exclusive, unless there is something in the constitution of Iowa which operated to prevent the Legislature from granting the power in question to the city, proceeds to show that there is nothing in the constitution which will operate in that manner.

Electric Railways in America.

In response to a request from us to furnish a statement of electric roads, the Van Depoele Co. sends us the following:-

The running of street railways by electricity has proven a grand success, and street railways all over the country are contemplating a change from horses to electricity.

The Van Depoele Electric Manufacturing Co. have equipped eight roads, some of which have been running over a year, and all are making money. The following roads are all running successfully by the Van Depoele system:-

Capital City Electric Railway Co., Montgomery, Ala. 13 miles, 20 cars, 8 per cent grades.

Dix road, Detroit, Mich. 2 miles, 2 trains of 6 cars, 2 per cent grades.

Appleton Electric Railway, Appleton, Wis. 4 miles, 5 cars, 8 per cent grades.

Windsor Electric Railway, Windsor, Oat. 2 miles, 2 cars, 2 per cent grades.

Scranton Suburban Railway, Scran-4 miles, 5 cars, 7 per cent ton. Pa. grades.

Port Huron Electric Railway Co., Port Huron, Mich. 41 miles, 4 cars, 3 per cent grades.

Binghamton Electric Railway, Binghamton, N. Y. 5 miles, 7 cars, 6 per cent

Lima Street Railway, Lima, O. 4 miles. 5 cars, 2 per cent grades.

The cars run from six to twenty miles an hour, as desired. Roads are being equipped under the Van Depoele system at Ansonia, Conn., St. Catherine's, Ont., Can.,

Brooklyn, N. Y.

Notes and Items.

Albany, Ga.

A Company has been organized by J. G. Stephens and others to build a street railway and water works.

Allegheny, Pa.

NUNNERY HILL INCLINE PLANE RY. Co.'s road will be opened about Oct. 1. It is 1,200 ft. long, rising from the head of Federal street to the top of Nunnery Hill, about 200 ft. high. It is of about 5 ft. gauge. They will run 2 cars, using a wire rope and drum. The capital stock is \$60,-000. The officers are: President, Oliver P. Scaife; Secretary, Arthur Kennedy; Treasurer, C. C. Scaife.

OBSERVATORY HILL PASS. Ry. Co. have their line about half completed already, and the road will be opened about the 1st of October. They will have 4 miles of track, of 5 ft. 2 in. gauge, 4 cars, operated by electricity, with motors under the cars. The Bentley-Knight system will be used, with 3 miles overhead wire and 1 mile conduit in city streets. The capital stock is \$125,000. The officers are: President, Oliver T Scaife; Secretary, Arthur Kennedy; Treasurer, James B. Scott.

Ausonia, Coun.

DERBY HORSE RAILWAY Co. write as follows:--"Replying to your favor of 7th in t., I would say that our company was originally chartered in 1885, and that the charter was amended during March of this year. We are given extraordinary powers by this instrument, having the right of carrying freight and merchandise, as well as passengers, and to use any motor power we wish. After careful investigation of various electrical and other plans, by a competent electrician, and by Charles Ackenheil, Chief Engineer of the B. & O. R. R., we decided upon adopting the Van Depoele electrical system. We are building the road in a very substantial manner, using full size steam ties, 3 ft. 6 in. from center, and other material proportionately, as the principal object of our road is to connect the large manufacturing establishments of Ansonia and Birmingham with tide water at Perby dock. We shall, however, give a good passenger service on the line. We shall equip with four passenger motor cars, with probably one or two additional passenger cars. For our freight business, we are having constructed a 65 H. P. motor, and shall put 8 freight cars on the line this season. Next spring shall probably more than double that number. While we commenced construction May 2d. it will probably be Sept. 1st, or later, before we get into operation, as the municipal authorities are to grade down the only serious hill upon our line. We are therefore at present not pushing construction strongly, as we are waiting for this grading. Our capital stock is now \$40,000. and will be increased to \$50,000 or \$60,000. It is held by parties who have direct interests in the success of the enterprise legitimately." The company will have 31 miles of track, of standard gauge, 46 lb. rail, 4 passenger cars, 5 motors, The officers are: President, John B. Wallace; Vice President, H Holton Wood: Secretary and Treasurer, William J. Clark; Superintendent, James D. Kennedy.

Asbury Park, N. J.

SEASHORE ELECTRIC Ry. Co. The first spike was driven June 24, and it is expected that cars will be running in a week. It will have 4 miles of track, of 4 ft. 81 in. gauge, 47 lb. rail, 15 cars, operated by the D ift system. President, Henry S. Iselin; Secretary and Treasurer, Daniel G. Thompson; Superintendent, G. L. Joralemon. A. J. Hutchinson has the contract. Next year the road will be extended to Ocean Beach.

Asheville, N. C.

THE NEW SCREET RAILWAY. C. M. MC Cloud is said to be interested in the line.

J. H. Dorsey, it is said, will build a line here.

Bellevne, Pa.

THE ELECTRIC RAILWAY here will be operated with a 100 H. P. Westinghouse engine.

Berlin, Germany.

THE TRAMWAYS Co. of Berlin has about d cided to substitute electricity for horses. Blaghamton, N. Y.

THE VAN DEPOELE ELECTRIC ROAD ON Washington street is nearly completed. The local papers speak very enthusiastically of the new road, and it promises to become very popular, and in fact we believe electric roads as a rule have so proven.

Birmingham, Ala.

WALKER LAND Co. will build a dummy

Blackburn, England.

BLACKBURN CORPORATION TRAMWAYS line has been opened for traffic. It is laid with steel girder rails, 88 lbs. per yard, and paved throughout with granite sets 5 in. deep.

Boston, Mass.

WEST END ST. RY. Co. The car which is being built by the John Stephenson Co. for this company, and which is equipped with the Julien electric system, is nearly ready for shipment. It has storage batteries of 5 H. P. The West End company has contracted with the Julien Electric Co. for a number of batteries, and some have already been delivered. This company expects to have from 8 to 15 miles of track when completed, of 4 ft. 81 in. gauge, 92 100 lb. rail; and report that work will be commenced some time in the fall probably. The capital stock at present is \$40,000; office, Equitable building.

SUBURBAN St. Ry. Co. expect to commence work this summer, and to open their road in the fall. They contemplate a length of track of 5 miles, of 4 ft. 84 in. gauge. Henry M. Whitney is President. No other officers have been elected yet. The capital stock is \$50,000.

Bridgeton, N. J.

THE ELECTRIC RAILWAY to which we referred last week will be about one and onethird miles long, on the main business and residence street of the town. If it succeeds, a cross town line of the same length will be built. Oberlin Smith, President of the Ferracute Machine Co., is identified with the project.

Brooklyn, N. Y.

ATLANTIC AVE. R. R. Co. The city authorities have revoked the permission granted some time ago to change the location of the tracks on Ninth avenue.

Franklin Ave. R. R. Co., which was organized in May of this year, has taken the property of the former Grand St., Prospect Park & Flatbush Ave. R. R. Co.

BUSHWICK R. R. Co. increases from 172 cars to 187, from 600 horses to 650. They have $23\frac{1}{2}$ miles of track. William H. Husted is now President, and Edwin Beers Vice President. Other officers are unchanged.

PROSPECT PARK & FLATBUSH R. R. Co. reports a new list of officers, as follows: President, John G. Jenkins; Secretary and Superintendent, W. G. Hovey; Treasurer, Theodore F. Jackson. They have now 4 cars and 16 horses.

BROOKLYN CITY & NEWTOWN R. R. Co. Every second car on the Franklin avenue line now switches off at De Kalb avenue and runs to Fulton street, the City Hall and the Bridge. De Kalb avenue cars by using the new switch can now carry passengers from Ridgewood to Prospect Park and Bedford station without transfer.

BROOKLYN CITY R. R. Co. It is stated that the recent break of the Park avenue cable, together with other circumstances which have developed in the working of cable roads, have induced some of the most influential directors in this company to favor a change to the electric rather than cable system, and that the Julien motors, as used on Eighth avenue, will probably be adopted. The City company's extension to Fort Hamilton is proving very profitable. On Sunday, July 3, 33,000 people were carried over the road and almost as many on the Fourth.

BROOKLYN CABLE R. R. Co. The Supreme Court has denied the right of the company to lay its tracks on Central avenue, and has decided that the Broadway R. R. Co. has the prior right to that thoroughfare. As the cable road could not be operated except at great loss, without Central avenue, the company discontinued operations July 15. Arrangements were made with the Brooklyn Cross Town R. R. Co., who at once put their cars on the line. The route will be over the cable line to Park and Throop avenues, thence through Throop avenue to Manhattan avenue, to Union, to the Greenpoint ferry. It is understood that the company, as soon as matters are straightened out, will also inaugurate a system of transfer between its old line and its new one. The cable company, in a notice posted in the new cars, speaks of "having made arrangements for an extension in another direction." Their counsel says that "the Atlantic Avenue R. R. Co. sold the cable company the right to Central avenue, and this will probably bring about a litigation between the two companies." President Richardson, of the Atlantic avenue road, says he was not consulted in the matter, and that the change was a complete surprise to him. He anticipated a lively legal controversy. The cable road had been having trouble with its employees, and it is possible that a tie-up might have resulted in consequence. An official of the cable company says: "We don't want a road that we have to run by means of horses at each end and cable in the middle, and it would not pay us to put the cable in Central avenue only. If Mr. Richardson gets Central avenue we will put our cable in from Evergreen Cemetery to the Fulton Ferry. In the mean time we have a good offer from Gen. Slocum and the Cross Town Railroad Co. for the lease which he bought from Mr. Richardson, and he has sold it to him with the express stipulation that in case Richardson gets Central avenue we will be allowed by him to put our cable in. The cross-town cars will run over the route whether we put the cable in or not. The latter will not interfere with the horses in any way."

Brunswick, Ga.

Brunswick St. R. R. Co. reports 6 cars and 25 horses. The road is laid with 38 lb. steel rail.

Buffalo, N. Y.

THE LEIB LUBRICATING Co. report increasing sales of the Dux Lubricant, and report orders from as far west as Topeka, Kan. They have established agencies at Williamsport, Pa.; Chicago, Ill.; and are about to start one in Boston.

Buffalo St. R. R. Co.'s large barn, at the corner of Main and Virginia streets, was burned July 21st. Horses, cars and nearly everything of value were saved. The barn was large enough for 312 horses. The cause of the fire, which started in a large brewery, is unknown. The barn was well insured.

Burlington, Ia.

UNION ST. RY. Co. Work on the extension has begun. When completed the company will make trips at more frequent intervals on other portions of its line.

Burlington, Vt.

Winooski & Burlington St. Ry. Co. increases to 8 cars and 30 horses.

Butte, Montana Terr.

ELECTRIC RAILWAY. C. O. Bean has charge of the work of construction.

Cope May, N. J.

CAPE MAY & SCHELLENGER'S LANDING R. R. Co. William Wharton, Jr., is President, William Selfridge Secretary and Treasurer, and James Leaming Superintendent.

Carbondale, Pa.

CARBONDALE & JERMYN ELECTRIC Rx. will connect these two towns. It will have 4½ miles of track, of 4 ft. 8½ in. gauge, 38 lb. rail, with 2 cars, operated by Sprague electric motors. Work was to have begun in July and the road to be opened in September. The company has a capital stock of \$50,000. The officers are: President, John W. Aitken; Vice President, A. Mitchell; Secretary and Treasurer, M. Moses.

Chattanooga, Tenn.

TENNESSEE RIVER & WALDEN'S RIDGE R.

R. Co. has been incorporated by S. J. A. Frazier, J. S. Bell, S. R. Read, P. D. Sims, John C. Griffiss and E. M. Dodson, "for the purpose of constructing a railroad from the Tennessee river at or near Hill City, in the county of Hamilton, to Walden's Ridge, with such branches, side lines and cross lines as the company may think proper to construct, or connect with other points in said county, north of the Tennessee river; in the operation of which the company may use horses, steam engines or other motive power." It will probably be operated as a dummy line.

Chicago, Ill.

THE VAN DEPOELE ELECTRIC MANUFACT-URING Co. are crowding their shops to fill orders. They started the first roads running by electricity in Canada, Michigan. Pennsylvania, Wisconsin, Alabama, Ohio and New York, and run the first road experimentally in Illinois, and will soon run the first one commercially. Street railways are run exclusively by electricity in the following cities: Montgomery, Ala.; Appleton, Wis.; Detroit, Mich., (the Dix road); Windsor, Ont.; Scranton, Pa.; Port Huron, Mich.; and Binghamton, N. Y. When asked how the Van Depoele system would work on the proposed elevated railroad on State street, say from Van Buren street to Hyde Park, Gen. Stiles said: "It would be simply perfect. The wires carrying the motive power would be placed on the trestle-work or over the top of the cars, and could be used for all purposes, lighting, heating and motive power. There could be no objectionable features whatever." "Five years," he said, "is more than the average useful life of a horse for street car purposes. We have thoroughly demonstrated the fact that cars can be run by electricity under the Van Depoele system for one-half the cost of horses, with coal figured on the basis of \$6 per ton." The new Van Depoele electric road at Lima, O., was formally opened July 4th. Cars were run all day without a break or stop. Great enthusiasm was manifested by the people, many thousands being present. The new electric road, Van Depoele system, at Ansonia, Conn., is to be in complete operation about Sept. 1.

OUR CHICAGO LETTER.

Elevated roads in Chicago are probably not a thing of the near future, though I was told the other day that the promoters of the system have by no means given up the fight, but are still in the arena. Certain it is that cable and electric roads seem to be growing in favor with the people here every day. The new cable lines are nearing completion, and it is a significant fact that but recently the City Passenger Railway Co. submitted an ordinance to the City Council asking permission to build and operate a single or double track on Michigan avenue from Madison street to Washington, along Washington as far as Des Plaines, including the tunnel, the same to be operated by electrical power or cable. A petition is also being circulated on West Harrison and Adams streets for a cable road.

Mr. Yerkes' North Side cable is progressing rapidly, and the construction is now nearly complete, nine miles having already been laid, leaving about one mile more in curves. Vaults are now being constructed and curves laid, which may be called the finishing work. The City Council has extended the time to four years in which the second track on La Salle street may be laid, at the option of the company. Both power stations will be completed in August. One and one-half miles double horse car track has just been completed on Division street, also one mile in Lake View. Some thirty or forty new box cars, made by the Brill Co., Philadelphia, are now building for them. These, I understand, are of a new pattern, and are to be mounted on trucks.

The City Railway Co. expect to have the track all laid on their Cottage Grove avenue extension by Aug. 1. The new engines which are to drive the heavy machinery have already arrived, and will be placed in position soon, as the buildings which they are to occupy are nearly completed. The tracks of the cable lines on State street and Wabash avenue are being relaid from Madison street to Twenty-second, with 75 lb. T rail. This makes a very heavy rail and is in fact I believe one of the heaviest used in street railway construction. The advantage in its use, it is expected, will be in producing an entirely smooth surface and the non-liability to get out of position, as it is known that the heavy trucks and wagons, used in teaming, which pass over the tracks daily, are a severe test on track construction, more so than the cars themselves.

The Van Depoele people are crowded to their utmost capacity to fill orders for electrical appliances for the equipment of the roads which they have under construction. They have just shipped to Montgomery, Ala., a 60 arc light dynamo, to be used in furnishing light in connection with the new electric road, which besides lighting the city will also furnish light for Highland Park, a suburb. A number of small stationary motors are being placed, in connection with this plant, to furnish power for printing presses and other places where light machinery is used. These are certainly progressive ideas, and are new departures in the economical use and application of electricity in connection with the successful operation of a street railway. The same company have just completed eight 100 H. P. generators, which are already sold and are to be shipped to various points.

The Cline Manufacturing Co. have their works in running order and are filling numerous orders for their heaters and patent fuel, which have been recently received. They have made improvements in their heaters, which clearly have an advantage over the old style, as they effect a saving in fuel and the cost of construction, as two heaters will take the place of the four formerly used.

Cincinnati, O.

CINCINNATI, BURNET WOODS, CLIFTON &

CUMMINSVILLE St. R. R. Co. has been incorporated by Thomas Morrison and others, with a capital stock of \$500,000.

Smoking has been absolutely forbidden on any part of Cincinnati's horse cars.

ELECTRIC RAILWAYS. It is reported that about twelve miles of electric railway will be equipped this fall in Cincinnati.

CINCINNATI ST. Rv. Co. Work has begun on the double track extension to North Fairmount by way of the new Baltimore pike, and it will be finished early in August. Ground has also been broken for the extension of Route 18 to the Wesleyan cemetery, Cumminsville; and work will soon begin on the extension from Cumminsville up the Hamilton pike to Josephine street. Both lines will probably be completed within a month.

Cleveland, O.

THE STREET RAILWAY SUPPLY Co. report an increasing business, and state that their actual showing, made July 1st, indicates a better business than has ever been done before by the establishment, and the STREET RAILWAY JOURNAL is very frankly given its share of the credit.

WOODLAND AVE. & WEST SIDE R. R. Co. secured the right of way some time since to lay a single track from Pearl street through Franklin avenue. An application from the Brooklyn Street Railroad Co. to extend its line through Franklin avenue between State and Harbor streets, has been received by the City Council, and with it a remonstrance from property owners on Franklin avenue against the building of a single track road. Mr. M. A. Hanna explained that when the Woodland Avenue & West Side Co. secured permission of the property owners to lay a track, nothing was heard of a double track. A double track would necessitate the widening of the street and the city would be liable for heavy damages to the property owners. On the other hand, it was suggested that the two roads occupy the tracks jointly. The whole matter was deferred. Cologne, Germany.

THE COLOGNE-EHRENFELD TRAMWAY Co. has made some satisfactory experiments with electrical traction, using accumulators placed under the seats of the cars.

Corsicana, Tex.

A New Company is organizing here to build a street railway.

Cortland, N. Y.

CORTLAND & HOMER HORSE R. R. Co. E. A. Fish is now President.

Dalias, Tex.

Dallas Consolidated St. Rv. Co. will build about three miles of new line this year. They have now 26 cars and 200 mules, an increase of 74 mules since their last report. Capital stock, \$250,000.

Davenport, Ia.

BRIDGE, SECOND ST. & NORTHWESTERN ST. RY. Co. will be built this year. Contracts are about to be given for material, etc.; and a committee have been East investigating the different electric motors. Joseph Ochs is Secretary.

Dayton, O.

JOHN KILGOUR'S road, the White Line, is to be equipped with the Van Depoele electric system. The contract requires the road to be completed in 90 days. Nine cars will be employed. The conductors will be partly overhead and partly in a conduit.

Detroit, Mich.

Springwells, Ecorse & Wyandotte R. R. Co. has been incorporated by J. B. Molony and others, with a capital stock of \$10,000.

Eureka, Cal.

ELECTRIC RAILWAY. A company has been formed here to operate an electric railway. Fitchburg, Mass.

A Panic occurred July 4 on a Fitchburg Street Railway car, in which one woman was killed and several others received serious injuries. The car had 90 people on board. The horses became frightened by some fireworks, and the driver lost control of them. Some one shouted, "Jump for your life," and in the rush a number of persons who were on the platforms were pushed off. The car did not leave the track.

Flushing, N. V.

Flushing & College Point R. R. Co. The village trustees granted this new company, July 4, a franchise for a street railway, from College Point to Flushing. There was sharp competition between the successful company and the electric railroad company. The village will receive 4 1-20 per cent of the gross receipts for the first ten years, 5 1-20 per cent for the second ten years, and 6 1-20 per cent thereafter. The railroad, it is expected, will be built and equipped within six months. Supervisor Joseph Dykes is President of the company.

Forestville, Ga.

PRINTUP CITY & FORESTVILLE ST. R. R. Co. has been organized. Forestville is near Rome.

Fort Worth, Tex.

NORTH SIDE ST. Rv. Co., capital stock \$100,000, has been chartered by J. P. Smith, N. G. Ellis, N. T. Byers, W. A. Huffman and John D. Templeton.

Framingham, Mass.

Framingham Union St. Ry. Co. This new company is likely to adopt electricity.

Frankfort, N. Y.

FRANKFORT & ILION ST. RY. Co. John A. Giblin, of Troy, is now Secretary and Treasurer.

Galveston, Tex.

GALVESTON CITY St. Ry. Co. will extend their line, and it is thought that they will soon run their cars by electricity.

Grand Rapids, Mich.

Cable St. Rv. Co. has been incorporated by Robert Wetherell and others, with a capital stock of \$500,000.

Valley City St. Ry. Co. has been incorporated, with a capital stock of \$200,000. Both cable and horse power will be used. Work will be commenced at once; and the cable system will be opened by the 1st of next January and the entire road by June 1, 1888. There will be 5 miles of track, ex-

clusive of sidings, of 4 ft. 8½ in. gauge, 28 lb. rail, with 14 cars at first. The officers are: President, William P. Innes; Vice President, A. M. Eggleston; Secretary and Treasurer, Robert W. Innes; Engineer, William Sherix.

Glens Falls, N. Y.

GLENS FALLS, SANDY HILL & FORT ED-WARD ST. R. R. Co. has 8 cars, 25 horses. The only change in officers is that B. B. Fowler is now Secretary and Treasurer, and Martin Byrnes Acting Superintendent. Gratiot, Mich.

Gratiot Electric Ry. Co.'s road runs to Windermere Summer Hotel and Huronia Beach, on the shore of Lake Huron. Its power is furnished by the Port Huron Electric Railway plant, with which it connects. They have at present one motor cur and one summer car. The Van Depoele overhead system is used.

Gravesend, N. Y.

CONEY ISLAND ELECTRICAL RAILWAY Co. has been incorporated by Sumner T. Dunman and others, with a capital stock of \$100,000.

Greensboro, Ala.

A DUMMY LINE, it is understood, will be built by Coleman & Coleman.

Greenville, S. C.

STREET RY. Co. OF THE CITY OF GREEN-VILLE reports 21 miles of track, of 5 ft. gauge, 16 lb. rail, 6 cars, 34 mules. President, T. C. Gowen; Secretary, G. G. Wells; Superintendent, P. H. Reilly. Gowen & Reilly are proprietors and owners.

Halifax, N. S.

Halifax St. Ry. Co. (Lim.) The officers of this company are as follows: President, John R. Bothwell; Vice President and Treasurer, John F. Zebley; Secretary, H. B. Zebley; Superintendent, J. C. Mc Donald.

Hamilton, O.

Hamilton St. Rv. Co. has 25 lb. rail, 11 cars and 15 horses. The officers are: President, James S. Griffin; Secretary, D. V. Parrish; Treasurer, H. L. Morey.

Hartford, Conn.

Hartford & Wethersfield Horse R. R. Co. President Goodrich has been investigating the possibilities of electric propulsion for street cars. The Hartford Light & Power Co. will furnish current. The tests are to be made on the Main street route.

Hastings, Neb.

Hastings Improvement Co. have 10 miles of track laid down and under construction, of 4 ft. 8½ in. gauge. They have 6 cars, with 10 more under construction, 30 mules and 12 horses. The officers are as follows: President, James B. Heartwell; Vice President, J. J. Wemple; Secretary, Charles D. Heartwell; Treasurer, H. Bostwick; Superintendent. J. A. Kraft.

CITIZENS' ST. RY. Co. The city recently voted this company a franchise similar to that given the Hastings Improvement Co. early last spring. Each company's franchise gives it the right to "lay and operate a street railway upon the various streets of the city," each, however, being required

to lay its track "in the center of the street." The result has been that each company has had a gang of men filling up the tie holes of the opposition as fast as they could be dug; and a lively contest is anticipated in the courts.

Hudson, N. Y.

THE FRANCHISE for a street railway here was offered for sale at auction at the Mayor's office, and as the only bid was from Edward J. Hodge, it was knocked down to him for \$1.25. Mr. Hodge says he stands ready to construct the road as soon as all the requirements can be complied with under the new law.

Indianapolis, Ind.

A CHARTER has been granted by the City Council to a recently organized street car company to operate a system of street car lines by means of electricity, cables or horse power. It is understood that several of the stockholders favor electricity. A letter from the General Manager of the company states that he will arrive in Indianapolis in a few days, and work will be at once commenced upon a line from Houghville to Woodruff Place, a distance of about eight miles.

INDIANAPOLIS CABLE St. R. R. Co. has been incorporated by Joseph R. Jackson and others, with a capital stock of \$1,000,000.

Jackson, Tenn.

Jackson & Suburban St. Ry. Co. Work will begin at once, and it is expected that the first mile will be opened in 90 days. The total length of track contemplated is 6 miles, of 4 ft. gauge, 30 lb. rail. They have 4 cars now; will get more next year. Will require 40 mules. The capital stock is \$50,000, and the officers are: President and General Manager, C. P. Heath; Vice President, J. H. Duke; Secretary, R. B. Crawford; Treasurer, J. L. Wisdom.

Jersey City, N. J.

Pavonia Horse R. R. Co. has 24 cars and 150 horses, with 5 miles of track, of 4 ft. 10 in. gauge and 40 lb. rail. J. H. Small is Manager.

JERSEY CITY & BERGEN R. R. Co., it is reported, is about to begin operating by electricity, using storage batteries and motors of the form devised by J. Weiss, of Jersey City.

Kunsas City, Mo.

METROPOLITAN ST. Rv. Co. An ordinance allowing the company to extend its Twelfth street line has been passed, and includes a provision that electric lights must be placed all along the extension.

LINDELL St. Ry. Co. has taken steps toward running an electric line. A Julien motor was attached to a car recently, and a round trip was successfully made. The dynamo in the company's barn is too small to charge the storage batter: es as rapidly as is desired and to remove that inconvenience a wire has been run from the Brush electric light plant to the car barn. The electric car is now used regularly. They are nowalso trying a Sprague motor. It swings between the axle and a thwart piece, and the interposition of a single pinion working in a gear, will give revolution to the car

wheel. There will be one gear engaged at each end of the armature shaft, which allows one to be fixed and the other adjustable. The motor delivers $7\frac{1}{2}$ H. P. on its armature shaft, and there being one of these on each axle 15 H. P. is furnished. At a recent meeting of the Board of Directors of the company the question of electric motors came up, and a decided partiality was shown for them. This is best shown by the fact that the board authorized the President to purchase five more motors.

KANSAS CITY ELECTRIC RAILWAY has proven a complete success. It carries thousands of passengers daily, and is making its proprietors a hundred dollars a day above all running expenses. The line will be extended to the farthest limit of the most eastern suburb of the city, and its number of cars will be doubled. It now runs four and five cars regularly. It is understood that it will soon be consolidated with the Metropolitan Street Railway Co., the most extensive company in the city, and that this will lead to the adoption of the electric system upon all the present mule lines of the company and upon all the proposed ex-A speed of tensions and new lines. eight miles an hour is maintained for the entire length of the road, and on trial bursts of speed a rate of sixteen miles an hour has been attained, with a heavily The cars run backward and loaded car. forward with equal ease, and the speed is accelerated or decreased as gradually as may be desired. Over a year ago the Council granted a franchise to what was known as the Fifth Street Railway Co. for a railway on Fifth street. Tracks were built for a horse car line; but operations were never begun. Afterward the Electric Railway Co. leased the tracks, rights and privileges of the Fifth Street Railway Co. A short time ago the Council repealed the franchise of the latter company. Whether this has any effect on the electric road is not determined, but prominent attorneys, including the City Counselor himself, give it as their opinion that the Council had no right or power to repeal the franchise after the tracks had been built, and had been virtually in operation through the lease of the electric road.

Keyport, N. J.

KEYPORT & MATAWAN ST. Ry. Co. organized July 8, and expect to have their line, consisting of 31 miles of single track, completed by Sept. 1. The road is of 4 ft. 81 in. gauge, and they are using 38 lb. girder side bearing rail. They will have 6 cars and 40 horses. The officers are: President, William H. Reid; Vice President, Daniel W. Pugh; Secretary, John S. Pugh; Treasurer, Frank D. Russell. The Board of Directors consists of Daniel W. Pugh, John S. Pugh, Frank D. Russell, New York; George D. Keeter, Brooklyn; William H. Reid, Thomas B. Brown, John D. Sprowl, Dr. J. Arrowsmith, Charles H. Whitlock, Keyport; David A. Bell, Matawan.

Knoxville, Tenn.

A NEW STREET RAILWAY will be built by

P. Kern, L. H. Hamilton, S. B. Luttrell and others.

KNONVILLE ST. R. R. Co. have just completed their Edgewood extension, 1 mile. They report 3 miles of track, with 5 cars and 33 horses.

Laredo, Tex.

THE CITY COUNCIL having declined granting a right of way on the terms asked, nothing has been done yet in regard to the projected street railway here.

Lexington, Ga.

A DUMMY LINE will be built from this town to Crawford by W. A. Shackelford and others.

Lima, O.

LIMA ST. Rv., Motor & Power Co. This new electric road, operated by the Van Depoele system, was opened July 4. On the opening day 10,000 passengers were carried, with 5 cars. The company has $3\frac{1}{2}$ miles of completed track and 10 miles contemplated. It is of 4 ft. $8\frac{1}{2}$ in. gauge, with 40 lb. Johnson steel rail, 8 cars, 8 motors. The authorized capital stock is \$100,000, of which \$50,000 is paid in. B. C. Faurot is President and F. L. Langan Secretary and Treasurer.

Logansport, Ind.

LOGANSPORT Ry. Co. has increased from 2½ to 4 miles of track, from 6 cars to 9, and from 39 mules to 46.

London, England.

ELECTRIC RAILWAYS. Operations were begun a few weeks ago with the Elieson storage cars of the North Metropolitan Tramway Co.'s line. On the first day about 1,700 passengers were carried by two cars, and since then one car daily has been running steadily and successfully, hauling passengers at the rate of 7,000 a week. Tests were made recently at Brixton, London, of a Jarman electric car on a line of grade 1 in 40, and with a curve of 43 ft. radius. The trial appears to have been successful. Full speed was obtained within a few yards, and the car was stopped within a space of 6 ft., when going 8 miles an hour.

Los Angeles, Cal.

AZUSA VALLEY ST. R. R. Co. has been incorporated by J. S. Phillips and others, with a capital stock of \$100,000.

ELECTRIC RAILWAY. It is proposed to pattern the projected electric railway here after the one at Kansas City.

Los Angeles Cable R. R. Co. The franchise which the City Council seems disposed to give is for fifty years, and allows the company the use of the principal streets of the city; but it is expressly stipulated that the consent of the street railway companies must be obtained, that is, operations in a section now covered by a certain company can not begin without the consent of that company, and so with the other sections of the city. It is stated that this new franchise is but a consolidation of others that have already been granted.

CENTRAL PASSENGER R. R. Co. has decided to run a 15-minute line to Clifton, which is to leave the present Payne street line at Young street, and run along this

street to the Shelbyville pike, and thence back to the Crescent Hill line. The Clifton people have guaranteed a part of the cost of construction, and the line is to be in operation in a few weeks.

Lowell, Mass.

Lowell Horse R. R. Co. has now 12 miles of track, with 43 cars and 160 horses.

LOWBLL & DRACUT ST. Ry. Co. increases to 9 miles of track, with 10 cars running and 6 more ordered, and 120 horses. They have 35 lb. iron rail and 1½ miles Longstreet rail. The officers are: President, Aug. Fels; Treasurer, Walter M. Sawyer; Superintendent, John F. Murphy.

Lynchburg, Va.

LYNCHBURG St. Ry. Co. increases to 7 cars and 38 horses.

Manchester, N. II.

MANCHESTER HORSE R. R. has obtained permission to lay out a branch line down Bridge street, across McGregor bridge, down McGregor street to North Main, thence connecting with the main line. Another branch is to run through Bedford, Central, Chestnut and Laurel streets to Hall street, the abutters along the route being awarded one cent damages. The matter of the extension on Massabesic street was postponed.

Marion, O.

Marion St. R. R. Co. has not yet taken definite shape, but it is expected that it will within a short time construct a line from one to four miles long. The motive power will probably be electric, though it is said that some of the parties interested talk of using crude petroleum engines. The construction of the road is somewhat contingent upon the completion of other railroad lines to Marion, now in contemplation.

Memphis, Tenn.

Union St. R. R. Co. A charter has been obtained for this company, but it has never been organized and no stock has been issued or officers elected. The charter may be used at some future time if needed.

Middletown, Conn.

MIDDLETOWN HORSE R. R. Co. The directors have made a contract for the equipment of their line as an electric railway on the Daft system. Four cars will be put in operation at once, and a 60 H. P. dynamo has been ordered for the central station. Overhead conductors will be used. The motors will be placed under the car, suspended between the axles. The cars will be lighted by electricity from the power circuit.

Milwankee, Wis.

CREAM CITY R. R. Co.'s request for a franchise for a line over Dock street bridge and northerly into the Thirteenth ward came up before the City Council, and met with considerable opposition from friends of the Milwaukee City Railway Co. Nothing was decided upon.

MILWAUKEE & WAUWATOSA CABLE RY.
Co., a new company, in which Frank L.
Gilson and Judge Frisby are interested,
want to connect the city with the outskirts.
WEST SIDE ST. RY. Co. ask the Council

for permission to convert their line into a cable road.

MILWAUKEE CITY Rv. Co. think the city is not yet large enough to justify the building of a cable road, which will cost from \$80,000 to \$100,000 a mile. The company has a large force of men at work laying the railroad track from the junction of Third and West Water streets down Third street to the corner of Sycamore street. The franchise was granted long ago.

Mobile, Ala.

THE NEW COMPANY of Nashville and New York capitalists, headed by William M. Duncan, who recently purchased all the street railway lines of Mobile for \$275,000, has taken charge. The property consists of the City Railroad Co., 18 miles of track; Frascati park and Amusement hall, 10 acres; a farm of 40 acres, a square of ground, stables and 5 acres of ground on Davis avenue, stables and 3 acres on Wilkinson street, brick stables on Royal street, 5 lots on Franklin street, 2 lots on Conception street, 60 cars and 200 mules; the Dauphin Street Railroad Co., 2 miles of track, stables and 2 acres of ground, 6 cars and 15 mules; Springhill Railroad Co., 7 miles of track, stables and 5 acres of ground, 10 cars and 25 mules. The company asks for right of way for important improvements, including lines over several new streets.

Montgomery, Ala.

THE ELECTRIC RAILWAY. All the mule cars have been taken off the 15 miles of street railway in Montgomery, and that city now claims the pre-eminence of being the only city in the world whose street railways are run entirely by electricity. The Advertiser said, the day after the change: "As if conscious that they had supplanted the festive mule for good and all, the cars ran about twice as fast as before and made schedule time. The speed now as a rule is equal to that of a dummy, and the cars go up hill and down hill with a delightful unconsciousness of change in grades. The electric cars are a success. One motor can pull several cars, which is a vast advantage over a mule. Yesterday a car with 15 H. P. motor had two summer cars attached, and pulled them full of people out to Highland park without diminishing the ordinary speed. The whole system represents an expenditure of \$175,-000."

THE VAN DEPOELS ELECTRIC MANUFACTURING Co., of Chicago, have decided to establish a branch factory here, at which 150 men will be employed.

Mancie, Ind.

MUNCIE CITY RY. Co. has been incorporated by W. W. Ball and others, with a capital stock of \$100,000.

Nashville, Tenn.

Nashville & West Nashville St. Ry. Co. has been organized. This is a dummy line, leading to the new town of West Nashville. The work of construction has already begun, and it is to be pushed to completion.

Newburgh, N. Y.

THIRD St. R. R. Co. has been incorpo-

rated, with a capital stock of \$40,000. Cornelius L. Waring is Secretary and Treasurer. The road will be about a mile long, and will be operated by cable power. Correspondence with builders of cable roads is solicited.

New Castle, Pa.

New Castle St. Ry. Co. will begin work this summer or fall, and will open their road next year. They will have 3 miles of track. The capital stock of the company is now \$8,000, and will be increased to \$25,000. The officers are: President, G. W. Johnson; Vice President, L. Raney; Secretary, Charles S. Wallace; who with P. L. Kimberly and M. S. Marquis are Directors.

Newport, Ky.

A Company has been organized to build a street railroad here.

Newton, Mass.

Newton St. R. R. Co. will begin work as soon as the Aldermen approve their location. They have a capital stock of \$50,000. They will have 6 miles of track, of 4 ft. 8½ in. gauge, 52 lb. rail, 12 cars with motors, operated by electricity. The officers are: President, H. B. Parker; Vice President, J. W. Stover; Secretary and Treasurer, H. C. Pratt; Directors, George W. Morse, A. F. Upton, W. P. Tyler. The Aldermen are believed to be favorably inclined towards granting the location. The line will run from Newton to Newton Lower Falls, Newtonville and Newton Center.

THE FEIGEL CAR Co. reports business good. They are building the cars for the new electric road at Asbury Park, N. J.; are filling orders from Halifax, N. S.; St. John, N. B.; Paterson, N. J.; and several orders for New York City roads.

New York, N. Y.

Frank H. Andrews has more orders in hand that at any previous time in the history of the business. All departments, wheel, spring, and machinery, are busy.

NORTH & EAST RIVER R. R. Co. Work is being pushed forward as rapidly as possible on this company's new electric road, on the Bentley-Knight system, on Fulton street; most of the work being carried on at night. The contract for laying the conduit, etc., was awarded to Frank H. Andrews. A request has been sent to the Mayor by the company for space 40 by 250 ft., in Burling slip, on which to erect a building for its engine and dynamos, part of the building to be occupied by the City Fire Department.

WILLIAM P. CRAIG is busy laying the track of the new Fulton street electric road, and the Irvington route in Newark. He will soon begin laying a track for the Millbury street road, running from Newark to Elizabeth, and an extension of that road to the Waverly fair grounds.

TWENTY-THIRD ST. RY. Co. A change has been made in the list of officers, as follows: President, Arthur Leary, in place of Jacob Sharp; Vice President, George N. Curtis; Treasurer, Walter T. Hatch. Thomas H. McLean continues Secretary

This company shows a slight increase in horses, to 770.

THE CONNELLY MOTOR Co. are making active preparations to manufacture their motors on a large scale, and say they will be ready by October 1st to fill large orders, guaranteeing to furnish any number within 60 days from receipt of order. The first motor built by them has been running in Brooklyn during the past four months, and it is claimed has clearly demonstrated the economy and practicability of the system. An accurate record kept of the hours run and napththa used during the entire period, showed a consumption of less than one gallon of naphtha for each hour run, the maximum speed being 12 miles, and average 10 miles per hour, making the total cost of operating motor, covering fuel, lubrication and wear and tear, less than \$1.50 per day. This is certainly a remarkable and most satisfactory practical result, which, when demonstrated by a number of motors on different roads, must certainly stimulate street railway building in hundreds of places where horse roads could not be operated with profit.

CENTRAL PARK, NORTH & EAST RIVER R. R. Co. has suffered from a very heavy mortality among its horses this summer, and has about decided to adopt electricity.

THIRD AVE. R. R. Co. Twenty horses were recently poisoned with cyanide of potassium mixed with the fodder, of which eight died. They were all stabled in the same row of stalls. Superintendent Robertson says he does not believe it was the work of strikers. There is no clue.

J. H. Stoll & Co., promoters of street railways, 13 Park row, will build 2½ miles of street railway at Westfield, Mass., also 3 miles from Pomeroy to Middletown, O., the latter for both freight and passengers.

Sanding Tracks. Two men were arrested for sanding the tracks of the Sixth Avenue Railroad. Their counsel said they had a right to sand the tracks, and that the police had been restrained from interfering with them by an injunction granted Oct. 13, 1885. It was claimed but not proved that the injunction had been vacated. The men were held for trial at Special Sessions.

ELECTRIC EXPERIMENTS. An ordinary car propelled by a Julien storage battery has been making a number of trips on the Fourth avenue surface road. At times the speed was 12 and even 15 miles an hour. The car was easily controlled. The speed was governed without the slightest difficulty, and stops were made with greater precision than is attained when horses are used. It is stated that a car moved by such a motor can be used at a cost of \$4.10 a day, while the cost of the same amount of service with horses is \$7.50. The motor, with accompanying storage batteries, weighs a ton. Cornelius Vanderbilt and other officers of the company were among those who took the trip. A car propelled by the Julien motor was recently run on Eighth avenue, and one will probably be put in service on the Belt line. The New

York Times says that the recent tests of the storage battery motors "point to the ultimate selection of such motors in crowded streets."

Norristown, Pa.

CITIZENS' PASS. Rx. Co. expect to open their road on the 8th of August. They have 4 miles of track, of 5 ft. $2\frac{1}{2}$ in. gauge, 47 lb. rail. Six cars have been ordered, and they will have 40 horses. Capital stock, \$80,000. The officers are: President, George D. Bolton; Secretary, George R. Kite; Treasurer, George Shannon; Superintendent, D. B. Hartranft.

Oakland, Cal.

ELECTRIC RAILWAYS. Oakland has a franchise for an electrical railway and Alameda wants one, too, so that the two roads can connect and adopt a uniform system.

Ocala, Fla.

Ocala, Silver Springs & Park St. R. R. Co. has been incorporated.

Omaha, Neb.

LAKE MANAWA Rv. Co.'s line has been completed. They have $4\frac{1}{2}$ miles of track, of 4 ft. $8\frac{1}{2}$ in. gauge, 25 lb. steel rail, 6 cars, steam motors. Capital stock, \$50,000. J. K. Graves is President, and W. S. Couch General Manager.

Ontario, Cal.

TENDERS are wanted for an electric railway on Euclid avenue, Ontario, Cal. It is to be 8 miles long and to have two trains of two cars each. A speed of 20 miles per hour up a 2½ per cent grade with a full train must be guaranteed. Ordinary 16 lb. steel T rails will be used, and are now on the ground. The system will be run by water power. California will soon have a large number of electric roads, and such a contract as this may be advantageous in helping to introduce a system in the State.

Orange, N. J.

Frank W. Child, speaking of the Daft electric road here, says, "I live within a block of the road, and can say from personal observation that it is a perfect success, and it is very much to be regretted that some of the property owners are so short sighted as to object to the overhead wires."

Palatka, Fla.

A COMPANY is being organized to build a street railway, beginning about where the proposed union depot will be, and running down Water street to Lemon, and out Lemon to the grant line.

Parls, Tex.

PARIS Ry. Co. will build 3 miles of extensions. All material has been bought. The iron is past due. They will have the track down in 30 days after they get the iron.

Philadelphia, Pa.

THE J. G. BRILL COMPANY report a good business. Among their recent orders is one from China, and one from the North Chicago R. R. in Chicago. The sleeping cars recently made by them for South America have reached their destination, and are proving satisfactory beyond the expectations of the purchasers. The re-

maining cars of the order are about being shipped.

LEHIGH AVE. Ry. It is thought probable that electricity will be used on this new road. An ordinance has been introduced into Councils, which has received the approval of the Select Chamber, granting this company the privilege of laying temporary tracks on Park avenue, Somerset street, Glenwood avenue and Lamb Tavern road for use until Lehigh avenue is cut through. The route proposed from the connection with Lehigh avenue at Thirteenth street is up Park avenue to Somerset street, west on Somerset to Glenwood avenue, along Glenwood avenue to Lamb Tavern road and along the latter road to Eighteenth street, where connection will be made with the tracks already laid on Lehigh avenue from Eighteenth street to Ridge avenue. This will open up an important tract of unimproved property, including the Wharton estate of 200 acres. To tap this district in a new quarter, and facilitate communication with it, it is proposed to open Twenty-second street as far as Allegheny avenue.

THE B. C. POLE MOTOR Co. has just received two valuable patents on starters an l registers for street railways.

HALE & KILBURN MANUFACTURING Co. reports business brisk. They are working nights and employing extra men to keep up with their orders. Their car seats are reported as giving excellent satisfaction, and they have more orders booked than ever before at any one time.

A, WHITNEY & Son report that the rapidly growing use of the cable and electricity for street cars upon established and constructing roads, and the steady boom in street railway enterprises wherever there is a town-and in some places where there isn't -are keeping them busy at a season when they customarily expect to be reasonably idle and intent on "fishing or spooning" somewhere out of sight of a car wheel. The use of electric and cable motors has necessitated some important changes from the size, form and weight of wheel generally used under horse cars, and their improved patterns in these respects are giving increasing satisfaction. They are filling orders and shipping to Scranton, Pittsburg, Pullman, Chicago, St. Louis, Kansas City, Denver, San Francisco and other points for cable and electric roads. For horse car service their orders are above the month's average, and besides furnishing to roads throughout the country they are fitting up several hundred pairs for South America and abroad.

Pittsburg, Pa.

A New Company has been organized to build and operate motors for passenger railroad lines. The following named gentlemen are interested in the project: John E. Ridall, James B. Scott, Oliver Scaife, George L. McFarlane and A. M. Neeper. Capital stock, \$100,000.

PITTSBURG & BIRMINGHAM PASS. R. R. Co. is adding a number of cars to be equipped with the Worswick box and Street Railway Supply Co.'s gear.

Brownsville Ave. St. Ry. Co. ask for the use of certain streets on the south side, and, though considerable objection was made to their using Washington avenue, on which the Mt. Oliver line already has one track, with privilege of building another, their request will probably be granted.

MT. OLIVER INCLINE Co. astonished the people of the south side July 7 by laying tracks on South Twelfth street as far as the incline. The Electric Railroad Co. made an application some time ago before Councils for the right of way along this street, but as the incline company had received the right of way some years ago, they precipitated matters and asserted their rights.

Pontiac, Ill.

PONTIAG Rx. Co. has been incorporated by Reason M. George and others, with a capital stock of \$20,000.

Portsmonth, Va.

THE NEW COMPANY. Subscription books have been opened for the stock of the new street railway company. It is expected that the bulk of the money necessary will be furnished by Northern capitalists. It is proposed to extend the railway to Churchland.

Pueblo, Col.

Pueblo & Bessemer St. Ry. Co. asks for right of way. G. M. Chilcott, Paul Wilson, J. D. Miller, And. McClelland and others are interested.

Pueblo, Bessemer, Highland & Mineral Park Circle R. R. Co. asks for right of way, proposing to use gas, steam or electric motors.

Pueblo St. Rv. Co. Track laying has begun on the Main street extension from First to Seventh. Two new cars have been ordered. The C street line to the grove will also be reopened. Work on the Abriendo avenue branch will begin at once.

Reading, Pa.

READING CITY PASS. Ry. Co. has now 4 miles of track, of 5 ft. 2\frac{1}{4} in. gauge, 47, 50 and 52 lb. rail, 30 cars and 125 horses.

Riverside, Cal.

RIVERSIDE & ARLINGTON ELECTRIC RY. Co. has been organized, with a capital stock of \$500,000, to build and operate 12½ miles of electric railway. The directors are Mr. Gage, S. C. Evans, J. Bettner, A. S. White, T. Bakewell, G. O. Newman and Dr. J. J. Jarvis. Work is to begin as soon as the city franchise has been obtained.

Rochester, N. Y.

The Franchises for the East Main street and Park avenue extensions of the street railway were offered for sale by the City Treasurer, July 5. A legal question was raised in regard to the former, and the sile was postponed. The franchise for the Park avenue extension was sold to the Rochester City & Brighton R. R. for 1-20 of 1 per cent per annum of the gross receipts, there being no other bid. Some of the persons who objected to the construction of a track along Plymouth avenue have withdrawn their opposition, and it is probable that that branch will also be constructed soon.

ROCHESTER CABLE CONSTRUCTION Co. has been incorporated. The Rochester stockholders are: John W. Martin, John N. Beckley, George W. Archer, Henry H. Craig, James Fee, Henry W. Benjamin, Frederick Odenbach, R. H. Schooley, John W. Hannan, P. G. Clark, Frank W. Embry, William Cox, Charles Staud and Hugh Devitt. Mr. Beckley said that if the franchise of the road from the Rapids to the Ridge is secured the road will be in operation by May 1, 1888, and that a bond to that effect would be given if necessary. It is suggested that in case the right to construct a railway from Goodman street along East Main to University avenue is secured by the cable company, the line may be extended through University avenue and Andrew street, Mumford, State and Church streets to connect with the other line at Sophia street. The road is to be built on the Bowers system. The rail is flat, with a groove in the center, and is flush with the pavement. The girders are placed 4 ft. apart and under each one is an iron rail bent in the form of a horseshoe and surrounded by heavy masonry. This prevents contraction of the slot from cold. The slot is only & in. wide.

Rome, N. Y.

ROME CITY ST. Rv. Co. opened their line July 4. They have over five miles of track, and $1_{\frac{1}{2}}$ miles more will be commenced at once. The gauge is 4 ft. $8_{\frac{1}{2}}$ in., with $38_{\frac{1}{2}}$ lb. rail, and they start with 13 cars and 60 to 70 horses. The officers are: President, Rowland F. Hill, New York; Secretary and Treasurer, William Moores, New York; Superintendent, William P. Rayland, Rome.

San Antonio, Tex.

ELECTRIC RAILWAY. R. Woolley, Jr., of Cincinnati, represents a company formed there to build an electric railway at San Antonio. This road will, it is said, be some five or six miles long.

San Diego, Cal.

SAN DIEGO ST. Ry. Co., who have only been awaiting the successful operation of the road at Kansas City before building one exactly like it in San Diego, have now concluded negotiations for the right to operate such a line, and work will begin at once.

San Francisco, Cal.

BROADWAY CABLE R. R. Co. has been incorporated by Robert Sherwood and others, with a capital stock of \$1,000,000.

CITY R. R. Co. The officers are now as follows: President, Leland Stanford; Secretary and General Manager, J. L. Willcutt; Treasurer, N. T. Smith; Superintendent, H. L. Gude.

SUTTER St. R. R. Co. reports 14 miles of track.

San Jose, Cal.

San Jose & Santa Clara R. R. Co. Samuel A. Bishop and Jacob Rich, Directors of this company (a horse car line that has been in operation 19 years), have been in Kansas City examining the Henry electric motor. The road has decided to change to electricity, and the Directors are on a tour of inspection.

St. Augustine, Fla.

ELECTRIC RAILWAY. Northern capitalists are reported to contemplate building an electric railway.

St. Catharine's, Out.

St. Catharine's, Merritton & Thorold St. Rv. Co., who are equipping their line with the Van Depoele electric system, hope to have it running in September.

Staten Island, N. Y.

STATEN ISLAND SHORE Ry. has 9 miles of track, of 4 ft. 8½ in. gauge, 10 cars and 40 horses. Thomas Moore is Superintendent. Office, Tompkinsville.

St. Joseph, Mo.

FREDERICK AVE. Rv. Co. began work April 7, and expect to open their road Sept. 15. They will have $3\frac{1}{2}$ miles of track, of 4 ft. $8\frac{1}{2}$ in. gauge, 38 lb. Johnson steel rail, 10 cars, 70 horses and mules. The officers are: President, D. D. Burnes; Secretary, J. A. Corby; Treasurer, S. A. Walker.

WYETH PARK CABLE RY. Co. ask for a franchise on Seventh street from Edmond to Olive, and on Olive street to the eastern city limits.

St. Louis, Mo.

THE ST. LOUIS CAR Co. has its machinery all ready to go into the new buildings, which are about completed. They have ten pattern makers engaged in making new patterns for street cars, have bought a large lot of dry lumber, and will soon be ready for business.

St. Louis Cable & Western road has in service the new double deck cars built for them by the J. G. Brill Co., and reports the best of satisfaction.

ELECTRIC RAILWAY. A number of St. Louis capitalists and street railway men have been in Kansas City, examining the workings of the road there, and it is stated on good authority that they purchased the rights to use the system in St. Louis.

Sale of Franchises. An ordinance has been framed providing for the sale of street railway franchises hereafter, but it meets with much opposition in the Municipal Assembly.

THE LOOP SYSTEM for street railways, embodied in a Council bill, is designed for the purpose of removing the turn-table and switch terminals, and providing for a comprehensive system of tracks at terminal points by which their cars may be turned without obstruction to traffic or interference with one another.

St. Paul, Minn.

St. Paul Cable Ry. Co. Work has been delayed, but will now be pushed forward rapidly, the contractors being under heavy penalties for the immediate completion of the road.

St. Paul City Ry. Co. are building a cable line, and upon its completion propose to abandon the track on Summit, Nelson, Western and Laurel avenues, and run a line from between Wacouta and Sibley streets on Fifth to Wabasha, to Tenth, to Rice, to Rondo, to Mackubin. This will leave only the track on Rondo street to build upon the completion of the cable

line. As soon as the bridge over the Minnesota & Northwestern tracks is built the west side line will be operated to the eastern portion of the ward. They also propose to build a second West St. Paul line as soon as Dakota avenue is sewered and paved, commencing at Ohio street on Winifred, thence to Dakota avenue, to Fairfield avenue, to South Robert street, crossing the river to some point yet undetermined. As soon as the streets are graded work will begin on the West Seventh & Lafayette avenue line. It is their intention to increase the extra car service immediately, and they have within the last six weeks purchased 60 head of horses for that purpose.

METROPOLITAN & SUBURBAN RY. Co. asks for a charter, to use cable or horses. One mile must be in operation by Jan. 1, 1888; another by July 1, 1888; and a third by Jan. 1, 1889. The streets occupied by the present company must not be used.

Syracuse, N. Y.

SYRACUSE R. R. Co. has been incorporated by Roger S. Sperry and others, with a capital stock of \$100,000.

Syracuse & Onondaga R. R. Co. increases to 10 cars and 30 cars.

Tacoma, Wash. T.

A Company has been formed to construct and operate an electric railway.

Talladega, Ala.

Talladega Land & Improvement Co. are interested in the construction of the new street railway here.

Taunton, Mass.

SCADDING St. Rv. Co.'s projected line is to have 3½ miles of track, with 10 cars and 30 horses. Capital stock, \$60,000. They wish to negotiate with parties who would like to take hold of the enterprise. W. W. Swan is interested.

Topeka, Kan.

TOPEKA CITY Ry. Co. The formal transfer to the Boston syndicate was made July 1. G. F. Parmelee, who represents the syndicate in Topeka, says that while they do not propose to change the gauge of the street railway, at least for the present, yet a vast betterment of service will result. The property acquired is all the horse car lines in the city, about ten miles of track, extending into the best portions of Central, South and North Topeka, westward on Sixth street out to and beyond Athletic park and eastward on Fifth street to the Santa Fe depot, together with the present rolling stock and the offices, stables and houses owned by the old company. It is the intention of the syndicate to at once put the present lines in first-class condition, and to extend the line eastward on Sixth street. This much of an extension is fully settled upon, and it is intimated that as the syndicate holds franchises on other streets it is not improbable that further extensions will be made in the future.

Tuskaloosa, Ala.

Tuskaloosa & Lake Lorraine St. Ry. This road, which is an adjunct of the Tuskaloosa & Castle Hill Real Estate & Manufacturing Co., is about half completed.

Part of it is now used, and the whole road will be opened in about a month. It has $4\frac{1}{2}$ miles of track, of 4 ft. $8\frac{1}{2}$ in. gauge, 25 lb. steel rail, 5 cars, 20 mules. S. F. Alston is Manager, Secretary and Treasurer. The capital of the parent company is \$350,000, and its officers are: President, James H. Fitts; Secretary and Treasurer, S. F. Alston; General Manager, Walton W. Hill.

Tuskaloosa Belt Rv. is owned and will be built by the Tuskaloosa Coal, Iron & Land Co., the officers of both companies being: President, W. C. Jemison; Vice President, B. Friedman; Secretary, J. W. Castleman; Treasurer, George A. Searcy. The work of construction is to begin in August. The road will have 6½ miles of track, of 4 ft. 8½ in. gauge, with 35 lb. rail. They will have 2 cars to start with, perhaps 4, and will use steam motors, starting with a single motor.

Tyler, Tex.

NEW STREET RAILWAY. A St. Louis party is negotiating for the building of a street railroad here.

Union Springs, Ala.

THE CITY COUNCIL have been discussing the proposition to build a street railway here.

Utica, N. Y.

ONEIDA St. R. R. Co. have 11 miles of road already in operation. They have 8 horses. The officers are: President, Henry Ney; Vice President, Daniel L. Jones, Jr.; Secretary, Frank J. Cronk; Treasurer, William C. Willcox.

Washington, D. C.

ANACOSTIA & POTOMAC RIVER RY. Co. increases from 9 cars to 12, and from 21 horses to 30.

Waterloo, Ia.

Robinson & Hitt report a large increase in the number of sales of street cars, being crowded to their utmost capacity, running twelve hours a day. They have contracted to build four miles of road at Carnie, Neb., which they will build complete and put in running order, equipping it with four cars of their own make. They recently shipped six box cars for the new road at Hastings, Neb., and have six more under construction. Among other recent orders are five for Grand Island, Neb., four for Fremont, Neb., three for Sioux Falls, four for St. Paul, two for Evansville, Ind.

Wichita, Kan.

A CORRESPONDENT writes that "20 miles of extensions of street railway is being built by the Wichita City Ry. Co. this summer. Four different electric and steam motor lines have been projected in and about the city of Wichita, and two of them are now in operation, one electric and one steam. The Wichita Construction & Supply Co. sold the Winfield Horse Ry. Co.'s road to a Wichita syndicate last week. They also have the contract to build four miles of extensions for the new company. Work has already begun on them."

Woonsocket, R. I.

ELECTRIC RAILWAY. Two miles are to be in operation by Aug. 1. The Woonsocket Electric Light Co. have purchased a water privilege, and will furnish power for the railroad.

The Horses of the Paris Tramways.

BY GEORGE L. FOWLER.

One of the first things that the American street railway man would notice in Paris would be the fine appearance, the large size, and well kept condition of the omnibus and tramway horses. It will be remembered that one of the police regulations for the conduct of the street railways is that only such horses shall be used as may be deemed fit by the police. Whether it is a result of this regulation or not is difficult to determine, but at any rate it is true that there is no road in America, with which we are familiar, where such fine animals are used upon the street cars as one finds without exception in Paris.

The General Omnibus Co., which owns with a few exceptions all of the Parisian lines, have taken a great deal of pains in the selection of their horses, in a careful comparison of the merits of the several breeds, and in tabulating the results, for the guidance of their future purchases. As a result of their long experience, extending over a period of thirty-two years. they have fixed upon the Percheron from which to draw the majority of their stock. These horses have an average weight of a little over 1,200 pounds, and, although not fast, they are free and easy going drivers. While, as has been said, the Percherons fill the majority of the purchases, they also use the Cauchois, Berrichons, Ardennais, Normandy, Boulonnais, and other provincial breeds in the order named, though it would require the careful examination of a horseman to pick out the different breeds, from their appearance.

Besides the breed, especial attention has been paid to the influences of color and age upon the effectiveness of the animals. In the report of the cavalry department for 1886, the colors of the horses are divided into bay, black, chestnut, roan, gray, dark gray, roan gray, salmon gray, iron gray and white. Of the 12,661 horses owned by the company, 6,757 are iron gray, or somewhat more than one-half. The bay follows this, with only 1,646, while this figure is in turn closely followed by the dark gray, with 1,533, and by black, with 1,159, whereas white has only 23. The dark and iron grays number, then, 8,290, or a fraction over 65 per cent of the whole stock. In speaking upon this subject, M. Lavalard, the Managing Director, said that the preponderance of the dark colored horses was very marked, and that they still continued to increase the proportion of dark colored horses as they have done in the past.

The age of the horses in actual service varies from four to nineteen years, the greatest number, or 1,514, being about twelve years old, the number decreasing with almost perfect regularity as the age increases, until at nineteen we find only fourteen of that age, while the numbers of younger horses vary very irregularly, and is due to the chance age of the horses that are offered for the service.

It is curious to find among these animals such a large percentage of stallions. The whole stock is made up of 4,604 stallions, 4,180 geldings and 3,877 mares. The stallions work well together, and are fully as effective as the geldings and mares.

The average price of the stock, taken as a whole, averages 1,139.39 francs, or about \$220, though it is evident from what has been said that the stock could not be duplicated in America for anything like that figure.

Besides the classifications of age, color and breed that have been indicated, there is a broader and more practical one of effectiveness and utility. Under this head the management groups the stock into three divisions. First, the fresh horses, that are put into service on one-quarter of the regular work. Their work is increased gradually but slowly. Yet, in spite of this precaution, it is found that almost all, before they have finished their novitiate, as it were, and some even before they have commenced it, fall ill and are sent to the hospital stables Last year more than half of the newly purchased horses were sent thither. Sometimes, in order to strengthen the convalescence, the horses are put at light work, and pass considerable time at it before being returned to line work. It is frequently four or six months and more before the animal is ready for the full service required. This careful preparation for the work has, evidently, much to do with the long service of these horses, which will be mentioned later.

The second division includes the good animals, that is to say, those which are strong and well and may be considered to be performing the full complement of regular service. Among these there are those which are graded as very good, or simply good, and finally as mediocre.

The third contains the mediocre or even poor horses, which need recuperation. These horses cannot perform a full day's work, and of late years, owing to the low prices which the company have been obliged to accept for discarded animals, this division has been considerably augmented. In order to obtain the maximum amount of work, the proportions between these three categories have been very carefull watched, for it is evident that the service will be weakened whenever the first or third division becomes too numerous. For this reason the recuperation of wornout horses has not been pushed too far of late years, and matters have been allowed to follow their normal course, so that the entrances and exits from the service have been kept within those bounds that will give the most effective work.

Closely connected with the renewal of the stock is the mortality under which it labors. There were 2,234 horses bought during the past year, and of these 65 died or were killed, giving an average of 2.89 per cent. Taking the whole stock into consideration, they had 1,008 deaths, or an average of 8.14 per cent. The average for the horses in the tramway service was somewhat less than the whole, as the general average was raised by the omnibus lines. The mortality for the tramways was 7.76 per cent. Yet, with this mortality, the average effective life of the horses that were sent out of service during the past year was six years, six months and twelve days; whereas the average effective life of horses recuperated, died and killed was seven years, seven months and twenty-nine days. This is certainly a long life for street car horses and one that can be appreciated where the life of a horse in this service is so short as it is with us.

The deaths of the past year are grouped under various heads, which we reproduce, as giving evidence of the prevalent diseases to which the French stock is liable, and with which the French horsemen have to contend:

Diseases of the respiratory organs	136
" " digestive "	395
Apoplexy, congestions, sunstrokes & foundering,	54
Paralysis	7
Convulsions	4
Wounds, fractures and accidents	29
Miscellaneous diseases	214
Completely used up, killed on account of their	
little value	130
Glanders and farcy	39
•	000

From this it appears that the diseases of the digestive organs cause the greatest mortality, while convulsions and staggers are the smallest.

A portion of these horses (54 in all) were sold to the butchers, for at the great abattoirs, near the Northern Railway station in Paris, large numbers of horses are killed for food. This amounts to between 7,000 and 8,000 annually. The price paid for these street car horses for this purpose was 105 francs each, or a trifle over twenty dollars.

An examination of the mortality by months explains certain causes which have occasioned the larger number of the losses. Thus, the great heat that prevailed last year at the end of August, and especially in the early part of September, greatly increased the proportion of losses due to sunstrokes, congestions, and apoplexy. The 22 horses smitten with these troubles in August and September died upon the street or immediately after being put to work. The sudden losses from affections of the respiratory and digestive organs during these months is attributed to the same cause.

The reasons given for selling the horses to the butcher are accidents to the feet, incurable lameness, wounds, fractures, etc., a wicked disposition and incurable diseases. While we rather shudder at the idea of an animal afflicted with an incurable disease being delivered to a butcher, assurance is given that the police inspection is so rigid that there is no danger from infected meat. Still it looks a little toward the disgusting side.

It may be added at this point that, in the tables of mortality given for the past fifteen years, it is shown that the mortality has ranged from 1.06 per cent in 1885 to 10.6 per cent in 1878, with a general average for the whole of the time of 5.04 per cent.

Seated at the front end of a tram car or omnibus, one must admire the splendid animals by which the vehicles are drawn. They are fat, sleek, clean, and have an exceedingly gentle expression of face. They haul their loads with patience, and exert their great strength with an ease of motion that is rare. Their treatment, however, at the hands of the driver is often exceedingly cruel and would not be tolerated with us. It is not uncommon to see a splendid animal lashed until the great welts rise under the skin, for no greater misdemeanor than that of slipping with smooth shod shoes upon a wet pavement. The whip is freely used at all times, and when there is not only no necessity for it but when it can do no good.

Whether this is recognized or not is doubtful, for the prevention of cruelty to animals has not reached the refined point which it has attained in the United States, and the car drivers are furnished with a long-lashed whip, with which a terrible blow may be dealt. Yet in speaking upon this subject the management have recognized the desirability of trained and careful drivers, and class, among the reasons for accidents to horses and their sudden deaths upon the street, the extra exertions caused by derailments, elevation of temperature, snow, frost, bad condition of the pavement, and the unskillful driving of new men. In fact they have noticed that almost every case of death upon the street occurs when supernumerary drivers are in charge, having been given control in place of the regular man.

Charles T. Parry.

Mr. Charles T. Parry, one of the members of the firm of Burnham, Parry, Williams & Co, proprietors of the Baldwin Locomotive Works, died last week at his summer residence, in Beach Haven, N. J., aged about sixty-five years.

Mr. Parry was a native of Philadelphia. In 1836 he and George Burnham entered the Baldwin Locomotive Works as apprentices. After serving in the departments of patterns and drawings he became the chief superintendent of construction, in which position he remained till 1867, when he and Mr. Burnham became members of the firm, purchasing the Baldwin interest.

During last November Mr. Parry was attacked at his Philadelphia home, No. 1,921 Arch street, with an abscess. He was confined to his room through the winter and spring. As summer progressed he showed signs of improvement and was conveyed about a month ago to his summer home, but the change proved of no avail to stop the disease.

RUFUS MARTIN, of Rufus Martin & Co., 13 Park row, New York, sails for Europe August 3.

JOSHUA T. HEALD, founder of the Delaware Western Railroad, the Wilmington street-car system and the sinking fund for the extinction of the debt of that city, died July 22 in his sixty-eighth year.

President Richards on Consolidation.

President Richards, of the Metropolitan Railroad Co. of Boston, writes the following letter in explanation of why he exchanged his Metropolitan shares for preferred stock of the West End Railroad Co.—

Boston, July 12, 1887.

Mr. Calvin A. Richards, President of the Metropolitan Railroad: I see by the newspapers that you are the first to exchange your stock under the recent act of the Legislature. Your action ought, I suppose, to be regarded as indicative of your judgment, but as I am acting as a trustee, I thought perhaps you would be willing to give me a word of advice.

Yours truly,

METROPOLITAN RAILROAD OFFICES, 16 K1LBY STREET, BOSTON.
July 12, 1887.

DEAR SIR: I have yours of the 11th inst. relative to my disposition of my shares in this company by exchanging them for the preferred stock of the West End Railroad Co., etc. The directors of this company passed the following resolution:

Whereas, the West End Street Railway Co. has offered to exchange its cumulative preferred 8 per cent stock for the stock of the Metropolitan Railroad Co. in the proportion of 1½ shares of said preferred stock for each share of the stock of the Metropolitan Railroad Co.,

Resolved, that the directors of the Metropolitan Railroad Co. believe it to be for the interest of its stockholders to accept said offer, and recommend them to make the exchange on the terms proposed.

Permit me to say that in an experience of many years I have never known our board to give more careful, deliberate and thoughtful consideration to a matter than we did to this, for although we were fully aware that the control of affairs was soon to pass from our hands, we felt that, so far as we were able to do so, the larger number of shares still in the hands of the minority should be protected by us, even though we were only requested to recommend their exchange for stock of another corporation. As the subject presented itself to us in the light of existing facts, the exchange seemed to be the very best thing possible for us to do, and for the following reasons:-

Our books show plainly that over 20,000 of the 40,000 shares of this company had been bought and paid for, and were now owned and held by the gentlemen composing the West End Railroad They had bought these shares at a high price for the purpose of gaining control of voting power in our corporation. To any one at all familiar with the laws governing corporations of this kind the fact is made plain at once, and now, especially under the great powers given them by the last Legislature, that they can do almost anything they please, and do it legally, with the franchise and property of this company.

Almost to our surprise they made us the proposition above referred to, which does not act in any coercive way whatever. They do not now attempt to make use of the controlling power which has cost them so much. They simply invite the minority stockholder to deposit his shares for exchange and receive therefor the preferred shares of the West End Railroad Co., upon which they guaranteed forever a dividend of 8 per cent; and to bring that dividend up to 10 per cent, which we have only paid for 18 months, they give as a premium an increased number of shares amounting to 25 per cent. So that in money value we get an assured cumulative dividend of 10 per cent, i. e., cumulative means that if for any reason a dividend is ever passed for any length of time, it remains as a lawful claim, and must be paid.

The situation, then, is precisely this: We get a guaranteed, unfailing interest of 10 per cent on the par valve (\$50) of the preferred stock, which we are invited to take in exchange for our shares in the Metropolitan company. No coercion by control, but the freewill offering of those who hold the positive unassailable power to do almost anything with us they please.

We have been asked by many the very natural questions, which, as your letter makes of me a personal inquiry, I will answer personally. What is the capital of the West End road, and what guarantee can they give that these dividends will be paid? As I understand it, the capital at present is simply nominal—some \$80,000: a nucleus around which will gather the entire capital of all the roads they propose to call into it. The stockholders of that company deposit all the shares they own in the Metropolitan, Cambridge and South Boston roads for exchange precisely as they ask us to do with ours. They inform me that they intend to proceed at once, after consolidation is effected, to build under the rights that Brookline and Boston have given them, an amount of track, and equip it, which will cause an expenditure of \$500,000. With this addition they will then have a capital of over \$7,000,000.

Now, as to earning capacity of this property, so that they can pay these promised dividends. Their plan is, so far as I know, to bring into one grand corporation the Metropolitan, Consolidated, Cambridge and South Boston roads, place them all under one management, and run them as one road. The most casual observer, or the most careful and experienced examiner, must see or find all possible doubt removed, even under almost any management, that the question of earning the promised dividend is so far settled that they can safely guarantee it.

Now, let us look at this magnificent property. It begins, we will say, at the water edge of Charlestown, extending inland to Everett, Malden and Somerville, passing on through all of Cambridge, Brighton, Watertown, into Newton, Brookline, West Roxbury, all of the Highlands, Dorchester and South Boston, the

entire Boston proper, through East Boston, Chelsea and round back to the water—one grand circle, embracing some 15 or 20 towns and cities, its lines offering first-class accommodation (and I understand it is to be first-class) to our entire suburban population, and, within Boston, commanding every depot, ferry and place of amusement of every kind.

But it is not this alone, in my judgment, that makes the great and permanent value: it is the all important fact that they will own the franchises of these roads and hold them under their charter. The business awaiting them now, immense as it is, is nothing compared with the future. It has now become an undisputed fact that the street railway is the greatest factor in promoting the growth of the residential population wherever its lines extend. The increase in the number of passengers carried by the Metropolitan alone in the last 10 years has been from 22,000,000 in 1876 to over 40,000,000 in 1886, and during that year the roads now to be consolidated carried over 86,000,000 passengers. The increase for the last three years on the Metropolitan has been very nearly 3,000,-000 each year, and so far this year has exceeded those proportions.

Conceive for one moment the vast number with this increase alone that this new company will have to accommodate. With the present organization of the different companies and all the attendant expenses, with a motive power now certain of being replaced by both cables and electric motors, with a power in their own hands of so running and mingling all of the present conflicting interests into and under one sole management, who can doubt that the saving in expenses is of itself alone a sufficient guarantee for the payment forever of their promised dividends?

Into whose hands will all this pass; what kind of men are they? It will pass into the hands, not of a set of speculators, whose headquarters are in a distant city, and who have long tried to obtain this control, but into the possession of Boston men; will be owned by Boston capital and managed by Boston experience. At the head of it will be a gentleman who has done more to build up our city, both in its real estate and its commercial interests, than any other man of his age; a man who believed, evidently, in the importance of Boston citizens to own, run and build the street railways of their own city rather than to send their money to St. Paul, Minneapolis and Kansas City to do the same thing there. These are some of the reasons which guided my official action in voting for the resolution elsewhere referred to, and my private action in placing my stock in the American Loan and Trust Co. for exchange, and I am satisfied that in so disposing of my stock I have done the very best thing I could do with it under the circumstances.

I do not think there is any other business in which a corporation can engage wherein they must do so much to benefit the public before they can make money as the street railroad business. In my opinion, financial success cannot be found unless the reasonable demands of the public are acceded to, and I am certain that, if this new corporation is encouraged and sustained by the people, a new era of street railroading will arise that will result in the removal of the blockades in our streets, and that will furnish the accommodation now more than ever desired. It will give renewed activity in the sales of lands and building in all our suburban districts, and add very largely to the taxable property.

Competition between existing lines is no longer needed; it has had its day and done good. All of the different roads have now all they can do to carry the people who want to ride and to meet the demands caused by the growth of the cities and towns. The one solution of the difficult problems we managers have so long struggled with is at hand. Conflict of management, with the attendant evils of competition on the same tracks, will disappear, and the public will gain in every way a permanent and lasting benefit from the enterprise of those who are willing to risk their money in investments here at home.

I am well aware that we have many stockholders left who are perfectly satisfied with their present investment. We have many ladies and distant residents who, not having followed the course of events, are ignorant regarding all the circumstances surrounding this state of affairs, and I am glad to be able to honestly recommend such to place their shares, as I have mine, for exchange for the preferred stock of the West End company. The time or opportunity, if it ever existed, to do better has passed away, and I am fully satisfied, and give my opinion, whatever it may be worth, that the offer of the West End company had better be accepted at once. As I have said nothing about any of these matters before, and do not intend to appear in print again regarding them, I must plead that as my excuse for the length of this communi-Very truly yours, cation.

CALVIN A. RICHARDS.

Notes and Items.

Received too late for classification.

Allegheny, Pa.

ORDINANCES have been approved authorizing the extension of the Observatory Hill electric line from Ohio street down Federal, Lacock and Sandusky streets to the North Side bridge. Also to allow the Pleasant Valley line to extend their tracks from the terminus on Taggart street to Pasture lane and from the corner of Lacock and Sandusky streets to the North Side bridge. The Street Committee has favorably reported a petition from residents on Main street for a street railroad on that street. It is interesting to note that this petition asks for the track in order to "facilitate the hauling of heavy loads and save the cost of repairing, which has now to be done every year."

Anniston, Ala.

Anniston City Land Co., John McKilroy, President, will build a street railroad.

Anrora, Ill.

Aurora City Ry. Co. has 39 mules now, and has ordered 20 more. They have $5\frac{1}{3}$ miles of track and 10 cars.

Brooklyn, N. V.

Grand St. & Newtown R. R. Co. report gross earnings for the quarter ending June 30 of \$41,658, against \$37,636 for the same quarter in 1886; and net income of \$7,758, against \$5,439.

Calera, Ala.

So. CALERA LAND AND IMPROVEMENT Co. are grading for their new street railway, and expect to open it about Nov. 1. It will have 2½ miles of track, of standard gauge, with 40 lb. steel rails. A dummy engine will be used. Their capital stock is \$150,000.

Charleston, W. Va.

GLENWOOD Co. will build a street railway with $1\frac{1}{2}$ miles of track, though the work may not be undertaken for some time to come. This is a land company.

Chillicothe, O.

CHILLICOTHE St. R. R. Co. now has 2 miles of track, 7 cars and 20 mules.

Cleveland, O.

Broadway & Newburgh St. R. R. Co. increases to 36 cars and 280 horses. They have 11½ miles of track.

Columbus, Ga.

COLUMBUS ST. Rv. Co. is contemplating the operation of its line by steam motors or some electric system.

Crookston, Minn.

CROOKSTON ST. Rv. Co. have completed their incorporation, but have been delayed in getting the franchise in shape, so that they will not do any work before next year. The officers are: President, Charles E. Sawyer; Secretary, John Cromb; Treasurer, A. D. Stephens.

Detroit, Mich.

East Detroit & Grosse Pointe Ry. Co., a newly organized company, began work on their new street railway June 15, and expect to open it about Oct. 1. It will have 8 miles of track, of 4 ft. 8½ in. gauge, with 25 lb. steel T rail, and 6 to 10 cars to commence with. For motive power the Fisher electric system will be used. The capital stock of the company is \$100,000, and the officers are: President, C. K. Brandon; Secretary, Hibbard Baker; Treasurer, Frank E. Snow.

Elizabeth, N. J.

ELECTRIC RAILWAY. The new company, in which ex-Freeholder Oliver, ex-Councilman Reeve and ex-Mayor Green are interested, has been incorporated, and now asks for a franchise from the City Coulcil. In this it is bitterly opposed by an opposition company, composed of such rich men as Henry G. Isham of New York; Adjustment Commissioner Heidritter of Elizabeth; and the millionaire Congressman, John Kean, Jr., of Union. It is said that this company was formed because some of the Elizabeth stockholders of the Elizabeth & Newark Horse R. R. Co. were dissatisfied with the recent reorgan-

ization of that company, by which Newark capitalists obtained complete control of it.

Framingham, Mass.

Framingham Union St. Rv. Co. will push work, in order to have the road in operation in September.

Fryeburg, Me.

THE HORSE RAILROAD is under construction and will be built as rapidly as possi-

Galesburg, Ill.

COLLEGE CITY ST. Ry. Co. The only change is that George W. Delanoy is now Secretary, and J. K. Mitchell Treasurer. They have 5½ miles of track.

Grand Rapids, Mich.

St. Ry. Co. of Grand Rapids increases from 29 cars to 61, and from 190 horses to 240.

Hoboken, N. J.

NORTH HUDSON Co. Ry. Co. The highest number of passengers carried by the cable road in one day is 15,000. On ordinary days 10,000 are carried.

Jersey City, N. J.

JERSEY CITY & BERGEN HORSE R. R. Co. has been enjoined from further work on its West Side avenue line.

Leavenworth, Kan.

Leavenworth & Suburban Ry. Co. is extending its road. The report of a new street railway being contemplated here is, we are informed, incorrect. A charter was granted to a new company, but, we are told, was obtained only to intimidate the Leavenworth & Suburban people and compel them to lay more track. How much they will lay is not yet decided.

Long Island City, N. Y.

RIKER AVE. & SANDFORD'S POINT R. R. Co.'s road was completed and has been in operation since June 1. They have $2\frac{1}{2}$ miles of track, of 4 ft. $8\frac{1}{2}$ in. gauge, 47 lb. rail. They have no cars of their own, being operated under lease by the Steinway & Hunter's Point R. R. Co. Horses are used this year, but electricity will be employed thereafter. The capital stock is \$20,000. J. H. Hempsted is President and Oscar R. Steins Secretary and Treasurer. The New York office is at 107 East Fourteenth street.

Lincoln, Neb.

STANDARD ST. R. R. Co. has been incorporated by L. G. Baldwin, M. H. Baldwin and Charles Pitcher. The company has a capital stock of \$100,000, and will build and operate lines in the city and within a radius of five miles in the suburbs.

Memphis, Tenn.

MEMPHIS & PROSPECT PARK R. R. Co. have their road about half completed, and cars are running. They will have 5 miles of track, of standard gauge, and at first will have 4 cars, operated by dummy. The capital stock of the company is \$100,000, and the officers are: President, T. J. Lathum; Vice President, J. A. Van Hoose; Secretary and Treasurer, T. A. Lamb.

Minneapolis, Minn.

MINNEAPOLIS ST. Rv. Co. increases since its last report from 773 horses to 876, and from 226 mules to 230.

New Orleans, La.

CANAL & CLAIBORNE STS. R. R. Co. has

been authorized to make numerous extensions of its tracks. It must use flat steel or iron rails, 5 in. wide, on stringers.

New Rochelle, N. Y.

NEW ROCHELLE & PELHAM R. R. Co. talk of adopting electricity as a motive power, their grades being rather steep for horses. This is a long road, over a not very thickly settled district, with unpaved streets, and especially adapted for an overhead system.

New York, N. Y.

RUFUS MARTIN & Co. report the sale of two Brill open cars to the Meriden Horse R. R. Co., of five cars to the Seashore Electric Ry. Co., of Asbury Park, two cars to the Mansfield Electric St. Ry. Co., and one closed car to the Birmingham & Derby (Conn.) Electric Ry. They also report sales of general equipment supplies to the horse railroad at Derby, Conn., and Schenectady, N. Y.

Niagara Falls, Can.

NIAGARA FALLS, WESLEY PARK & CLIFTON TRAMWAY Co. increases to 4½ miles of track, of 30 and 45 lb. rail, with 10 cars and 40 horses.

Omaha, Neb.

OMAHA MOTOR Co. At the election, July 13, on the question of granting a franchise to this company, about 1,200 votes were cast, and the majority for the company was about 850. It is understood that they will begin building their road at once, and will push the work forward rapidly. They already have considerable of their material on hand.

NORTHWESTERN St. Rv. Co. was granted a franchise July 13 by about the same vote as above. The two companies pooled their interests to obtain this result.

Orlando, Fla.

ORLANDO ST. Ry. Co. will build extensions.

Oshkosh, Wis.

OSHKOSH St. R. R. Co. has now 6½ miles of track, 10 cars and 40 horses. The only change in officers is that J. H. Jenkins is now Vice President.

Ottumwa, Ia.

MINERAL SPRINGS ST. Ry. Co. has 1 car and 4 mules.

Pittsburg, Pa.

PITTSBURG & MCKEE'S ROCKS ST. Ry. Co. This new road is only a branch, or rather two branches, of the present line of the Pittsburg & West End Pass. Ry. Co. It is nearly completed, and will be opened in three weeks. The length of track is 4 miles, of 5 ft. $2\frac{1}{2}$ in. gauge, with 45 lb. steel rail, about 12 cars and 75 horses. Capital stock, \$200,000. Same officers as West End company.

Pittsfield, Mass.

PITTSFIELD St. Rv. Co., which has not heretofore been reported in full in our Directory, has $3\frac{1}{2}$ miles of track, of 4 ft. 8 in. gauge, 8 cars and 40 horses. The officers are: President, Joseph Tucker; Secretary, T. Allen; Treasurer, T. A. Oman; Superintendent, C. P. Upson.

Providence, R. I.

CABLE ROAD. The City Council has passed the ordinance granting permission

to the Providence, Warren & Bristol R. R. Co. to construct and operate a cable road in South Water street from its depot at India street to Leonard street: the primary object being to land their passengers in the heart of the city. The engine house is to be located on or near India street. The trench is to be about 18 in. by 18. Two grip cars will be attached to each train, one for bringing the cars up town, and then to make the return trip to India street the engine will be reversed and the grip car at the other end will pull the train down to the station. Col. Paine, whose grip is in use on the Brooklyn Bridge, will have supervision of the work. The company is to pay the city \$500 a year. The company must run its cars over the Providence & Worcester R. R. Co.'s tracks, or others laid in their place; and the Bristol road offers to haul the Worcester freight cars by cable for half the present cost.

Union R. R. Co. asks permission to lay a double track in Broad street from Friendship to Public street, and a single track across Washington bridge.

Quincy, Mass.

A STREET RAILWAY is projected.

Rochester, N. Y.

AN ELECTRIC RAILWAY COMPANY has been incorporated by Henry Brinker, Asa T. Soule, W. B. Vail and others, with a capital stock of \$75,000. The line will extend from the rapids to the north line of the city.

THE FRANCHISE for a street railroad will be sold by auction Aug. 22.

San Francisco, Cal.

THE TELPHERAGE ELECTRIC R. R. Co. made a test of its system on July 14. The track is somewhat sim lar to the cable system, having a central conduit. F. M. Speed is President of the company, and Professor N. S. Keith is in charge of the engineering. The temporary track on Nineteenth street has a grade of 100 ft. per mile and a load of over four tons has been hauled up it. The present experiments are for the purpose of perfecting the arrangements.

San Jose, Cal.

ELECTRIC RAILWAY. The engine and boilers are being manufactured in San Francisco, and the electrical plant is being manufactured in the East. Work will be started shortly on the track and will be done partly by contract and partly by day labor. Messrs. Bishop and Rich have the matter in charge.

Schenectady, N. Y.

THE STREET RAILROAD is completed.

Westfield, Mass.

WESTFIELD ST. R. R. Co. has elected the following Directors: Eugene Cole and J. W. Stall, of New York, owning a majority of the stock; Orrin D. Parks, J. H. Bryan, L. H. Lee, J. Lakin and Charles L. Weller. Contracts are now being let, and construction will be commenced early in August.

MR. R. P. SHERMAN, representing Rufus Martin & Co., was recently in Boston, Mass. He has been traveling in the East for the past month.

Are Electric Railways a Success?

GEN. STILES, OF THE VAN DEPOELE COMPANY,
IS INTERVIEWED BY A NEW YORK STAR
REPORTER.

The telegraphic columns of the daily papers announce the opening of the electric railway at Lima, O., stating that on the opening day 10,000 passengers were carried with five cars. So much interest is manifested by the public generally in electric railways that it was thought best to get some authoritative data in regard to them. A. K. Stiles, Manager of the Van Depoele Electric Manufacturing Co. of Chicago, was called upon at his office, 45 Broadway, in this city, and in answer to questions stated as follows:—

"Yes, the Van Depoele company have been running railroads by electricity about four years. We ran a train in Toronto, Canada, in 1884, carrying over 10,000 passengers per day. This was a sample road of one mile, the cars running forward and back. This is no trick at all. Although we thought we knew something then, we now find we knew but little about the difficulties to be overcome. We now have equipped eight out of the twelve passenger roads running in the United States, and all are running successfully. We equipped the first road in Canada and the first in Wisconsin, Michigan, Ohio, Alabama, Pennsylvania and New York.

"Our roads are: The Capital City Electric Railway, Montgomery, Ala.; the Dix road, Detroit, Mich.; the Appleton Electric Railway, Appleton, Wis.; Windsor Electric Railway, Windsor, Ont.; Scranton Suburban Railway, Scranton, Pa.; Port Huron Electric Railway, Port Huron, Mich.; Binghamton Electric Railway, Binghamton, N. Y.; Lima Street Railway, Lima. O .- in all over forty miles of track and sixty cars. All these roads are making money, and most of them increasing their plants. The Montgomery electric road is the largest in the world, and covers the entire city railway system, has fifteen miles of road branching in all directions, and about twenty cars."

"What do you know about storage batteries for running cars?"

"We have had some experience with storage batteries; we operated them in various forms, experimentally, for a long time, running part of our factory for over a year to test them. I have no faith that they will work to do any commercial business. To much loss of power, too expensive, too cumbersome and heavy. The batteries contain only a limited amount of electricity, and no reserve for extra overloading of cars, which requires extra power, and uses up the current faster than ordinary circumstances. Not durable. We spent a great deal of money in that line; have had enough of it."

"Would your company equip a road with electrical apparatus in New York, using underground conduit?"

"Yes. Why not? We have a good conduit system, and own the first patent is-

sued on underground conduits for rail-ways."

"What proportion of gross receipts could you afford to pay for a good franchise in the city?"

"I don't know of any route where a company could afford to pay over 10 per cent of its gross earnings. That would be paying high for a franchise. The best paying roads in this city are not run with less than from 70 to 90 per cent of their earnings, and most of them are bonded, and after paying repairs and interest leaves but a small percentage to pay dividends; but of course doing a large volume of business they make money."

"Could you not afford to pay 40 per cent?"

"No, nor can any other company afford it; and in my opinion any company that does it can never pay a cent of interest on their bonds or dividends on their stock, and if any company intends to pay from 35 to 40 per cent of gross earnings for a franchise they must calculate to make their money selling bonds or stock. Any practical street railway man will verify my statement."

"Where do you place your motors on the cars?"

"We place our motors generally on the front platform. We have had them under the cars and on top and have geared with ropes, tooth gears, friction wheels and belts. We now have a plan of our own which we use on all our roads. We have adopted the plan of having all our apparatus in sight and constantly under the eye of the operatives, and where the Superintendent can see that everything is cared for.

"We have run as long as three months with motors under cars. It will never do. Try it long enough and find out as we did."

"Are you intending to equip any road in the city or vicinity?"

"Yes, that's what we are here for. We are putting in our apparatus at Ansonia, Conn., and will have a road running here within sixty days. The first you know you will see it running; that's the way we do it. We have found that we can't run electric roads by wind, though we do run by water."

The Life of a Car Horsc.

Some car horses wear out after two years' work. There are others who are hale and hearty after eight years of service, but such instances are rare. It is the general impression that the life of a car horse depends in a large measure upon the driver. If the latter does not assist the horse by holding tightly on to the reins in starting the car, the animal strains itself and if often repeated soon becomes worthless as a railroad horse. In such cases the horse is taken to the market, where is is purchased by a street vender for a trifle, or bought up by the skinner for its hide and fat.

Some horses worry and fret as if dissatisfied with their lot. These usually take sick early in their career and are disposed of as quickly as possible. There are other horses who are contented with their lot and grow fat. These generally have kind and experienced drivers. While in the stable the horses have the best of care. A veterinary surgeon is in attendance constantly, and their ailments attended to.

AN ELECTRICAL EXHIBITION is to be held in New York, beginning September 28th, under the auspices of the New York Electrical Society.

Business Notes.

H. W. CALDWELL, of Chicago, recently sold to Allen & Vieths, contractors of the new cable road at St. Louis, a concrete mixer, a great labor saving device in cable construction where cement is used. The rapid work it is capable of doing is astonishing.

THE FERRACUTE MACHINE CO., of Bridgeton, N. J., is unusually busy for this time of year. The demand for their new punching presses is ahead of the supply, and they are now making additions to their plant to facilitate the production of work in this department.

THE CHICAGO WOOD FINISHING Co., of Chicago, report a very large and satisfactory business. Finishers of car wood work are adopting their wood fillers, wood stains and polish (to give varnish a brilliant luster), rough-stuff, etc., as being articles to be thoroughly relied upon in every particular.

THE MONTOOMERY (Ala.) Advertiser discourses very enthusiastically of the Van Depoele electric road in that city, e. g.: "The electric cars are a success." "Cars go up hill and down hill with delightful unconsciousness of change of grade." "One motor car pulls several cars, which is a great advantage over a mule."

THE NATIONAL RAILWAY & STREET ROLLING STOCK Co., of Concord, N. H., has established an office at Boston for the purpose of introducing their dust

STREET RAILWAY STOCK QUOTATIONS.

PROVIDENCE STOCKS .- Corrected by Chace & Butts, Bankers, Providence, R. I.

Company.	Par.	Capital.	Period.	Rate.	Date.	Bid.	Asked.
Union R. R. Co., Prov	100 100	\$1,500,000 270,000	Q.—J. New.	New.	April, 1887.	203 107½	206 110

NEW HAVEN STOCKS .- Corrected by H. C. Warben & Co., Bankers & Brokers, New Haven, Conn.

Company.	Par.	Capital.	Period.	Rate.	Date.	Bid.	Asked.
Fair Haven & Westville R. R. Co State Street Horse R. R. Co "Bonds "Bonds New Haven & West Haven R. R. Co. New Haven & Centerville H. R. Co., Whitney Ave. Ry. Co.	25 25 25	\$309,000 23,000 12,800	J. & J. J. & J. J. & J.	4 3 7	January, 188 January, 188		
Bridgeport Horse R. R. Co Bonds	100 1,000	140,000 50,000		6			

STREET RAILWAY STOCKS,—Continued,

NEW YORK STOCKS .- Corrected by H. L. Grant, 145 Broadway, New York.

Company.	Par.	Capital.	Period.	Rate.	Date.		Bid.	Asked.
Rleecker St. & Fulton Ferry	100	\$900,000	J. & J.	3/	January,	1887	28	31
1st mort	1.000	700,000	J. & J.	7	July.	1900	115	116
Broadway & Seventh Avenue	100	2,100,000	Q.—J.	2	January,	1886		185
1st mort	1,000	1,500,000	J. & D.	5	June.	1904	100	103
2d mort	1,000	500,000	J. & J.	5	July,	1914	103	105
Broadway Surface Guaranteed	1,000	1,500,000	J. & J.	5	July,	1924		100
Additional	1,000	1,000,000	J. & J.		July,	1905		100
Brooklyn City-Stock	10	2,000,000	QF.	2	May.	1887	165	170
1st mort	1,000	800,000	J. & J.	5	January,	1902	106	110
Brooklyn Crosstown	100	200,000	A. & O.	4	April,	1887	160	165
1st mort bonds	1,000	400,000	J. & J.	7	July,	1888	105	109
Central Park North and East River	100	1,800,000	QJ.	2	January,	1887	82	85
Con, mort. bonds	1,000	1,200,000	J. & D.	7	December,	1902	121	1221/2
Christopher & Tenth	100	650,000	F. & A.	11/2	February,	1887	120	125
Bonds	1,000	250,000	A. & O.	7	October,	1898	110	116
Central Crosstown	100	600,000	QF.	13/4	July	1887	150	160
1st mort	1,000	250,000	M. & N.	6	November,	1922	118	125
Dry Dock, East B'way & Battery	200	1,200,000	Q.—F.	2	August,	1887	150	155
1st mort consol	500	1,900,000	J. & D.	7	June,	1893	1081/2	111
Scrip	100	1,200,000	F. & A.	6	August,	1914	105	107
42d & Grand St. Ferry	100	748,000	QF.	3	August,	1887	210	215
1st mort	1,000	236,000	A. & O.	7	April,	1893	110	112
42d St., Manhattan & St. Nich. Av	100	2,500,000					38	40
1st mort	1,000	1,200,000	M & S.	5		1910	108	110
2d mort. In. bonds	1,000	1,200,000	J. & J.	6		1915	60	63
Eighth Avenue—Stock	100	1,600,000	Q.—J.	2	July,	1887	155	160
Scrip	100	1,000,000	F. & A.	6	August,	1914	105	110
Houston, West St. & Pavonia Ferry	100	1,000,000	Q -F.	2	August,	1885	150	160
1st mort	500	250,000	J. & J.	7	July,	1894	110	111
Second Avenue—Stock	100	500,000	J. & J.	5	January,	1887	115	118
1st mort		1,862,000	M. & N.		November,	1909	104	106
Consol	1,000	550,000	M. & N.		November,	1887	101	103
Sixth Avenue	100	1,050,000	M. & S.	3	February,	1887	175	180
1st mort	1,000	500,000	J. & J.		July,	1890	110	112
Third Avenue—Stock	100	2,000,000	Q.—F.	3	February,	1886		205
1st mort	1,000	2,000,000	J. & J.	7	January,	1890	110	112
23d St.—Stock	100	600,000	F. & A.	5	February,	1887	245	250
1st mort	1,000	250,000	M. & N.	7	Мау,	1893	110	113
Ninth Avenue	100	800,000		3	September,	1885	107	112
Chicago City Railway	100						299	325

PHILADELPHIA STOCKS .- Corrected by Robert Glendinning & Co., 303 Chestnut st., Philadelphia,

Company.	Par.	Capital,	Period.	Rate.	Date.	Bid.	Asked.
Citizens	50 50	\$500,000 1,000,000	Q.—J. J. & J.				125
Frankford & Southwark	50	750,000	QJ.				275
Green & Coates.	50 50	1,500,000 500,000	Q.—J. Q.—J.			91½	96 115½
Hestonville	50 25	2,050,000 500,000					95
Peopie'sPhiladelphia City	25 50	1,500,000 I,000,000	J. & J.			34	
Philadelphia & Gray's Ferry	50	617,500	J. & J.			140 85	145
Philadelphia TractionRidge Avenue	50 50	5,000,000 750,000	Q. —J.		N .		70¼ 225
Second & Third	50 50	1,060,200 500,000	QJ. J. & J.			155	-20
Thirteenth & Fifteenth	50	1,000,000	J. & J.				150
Union	50 50	1,250,000 750,000	J. & J. J. & J.				180

BOSTON STOCKS .- Corrected by R. L. DAY & Co. 51 State st., Members of Boston Stock Exchange.

Company.	Par.	Capital.	Period.	Rate.	Date.	Bid.	Asked.
Metropolitan. South Boston. Boston Consolidated Cambridge.	50 100	\$2,000,000 750,000 1,700,000 1,950,000	J. & J. J. & J. J. & J. J. & J.	8	July, 188 July, 188 July, 188 January, 188	105 152	119 115 155 120

ST. LOUIS STOCKS.—Corrected by James Campbell, Banker & Broker, 307 Pine st., St. Louis, Mo.

Company.	Par.	Capital.	Period.	Rate.	Date.	Bid.	Asked.
							—
STOCKS. Benton-Bellefontaine	100	\$400,000	Jan.	1½		95	100
Cass Ave. & Fair Grounds	50	300,000		7,040		80	
Citizens'	100 100	1,000,000	Apl. '76	11/4		65 100	70
Jefferson Avenue	100	112,000				100	
Lindell	100	600,000	June	2		110	125
Missouri	100 100	600,000 125,000	April	2		150	400
Mound City	100	200,000				103	107
People's	50	300,000	June	2		40	421/2
St. Louis	100	900,100	May	2		50	55
Tower Grove	50 50	300,000 600,000	Jan.	.50		13	9 15
Union Depot	100	400,000				75	80
St. Louis Cable	100	1,000,000					
BONDS.							
Benton-Bellefontaine	1,000 1,000	\$50,000 200,000	A. & O. F. & A.	6	1880 1886	102	100
Cass Avenue	1,000	200,000	J. & J.	6	1882	102	103 104
Lindeli	1,000	87,500	F. & A.	7	1879	102	105
Mound City	1,000	125,000	J. & J.	6 -	1834	102	103
People's 1st mort	1,000 1,000	125,000 75,000	J. & D. M.& N.	6	1882 1886	103	105
Northern Central	1,000	200,000	J. & J.	6	1884	102	103
St. Louis Cable	1,000	600,000	M.& N.	6	1884	105	107
Union Depot	1,000 1,000	150,000 350,000	M.& N. A. & O.	6	1885 1886	102 102	103 102½
	*,000	000,000		0 -1	1000	102	100/2

guard, axle bearings and other railroad specialties. The company claims to have a dust guard which is giving perfect satisfaction on several large roads in the United States, and is in possession of valuable testimonials from leading railroad officials. The officers of the company are: Thomas Gogin, President; James M. Stone, Treasurer and Attorney; and M. V. B. Stimson, Agent.

THERE are over 100,000 horses used in hauling street cars in the United States. Chicago has 8,625; Cincionati, 2,175; St. Louis, 2,815. Five years is more than the average useful life of a horse for street car purposes. The success of the Van Depoele system of propelling street cars by electricity, is doing much to convince street car men that the horses must go, more especially since it is claimed to have been thoroughly demonstrated that cars can be run by electricity under the Van Depoele system for onehalf the cost of running by horses.

THE CLINE MANUFACTURING Co., Chicago, are now running as usual at their new works, and announce themselves as fully prepared to fill all orders for car heaters, and their patent fuel. A decided improvement has recently been made in the heater, consisting of a cold air current directly over the fuel, there-by giving greater heating capacity. Two heaters in a car are guaranteed to take the place of the four heretofore used, and produce the same amount of heat, thereby lessening the cost in adopting the system and in the amount of fuel used. These heaters are placed in cars on trial, if desired, subject to the approval of the party ordering. Further information will be cheerfully given by the manufacturers.

EDITORS STREET RAILWAY JOURNAL:-

In reply to your postal, we beg to say that our buildings will all be completed by Aug. 1st, 1887. We have bought all our machinery, etc., and it is waiting to be put in place. Mr. Kling, our Manager and Superintendent, has put 10 pattern makers to work making new patterns for street cars, and when complete will be the finest cars ever turned out of St. Louis or elsewhere. His running gear is very simple and plain, and the most durable of any in the market. Will run as easy as any and will not require oiling as often as others, and brasses will wear longer than any, or at least as long as any other in the market. We are having a car lithographed, 14 in, by 18 in., in four colors, which we will send to all street railway operators. We have also bought a large lot of dry lumber, and every car that we build we can safely guarantee, and having our factory on a dry location, our panels will not give after being put on cars, as is the case with some bui'ders who are located in swamps.

ST. LOUIS CAR CO.

THE FOLLOWING regarding "Magnolia Metal," made by C. B. Miller, New York, is self-explanatory:

J. S. GRAHAM & CO. MANUFACTURERS OF WOOD

WORKING MACHINERY.

Rochester, N. Y., July 1, 1887. (DICTATED BY J. KANE).

CHAS. B. MILLER, ESQ., New York.

DEAR SIR:—On the days of October 21st, 23rd and 25th, 1886, we made five tests of your metal in comparison with the best genuine Babbitt metal to be had. These tests were made in a testing machine adapted to the purpose, and in each case were very severe. We were surprised at the superior results of your metal over the genuine Babbitt. It not only stood the tests while the other metal melted out, but did not need so much lubrication, and did not cut or abrade the shaft. (See our special detailed report to you Oct. 27th, 1886).

Since these tests were made we have bought your metal and used it in several mills and factories on journals that have been a constant source of annoyance to our customers and ourselves, and in which the best genuine Babbitt metals had been placed, but had not kept the boxes from heating, melting out and cutting the spindles. These experiments were on high speed exhaust fans, cutter heads on planers, upright shapers, saw arbors, etc., often attaining speed of 5,000 revolutions per minute. In each and every case they have given the best results, and we know our customers have had no further trouble. Some of these bearings have been in constant use for the last eight months and when previously running with other Babbitt metals did not run two months.

We have abundant evidence and references that your metal is first class and superior in every respect.

Yours truly, J. S. GRAHAM & CQ.

SPECIAL NOTICES.

ROR SALE.—Second-hand N. Y. Sweeper, in good working order. If sold at once, \$250. Address Brooklyn Railway Supply Co., 37, 39 & 44 Walworth St., Brooklyn, N. Y.

WANTED.—Four Second Hand one-horso Cars, with Fare Boxes. Gauge, 5 ft 2½ in. Must be in good running order. CITIZENS' RAILWAY Co., Wheeling, West Va.

FOR SALE.—A Street Railway Specialty manufacturing business. Well established. Applicant should be a well bred mechanic. Address Specialty, STREET RAILWAY JOURNAL.

WANTED.—Workmen experienced in the construction of street car bodies and the application of the side wood-work to the same. Address H. II. Sessions, Supt. of Construction, Pullman Car Works, Pullman, Ili.

FOR SALE.—We have one second-hard 16 ft. closed, eight window, Horse Car for sale. This car is in thorough repair and will be repainted and relettered to suit purchaser. It is fitted with floor racks, center lamp, carpet seats, bronze trimmings, and can be arranged to receive fare boxes. Immediate delivery. Price F. O. B. New York City, \$600.00. RUFUS MARTIN & Co., 13 Park Row, N. Y.

W ANTED—A position as General Manager on a new or old established Street Railway by thoroughly practical man. Location no object; and willing to work for a small salary. Can give the best of New York City references. Parties wanting a man who is able to look sharp after the interest of the company, will please address J. L. D., care of Street RAILWAY JOURNAL, 113 Liberty street, New York.

A N experienced and thoroughly practical Street RALLWAY JOURNAL, 113 Liberty street, N. Y. City.

FOR SALE.

Thirty Second-hand Bobtail Single Horse Cars, in good condition.

For particulars and prices apply to New York RAILWAY SUPPLY Co., Limited, 40 and 42 Wall st., New York.

Steel Rails.

COMPLETE OUTFIT FOR

LOGGING, MINING, PLANTATION

STREET RAIL & TRAM ROADS.

Light sections Rails & Spikes in stock.

Locomotives, Motors, Cars, etc.,

HUMPHREYS & SAYCE,

No. I Broadway, New York.

THE

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St. Louis, Mo.,

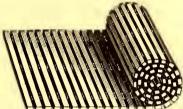
BUILDERS OF

Street Cars

OF EVERY DESCRIPTION.

Works among the most complete in this country.

Ready for business about August 1st.



WARNECK & TOFFLER, 211 East 22d St., New York, sole Manufacturers and Patentees of the only

"ROLLING WOOD MAT"

in the market. This matting, either in round, square or flat slats, is the most convenient one for horse cars, as it is a self cleaner and can easily be repaired.

repaired.
Price, a running foot, 3 feet wide,



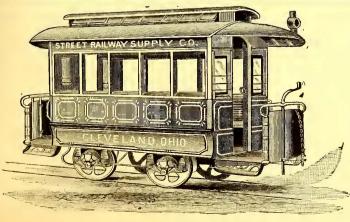
Parrott Varnish Co.,
FINE COACH VARNISHES.

Bridgeport, Conn., U.S.A.

CHICAGO WOOD FINISHING CO.

Manufacturers Wood Fillers, Rough Stuff, Wood Stains & Polish for Car Interiors. 143 & 145 South Clinton St., Chicago, Ill.





STREET R'Y SUPPLY CO.

-SUCCESSOR TO-

HIGLEY CAR JOURNAL CO., CLEVELAND, O.,

MANUFACTURERS AND DEALERS IN

Street Railway Supplies

GEAR SUPPLIES A SPECIALTY.

STREET RAILWAYS

IN THE UNITED STATES & CANADA.

Compiled from data furnished the editors of "The Street Railway Journal," by the officers of the various roads.

ABBREVIATIONS—m, miles; g, gauge; lb r, pounds rall to the yard; c, cars; h, horses; mu, mules. Officers' addresses are the same postoffice as the company unless otherwise specified.

officers' addresses are the same postoffice as the company unless otherwise specified.

AKRON, O.—Akron St. Ry. & Herdic Co. 2½ m, 6c, 31 h. Pres. Ira M. Milier, V. Pres. James Christy, Treas. B. J.. Dodge, Sec. F. M. Atterholt, Supt. John T. Metlin. k

ALBANY, N. Y.—Watervilet Turnpike & R. R. Co. 15 m, 4.8½ g, 30-45 lb. r, 31 c, 145 h. V. Pres. C. B. Tillinghast, Sec. & Treas. Cantine Tremper, Supt. Amos Free. Offices, 1165 Broadway. h. The Albany Ry. 14 m, 4.8 g, 54 c, 232 h. 33-47 lb r. Pres. Supt. and Treas. John W. McNamara. V. Pres. Robt. C. Pruyn, Sec. Jas. II. Manning, Cashler, Wm. W. Dennin, Asst. Supt. Edgar S. Fassett, Accountant, J. N. Murphy. Offices 3 & 5 N. Pearl st. j. Alleghen Volty, PA.—Federal St. & Pleasant Valley Pass. Ry. 4.8 m, 5-2 g, 50 lb r, 22 c, 160 h and mu. Pres. Wm. McCreery, Sec. R. F. Ramsey, Supt. Wm. J. Crozier. Office, 129 Taggart st. a People's Park Pass. Ry. Co. 5.2 m, 5-2 g, 45 lb r, 10 c, 70 mu. Pres. Wm. McCreery, Sec. R. F. Ramsey, Treas. Jas. Boyle, Supt. Wm. J. Crozier. Office, 129 Taggart st. a ALLENTOWN, PA.—Allentown Pass. R.R. Co. 3½ m, 4.8½ g, 19 lbs. r, 3 coaches, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balliet. Supt. A. T. Brown. Office Hamilton st. Capital, \$45,260. k
ALTON, ILL.—Alton & Up. Alton llorse Ry. Co. ALTONA. PA.—City Pass. Ry. Co. of Altoona, Pa. 3½ m, 5-3 g, 43 & 45 lbs. r, 17 c. 40 h. Pres. John P. Levan, Sec. & Treas. L. B. Relfsnelder, Supt. John J. Buch. Capital, \$8,000. a

AMISTERDAM, N. Y.—Amsterdam St. R. R. Co. 1½ m, 4-8½ g, 35 lb r, 4 c, 11 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. Leased to Jas. R. Snell. a

APPLETON, WIS.—Appleton Electric St. Ry. 4½ m. 4-8½ g, 33 lb r, 5 c, 5 motors. Pres. J. E. Harriman, V.-Pres. N. B. Clark, Sec. & Treas. Jos. Koffend. a

ASI TABULA, O.—Ashtabula City Ry. Co. 4 m, 4-8½ g, 40 lb r, 9c, 60 h. Owner & Prop. Jno. N, Stewart,

Harriman, V.-Pres. N. B. Ciark, Sec. & Heas, Jos. Koffend. a

ASHTABULA, O.—Ashtabula City Ry. Co. 4 m,
4-8½ g, 401b r,9c, 60 h. Owner & Prop. Jno. N. Stewart,
Cleveland, O. 5

ATCHISON, KAN.—Atchison St. Ry. Co. 9 m,
20 c, 65 h, 4-8½ g, 20-31 lbr. Pres. J. H. Beeson, Treas.
H. M. Jackson, Sec. J. P. Adams, Gen. Supt. Geo. W.
Carpenter. 11

ATHENS, GA.—Classic City St. Ry. Co. 3½ m, 4
g, 16 & 20 lb Tr, 4 c, 30 mu. Pres. Geo. M. Snodgrass,
V.-Pres. R. B. Russell, Treas. Lamar Cobb, Supt. J.
H. Dorsey. 4

H. Dorsey. 4

ATLANTA, GA.—Atlanta St. Ry. Co. 13 m, 4-8½
g, 42 lb C. B. rail, 40 two h cars, 150 horses. North
Atlanta Line 1 m. Decatur St. Line 1.50 m. Marietta St. Line 2.50 m. McDonough St. Line 1.50m.
Peachtree St. Line 2.50 m. West End Line 2.50 m.
Whitehall St. Line 1.50 m. Pres. Richard Peters,
Sec. & Treas. J. W. Culpepper, Supt. & Purch. Agt.
E. C. Peters, Engr. W. S. Larendon. Office, 49 Line
st. g

Sec. & Treas. J. W. Culpepper, Supt. & Purch. Agt. E. C. Peters, Engr. W. S. Larendon. Office, 49 Line st. g
Gate City St. R. R. Co. 2½ m, 4-8½ g, 16 & 60 lb. r, 7 c, 28 mu. Pres. R. Peters, Sec. & Treas. J. W. Culpepper, Supt. & Pur. Agt. E. C. Peters. 6
Metropolitan St. R. It. Co. 6 m, 4-8½ g, 20 lb r. 20 c, 84 h. Pres. J. W. Rankin, Sec. J. S. Haniutu. Office cor. Hunter and Butler sts.
West End & Atlanta St. R. R. Co. 2 m, 4-8½ g, 20 lb r, 6 c, 34 mu. Pres. T. G. Healey. V. Pres. T. L. Langston, Sec. & Treas. B. H. Brumhcad, Man. & Pur. Agt. John S. Brumhead.

ATLANTIC, N. J.—Atlantic City Ry. Co. AUBURN, N. Y.—Auburn City Ry. Co. 3½ m, 4-8½ g, 30 -42 lb r, 10 c, 41 h. Pres. G. W. Allen, V. Pres. H. B. Hollins, New York, Scc. Bronson Peck, Jr., New York, Treas. E. L. Horton, New York, Asst. Treas. C. B. Kosters, Supt. J. L. Windsor. g

AUGUSTA, GA.—Augusta & Summerville R. R. Co. 6 m, 5 g, 30 lb r, 13 c, 42 h. Pres. Patk. Walsh, Supt. & Sec. Edw. G. Mosher. Auditor, Frank E. Petit. Office, 513 McKinne st. a

AURORA, ILL.—Aurora City Ry. Co. 5 m, 4-8½ g, 28 lb r, 7 c, 101, 30 mu. Pres. H. H. Evans, V. Pres. BABYLON, N. Y.—Babylon Street Ry. Co. 1.53 m, 4-9 g, 60 lb r, 3 c, 3 h. Pres. W. F. Norton, Sec. Jos. F. Sammis. d

BALTIMORE, MD.—Baltlmore & Powhatan Ry. Co. 6 m, 5-4½ g, 30 lb r, 4 c, 18 h. Pres. & Treas. E.

Jos. F. Sammis, Treas. John R. Reed, Supt. David S. S. Sammis.

BALTIMORE, MD.—Baltimore & Powhatan Ry. Co. 6 m, 5-4½ g, 30 lb r, 4 c, 18 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Ciark, Supt. I. M. Ketrick. Office 406 Laurens st.
Baltimore City Pass. Ry. Co. 44 m, 5-4½ g, 46 & 47 lb r, 155 c, 1065 h. Pres. & Supt. Oden Bowle, Supt. car shops J. M. Blundell, Supt. tracks, Boyer Parks. Treas John Bolgiano, Sec. S. L. Bridge. Office cor. Calvert & Baltimore sts. a
Baltimore Union Pass. Ry. Co. 16 m, 5-4½ g, 47 lbs r, 61 c, 391 h. Pres. N. Perrin, Gen. Man. T. C. Robbins, Treas. E. P. D. Cross, Sec. Leon Fender, Ass't. to Gen. Man. R. E. Robbins. Office cor. Huntington ave. & Oak st. k
Baltimore, Catonsville & Elliott Mills Pass. Ry. Co. 6 m, 5-4½ g, 35 lb r, 15 c, 42 h. Pres. T. C. Robbins, Sec. W. W. Orendorf, Treas. E. P. D. Cross. a
Central Ry. Co. 11½ m, 5-4½ g, 40 lb r, 22 c, 2 sweepers. 186 h. Pres. Peter Thompson, Sec. & Treas. Walter Blakistone. Office cor Preston and Constitution sts. b.
Citizen's Ry. Co. 20 m, 5-4½ g, 47 lb. r, 36 c, 400 h. Pres. Jas. S. Hagarty, Treas. Jos. Balzino, Supt. &

Pur. Agt. C. C. Speed, Cashler Wm. V. Hammersley. a Highlandtown & Point Breeze Ry. Co. City Div. 6, 5-8 g, — Ib r, 15 c, 9; h. Pt. Breeze Div. 3 m, 1 loco, 4c. Pres & Gen. Man. Francis Hazlehurst, of Philadelphia, Treas. Robt. D. Morrison.
North Baltimore Passenger Ry. Co. 21 m, 5-4½ g, 45 lb. r, 72 c, 400 h. Pres. Jas. L. McLane, Treas. Dan'l J. Foley, Sec. Thos. J. Wilson.
People's Ry. Co. 13-2 m, 5-4½ g, 42 45-47 lb r, 38 c, 210 h. Pres. T Edw. Hambleton, Treas. Gustavus Ober, Sec., Supt. & Pur. Agt. Wm. A. House, Jr. Office, Druid Hill ave. extension, Clifton. f
Pimilco & Pikesville Ry. Co. 6 m, 5-4 g, 30 lb r, 4 c, 17 h. Pres. P. H. Walker, Sec. Frank Caughy, Treas. & Supt. Arthur Chenoweth. Office, Pikesville, Balto. Co. d
Yorktown Turnpike Road Co. 11½ m, 5-4½ g, 25 th. 19 c, 133 h. Pres. Sam'l H. Tagart, Treas. Jos. W. Jenkins, Agt. A. D. Sanks. Office, 6 N. Hallday st.

BATTLE CREEK, MICH.—Battle Creek St. Ry. 4 m, 3-6 g, 28 lb r, 8 c, 20 h. Pres. G. L. Beveredge, Chicago, V. Pres. Lucius Clark, S. Bend, Ind., Sec. H. H. Brown, Battle Creek, Treas. H. H. C. Miller, Chicago, Supt. Geo. Wolf, Battle Creek. c

BAY CITY, MICH.—Bay City St. Ry. Co. 7½ m, 4-8½ g, 18 lb r, 13 c, 35 h. Pres. James Clements, Treas. Wm. Clements, Sec. Edgar A. Cooley.

BEATRICE, NEB.—Beatrice St. Ry. Co. 4 m, 4-8½ g, 25 lb. r, 4 c, 28 h. Pres. J. D. Kilpatrick, Pur-

BEATRICE, NEB.—Beatrice St. Ry. Co. 4 m, 4-8½ g, 251b. r, 4 c, 28 h. Pres. J. D. Kilpatrick, Purchasing Agt. J. E. Smith. h

BEAVER FALLS, PA.—Beaver Valley St. Ry. Co. 3½ m, 5-2½ g, 38 lbr, &c, 31 h. Pres. M. L. Knlght, V. Pres. Col. J. Weyand, Sec. & Treas. J. F. Merriman, Supt. L. Richardson. Office, 1207 7th av., Beaver Falls.

Ver Falls. a

BELLAIRE, O.—Bellaire St. R.R. Co. 2½ m, 3-6 g, 15 lb r, 4 c, 13 h. Owner Geo. W. Stetson of New York, Man. Fred. Rodewlg. 7

BELLEVILLE, ONT., CAN.—Belleville St. Ry. Co. 1½ m, 3-6 g, 25 lb, r, 5 c, 14 h Pres. D. Lockwood, Sec.. Treas. & Man. S. A. Lockwood. l

BELLVILLE, ILL.—Citizen's St. Ry. Co. 4½ m, 4-8½ g, 16 lb r, 7 c, 20 h. Pres. D. P. Alexander, Man. & Treas. H. A. Alexander, Sec. J. E. Thomas. office N. E. cor. Main and High sts. j

BEREA. O.—Berea St. R. R. Co. 1½ m, 3-6 g, 25 lb r,

& Treas. H. A. Alexander, Sec. J. E. Thomas. Office N. E. cor. Main and High sts. j

BEREA, O.—Berea St. R. R. Co. 1½ m, 3-6 g, 25 lb r, 2c, 4h. Pres. C. W. D. Miller, V. Pres, T. Churchward, Treas. F. T. Pomery, Supt. A. W. Bishop. a

BINGHAMTON, N. Y.—Washington Street & State Asylum R.R. Co. 4½ m, 4 g, 16-35 lb r, 13 c, 23 h. Pres. R. H. Meagley, V. Pres. Geo. Whitney, Sec. Ira J. Meagley, Treas. F. E. Ross, Supt. Wm. Whitney, Binghamton Central R.R. Co. 3½ m (3 m. lald,) 3 g, 28 lb r, 6 c, 8 h. Pres. Geo. L. Crandall, V.-Pres. Alonzo Evarts, Sec. Chas. O. Root, Treas. H. J. Kneeland, Supt. Nelson Stow. Offices 65 Court st d Binghamton & Port Dickinson R.R. Co. 5 m, 4-8½ g, 20-30 lb r, 10 c, 23 h. Pres. Harvey Westcott, Sec. & Treas. G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 State st. Clty Ry. Co. 1 m, 4 g, 25 lb r, 2 c, 5 h. Pres. & Man. R. H. Meagley, Supt. Wm. Whitney. Office, 216 Fort St. 3

Main, Court & Chenango St. R.R. 5 m, 4-8g, 40 lb r, 10 c, 25 h. Supt. & Lesse, N. L. Osborn. Offices 83 Washington st.
Park Ave, R. R. Co. 1 m, 4 g, 20 lb r. Pres. E. Ross, Treas. F. E. Ross, Sec. E. A. Matthews. S. M. Nash. lessee. 5

BIRMINGHAM, ALA.—Birmingham Union By Co. 22 m. 4-84 f. 15 h. A. S. S. M. S. S. M. S. S. M. S. S. M. S.

Nash, lessee. 5
BIRMINGHAM, ALA.—Birmingham Union Ry.
Co. 22 m, 4-8½ g, 16 lb r, 25 c, 212 mu. Pres. J. A.
Van Hoose, Sec. & Treas. B. C. Scott, Supt. T. S.
Morton,
East Lake Land Co. 7m, 4-8½ g, 40 lb r, 6 c, 4 motors.
Pres. Robr. Jemison. V. Pres. A. A. Clisby, Sec. &
Treas. S. M. Ilanby. Capital, \$200,000. Office, 2,009
First ave. h
Highland Avenue R. R. 6½ m, 4-8½ g, 30 lb r, 5 c,
28 h. Pres. H. M. Caldwell, Man. W. J. Milner, Supt.
J. M. Lens, Eng. H. Schoel. Owners, The Elyton
Land Co.
Birmingham & Pratt Mines St. Ry. Co. 5 m, 4-8½

Land Co.

Birmingham & Pratt Mines St. Ry. Co. 5 m, 4-8½
g, 16 lb r, 6 c, 30 h. Pres, and Gen. Man. J. A. Van
Hoose, Sec. & Treas. Wm. Berney.

BLOOMFIELD, N. J.—Newark & Bloomfield R. (See Newark, N. J.)

BLOOMFIELD, N. J.—Newark & Bloomfield R. R. (See Newark, N. J.)

BLOOMINGTON, ILL.—Bloomington & Normal Horse Ry. Co. 5½ m, 4-8½ g, 36 lb r, 10 c, 60 h. Pres. & Proprietor A. H. Moore, Sec. Edw. Sharp. c

BOONE, IA.—Boone & Boonsboro St. Ry. Co. 1½ m, 3g, 20lb r, 3c, 1 'bus, 10 h. Pres. L. W. Reynolds, Treas. Ira B. Hodges, Sec. and Supt. A. B. Hodges. F Twin Clty & Des Molnes River Motor St. Ry. Co. 6 m, 20 lbs. r, 3-6 g, 2 motors, 3 c. President & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger. k

BOSTON, MASS.—Boston Consolidated St. Ry. Co. 51½ m, 4-8½ g, 48-50 lb r, 375 c, 1800 h. Pres. Chas. E. Powers, Treas. Sam'l Little, Ass. Treas. John H. Studley, Jr., Gen. Supt. Julius E. Rugg. Supt. J. H. Studley, 19 City Square, Charlestown. Capital, \$1,700,000. Office, 27 Tremont row. k

Boston & Chelsea R. R. Co. 4.154 m, 4-8½ g, 45-50 lb r. Pres. W. W. Whelldon, Treas. and Clerk, John H. Studley, Jr. (Operated by the Boston Consolidated St. Ry. Co.) Office, 27 Tremont row. f

Albany St. Freight Ry. Co. .93 m, 4-8½ g, 90 lb r, no c, no h. Pres. Chas. L. Plerson, Treas. Geo. F. Child. Office, 439 Albany St. freight Ry. Co. .93 m, 4-8½ g, 28-48 lb r, 175 c, 748 h. Pres. Chas. L. Plerson, Treas. Geo. F. Child. Office, 439 Albany St. free Chres. & Tremont row. & Metropolitan R. R. Co. 83 m, 48 to 54 lb r, 687 c, 3043 h. Pres. C. A. Richards, Sec. Wm. P. Harvey, Treas. Chas. Boardman. Office, 16 Kilby St. k

So. Boston Ry. Co. 16 m, 4-8½ g, 50 lb r, 199 c, 970 h. Pres. Chas. H. Hersey, V. Pres. Ezra H. Baker; Sec. & Treas. Supt. Daniel Coolidge. Office, 715 Broadway, So. Boston. R. R. Co. (Operated by the Boston Consolidated Street Ry. Co.) 5.4 m, 4-8½ g, 48-10 m. Sonerville Horse R. R. Co. (Operated by the Boston Consolidated Street Ry. Co.) 5.4 m, 4-8½ g, 48-10 m. Sonerville Horse R. R. Co. (Operated by the Boston Consolidated Street Ry. Co.) 5.4 m, 4-8½ g, 48-10 m. Sonerville Horse R. R. Co. (Operated by the Boston Consolidated Street Ry. Co.) 5.4 m, 4-8½ g, 48-10 m. Sonerville Horse R. R. Co. (Oper

60 lb r. Pres. Sam'l E. Sewall, Treas. & Clerk, J. H. Studiey, Jr. Office, 27 Tremont row. a Winnisimmet R. R. Co. 1.95 m, 4-8½ g, 48 lb r, no c, no h. Pres. Wm. R. Pearmain, Chelsea, Mass. Treas. & Clerk, E. Francis Oliver, Boston. Office, 13 Tremont row.

BRADFORD, PA.—Bradford & Kendall R.R. Co. 1½ m, 4-8½ g, 33 lb r, 3 c, 5 h. Pres. James Broder, Treas. Enos Parsons. Capital, \$12,000. 7

BRANTFORD CAN.—Brantford St. Ry. Co. 4
m, 3-6g, 25 lb r, 6 c, 20 h. Pres. D. A. Flack, V. Pres. R. A. Pringle, Sec., Treas. & Man. Chas. H. Flack. h

R. A. Fringle, Sec., Treas. & Man. Chas. H. Flack. h.
BRENHAMI, TEX.—Brenham St. R. R. Co. 2 m,
4g, 20 lb r, 3 c, 18 mu. Pres. T. J. Pampell, V-Pres. F,
Krentzlin, Sec. John A. Randle, Treas. D. C. Glddings.
Man. E. B. Randle. Office, Gruber Blug., North st. l.
BRIDGEPORT, CONN.—Bridgeport Horse R.R.
Co. 6½ m, 4-8½ g, 42 lb r, 20 c, 90 h. Pres. Albert
Eames, Sec. & Treas. F, Hurd, Supt. B. F. Lashar. j
Bridgeport & W. Strattord Horse R. R. Co. 3½ m,
4-8½ g, 45 lb r. 10 c, 40 h. Pres. David F, Hullister,
Sec. & Treas. Henry D. Drew, Man. Henry N.
Beardsley. j

BROCKTON, MASS.—Brockton St. Pr. Co. 114.

BROCKTON, MASS.—Brockton St. Ry. Co. 11½ m, 4-8½ g, 35 lb. r, 32 c, 130 h. Pres. W. W. Cross, Treas. C. R. Fillebrown. Supt. H.B. Rogers. Office, Wain st.

BROCKTON, MASS.—Brockton St. Ry. Co. 11½
M, 48½ g, 35 lb. r, 32 c, 130 h. Pres. W. W. Cross, Treas. C. R. Fillebrown. Supt. H.B. Rogers. Office, Main st. j
BROOKLYN, N. Y.—Atlantic Avenue R. R. Co. of Brooklyn. 32½ m, (leased and owned). 4-8½ g, 50-60 lb r, 255 c, 938 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newbery H. Frost. Office, cor. Atlantic & Third aves.

Broadway R.R. Co. 12 m, 4-8½ g, 60 lb r, 199c, 750h. Pres. Edwin Beers, Sec. & Treas. Robert Sealy, Supt. Joshua Crandall. Office 21 Broadway, E. D. e
Brooklyn Cable R. R. Co. Leases its line from Atlantic Ave. R. R. Co., for 14 per cent of gross receipts. Capital, \$1,000,000.

Brooklyn Cross Town R.R. Co. 16 m, 4-8½ g, 50-60 lb r, 72 c, 430 h. Pres. Henry W. Slocum, V. Pres. Ezra B. Tuttle, Sec. M. Joost, Treas. John R. Conner, Supt. D. W. Sullivan. Offices 585 Manhattan ave. J. Bushwick R.R. Co. 28 m, 4-8½ g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, V. Pres. Wm. H. Husted, Treas. & Sec. S. D. Hallowell, Supt. Wm. N. Morrison. Office 22 Broadway, N. Y.

Brooklyn, Bushwick & Queens County F. R. Co. 11 m, 4-8½ g, 42-47 lb r, 50 c, 214 h. Pres. Geo. W. Van Allen, Sec. Wm. B. Walt, Treas. C. B. Cottrell, Supt. Chas. E. Harris. Office of Pres. & Supt. cor. Nostrand & Parkav. b

Brooklyn City R.R. Co. 88½ m, 4-8½ g, 45-64 lb r, 501 close c, 335 open. c, 3176 h. Pres. Daniel F. Lewis, V. Pres. Wm. M. Thomas, Sec. H. M. Thompson, Asst. Sec. Francis E. Wrigiey, Treas. Cromwell Hadden. Offices, 10 Fulton st. a

Brooklyn City & Newtown R.R. Co. 13½ m, 4-8½ g, 45-60 lb r, 128 c, 400 h. Pres. Col. John N. Partridge; Sec. & Treas. Duncan B. Cannon; Supt. John L. Helns. Office cor. DeKalb & Central aves. d

Calvary Cemetery, Greenpoint & Brooklyn R. R. Co. 6 m, 48½ g, 50 lb r, 10 c, 30 h. Pres. Jas. R. Co. 6 m, 48½ g, 50 lb r, 10 c, 30 h. Pres. Jas. R. Co. 6 m, 48½ g, 50 lb r, 10 c, 30 h. Pres. Jas. R. Co. 6 m, 48½ g, 50 lb r, 10 c, 30 h. Pres. Jas. S. Coney Island and Brooklyn R.R. Co. 18 3-5 m, 45 lb r, 4-8½ g, 103 c, 344 h. Pres. James

Wm. E. Horwill, Supt. Walter G. Howey. Office 394 Kent ave. I Grand Street, Prospect Park & Flatbush R.R. Co. Pres. Thos. Clark, Jr., Sec. & Treas. Chas. Crelfelds. Leased to De Kalb Ave. R. R. Co. 7 Greenpoint & Lorimer St. R. R. Co. 5½ m, 4-8½ g, 50 lb r, 36 c, 183 h. Pres. Geo. W. Van Allen, Sec. Wm. B. Walt, Treas. C. B. Cottrell, Supt. Chas. E. Harris. Office, cor. Nostrand and Park aves. J. New Williamsburgh & Flatbush R. R. Co. 17½ m, 4-8½ g, 47-50 lb r, 78 c, 278 h. Pres. Geo. W. Van Allen, 54 Ann. St., New York, Sec. W. B. Walt, 34th. £. & 9th ave., New York, Treas. C. B. Cottrell, 8 Spruce st., N. Y. Clty, Supt. Chas. E. Harris, Nostrand & Park aves., Brooklyn. J. Prospect Park & Flatbush R.R. 3 m, 4-8½ g, 34 lb r, 70 c, 360 h. Pres. Loftls Wood, Sec. & Treas. Sam'l Parkhill, Supt. Loftls Wood. Offices 45 Broadway.

Sam'l Parkhill, Supt. Louis wood.

Way.

South Brooklyn Central R.R. Co. 8% m, 4.8% g, 60 lb r, 42 c, 193 h. Pres.Wm. Richardson, Sec. Wm. J. Richardson, Treas. N, H. Frost, Asst. Treas. Jas. S. Suydam, Offices, Atlantic & 3d aves.

Van Brunt St. & Erle Basin R.R. Co. 3 m, 4-8% g, 45 lb r, 7 c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry. Offices, 264 Van Brunt St.

BRUNSWICK, GA.—Brunswick St. R. R. Co. 4% m 4-8% g, 38 lb r, 6 c, 24 h. Pres. C. P. Goodyear, Sec. & Gen. Man. U. Dart, Treas. W. E. Kay. Office, Newcastle st. 7

BUFFALO, ILL.-See Mechanicsburg, Ill.

BUFFALO, N. Y.—Buffalo St. R.R. Co. 15½ m, 48½g, 50 lb r, 109 c, 615 h. Pres. Henry M. Watson, V. Pres. P. P. Pratt, Sec. S. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Office, 346 Main

H. Watson, Supt. Edward Edwards. Office, \$46 Maln st. 6
Buffalo East Slde St. Ry. Co. 31 m, 4-8½ g, 50 to r, h. Pres. S. S. Spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Watson, Supt. Edward Edwards. Office 346 Main st. 6
BURLINGTON, IA.—Burlington St. R.R. Co. 3½ m, 4-8½ g, 16-22 lb r, 9 c, 22 h, 10 mu. Pres. & owner, John Patterson, Sec., Treas. & Man. C. T. Patterson. Office, 1401 Summer st. a
Union St. Ry. Co. 8½ m, 4-8½ g, various r, 20 c, 80 h. Pres. Geo. A. Duncan, Sec., Treas. & Supt. F. G. Jones. a
BURLINGTON. VT.—Winooski & Burlington

BURLINGTON, VT.—Winooski & Burlington Horse Ry. Co. 3½ m. 4-8 g, 25 lb r, 7 c, 24 h. Pres. W. A. Woodbury, V. Pres., F. C. Kennedy, Supt, K.

The Julien Electric Company.

OFFICE, 120 BROADWAY, N. Y

FACTORY, CAMDEN, N. J.

Electric Street Cars on Secondary Battery Principle.

EDMOND JULIEN, Engineer, of Brussels, Belgium, is the inventor both of the Traction System and Secondary Battery System of this company. The present car is the result of six years of unceasing experiments, carried on at his works in Brussels and on the streets of that city, at great cost.

The leading principle of Mr. Julien's System has been the application of an Electric Motor and Batteries to the present existing rolling stock of street railways, and to construct a car so simple in its management that the drivers and conductors at present in charge of horse cars may take to the new service as easily as to the old. Mr. Julien, after running an Electric Car on the Rue de la Loi in Brussels, during the year's 1884 and 1885, and ascending a grade of 5 per cent on that street, put his car in service at the Antwerp International Exhibition of Mechanical Traction in May, 1885, and ran it daily a distance of 57 miles, sometimes drawing an ordinary street car, both cars filled with passengers, and in competition with steam and compressed air motors; and the jury, consisting of eminent Engineers from England, Germany, France and Belgium, awarded Mr. Julien the First Prize and Diploma of Honor for the best System of Mechanical Traction for street cars.

At the end of this Exhibition, Mr. Julien placed two cars on the streets of Hamburg, and afterwards added a third. Those cars have now been running since February, 1886. They each make 69 miles a day and in one place over a 4 per cent grade, carrying passengers; and, although the municipal requirements of Hamburg were very exacting, yet the Electric car has so satisfactorily met them, that it has been adopted in that city. Readers are requested to write to Hamburg to satisfy themselves. The batteries used upon these cars were examined by the municipal officers two months ago, and were found in as perfect condition as when they were first put in the cars.

In April, 1886, Mr. Julien closed a contract with all the Brussels street railways, whereby they have agreed to adopt his System and to put 107 cars in use in Brussels. They are now ready to put three lines of Mr. Julien's system in service, if they have not already done so. The street railways at Rio Janeiro have also adopted Mr. Julien's system.

Last June, Mr. Julien placed two of his cars in service on the Champs Elysees under the supervision of ten members of the International Society of Electricians of France, M. Fontaine at the head. They did service between the Place de la Concorde and the Palais de l'Industrie during the entire summer, and, at the end of the Exhibition, were awarded a first prize and Diploma of Honor. Mr. Julien's Batteries were also put in competition there with those of Faure and Plante under the supervision of Mr. Hospitalier, an eminent Electrician; and Mr. Julien was awarded the first prize and a Diploma of Honor. The Faure and Plante batteries received a third prize and silver medal. Mr. Julien's car, which is now exhibited on Eighth Avenue, New York City, is working its way into favor and has been so adapted to the new conditions arising from sharp curves and an irregular track, as to travel easily at a rate of eight and one-half (81) miles an hour and carrying a full load.

COST.

The cost of Installation of Mr. Julien's System is about the same as that of horse system. It is, in all probability, less; and, once installed, the expense of maintaining it is, of course, much less. In Brussels, this expense has been found, after an examination, covering a period of nearly a year, by a committee of Street Car men, to be a little over Three Dollars (\$3.00) a day for each car. In this country, the expense will not exceed Four Dollars (\$4.00) per day. From our observations on the Eighth Avenue line, it will be less than that on that line, owing to the favorable nature of the grades. The cost of horse traction is deemed to be at least Seven Dollars (\$7.00) a day. We speak, of course, of two-horse cars.

The manipulation of the System is far easier than that of the horse system. Each car will require about three horse power in the way of steam engine, so that a road maintaining, say, 40 cars, would require three 60 horse power engines, one engine being in reserve. The dynamic power required is the same. Each car will require about three tons of battery; this will enable the car to be run about 80 miles a day with but one change of battery. It requires

about eight hours to charge each battery. The three tons will be divided into two batteries, one being charged while the other is being used on the car. The batteries are ranged on either side of the car on benches; when the car comes in from service and its batteries are exhausted, it is run up between empty benches, which are on a level with the panels of the car, the panels are let down and the batteries are easily drawn out on greased rods. Adjoining the empty benches are the benches with the charged batteries, which take the place of the discharged ones.

Mr. Julien's batteries being made on a new principle—that is, inoxidizable support plates-are found to have an unlimited life and to be capable of being run up to a very high intensity without any injurious effect. In heavy grades, and going around curves, the current may be run up to 70 amperes without any fear of injury to the battery. As all Electricians know, Mr. Julien's is the only battery that can pretend to stand so high an intensity. Yet it may be seen every day on the Eighth Avenue road. The motor required for a large car will vary, according to the grades of the road, from 7 to 10 horse power. We do not consider it economical to overcome long grades of more than 5 per cent, though of course the car may be made to overcome much higher grades than this, especially for short distances. Curves should be at least 40 feet radius, although, on the Eighth Avenue road, we are compelled to run around curves of only 29 feet radius; yet there is an element of danger to the gearing of the car in so short a curve.

Next to Mr. Julien's motor, which is especially adapted, by its simplicity, for use on a Street Car, the Electrical Regulator is worthy of admiration. It is placed at either end of the car and controls so effectively and so methodically the application of power that an ordinary driver may learn the use of it with entire success in less than a few hours. Of course, railroads using this Company's cars will be enabled to light their stables with the Secondary battery employed in the service; the cars are, of course, lighted from the same batteries. One company now adopting Mr. Julien's System are undertaking to light the streets along which the cars will run from their stables, thereby reducing the cost of their installation by getting a profit from the

B. Walker, Treas. L. E. Woodhouse, Clerk, G. W. Wales. Office, Winooskiave. g
CAIRO, ILL.—Cairo St. Ry. Co. 2 m, 3-6 g, 25 lb r, 4 c, 12 h. Pres. J. A. Goldstine, V-Pres. C.V. Neff, Supt. & Treas. Thos. Lewis, Sec. H. Schulze. k
CAMBRIDGE, MASS.—Cambridge R. R. Co. 5-1-59 m, 4-8½ g, 50 lb r, 255 c, 1,428 h. Pres. Prentiss Cummings, Treas. & Clerk Franklin Perrin, Exec. Com. I. M. Spelman, P. Cummings, O. S. Brown, Clerk of Directors, O. S. Brown, Supt. Wm. A. Bancroft.
CAMDEN, N. J.—Camden & Atlantic St. Ry.
Camden Horse R.R. Co. 9 m, 5-1 g, 35-52 lb r, 26 c, 85 h. Pres. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood. Office 125 Newton ave. h
CANTON, O.—Canton St. Ry. Co. 4½ m, 4 g, 28 lb r, 11 c, 65 h. Pres. & Treas. G. E. Cook, Sec. John F. Clark, Supt. O. L. Stanton. Office, 4 E. 7th st. a
CAPE MAY, N. J.—Cape May & Schellenger Landing Horse R. R.
CARTHAGE, MO.
CEDAR RAPIDS, 1A.—Cedar Rapids & Marion Ry., 13½ m, 4-8½ g, 28-30-33 lbr, 20 c, 44 h. Pres. W.
Greene, V-Pres. A. J. McKean, Sec. N. B. Consigny, Treas. G. Greene, Supt. Wm. Elsom. Office, 11 N. Second st. a
CHAPLISTION, ILL.—Champalgn R.R. Co.
Urbana & Champalgn St. R.R. Co. (See Urbana.)
CHATHAM, CAN.
CHARLESTON, S. C.—Charleston City Ry.
Co. 8½ m, 4-8½ g, 38 lbr, 32 c, 110 h. 1mu. Pres.
Jno. S. Riggs, Sec. and Treas. Evan Edwards, Asst. Treas. Frank Whilden, Supt. Jno. Mohlenhoff.
Office 2 Broad st. k
Enterprise R.R. Co. 15 m, 5 g, 42 lb r, 29 pass. c, 10 freight c, 95 h. Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. T. W. Passallalgue.
Middle Street Sullivan Island Ry. Co. 2½ m, 4-8½ g, 20 lb T, 7, 14 mu. Pres. B. Callaghan, Sec. & Treas. Frank F. Whilden, Supt. B. Buckley. Office 2 Broad st. d
CHARLOTTE, N. C.—Charlotte St. Ry. Co. 2½ m, 4-8½ g, 25 4-5 lb r, 26 c, 120 h. Pres. and Treas. Frank F. Whilden, Supt. F. W. Dixon, Capital, \$20,000. J.
CHATTANOOGGA, TENN.—Chattanooga St. R. Co. 12 m, 4-8½ g, 25-45 lb r, 26 c, 120 h. Pres. and Treas. B. Humerr, Sec. C. R. Gaskill. 3
CHLESTER, PA.—Chester St. Ry. Co. 90 m, 4-8½ g, 4

T. C Pennington, Supt. C. B. Holmes. Office 2,020 State st. a Chicago Pass. Ry. Co. 21 m, 52 lb r, 60 c, 500 h. Pres. Harvey T. Weeks, Supt. Austin J. Doyle. 5 Chicago West Division Ry. Co. 46½ m, 48½ g, 43 lb r, 900c, 4,300 h. Pres. J. R. Jones, Sec. George L. Webb, Supt. De Witt C. Cregier. Office of Pres., 59 State st; Supt., 51 Randolph st. a North Chicago City R.R. Co. 45 m, 4.8½ g, 45 lb r, 375 c, 1,800 h. Pres. Chas. T. Yerkes, Treas. Hiram Crawford, Supt. Fred L. Threedy, Purch. Agt. John M. Roach, Master Mechanic J. Millar, Car Builder II. N. E. Cottler. Office, 4414. Clark st. 5 CHILLICOTHE, 0.—Chillicothe St. R.R. Co. 1½ m, 3 g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewel McMartin.

McMartin.

CINCINNATI, 0.—Cincinnati Inclined Plane Ry.

Co. 6½ m, 5-2½ g, 43 lb r, 25 c, 140 h. Pres. Geo. A.
Smith. Sec. & Supt. James M. Doherty, Tr. J. S.

McMartin.

CINCINNATI, O.—Cincinnati Inclined Plane Ry.
Co. 6½ m, 5-2½ g, 43 lb r, 25 c, 140 h. Pres. Geo. A.
Smith, Sec. & Supt. James M. Doherty, Tr. J. S.
IIII. a

Cincinnati St. Ry. Co. 96m, 5-2 g, 42-52 lb r, 250 c, 2,000
h. Pres. Jno. Kligour, Treas. R. A. Dunlap, Sec. & Auditor, Jas. A. Collins, Supt. Jno. Harris, Pur.
Agt. B F. Haughton. Office second floor of Apollo
Building.

Columbia & Cincinnati St. R.R. Co. 3½ m, 3 g, 40
lb r, 6 c, 3 dummy c. Pres. & Auditor C. H. Kligour,
V. Pres. John Kligour, Treas. & Sec. A. H. Meler,
Mt. Loykout, O. Office Station C. a

Mt. Adams & Eden Park inclined R.R. Co. 7 m, &
8 m cable, 5-2½ g, 42 lb r, 20 c, 40 cable c, 175 h. Pres.
G. B. Kerper, Sec. J. R. Murdoch, Supt. R. P. Alley.
Office, head of Mt. Adams incline.

a Price Hill Inclined Plane R.R. Co. 8-13 m, 5-6 g, 60
lb r, 4 c, Pres. M. W. Oilver, Gen. Man. Rees E. Mc
Duffie, Sec. & Treas. Geo. T. McDuffie.
So. Covington & Cincinnati. (See Covington, Ky.)
Clarksville, Tenns.—Clarksville St. Ry.
Co. 2 m, 4-8½ g, 16 lb Tr., 4c, 16 mu. Pres. John F.
Shelton, Sec. & Treas. John W. Faxon. Capital.
\$6,250. Office, Farmers' & Merchants' Nat. Bank. 1

CLEVELAND, O.—Brooklyn St. R.R. Co. 12½
m, 4-8½ g, 52 lb r, 70 c, 402 h. Pres. Tom. L. Johnson.
V. Pres. A. J. Moxham, Sec. J. B. Hoefgen, Treas.
John McConnell, Supt. A. L. Johnson. Office 1,301
Pearlst. 7

Rroadway & Newburg St. R.R. Co. 11.4 m, 4-8½ g,
43 lb r, 26 c, 165 h. Pres. Joseph Stanley, V. Pres.
H. E. Andrews, Sec. & Treas. E. Fowler, Supt. J. J.
Stanley. Office 1373 Broadway.
Superior St. R.R. Co. 15 m, 4-8½ g, 45 lb r, 46 c,
265 h. Pres. Frank De H. Robison, V. Pres. John
Koch, Sec., Treas, & Supt. J. H. Robison, Jr.
East Cleveland R. R. Co. 20½ m, 4-8½ g, 45 lb r, 6 c,
265 h. Pres. Frank De H. Robison, Sec. & Pres. Chas. Wason, Sec. & Treas. H. A. Everett,
Supt. E. Duty. Offices, 1154 Euclid ave. & Prospect
St.: Cedar ave.; Garden st. Pres. A. Everett, VPres. Chas. Wason, Sec. & Treas. H. A. Everett,
Supt. E. Duty. Offices, 1154 Euclid ave. & Frospect
St.:

John N. Hayward, 52 B'way, N.Y. Sec. John H. Bache, Niagara Falls, Ont. h
CLINTON, IA.—Lyons & Clinton Horse R.R. Co.

(See Lyons.)

COLUMBIA, S. C.—Columbia St. Ry. 4½ m,
4-8½ g, 30 lb r, 6 c, 18 h. Pres. E. M. Cole, Sec. Edw.
Benedict, Treas. W. de L. Benedict, all of 32 Liberty
st., New York. Capital, \$50,000. 5

COLUMBUS, GA.—Columbus St. R.R. Co. 3 m,
4-8½ g, 16 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec.
L. G. Schnessier, Treas. N. N. Curtis, Supt. J. A. Gabourgh.

COLUMBUS, GA.—Columbus St. R.R. Co. 3 m. 4-8½ g, 16 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Gabourgh.

COLUMBUS, O.—Columbus Consolidated St. R.R. Co. 25 m, 5-2 g, 35-52 lb r, 97 c, 383 h. Pres. A. D. Rodgers, V. Pres. H. T. Chittenden, Sec. & Treas. E. K. Stewart, Supt. J. H. Atcherson.

Glenwood & Greenlawn St. R.R. Co. 4½ m, 3-6 g, 24 lb r, 4 c, 19 h. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. R. Rickly, Treas. S. S. Rickly, Supt. Jonas Willcox. Office 9 S. High st.

CONCORD, N. H.—Concord Horse R. R. Co. 7½ m, 3-6 g, 34 lb r, 9 c, 16 h. 2 steam motors. Pres. & Supt. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.

CONTLAND, N. Y.—Cortland & Homer Horse R.R. Co. 4 m, 4-8 g, 25-30 lb r. 6 c, 16 h, Pres. Chas. H. Garrison, Troy, N. Y. V. Pres. E. Mudge, Sec. & Treas. S. E. Welch.

COUNCIL BLUFFS, I.A.—Council Bluffs St. Ry. Co. 5 m, 4-8½ g, 27 lb r, 10 c, 32 h. Pres. S. R. Callaway, Sec. & Treas. Geo. R. Hall, Supt. Wm. H. Burns. Office, 506 First ave.

COVINGTON, KY.—Covington & Cincinnati St. Ry. Co. 17½ m, 5-2½ g, 43 lb r, 46 c, 296 h. Pres. E. F. Abbott, Sec. J. C. Benton, Treas. G. M. Abbott, 7 DALLAS, TEX.—Dallas Consolidated St. Ry. Co. 13 m, 4-8½ g, 20-38 lb r, 26 c, 126 mu. Pres. J. E. Henderson, Sec. W. C. Connors. Capital, \$30,000.

DANVILLE, HLL.—Cittzens' St. Ry. Co. 5 m, 4 g, 20 lb r, 8 c, 41 mu. Pres. Wm. P. Cannon, V. Pres. A. C. Danlel, Sec. & Treas. Adam R. Samuel. Office, 160 Vermilion st. f.

DAVENPORT, I.A.—Davenport Central St. Ry. Co. 3 m, 4-8½ g, 20 lb r, 14 c, 24 h, 15 mu. Pres. Whit. M. Grant, V. Pres. W. L. Allen, Treas. S. B. Fidlar, Sec. O. S. McNeil, Supt. J. W. Howard. k. Davenport City Ry. Co. 3½ m, 4-8½ g, -lb r, 14 c, 24 h, 15 mu. Pres. Whit. M. Grant, V. Pres. W. L. Allen, Treas. S. D. Bawden.

DAYTON, Ky.—Newport & Dayton St. Ry. Co. 2 m, 6-2½ g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

DAYTON, O.—Dayton St. R.R. Co. 7½ m, 4-8½ g, 44 lb r, 25 c, 95 h. and mu. Pres. C. J. Ferneding, 44 lb r, 25 c, 9

DAYTON, KY.—Newport & Dayton St. Ry. Co. 2 m, 5-2½ g, 44 lb r, 9 c, 36 h Pres. & Supt. W. W. Bean.

DAYTON, O.—Dayton St. R.R. Co. 7½ m, 4-8½ g 44 lb r, 25 c, 95 h and mu. Pres. C. J. Ferneding, V. Pres. G. W. Rogers, Sec. C. A. Craighead, Supt. A. W. Anderson. Office, W. 8d st. d Flith St. R. R. Co. 7 m, 4-8½ g, 45 lb r, 18 c, 58 h. Pres. A. A. Thomas, Sec. D. B. Corwin, Treas. R. I. Cummin, Supt. J. M, B. Lewis. Office, 7 E. 3d st. a Oakwood St. Ry. Co. 6 m, 4-8½ g, 38 lb r, 14 c, 56 h. Pres. Charles B. Cleege, Sec. H. V. Perrine. a The Wayne & Flith St. R. R. Co. 4½ m, 4-8½ g, 38 lb r, 10 c, 35 h. Pres. Geo. W. Shaw, Sec. & Treas. Eugene Waichet, Supt. N. Routzahn. Office, 29 Wayne st. k

DECATUR, II.L.—Decatur & North Park St. Ry. Co. Atty. Geo. Brown. 4

Ctitzlens Street R.R. Co. 2 m, 4-8½ g, 20 lb T r, 9 c, 43 h & mu. Pres. D. S. Shellabarger, Sec. W. L. Shellabarger, Treas. & Gen. Man. W. L. Ferguson. 4

DENISON, TEX.—Denison St. Ry. Co. 3½ m, 3-6g, 16 lb r, 7 c, 25 mu. Pres. C. A. Waiterhouse, Supt. J. J. Campbell. 5

DENVER, COL.—Denver City Ry. Co. 24m, 3-6 g, 16 lb r, 64 c, 332 h. Pres. Geo. H. Holt, 10 Wall st. New York City, Sec. G. D. L'huiller, 10 Wall st., New York City, Treas. & Man. G. E. Randolph. h Denver Tramway Co. 4 m, 3-6 g, 16-18 lb r, 8c. Run by electricity. Pres. Rodney Curtis. V. Pres. John J. Riechman, Sec. Wm. G. Evans. 9

DES MOINES, 1A.—Des Moines St. R. R. Co. 12 m, 3 g, 25-30-38-52 lb r, 18 c, 125 h. Pres. W. McCain, V.-Pres. C. W. Rogg, Sec. F. A. Sherman, Treas. G. B. Hippee. a Capital City St. Ry. Co. 7 m, 4-8½ g, 45 lb r, 6 c, 32 h. G. Van Ginkel, Sec. H. E. Teachout, Treas. J. Weber. Office, cor. E. 5th & Locust sts. a Les Moines & Sevastopol St. Ry. Co. (See Sevastopol, 1a).

DETROIT, MICH.—Fort Wayne & Elmwood Ry. Co. 9.1 m, 4-8½ g, 45 lb r, 6 c, 8 N. W. God. N. W.

32 h. G. Van Ginkel, Scc. H. E. Teachout, Treas. J. Weber. Office, cor. E. 5th & Locust sts. a Des Moines & Sevastopol St. Ry. Co (See Sevastopol, 1a).

DETROIT, MICH.—Fort Wayne & Elmwood Ry. Co. 9.1 m, 48½ g, 45 lb r, 33 c, 216 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Sec. N. W. Goodwin, Treas. E. S. Heineman, Supt. Geo. S. Hazard. Office, 129 Griswold st. a Detroit Electric Ry. Co. 2 m, 30 lb r, 4 c, elec. motors, Van Depoele system. Pres. H. M. Campbell, Sec. Bethune Duffield. 7

Detroit City Ry. 30 m, 48½ g, 40-43½ lb r, 130 c, 700 h. Includes Jefferson Ave. line, Woodward Ave. line, Michigan Ave. line, Cratiot Ave. line, Brush St. line, Cass Ave. line, Congress & Baker line. Pres. Sidney D. Miller, Treas. George Hendrie, Sec. James Heugh, Gen. Supt. Robert Bell, M. M. John Willis. Office, 12 Larned st. W. 4

Grand River St. Ry. Co. 4½ m, 4-8½ g, 45 lb r, 15 c, 160 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. C. M. Dalley. 6

Highland Park Ry. Co. 3 m, 4-8½ g, 42 lb r for ½ m in citv limits, outside 35 lb T, 2 c, electric motors. Pres. and Treas. Frank E. Snow, Sec. F. Woodruff. Capital, \$50,000. Office, 92 Griswold st. a DOVER, N. H.—Dover Horse R.R. Co. 5 m, 3 g, 30 lb r, 4 c, 14 h. Pres. Chas. H. Sawyer, Treas. B. E. Linehan, Supt. J. J. Linehan. Office, 21st st. & Coulier ave. a DUBUQUE, 1A.—Dubuque St. R.R. 7 m, 4-8½ g, 52 lb r, 22 c, 60 h. Pres. J. A. Rhomberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Linehan. Office, 21st st. & Coulier ave. a DULUTH, MINN.—Duluth St. Ry. Co. 5½ m, 2-6 g, 35-45 lb r, 18 c, 91 mu. Pres. Sam'l Hill, V. Pres. T. P. Wilson, Sec. & Treas. A. S. Chase, Supt. T. W. Hoopes. d EAST SAGINAW, MICH.—East Saginaw St. Ry. 8 m, 4-8½ g, 30 and 40 lb r, 23 c, 70 h. Pres. Walter A. Jones, Acting Sec. C. A. Bartlett, Supt. A. Bartlett. Supt. A. B

EASTON, PA.—The Easton & So. Easton Passenger Ry. Co. 1½ m, 5-2½ g, 45 lb r, 4 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Elisha Burwell, So. Easton. Capital, \$29,562. Office, 348 Northampton st.

The West End Passenger Ry. Co. 1½ m, 5-2½ g, 45 lb r, 6 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Samuel Berry.

EAU CLAIKE, WIS.—Eau Claire St. Ry. Co. 5 m, 4-8½ g, 27 lb, 42 lb center bearing steel, and 60 lb grooved steel r, on all curves, 16 c, 80 h. Pres. A. G. Bradstreet, New York, V.-Pres. Geo. B. Shaw, Eau Claire, Sec. & Treas. Weston Lewis, Gardiner, Me. h

ELGIN, ILL.—Elgin City Ry. 2½ m, 4-8½ g, 25 lb r, 4 c. 18 h. Pres., Sec., Treas. Supt. & Owner, B. C. Payne. 4

ELIZABETH, N. J.—Elizabeth & Newark Horse R. Co. 14 m, 5-2½, 4-10½ g, 30 lb r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. Jonn f. Pritchard. Elizabeth St. Ry. Co. Pres. & Supt. Amos Clark, Sec. & Treas. Jonn P. Earl. 4

Sec. & Treas. John P. Earl. 4

ELKHART, IND.—Citizens' Ry. Co. 4¼m, 4-8½g, 30 lb r, 7c, 25 h. Pres. F. W. Miller, V. Pres. J. W. Ellis, Sec. C. W. Fish, Treas. J. A. Cook, Man. Director, Jas. Kavanagh. Office, 101 N. Main st. b

ELMIRA, N. Y.—Elmira & Horseheads Ry. Co. 10 m, 4-8½g, 25-30-40 lb r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Officers 212 E. Water st. k

ELPASO. TEX.—El Paso St. Ry. Co. 6 m. 4-8½g.

Swift, Supt. John H. Bowker, Jr. Office, 182 N. Main st. J. Grand H. Bowker, Jr. Office, 182 N. Main st. J. Charles and J. Cheever, Treasbull, Haight, Sec. J. S. Auerbach, Supt. Rufus Martin. Office, 13 Park row, New York. 10

FITCHBURG, MASS.—Fitchburg St. Ry. Co. 3½ m, 4-8½ g, 35 bt, 7 9 c, 35 h. Pres. H. A. Willis, V. Pres. H. I. Wallace, Treas. B. F. Wallis, Sec. H. C. Hartwell, Supt. & Pur. Agt. Wesley W. Sargent. Office of Pres. 131 Main st.; Supt., 41 River st. front Scott, KAN.—Bourbon County St. R. R. 3m, 4g, 16 lb r, 5 c, 22 h. Pres. J. D. Hill; Sec. C. O French, Treas. J. H. Richards, Supt. E Strong. 4 FORT SMITH, ARK.—Fort Smith St. Ry. Co. 2 m, 3-6 g, 28 lb r, 5 c, 16 mu. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks. h. FORT WAYNE, IND.—Citizens' St. R.R. Co. FORT WORTH, TEX.—Fort Worth St. Ry. Co. 7½ m, 4g, 25-88 lb r, 16c. 89 mu. Pres, K. M. Vanzandt, Treas. W. A. Huffman, Supt. J. T. Payne. 4 FRANKFORT, N. Y.—Frankfort & Hlon Street Ry. Co. 2½ m, 5 g, 4 c. Pres. A. C. McGowan, Frankfort, Sec. D. Lewis, Illon, Treas. P. Remington, Illon, Supt. Freek. Gates, Frankfort.

FREEDONIA, N. Y.—Dunkirk & Fredonia R.R.Co. 3½ m, 4-10 g, 25 lb r, 5 c, 9 h. Pres. W. McKinstry, Sec. & Treas. M. M. Fenner, Supt. Z. Elmer Wheelock. 5

FREEPORT, ILL.—Freeport St. Ry. Co. 4½ m. 48% g, 5 c, 48 h. Pres. Jacob Krohn, V.-Pres. F. C.

3½ m. 4-10 g, 25 lb r, 5 c, 9 h. Pres. W. McKinstry, Sec. & Treas. M. M. Fenner, Supt. Z. Elmer Wheelock.

FREEPORT, ILL.—Freeport St. Ry. Co. 4½ m. 4-8½ g, 5 c, 48 h. Pres. Jacob Krohn, V.-Pres. F. C. Platt, Sec. W. G. Barnes, Treas. John B. Taylor, Supt. H. T. Warner.

FULTON, N. Y.—Fulton & Oswego Falls St. Ry. Co. 6,000 tt, 4 8½ g, Glbbon's metallic stringer and r, 4 c, 8 h. Pres. Joseph Walker, Jr., V. Pres. N. N. Stranahan, Sec. and Treas. Chas. Lyman. Capital, \$15,000. Office, 15 Broad st., New York.

GAINESVILLE, TEX.—Gainesville St. Ry. Co. 3 m, 3-8g, 16 to 18 lb r, 4c, 22 h, 1mu. Pres. Sam. Lazarus, V. Pres. L. Dreyfoos. Sec. & Treas. Zac. Farmer. 7

GALESBUKG, 1LL.—College City St. Ry. Co. 5 m, 4-8½ g, 18-20-38 lb r, 9 c, 24 h. Pres. L. W. Sanborn, V.-Pres. A. S. Hoover, Supt. & Sec. Geo. S. Clayton, Treas. A. Matteson.

GALVESTON, TEX.—Gaiveston City R.R.. Co 25 m, 4-8½ g, 30 lb r, 79 c, 218 mu. Pres. Wm. H. Sinclair, Sec. & Treas. F. J. DeMeritt, Supt. M. J. Keenan. Office, cor. Twenty-first & I sts.

GUIC City St. Ry. & Real Estate Co. 13½ m, 4 g, 25-30 lb r, 32 c, 81 mu. Pres. J.H. Burnett, Sec. P. S. Wren, Treas. F. D. Allen. Office P. O. st., bet. 22d & 23d. i

GARDEN CITY, KAN.—Garden St. Ry. Co. 4

GLENS FALLS, N. Y.—Glens Falls, Sandy Hill & Fort Edward St. R. R. Co. Pres. Henry Crandall. Sec. & Treas. T. S. Coolidge, Supt. Albert V. Brayton. 12

GLOUCESTER, MASS.—Gloucester City R. R. 4 m 4-6g, 35 lbr. 10 c. 90h. Pres. Morris C. Fletcher.

GLOUCESTER, MASS.—Gloucester City R. R. 4 m 4-6 g, 35 lb r, 10, c, 90 h. Pres. Morris C. Fletcher, V.-Pres. Walter A. Jones, Sec. D. G. Pearson, Tres. F. W. Homans. Office, Railroad ave. & Gloucester St. Ry. Co. 4 m, 4-8 g, g, 38 lb r, 13 c, 86 h. Pres. Morris C. Fitch, V. Pres. Walter A. Jones, Sec. D. S. Presson. Treas. F. W. Homans, Supt. W. A. Strongman. Office, Railroad ave. & GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 14 g, m, 4-8 g, g, 25-40 lb r, 29 c, 190 h. Pres. W. J. Hayes, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. C. G. Swensberg, Grand Rapids, Supt. A. Bevier, Grand Rapids. Office, cor. Washington & Indiana sts. g

JOS. A. SLEEPER, Pres. W. A. STILES, Secy. and Treas.

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CHICAGO, ILL., U. S. A.

GREENBUSH, N. Y.—North & East Greenbush St. Ry. Co. 1½ m, 4.8½ g, 4 c, 12 h. Pres. & Treas. A. Bleekerbanks, Supt. J. Gascoigne. 1
GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2½ m, 4.8½ g, 23 lb r, 3 c, 14 h. Pres. & Supt. Dudley Rogers, Sec. James S. Nutt, Treas. Ralph Rogers, Gen, Man. E. W. Rogers. Office, 16 S. Jackson st. a

Ry. Co. 2½ m, 4-5½ g, 23 lb r, 3 c, 14 h. Pres. & Supt. Dudley Rogers, Sec. James S. Nutt, Treas. Ralph Rogers, Gen. Man. E. W. Rogers. Office, 16 S. Jackson st. a

GREENVILLE, S.C.—Greenville City Ry. Co. 1 m
5 g, 16 lb r, 5 c, 20 h. Proprietors, Gilreath & Harris.

HALIFAX, N.S.—Halifax St Ry Co. (Lim.) 7 m, 4-8½ g, 45-60 lbs. r, 15 c, 65 h, Pres. John R. Bothwell, V. Pres. & Treas. John F. Zebley, Sec. H. B. Zebley, Supt. J. C. McDonald. Offices, Room 39, Drexel Building, New York, and Halifax, N.S.

HAMILTON, O.—Hamilton St. Ry. Co. 4 m, 3 g, 28 lb r, 11 c, 18 h. Pres. James S. Giffin, Sec. Barly, M. Co.—Hamilton St. Ry. Co. 2 m, 4-8½ g, 36 lb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O'Hern. Office, 300 Market st. g

HARNIBURG, PA.—Harrisburg City Passenger Ry. Co. 6 m, 5-2½ g, 42-47-50 lb r, 26 c, 72 h, Pres. H. A. Kelker, Sec. John T. Ensminger, Treas. R. F. Kelker Capital, \$100,000. Office, 27 South 2d st. e

HARTFORD, CONN.—Hartford & Wethersfield Horse R.R. Co. 12 m, 4-8½ g, 45 lb r, 53 c, 259 h. Pres. E. S. Goodrich, Sec. Dan'l R. Howe. g

HAVERHILL, MASS.—Haverhill & Groveland St. Ry. Co. 13.7 m, 4-4½ g, 30 35 lb r, 36 c, 131 h. Pres. Jackson B. Sweet, Treas. John A. Colby. Office 3 Water st. J.

HELENA, MON.—2½ m, 4-8½ g, 38 lb r, 5 c. Pres. C. W. Cannon, V.-Pres, J. B. Wilson, Sec. & Treas. L. A. Walker. 1

HERKIMER, N. V.—Herkimer & Mohawk St. Ry. Co. 13; m, 4-7 g, 50-60 lb r, 16 c, 635 h. Pres. John H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Michel, Supt. Nicholas Goelz. 6

HOLYOKE, MASS.—Holyoke St. Ry. Co. 3¼ m, 4-8½ g, 35 lb r, 15 c, 55 h. Pres. Wm. A. Chase, Treas. C. Fayette Smith, Supt. H. M. Smith. a

HOT SPRINGS, ARK.—Hot Springs R.R. Co. 3¼ m, 4-8½ g, 35 lb r, 15 c, 55 h. Pres. Wm. A. Chase, Treas. C. Fayette Smith, Supt. H. M. Smith. a

HOT SPRINGS, ARK.—Hot Springs R.R. Co. 3½ m, 4-8½ g, 35 lb r, 15 c, 55 h. Pres. & Gen. Man. H. F. MacGregor, Houston, Supt. Henry Freund, Houston. Office, 90 Travis st. a

HUT CHINSON, KAN.—Hutchinson St. Ry. Co. 2½ m, 4-8½ g, 20 lb r, 6

MacGregor, Houston, Supt. Henry Freund, flouston, Sec. & Treas. E. H. Balley, Houston. Office, 90 Trayls St. a

HUTCHINSON, KAN.—Hutchinson St. Ry. Co. 2½ m, 4-1g, 20 fbr, 6 c, 18 h. Pres. A. L. Forsha, V. Fres. John Severance, Treas. S. W. Campbell, Sec. Fred. A. Forsha. Office, 5 North Main st. 1

HJON, N. Y.—Frankfort & Illon St. R. K. Co. 2½ m, 5 g, 25 lb r, 5 c, 5 h. Pres. A. C. McGowan, V. Pres. P. A. Skiff, Sec. & Treas. John A. Giblin, Supt. J. Hannahr. C.

INDIANAPOLIS, IND.—Cittzens' St. Ry. Co. 35 m, 4-8½ g, 33-38-45-50 lb r, 70 c, 550 mu. Pres. A. W. Johnson, Indianapolis, Treas. Tom L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Man. W. T. Steele, Indianapolis, Office 80 W. Louislana st. a

Man. W. T. Steele, Indianapolis. Office 80 W. Louislana st. a

JACKSON, MICH.—Jackson City Ry. Co. — m,
— g, — lb r, 11 c, 40 h. Pres. Hiram H. Smith, Treas.
samuel Hopeweil, Gen. Supt. Henry H. Smith,
JACKSON, MISS.—Jackson City R. R. 1½ m, 5g
ac, 9 mu. Pres. P. W. Peoples, Sec. & Tr. J.B. Bradford,
JACKSONVILLE, FLA.—Pine St. R.R. Co. 2½
m, 5 g, 25 lb r, 4 c, 18 m. Pres. S. B. Hubbard; V.
Pres. J. M. Schumacher; Treas. J. C. Greeley; Sec. & Man. H. S. Ely.
Jacksonville St. Ry. Co. 8 m, 5 g, 25 lb r, 22 c, 93
mu. Pres. H. S. Halnes, Savannah, Ga.; V. Pres.
Geo. R. Foster, Jacksonville, Fla.; Treas. J. M. Lee,
Savannah; Supt. G. W. Haines, Savannah; Agent M.
H. Matte, Jacksonville.
Springfield St. Ry. Co.

Savannan; Supe. G. W. Hallow, S. R. H. Matte, Jacksonville, C. Springfield St. Ry. Co. JACKSONVHLLE, ILL.—Jacksonville Ry. Co. 4½ m, 4-8½ g, 30 lb r, 16 c, 30 h. Pres. Wm. S. Hook, Sec. T. J. Hook, Treas. Marcus Hook, Supt. B. F.

JACKSONVILLE, ILL.—Jacksonville Ry. Co. 4% m, 483g, 30 lb r, 16 c, 30 h. Pres. Wm. S. Hook, Sec. T. J. Hook, Treas. Marcus Hook, Supt. B. F. Sibert. 4

JAMAICA, N. Y.—Jamaica & Brooklyn R.R. Co. 10 m, 48% g, 56-60 lb r, 29 c, 56 h. Pres. Aaron A. Degrauw, Sec. Martin J. Durea, Treas. Morris Fosdick Supt. Wm. M. Scott.

JAMESTOWN. N. Y.—Jamestown St. Ry. Co. 4-34 m. 4-8% g, 30-42 lb r, 13 c, 40 h. Pres. Jas. B. Ross, V. Pres. L. B. Warner, Sec. F. E. Gifford, Treas. A. N. Broadhead. Supt. G. E. Maltby. J. JANESVILLE, WIS.—Janesville St. Ry. Co. Pres. Stephen G. Clarke, Chicago. 4

JERSEY CITY, N. J.—Jersey City & Bergen R. R. Co. 28 m, 4-10 g, 47-60 lb r, 80 c, 630 h. Pres. Chas. B. Thurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Supt. Thos. M. Sayre. 6

Pavonia Ferry St. R. R. Man. J. H. Small.
JOHNSTOWN, N. Y.—Johnstown, Gloversville & Kingsboro Horse R.R. Co. 4 m, 4-8½ g, 26 lb c, 6 c, 18 h. Pres. James Younglove, V. Pres. R. Fancher, Sec. & Treas. J. McLaren, Supt. Henry Slotter. a JOHNSTOWN, PA.—Johnstown Pass. Ry. Co. 7 m, 5-3 g, 41-43 lb r, 15 c, 74 h. Pres. James McMillen, Sec. B. L. Yeagley, Treas. W. H. Rosensteel, Jr. f. JOHNET, HLL.—Jollet City Ry. Co. 3½ m, 4-8½ g, 38 lb r, 16 c, 30 h. & mu. Prop. J. A. Henry, Supt. A. Bischman, Treas. J. Hulsizer. 6

JOPLIN, MO.

KALAMAZOO, MICH.—Kalamazoo St. Ry. Co. 816 m, 4-8 g, 35 lb r, 30 c, 50 h. Pres. E. M. Irish, V. Pres, Dr. Chase, Man. J. W. Bounton, Sec. & Treas. Arthur Ellinorp, Auditor, Wm. Shakespeare. Office, 128 Mainst. 2

KANSAS CITY, MO.—Kansas City Cable Ry. Co. 12 m, 4-8 M, 45-56 lb p. 26 Grilo c. 39 pass. c.

Grand Avenue Ry. Co. 8 m, 4-8 g, 40 lb r, 15 c, 75 h. Pres. C. F. Morse, V. Pres. and Gen. Man. W. H. Holmes, Sec. & Atty. D. B. Holmes, Engineers, Knight & Bouticon, Auditor, T. J. Fry, Supt. C. F. Holmes. Capital stock, \$1,200,000. Office, 15th & Grand av. d Kansas City Electric Ry. Co. 2 m, 4 8½ g, 70 lb girder r, 4 motor c (Henry system). Pres. W. W. Kendall, V. 1 res. Hugh L. McEiroy, Sec. & Treas. Warren Watson, Supt. John C. Herrey, Office, 1139 E. 5th st. Capital, \$10,000. d Kansas City & Rosedale St. Ry. Co. Operated by the Metropolitan st. Ry. Co. 25 m, 4-8½ g, 56 lb r, 126 c, 475 h. Pres. C. F. Morse, V. Pres. Geo. H. Metropolitan st. Ry. Co. 25 m, 4-8½ g, 56 lb r, 126 c, 475 h. Pres. C. F. Morse, V. Pres. Geo. H. Nettleton, Sec. & Auditor R. J. McCarty, Treas A. W. Armour, Supt. E. J. Lawless, Engineers. Knight & Bouttoon. a KEOKUK, IA.—Keokuk St. Ry. Co. 4 m, 4-8½ g, 27 lb Steel r, 12 c, 40h. Pres. Jas. H. Anderson, Sec. Wm. E. Anderson. h KINGSTON, ONT., CAN.—Kingston St. R. Co. ½ m, 3-6 g, 9 lb r, 10 c, 36 h. Pres. Robert Carson, Sec. & Treas. F. Sargent, Man. William Wilson. KNOXVILLE, TENN.—Knoxville St. R.R. (o. 2-6 m, 4-8½ g, 22 lb r, 5 c, 26 h. Pres. John S. Van Gilder, Treas. & Man. T. L. Beaman. Office, 336 Broad st. 2 Mabry Bell Ave. & Hardee St. Ry. Co. 4 m, 4 8½ g, 22 lb r, 4 c, 27 h. Pres. John S. Van Gilder, Man. & Treas. T. L. Beaman. Office, 335 Broad st. 1 Market Sq. St. Ry. Co. 2 m, 4-8½ g, 22 lb r, 4 c, 18 h. Pres. John S. Van Gilder, Sec. W. B. Henderson, Treas. W. H. Slmmonds, Supt. L. O. Rogers. Office, 148 Gayst. h

n. Pres. John S. Van Gilder, Sec. W. B. Henderson, Treas. W. H. Simmonds, Supt. L. O. Rogers. Office, 148 Gayst. h
LACONIA, N. H.—Laconia & Lake Village Horse R. R. 2½ m, 3 g, 34 lbr, 5 c, 20 h. Pres. A. G. Folsom, Sec. J. P. Hutchinson, Treas. Edmund Little, Man. Bela S. Kenniston. a
LA CROSSE, WIS.—La Crosse City Ry. Co. 5½ m, 4-8 g, 40 lb r, 15 c, 70 h. Pres. B. E. Edwards, V. Pres. Geo. F. Gund, Treas. Fred Tillman, Sec. Jas. T. Daggett, Supt. (North Division), Peter Valler Supt. (South Division), Geo. F. Smith. Office 222 Man st. a
LAFAYETTE, IND.—LaFayette St. Ry. 2½ m, 4-8½ g, 35 lb r, 6 c, 38 h. Pres F. B. Caldwell, LaFayette, Sec. & Treas. E. G. Jones, Decatur Ill., Supt. F. Greer, LaFayette.
LAMPANAS SPRINGS, TEX.—Lampasas Springs St. R. R. Co. 3 m, 4-8½ g, 6 c, 13 h. Sec. & Treas. W. H. Little. Office, Elm st. 7
LANCASTER. PA.—Lancaster & Millersville St. Ry. Co. m, 4-8½ g, 30 lb r, 4c, 14 h. Pres. J C. Hager. V. Pres. H. S. Shirk, Sec. & Treas. Chas. Dennes. b Lancaster City St. Ry. Co. 1.1 m, 5-2 g, 38 lb r, 6c, 4h. Pres. W. D. Sprecher, Treas. J. H. Baumgardner. Sec. Thos. B. Cochran, Man. J. B. Long. Gen. Office, 29 North Queen st. a
LANSING, MICH.—Lansing City Ry. Co. 3 m, 4-8½ g, 30 lb steel r, 5 c, 24 h. Pres. Stephen G. Ciarke, Chicago, V.-Pres. & Treas Harry M. Clarke, Lansing, Sec. John P. Altgeld, Supt. Byron E. Clarke, Lansing, Sec. John P. Altgeld, Supt. Byron E. Clarke, Lansing, Sec. 25 lb r, 2 c, 10 h. Pres. C. H. Murray, Treas.

Lansing, Sec. John F. Aitgeld, Supt. Byron E. Clarke, Lansing. 4

LARCHMONT, N.Y.—Larchmont Manor Co. 1% m, 4-8 g, 25 lb r, 2 c, 10 h. Pres. C. H. Murray, Treas. T. H. French, 38 East Fourteenth st. N. Y. City. a I.AWRENCE, KAN.—Lawrence Transportation Co. 5% m, 4-1g, 38 lb r, 8 c, 38 h, 6 mu. Pres. H. Tisdale, Sec. W. N. Bangs. Supt. Geo. Fricker. 7

LAWRENCE, MASS.—Merrimack Valley Horse R.R. Co. 63 m, 4-8% g, 48 lb r, 22 c, 87 h. Pres. Wm. A. Russell, Clerk & Treas. James H. Eaton, Supt. A. N. Kimball. 1

LEWISTON, ME.—Lewiston & Auburn Horse R.R. Co. 10 m, 4-8% g, 32 lb r, 20 c, 60 h. Pres. Frank W. Dana, Clerk & Treas. C. C. Corbett, Supt. J. E. Fairbanks. k

banks. k
LEXINGTON, KY.—Lexington City Ry. Co. 8
M. 4-10g, 20 lo r, 20 c, 85 h. Pres. & Treas. R. B.
Metcalfe, V. Pres., Man. & Sec. Albert Cross, Supt.
Bert. Cross.

Metcarle, V. Pres., Man. & Sec. Ander Cross, Supt. Bert. Cross.

LEXINGTON, MO.—Lexington St. Ry. Co. 1½ m, 44 g, 30 lb r, 2 c, 8 h. Supt. John C. Young. Office, 124 Main st. 4

LIMA, O.—Lima St. Ry., Motor & Power Co. Elec. ry., Van Depoele system. 6½ m, 40 lb Johnson steel r, 7 c, 7 motors.

LINCOLN, NEB.—Lincoln St. Ry. Co. 12m, 4-8½ g, 20 lb steel r, 24 c, 150 h. and mu. Pres. J. W. Deweese, V.-Pres. John R. Clark, Sec.& Treas. C. J. Ernst, Supt. Wm. R. Carter. b

LITTLE ROCK, ARK.—Citizens' & Little Rock St. Ry. Co. 12 m, 4-10g, 25, 36 & 45 lb r, 30 c, 200 mu. Pres. Jas. R. Miller, Sec. & Treas. Allan Johnson, Supt. J. A. Garrett. Office, cor. Markham & Spring sts. d

LOCKPORT, N. Y.—Lockport St. R. R. Co. 3½

Supt. J. A. Garrett. Office, cor. Markham & Spring sts. d

LOCKPORT, N. Y.—Lockport St. R. R. Co. 3½

m, 4.8½ g, 42 lb r, 8 c, 33 h. Pres. & Treas. John Hodge, Sec. W. T. Ransom. Atty. E. M. Ashley. Office, 19 & 20 Hodge Opera House Bldg.

LOGANSPORT, IND.—Logansport Ry. Co. 2½

LOGANSPORT, IND.—Pres. Frank G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques. Office, Urbana, Ill. k

LONDON, CAN.—London St. Ry. Co. 6 m, 4-8; g, 30 lb r, 12 c, 40 h. Pres. V. Cronyn, Sec. Jas. H. Flock, Treas. Chas. Currle, Supt. Henry I. Smith. Office, Richmond st. a

Office, Richmondst. a

LONG ISLAND CITY, N. Y.—Steinway &
Hunter's Point R. R. Co. 30 m, 48½ g, 47 lb r, 68 c,
225 h. Pres. H. A. Steinway, Steinway Hall, N. Y.
City. V. Pres. Henry A. Cassebeer, Jr., Steinway
P. O., Long Island City, N. Y. Sec. & Treas. Chas. F.
Tretbar, Steinway Hall, N. Y. City. Supt. W. H.
Delahanty. Offices Steinway Hall, N. Y. d
Dutch Kills & Hunter's Point R.R. — m, — g, — lb
r, — c, — h Pres. R. J. Gleason.
Long Island City & Newtown Ry. Co. 4½ m, 48½ g,
45-55 lb r, 25 c, 60 h. Pres. Isaac Buchannan, N. Y.
City, Sec. Geo. S. Crawford, Brooklyn, N. Y., Treas.
Patrick J. Gleason, Supt. Michael Conway. Offices
112 Front st.

LONGVIEW, TEX.—Longview & Junction St. Ry. 3/m. 3-6g, 16 lb r, 2 c, 4 h. Pres. F.T. Rembert, Sec. R. B. Levy, Treas. F. S. Whaley, Supt. C. W. Booth. d

LOS ANGELES, CAL.—City & Central R.R. Co. 22 m, 3-6 & 4-8 g, 16 & 20 ib r, 37 c, 234 h. Pres. I. W. Hellman, Gen. Man. J. F. Crank, Sec. R. D. P. Widner, Supt. Wm. Hawks. 7 Central & Boyle Heights Co. 6 ½ m, 3 6 g, 26 c, 110 h. Pres. E. F. Spence, Gen. Man. J. F. Crank, Sec. Fred Harkness, Supt. W. Hawks. 6 East & West Los Angeles Co. 7 m, 20 c, 30 h. Pres. & Gen. Man. J. F. Crank, Sec. Fred Harkness, Supt. W. Hawks. 6 Main St. & Agricultural Park Co. 8 m, 3-6 g, 15 c, 60 h.Pres. W. J. Broderick, Sec. A. C. Taylor, Supt. E. M. Lorricke. 6 Second St. Cable Ry. Co. 1½ m cable & 1½ m steammotor extension, 3-6 g, 8 c, 6 gilp c, 2 motors. Pres. & Treas. Jas. McLoughtin, Sec. & Supt. H. W. Davis, Asst. Supt. & Master Mechanic E. H. Hutchinson. 6 Temple St. Cable Ry. Co. 1½ m, 3-6 g, 6 c, 6 grip c. Pres. P. Beaudry, Sec. & Man. F. W. Woods, Supt. J. Fowler. 6 Los Angeles Electric Ry. Co. 5 m, 4-8 g, 4 c, Daft system, overhead wires. Pres. Geo. H. Bonebrake; Sec. & Man. C. H. Howland, Constructing Engr. A. H. Hayward. 6 LOUISVILLE, KY.—Kentucky St. R. R. Co. 5 m, 5 g, 52 lb r, 22 c — h. Pres. T. J. Minary, Sec. T. C. Donigan. 6 Central Pass. R.R. Co. 5 m, 5 g, 52 lb r, 156 c, 800 h, Pres. B. du Pont, V. Pres. & Man. T. J. Minary, Sec. T. C. Donigan. 6 Central Pass. R.R. Co. 6 Louisville City Ry. Co. 65 m, 5 g, 40 to 58 lb r, 230 c, 1,400 mu. Pres. Maj. Alexander Henry Davis, Syracuse, N. Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell. Office, 13th and Malusts. 6 Loues L. Mass. — Lowell Horse R.R. Co. 12 m, 4-8 k g, 28-33-45 lb r, 43 c. 160 h. Pres. Wm. E. Liyng.

A. Watts, Supt. H. H. Litteil. Office, 13th and Maiu Sts. C
LOWELL, MASS.—Lowell Horse R.R. Co. 12 m, 4-8½ g, 28-33-45 lb r, 43 c, 160 h. Pres. Wm. E. Livingston, Gen. Man. J. A. Chase.
Lowell & Dracut St. Ry. Co. 9 m, 4-8½ g, 25 lb 1ron and 1½ m Longstreet r, 16 c, 120 h. Pres. Aug. Fels, Treas. Walter M. Sawyer, Supt. John F. Murphy. 8
LYNCHBURG, VA. — Lynchburg St. Ry. Co. 2½ m, 5-1 g, 20-26 lb r, 6 c, 32 h. Pres. & Treas. Stephen Adams, Supt. William M. Payne. h
LYONS, IA.—Clinton & Lyons Horse Ry. Co. 4½ m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, Sec. W. T. Joyce, Supt. Frank Crapsel. 6
MACON, GA.—Macon City & Suburban St. R.R. Co. 12 m, 5 g, 20 lo Tr, 25 c, 100 mu. Pres. John S. Bransford, Nashville, Tenn., Sec. and Supt. Jno. T. Voss. 7

Voss. 7
MADISON, IND.—Madison St. Ry. Co. 2½ m, 4
g, 15 lb r, 7c, 4 h, 11 mu. Pres. & Supt. Jacob Wendel,
V.Pres. & Treas. Peter F. Robinius, Sec. John K.
Weyer. Office, 1026 Walnut st. a
MADISON, WIS.—Madison St. Ry. Co. 2½ m, 3
g, 23 lb r, 8 c, 28 mu. Pres., D. K. Tenney, Sec. &
Treas. B. W. Jones, Supt. A. R. Kentzler. Office,
Williamson st. 4
MANGULESTEEL N. H.—Manghester Horse B. R.

Treas. B. W. Jones, Supt. A. R. Kentzler. Office, Williamson st. 4
MANCHESTER, N. H.—Manchester Horse R.R. 7m, 3 g, 27-34 lb r, 14 c, 60 h. Pres. S. N. Bell, Treas. G. F. Smyth, Clerk J.A. Weston, Supt. A. Q. Gage. Office Depot st. e
MANKATO, MINN.—Mankato St. Ry. Co. 2½ m, 3-6 g,27 lb steel r, 4 c, 12 h. Pres. &Man. W. M. Farr, Sec. and Treas. John C. Noe, Capital, \$50,000; office, 313 So Front street. f
MARSHALTOWN, IA.—Marshaltown St. Ry. Co. 3 m, 4 g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Sec. C. C. Gilman, Man. & Treas. A. E. Shorthill. f
MARYSVILLE, CAL.—City Pass. R.R. Co. MAYSVILLE, KY.—Maysville St. R.R. & Transfer Co. 3½ m, 20 lb r, 4-8½ g, 7 c, 32 mu, Pres. L. W. Robertson, Sec., Treas. & Supt. W. S. Frank. Office, Court st. d

Court st. d MECHANICSBURG, ILL. — Mechanicsburg & Buffalo Ry. Co. 3% m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. J. N. Fullenweider, Treas. A. T. Thompson, Sec. H.

Thompson.

MEMPHIS, TENN.—M mphis City R.R.Co. 18 m, 5 g, 38-40 lb r, 80 c, 320 h. Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Sec. James Frost, Treas. S. P. Read Jr. Supt. W. F. Shippey. Office 474 Main st. 1 Union R. R. Co. 14 m, 38 c, 200 h and mu.

MERIDEN, CONN.—Meriden Horse R.R. Co. 5 m, 4-8 g, 35 lb r, 15 c, 100 h. Pres. Geo. R. Curtis, Sec. & Treas. Chas. L. Rockwell, Supt. Dan'l Rarker. 6

Meridian St. Ry. Co. 22 m, Meridian St. Ry. Co. 22 m,

Sec. & Treas, Chas. L. Rockwell, Supt. Dan Barker; 6
MERIDIAN, MISS.—Meridian St. Ry. Co. 2½ m, 4-8 g, 16 lb r, 5 c, 20 mu, Pres. Geo. S. Covert, V. Pres. and Sup. J. L. Handley, Sec. R. M.Houston, Treas. J. A. Kelly. d
MICHIGAN CITY, IND.—Citizens' St. Ry. Co. 4 m, 4-8½ g, 30 lb r, 4 c, 15 h. Pres. Wm. G. Knight, V-Pres. John Lyons, Sec. Jacob Henderon, Treas. Jerry H.Knight. Office West Washington st., South Bend, Ind.

MIDDLETOWN, CONN.—Middletown Horse R.R. Co. 2 m, 6c, 36 lb. r, 30 h. Pres. John M. Douglas, Sec. & Treas. J. K. Guy, Supt. Walter Baldwin. Office 166 Main st.

R.R. Co. 2 m, 6c, 36 ib.r, 30h. Pres. John M. Douglas, sec. & Treas. J. K. Guy, Supt. Walter Baldwin. Office 166 Main st.

MIDDLETOWN, 0.—Middletown Horse R.R. Co. Middletown & Madison St. R.R. Co. 2 m, 5-9 g, —r, 4 c, 8 h, Pres. C. F. Gunckel, Sec. and Treas. E. W. Gunckel, Supt. T. C. Reed.

MILLERSVILLE, PA.—Lancaster & Millersville St. R.R. Co. (See Lancaster, Pa.)

MILWAUKEEE, WIS.—Cream City R.R. Co. 17 m, 4-8½ g, 38 & 52 lb girder r, 27 lb tram r, 80 c, 319 mu. Pres. Winfield Smith, V. Pres. Cristian Preusser, Treas. Ferdinand Kuehn, Sec. Wm. Damkoehler, Gen. Man. D. Atwood, Supt. H. J. C. Berg. Office, 440 E. Water st. b.

Milwaukee City Ry. Co. 30 m, 4-8½ g 45 lb r, 81 c, 513 h. Pres. Peter McGeoch, Sec. & Treas. Geo. O. Wheatcroft. Office 209 West Water st. a. West Side St. Ry. Co. Pres. Washington Becker Sec. Thos. J. Durnin, Supt. A. McNaughton. 4

MINNEAPOLIS, MINN.—Minneapolis St. Ry. Co. 36 m, 3-6 g, 27-35-45 lb r, 186 c, 773 h, 226 mu. Pres. Thos. Lowry, V. Pres. C. Morrison, Treas. W. W. Herrick, Sec. C. G. Goodrich, Supt. D. W. Sharp. g

MOBILLE, ALA.—City R.R. Co. 17½ m, 5-2 g, 35 lb T-r, 60 c, 200 h. Pres. O. W. Cawthon, V. Pres. A. H. Spira, Sec. Peter Stark, Supt. R. R. Benson. d Dauphin & Lafayette Ry. Co. 2 m, 5-2½ g, 40 lb

THE SPRAGUE ELECTRIC RAILWAY & MOTOR CO.

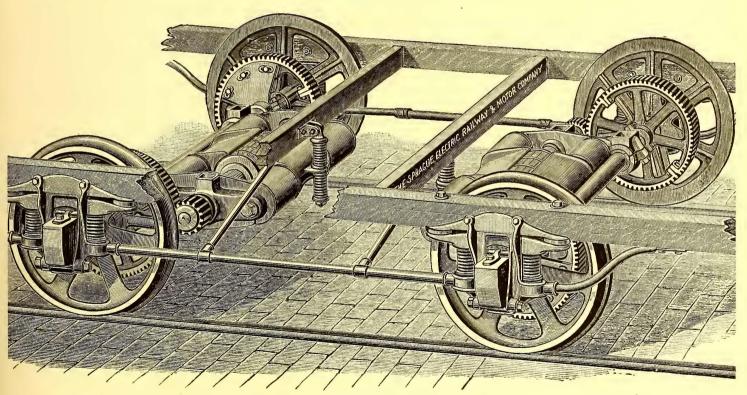
THIS IS THE ONLY COMPANY IN THE UNITED STATES DEVOTING ITS ENTIRE ENERGIES TO THE VARIOUS QUESTIONS INVOLVED IN THE TRANSMISSION OF POWER, AND IT IS PUTTING INTO PRACTICAL USE MORE MOTORS OF AND OVER ONE-HALF HORSE POWER THAN ALL OTHER COMPANIES COMBINED.

OFFICES:

NEW YORK: 16 & 18 Broad St. BOSTON: 55 Oliver St. CHICAGO: 185 Dearborn St.

ST. LOUIS: 304 Locust St. NEW ORLEANS: 20 Carondelet St. DETROIT: 133 Jefferson Ave. PHILADELPHIA: 119 So. Fourth Street, CLEVELAND, O.: 117 Public Square.

This company, having now perfected a Street Railway System in all its details, is prepared, under suitable guarantees of successful operation, to take contracts for equipping new roads with all the appliances, both electrical and mechanical, for operating street railroads, and also for equipping roads now in operation.



Street Car Truck Showing Motors.

CHARACTERISTICS OF RAILWAY MOTORS.

Lightest weight consistent with Highest Efficiency.
Simple, Compact in Construction.

Non-Liability to get out of order.

No Skilled Labor.

Strong enough to do the work under all conditions.

Simplicity and ease of operation.

Commutator wear Reduced to a Minimum.

DETAILS OF SYSTEM.

Generators of Highest Efficiency and Reliability.

Systems of Conducting Current to the Cars with the Impossibility of an Accident at any Point of the Line Interfering with the Operation of the Remainder of the Road.

Motors Flexibly Suspended from the Axles to insure Perfection of Running.

Greatly Increased Traction by the Application of Motors to each Axle with Independent Driving.

Greatest Return for Given Amount of Coal Burned.

Entire Freedom from Disagreeable Noises by means of Split-Gears and Spring Suspension.

Absence of all Ropes, Belts, Sprocket-Wheels and Chains.

No Useful Room in the Car taken up by the Motor.

No Changes in Truck.

No Complicated Nest of Gearing.

Use of Single Sets of Brushes for both Directions of Driving.

Storage Battery or Overhead System.

r, 9 c, 10 h, 12 m. Pres. D.P. Bestor, V. Pres. & Sec.G. Y. Overall, Treas. & Acting Sec. Jas. W. Gray, Pur. Agt. & Man. J. B. Robertson. e Mobile & Spring Hill R. R. Co. 8 m, 5-2½ g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Daniel McNeill, Sec. & Treas. C. F. Sheldon, Man. F. Ingate. b MOHAWK, N. Y.—Mohawk & Hion R.R. Co. 1½ m, 4-8½ g, 30 lb r, 4 c (contract for motive power). Pres. O. W. Bronson, V. Pres. C.W. Carpenter, Sec. H. D. Alexander, Treas. R. M. Devendorff, Supt. O. W. Bronson. f

D. Alexander, Treas. R. M. Devendorff, Supt. O. W. Bronson. I

MOLINE, ILL.—Moline Central St. Ry. Co. 1½

m, 4-8½ g, 30 lb r, 3 c, 10 h. Pres. P. H. Wessel, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway. Office, 314 16th st. 1

Moline & Rock Island St. Ry. Co. 5 m, 4-8½ g, 20 lb r, 8 c, 40 h, 2 steam motors. Pres. & Treas. Eugene Lewis, Sec. I. M. Buford, Gen. Man. Geo. W. French, Supt. Jas. Cazatt. 1

MONTGOMERY, ALA.—Capital City Electric Ry. 11 m, 4 g, 42 lb r, 20 c. Electric motors. Pres. E. B. Joseph, Gen. Man. J. A. Gaboury, Treas. Thos. E. Hannon. &

MONTREAL, CAN.—Montreal St. Ry. Co. 30

N. 1711, 4 g., 21 of., 20 c. Breats moory from the Joseph, Gen. Man. J. A. Gaboury, Treas. Thos. E. Hannon. e. MONTR EAL, CAN.—Montreal St. Ry. Co. 30 m. 4-8 % g. 80 c. 80 sleighs, 40 'buses, 700 h. Pres. Jesse Joseph, V. Pres. Alex. Murray, Sec. & Man. Ed. Lusher, Supt. T. H. Robillard. 3 MOULTRIEVILLE, S. C.—Middie St. & Sulfivan's Landing Ry. 2½ m, 4-8 % g, 20 lb r, 7c 4 h. Pres. B. Callahan, Treas. B. Buckley. MT. VERNON. N. Y.—Mt. Vernon St. Ry. Co. Mount Vernon & East Chester R. R. Co. 3 % m,—g, r, 7 c, 30 h. Pres. Wm. A. Butler, V Pres. Thos. Nichols, Sec. Jas. T. Byrne, Treas. Benj. L. Wetthelmer, office, 261 Broadway, N. Y. 1 MUSCATINE, IA.—Muscatine City Ry. Co. 3 % n, 3-6 g, 21 lb r, 7c, 34 h. & mu. Pres. Peter Musser, V-Pres. W. Hoffman, Sec. T. R. Fitzgerald, Treas. S. M. Hughes. & MUSKEGON, MICH.—Muskegon Ry. Co. 42 % m 1-6 g, 20 lb r, 8 c, 17 h, 9 mu. Pres. F. A. Nims, V. 9 res. Chas. Mertiam, Boston, Mass., Sec. Thomas Munroe, Treas. G. R. Sherman, Supt. Wm. McLaughlin. a

Munroe, Treas. G. R. Sherman, Supt. Wm. McLaughlin. a

NASHUA, N. H.—Nashua St. Ry. Co. 2 m, 3 g, 35

id., 6c, 24 h. Pres, John A. Spalding, Clerk, R. D.
Barnes, Treas. Ira F. Harris, Supt. Q. A. Woodward, e

NASHVILLE, TENN.—Nashville & Edgeneld
R.R. Co. Fatheriand Street Railway Co. North Edgefield and Nashville St. R.R. Co., one management.
5 m, 5 g, 16-20-32 id., 21 c, 100 mu. Pres. Jas. If. Yarbrough, Sec. & Treas. H. B. Stubblefield, Supt. D.
Deaderick.

McGavock & Mt. Vernon Horse R.R. Co. 7½ m, 5 g,
16-20-23-32 id., 25 c, 140 h & mu. Pres. John P White,
V. Pres. B. F. Wilson, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Deaderick.

South Nashville St. R. R. Co. 4½ m, 5 g, 16-20-32 id.
C. L. Fuller. Office cor. So. Franklin and Cherry Sts. id.
NATCHEZ, MISS.—Natchez St. Ry. Controlled
by Thos. Reber.

NATICK, MASS.—Natck & Cochluate St. Ry.

South Nashville St. R. R. Co. 4½ m., 5 g, 16-20-32 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller. Office cor. So. Franklin and Cherry sts. i NATCHEZ, MISS.—Natchez St. Ry. Controlled by Thos. Reber.

NATICK, MASS.—Natchez St. Ry. Controlled by Thos. Reber.

NATICK, MASS.—Natchez St. Ry. Controlled by Thos. Reber.

NATICK, MASS.—Natchez St. Ry. Controlled St. Ry. 3m, 48-3½ g, 35 lb r, 7 c, 19 h. Pres. Harrison Harwood, Supt. Geo. F. Keep, Clerk Frank Hays. e NEW Albany, IND.—New Albany St. R. R. Co. 6-3½ m. 4-11 g, 25 lb r, 14 c, 53 h. Pres. Geo. T. Vance, Treas. Lettida V. Vredenburgh, Supt. & Pur. Agt. Wm. L. Timberlake. Office cor. Vincennes and Spring sts. 7 newArk, N. J.—Newark & Bloomfield St. R.R. Co. Consolidated with Essex Pass. Ry. Co. 5 Essex Pass. Ry. Co. 50 m, 5-2½ g, 47 lb r, 133 c, 797 h. Pres. S. S. Battin, Sec. Fred T. Kirk, Supt. H. F. Totten, Paymaster, W. L. Mulford. Office, 786 Broad St. d
Newark & Irvington St. Ry. Co., 7 m, 5-2½ g, 47 lb r, 32 c, 16 ih, Pres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Office 786 Broad st. d
Newark & So. Orange, Ferry St. & Hamburg Place R. R. Co. 15 m, 5-2½ g, 45 lb r, 49 c, 300 n. Pres. John Radel, Sec. Andrew Radel, Treas. Joseph Criqui. Office, cor. So. Orange ave. & So. 19th St. f
NEWARK, O.—Newark City Ry Co. 5 m, 4-8½ g, 35 lb r, 6c, 2th. Pres. Stephen G. Clarke, V. Pres. & Supt. Byron E. Clarke, Sec. John W. Lanehart, Treas. Harry M. Clarke. Office, 239 W. Main st. l
NEW BEDFORD, MASS.—Unlon St. Ry Co. 17.78 m, 4-8½ g, 35, 38, 45 & 50 lb r, 84 c, 311 h. Pres. Sam'l C. Hart, Treas. A. G. Pierce, Clerk Abbott P. Smith, Auditor, Geo. R. Phillips. Capital, \$266,000.

NEW BRITAIN, CONN.—New Britain Tramway Co. 3½ m, 4-8½ g, 35 lb r, 4 c. Pres. Allston Gerry, Treas. Jos. A. Flynn, both of New York City. 5
NEW BRUNSWICK, N. J.—New Brunswick Horse R.R. 4 m, 8-8 g, 40 lb r, 5 c, 20 h. Pres. F. M. Delano, Treas. Carroll Sprigg.

NEW BRUNSWICK, b. Pres. Rowland F. Hill, V. Pres. Sidney W. Hopkins, Sec. & Treas. Wm. Moores,

New Haven & West Haven R.R. Co. (See West Haven).
State Street Horse R.R. Co. 2½ m, 4-8½g, 43 lb r, 6 c, 40 h. Pres. C. A. Warren, Sec. & Treas. J. E. Emery.
Office 16 Exchange Bldg. d Whitney Ave. Ry. Co. 2½ m, 4-8½g, 25 lb r, 3 c, 20 h. Pres. Geo. H. Watrous, Sec. George D. Watrous, Treas. Ell Whitney, 1r., Lessee J. A. Davis. α NEW ORLEANS, LA.—Canal & Claiborne Sts. R.R. Co. 13 m, 5-2½g, 37 lb r, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. Jos H. DeGrange. a

THE STREET RAILWAY JOURNAL.

Crescent City R.R. Co. 26 m, 5-2½ g, 33-45 lb r, 90 c, 400 h. Fres. W. J. Behan, Sec. & Treas. J. R. Juden, Supt. A. V. Smith.

G. Orleans R.R. Co. 9½ m, 5-2½ g, 35 lb r, 32 c, 155 h. & co. 12 m, 12

St. b. Second Ave. R.R. Co. 28 m, 48% g, 60 lb r, 316 cars, 1750 h. Pres. W. S. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second ave. cor.

Sec. & Treas. J. B. Underhill. Office Second ave. cor. 96th st.

Third Ave. R. R. Co. 28% m, 48% g, 60 lb r, 360 c, 2190 h. Pres. Lewis Lyon, 739 Madison ave., Sec. Alfred Lazarus, 436 W. 61st st., Treas, John Beaver, 211 E. 112th st., Supt. John H. Robertson, 307
E. 65th st. Eng. Wm. H. Paine. Office, 1,115 Third ave.

Twenty-third St. Ry. Co. 14 m, 48% g, 54 lb r, 122 c, 764 h. Pres. Jacob Sharp, V. Pres. Isaac Hendrix, Sec. Thos. H. McLean, Treas. Lewis May. Office 621
West 23d st. f

West 23d st. f

NIAGARA FALLS, N. Y.—Niagara Falls & Suspension Bridge Ry. Co. 2½ m., 4-8½ g, 38 lb r, 19c, 41 h. Pres. Benj. Flagler, V. Pres. H. Nielson, Sec. W. J. Mackay, Man. & Treas. A. Schoellkopf. j

NORFOLK, VA.—Norfolk City R. R. Co. 3½ m. 5-2g, 43 lb r, 20 c, 67 h. Pres. John B. Whitehead Sec. & Treas. H. C. Whitehead, Supt. E. W. Savage. b

NORTH ADAMS, MASS.—Hoosac Valley St. Ry. Co. 6 m., 4-8½g, 40 lb. r, 8 c, 31 h, 2 steam motors. Pres. Wm. B. Baldwin, V-Pres. L. W. Cronkhite. Sec. S. Proctor Thayer, Treas. Chas T. Beach. 6

NORTHAMPTON, MASS.—Northampton St. Ry. Co. 3½ m., 4-8½ g, 32 lb r, 9 c, 35 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark. 1.

Edwards, Sec. M. H. Spaulung, Trouble Ry. Co. Clark. 1.
NORWALK, CONN.—Norwalk Horse Ry. Co. 1% m, 4-10 g, 42 lb r, 7 c, 19 h. Pres. & Supt. James W. Hyatt, Sec. Edwin G. Hoyt. 1 NORWICH, CONN.—Norwich Horse R.R. Co. OAKLAND, CAL.—Alameda, Oakland & Piedmont R.R.
Berkley Villa R.R.
Berkley Villa R.R.
Broadway & Piedmont R.R. Co. 3 m, 5 g, 30 lb r, 18 c, 46 h. Pres. Walter B. Carr, Sec. Montgomery Howl. Brooklyn & Fruit Vale R. R. 2½ m, 5 c, 18 h. Pres. E. C. Sessions, Sec. W. W. Gill. 2

Fourteenth St. R.R. Co. 8 m. 5 g, 25-40 lb r, 10 c, 46 h. Pres. & Supt. Walter Blair, Sec. P. J. Van Loben, office, 524 14th St. 1
Oakland R. R. Co. 8 m, 3 g, 60 lb r, 9 c, 83 h. Pres. Jas. G. Fair, Sec. Chas. S. Neal, Supt. Geo. Y. Loring. Office, 21st & Jones Sts.
Oakland, Brooklyn & Fruit Vale R. R. Co. 2½ m, 5 g, 35 lb r, 4 c, 25 h. Pres. H. Tubbs, Sec. W. C. Mason, Supt. J. Dixon, Pur. Agt. Geo. H. Mason. Office, 301 Central ave.

Oakland Cable Ry. Co. 5 m, 3 g, 40 lb. iron r, 10 c. Pres. Jas. G. Fair, Sec. & Treas. Chas. S. Neal, Supt. Geo. Y. Loilng. Office, 21st & Jones Sts.

GGDEN CITY, UTAH.—Ogden City Ry. Co. 3 m, 4-8½ g, 20 lb r, 4 c, 20 h. Pres. L. W. Shurtliff, V. P. & Supt. O. P. Arnold, Sec. & Treas. H. S. Young.

V. P. & Supt. O. P. Arnold, Sec. & Freed.

Young. a

OGDENSBURG, N. Y. — Ogdensburg St. Ry. Co. 5m.

4-8½ g, 25 lb. r, 6c, 22 h. Pres. W. H. Daniels, Sec. E.

A. Newell, Treas. A. E. Smith. b

OLEAN, N. Y. — Olean St. Ry. Co. 1½ m, 3-6 g,

25 lb r, 3-2, 7 h. Pres. & Supt. M. B. Fobes, Sec. & Treas.

M. W. Barse, Asst. Sec. John Fobes. Office, Union st. 4

OMAHA, NEB. — Omaha Horse Ry. Co. 22 m,

4-8½ g, 30, 35 & 45 lb r, 62 c, 470 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Sec. J. E. Wilber, Treas.

W. W. Marsh, Supt. W. A. Smith. Office 1504 Farnam st. e

OMAHA, NEB.—Omaha Horse Ry. Co. 22 m, 48½ g, 30, 35 45 lb r, 62 c, 470 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Sec. J. E. Wilber, Treas. W. W. Marsh, Supt. W. A. Smith. Office 1504 Farnam st. & Cable Tramway Co. of Omaha, 4m, 48 1-2 g, 58½ lb r, 10 c, each with grip; operated by cable. Pres. S. R. Johnson, V. Pres. L. B. Williams, Sec. and Treas. C. E. Yost, Chief Engineer Robert Gilham. Capital stock, \$300,000. General office, 130 South 13th st. & ONEIDA VILLAGE, N. Y.—Oneida Ry. Co. m, 48½ g, 47 lb r, 3 c, 6 h. Pres. W. A. Stone, Sec. & Treas. W. E. Northrup, Supt. Chas. Bonta. j OSHKOSH, WIS.—OshKosh St. R. R. Co. 3½ m, 48½ g, 27 lb r, 9 c, 2½ h. Pres. Leander Choate, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson. g
OSWEGO, N. Y.—Oswego St. Ry. Co. 2½ m, 48½ g, 25 lb r, 5 c, 25 h. Pres. R. J. Ollphant, V. Pres. H. D. McCaffrey, Sec. & Treas. Albert Himes, Supt. Wm. S. Turner. Office, West Bridge, near Third ave. d
OTTAWA, ONT.—Ottawa City Passenger Ry. Co. 5 m, 48½ g, 30 lb r. 9 c. 40 h. Pres. Thomas C. Keerer, V. Pres. R. Blackburn, Sec. James D. Fraser. i Ottawa St. Ry. Co. 0 OTTUNIWA, IA.—Ottumwa St. R. R. Co. 2 m, 3-6 g, 27 lb r, 4 c, 2 h. 14 mu. Pres. J. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick.
Mineral Springs St. Ry. 1 m, 3-6 g, 16 lb r, 1 c, 1 mu, Owner, L. E. Gray.
PARIS. TEX.—Paris Ry. Co. 2½ m, 4-8½ g, 22 lb. Tr. 3 pass. 4 ftc. 11 mu, Pres. W. D. Latlmer. a
PATERSON, N. J.—Paterson & Passalc R. R. Co. 7 m, 4-10½ g, 33 lb r, 16 c, 30 h. Pres. John N. Terlune, Sec. E. S. Brown, Treas. John J. Brown, Man. & Supt. Ambrose T. King, Asst. Supt. Townsend Rider. Office, First National Bank Bidg.
Paterson City Ry. Co. 8½ m, 4-8½ g, 35 lb r, 10 c, 40 h. Pres. Garret Planten, Treas. & Man. H. Romaine, Sec. & Holt Ry. Go. 20 m. Pres. & Gen. Man. H. R. Woodward, Sec. C. Albert A. Wilcox, Supt. M. Pettigrew. Office 2r Broad st. & PENSACOLA, Flanten, C. 124 h. Pres. A. B. Cliabed, Sp. 20 & 40 lb r, 9 c, 22 h. Pres. & Gen. Man. H. R. Woodward, Sec. Jos. Edet, Treas.

48½ g, 42 & 47 ld r, 9 c, 2 m, so mu.

Prop. 7

PHILADELPHIA, PA.—Citizens Pass. Ry. Co.
10½ m, 5-2 g, 45-47 lb r, 86 c, 470 h. Pres. John McCarthy, Sec. & Treas. J. Q. Adams, Sup. H. C. Keen,
Office, n w cor. 12th and Susquehanna ave. Capital,
\$192,500. a

Empire Pass. Ry. Co. 8½ m, 5-2 g, 45 lb r, 32 c, 250
h, Pres. James McManes, Sec. and Treas. John I.
Adams. Office, n w cor. 12th st. and Susquehanna
av. a

Adams. Office, n w cor. 12th st. and Susquehanna av. a

Frankford & Southwark Phila. City Pass. R.R. Co. 18.10 m, 5-2g, 47 lbr, 100c, 8 dummles, 650 h. Pres. John Nobitt, Sec. Thos. S. Harris. Treas. R. C. Brewster, Supt. T. E. Cox. Capital, \$750,000. Office, 2501 Kensington ave. a

Germantown Pass. Ry. Co. 29½ m, 5-2½ g, 47 lbr, Cars and horses, leased. Pres. Cralg D. Ritchie, Sec. & Treas. Lewis S. Renshaw. Office, 1,001 Chestnut st. f

Green & Coates R. R. Co. (Leased to People's Pass.

nut st. 1 Green & Coates R. R. Co. (Leased to People's Pass. Ry. Co.) Pres. Moses A. Dropsle, Sec. & Treas. Lewis S. Renshaw. Office N. W. cor. 10th and Chestnut

sts. 6
Hestonville, Mantua & Fairmount Pass. R.R. Co. 20
m, 5-4½ g, 45 lb r, 60 c, 500 h. Pres. Charles H. Lafferty, Sec. & Treas. W. C. Foster. Office, 4,300 Lancaster ave. a

ter ave. Lombard & South Sts. Pass. Ry. Co. 10 m, 5-2 g, 43 tb, r, 51 c, 276 h. Pres. John B. Parsons, Sec. & Treas. Thos. C. Barr, Supt. J. H. Fresh. Office, 25th & South

sts. k People's Pass. Ry. Co. 45 m, 5-2 g, 47 lb r, 125 c, 1153

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For Street Railways the DAFT SYSTEM possesses the following named advantages.

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The remoteness of the motive machinery from the passengers; its being insulated electrically and acoustically by India-rubber washers and bushings at its connection with the caraxles; and its being covered by a magnetic shield, which affords perfect protection to the watches of passengers from magnetization—render the "Daft System" of Street Railway Propulsion peculiarly free from the above serious objections.

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Offices, 115 Broadway, New York. Factory, Jersey City, N.J.

Pres. John B Parsons, Sec. & Treas. D. C. Colden, pt. Chas. S. Whiting. Office, 8th & Dauphin

Supt. Chas. S. Whiting. Onloc, 652 & 524 g, 47 & 78 lb r, 132 c, 708 h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. (Leased to W. Phila. Pass. Ry. Co.) Office, 202 Walnut place. a Philadelphia Traction Co. 109 m, 5-2½ g, 47 lb r, 594 c, 2608 h. Pres. W. H. Kemble, V. Pres. P. A. B. Widener & W. L. Elkins, Sec. & Treas. D. W. Dickson, Engr. A. D. Whitton. Office, n w cor. 41st and

Widener & W. L. Elkins, Sec. & Treas. D. W. Dickson, Engr. A. D. Whitton. Office, n w cor. 41st and Haverford sts. 4
Philadelphia & Darby Ry. Co. 6½ m, 5-2½ g, 42 br., road leased. Pres. C. L. Borle, Sec. and Treas. Wm. W. Colket. Office, 202 Walnut pl. Leased to Phila, City Pass. Ry. Co. 2
Philadelphia & Gray's Ferry Pass. R.R. Co. 101-3
m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes. Sec. J. Crawrond Dawes, Supt. Patrick Lovett. Office, 36th st. and Gray's Ferry Rd.
Ridge Ave. Pass. Ry. Co. 15 m, 5-1g, 47 lbr, 63 c, 350 h. Pres. E. B. Edwards, Sec. & Treas. Wm. S. Blight, Supt. Wm. Myers, Engr. Morris Vose.
Second & Third St. Pass. Ry. Co. 37 m, 5-2½ g, 43 to 55 lbr, 116c, 675 h. Pres. Alexander M. Fox, Treas. William F. Miller, Sec. Charles D. Matlack, Supt. D. W. Stephens. Office, 2635 Frankford ave. a Seventeenth & Nineteenth Sts. Pass. Ry. Co. 7½ m. Pres. Matthew S. Quay. Sec. & Treas. John B. Peddle. (Leased to Philada. Traction Co.)
Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 g, 47 lbr, 49 c, 52 h. Pres. Thos. W. Ackley, Sec. & Treas. John B. Peddle. Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. (Leased to Phila. Traction Co.)
West Philadelphia Pass. Ry. Co. 18½ m, 5-2½ g, 47 lbr, 48 c, 52 h. Pres. Thos. W. Ackley, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. (Leased to Phila. Traction Co.)
West Philadelphia Pass. Ry. Co. 18½ m, 5-2½ g, 47 lbr, 125 c, 112 h. Pres. Peter. A. B. Widener, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. (Leased to Phila. Traction Co.)
PHILIPSBURG H, P.A.—Central Pass. R.R. Co. 67 m, 5-2½ g, 48 lbr, 16 c, 100 h. Pres. Geo. 1. Whitney, Sec. & Treas. Fl. Stephenson, Supt. R. G. Herron. 4 Cleaner Pass. Ry. Co. 16½ m, 5-2½ g, 45 lbr, 16 c, 100 h. Pres. Geo. 1. Whitney, Sec. & Treas. Fl. Stephenson, Supt. R. G. Herron. 4 Cleaner Pass. Ry. Co. 16½ m, 5-2½ g, 45 lbr, 16 c, 100 h. Pres. Geo. 1. Whitney, Sec. & Treas. Fl. Stephenson, Supt. R. G. Herron. 4 Cleaner Pass. Ry. Co. 165 m, 5-2½ g, 45 lbr, 16 c, 20 h. Pres. Shas. Supt. Wm. J. Crozler, Alle

Treas. Chas. A. Ward, Jr. Office, 306 Huron ave. h

PORTIAND, ME.—Ocean St. R.R. Co. Operated by Portland R. R. Co. 12

Fortland R.R. Co. 12

Fortland R.R. Co. 9½ m, 4-8½ g, 35-45 lb r, 36 c, 167 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A. Newman. Office, 484 Congress st. 4

PORTIAND, ORE.—Portland St. Ry. Co. 2 m, 3-6 g, 25-42 lb r, 10, 40 h. Pres. Jos. Holladay, Sec & Supt. C. K. Harbaugh. Office, 104 Fourth st. k

Muttnomah St. Ry. Co. 2½ m, 3-6 g, 30 lb r, 19 c, 65 h. Pres. A. N. King, Sec. E. A. King, Supt. W. J. Matchette. Office, 294 Washington st. j

Transcontinental St. Ry. Co. 10 m, 3-6 g, 25-38 lb r, 24

C, 100 h. Pres. & Gen. Man. Tyler Woodward, Sec. D. W. Wakefield. Office, 145 G st. b

PORTSMOUTH, O.—Portsmouth St. R. R. Co. 2 m, 3-6 g, 18 lb r, 4 c, 10 h. Pres. James Skelton, Treas. Sec. & Supt. Enas Reed. a

POTTSVILLE, PA.—People's Ry. Co. 4½ m, 4-8½ g, 45 to 60 lb r. Pres. T. A. Reilly, Sec. & Supt. Wm. D. Pollard. 7

POUGHKEEPSIE, N. Y.—City R. R. Co. 4 m, 45 to 61 db r. 20 h. 20 h. Co. 2 m, 3-6 d. 10 h. 20 h. 2

Providerd. 7
POUGHKEEPSIE, N. Y.—City R. R. Co. 4 m, 48½ g, 35-42 lb r, 11 c, 39 h. Pres. Geo B. Adriance, V. Pres. & Treas. Hudson Taylor, Sec. A. B. Smith, Supt. C. M. Davis. Office 491 Main st. f
PROVIDENCE, R. I.—Union R.R. Co. 53.8 m, 4-8 g, 47-54 lb r, 277 c, 1,400 h. Pres. Jesse Metcalf, V. Pres. & Gen. Man. D. F. Longstreet, Sec. and

Treas. C. A. Babcock, Auditor B. A. Jackson. Office,

Marketsq. k
PUEBI.O, COL.—Pueblo St. Ry. Co. 5 m, 3 g, 22
bi iron r, 8 c, 28 h. Pres. J. B. Osman, V. Pres. J. K.
Moore, Sec. & Supt. J. T. Ciark, Treas. J. N. Carllsle. 5

Ib Iron 1, 8 c, 28 h. Pres. J. B. Osman, V. Pres. J. K. Moore, Sec. & Supt. J. T. Clark, Treas. J. N. Carlisle. 5

QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-8% g, 45 lb r, 9 c, 46 h. Pres. Chas. St. Michel, Quebec, V. Pres. G. R. Renfrew, Quebec, Sec., Treas. & Supt. Samuel Moore.

St. John St. Ry. Co. Lim, 1½ m, 4-8% g, 35 lb r, 4 c, 23 h. Runs 4 'buses out 4 m. from city limits. Pres. Jos. W. Henry, V. Pres. A. Robertson, Sec. & Man. W. W. Martin. b

QUINCY, ILL.—Quincy Horse Ry. & Carrying Co. 6 m, 5 g, 71 lb r, 21 c, 118 mu. Pres. Lorenzo Bull, Sec. C. H. Bull, Supt. E. K. Stone.

RACINE, WIS.—Belle City St. Ry. Co. 4 m, 4 g, 32 lb r, 9 c, 40 h. Pres. Geo. B. Hathaway, Sec. & Treas. J. E. Dodge. Office, 716 Park ave. d

RALEIGH, N. C.—Raleigh St. Ry. Co. 5 m, 4-8½ g, 16 T Steel r, 6 c, 36 mu. Pres. V. E. Turner, Sec. & Treas. R. T. Gray, Atty. F. H. Busbec. Capital stock, \$25,000. 6

RAPID CITY. DAK.—Rapid City St. Ry. Co. 1½ m, 4 g, 1b r, 2 c, 4 h. Pres. Fred. T, Evans, Sec. & Treas. G. Schnasse. a

READING, PA.—Reading City Pass. Ry. Co. 21-5 m, 5-2½ g, 45 lb r, 19 c, 44 h. Pres. B. F. Owen, V. Pres. Jas. L. Douglass, Sec. & Treas. H. A. Muhlenberg, Supt. J. A. Riggs.

Perkiomen Ave. Pass. Ry. Co. 4½ m, 5-2½ g, 38 45 lb r, 18 c, 75 h. Pres. Chas. Brenelser, Sec. & Treas. Isaac Hiester, Supt. John B. Houp. Office, Perkiomen ave. & 19th st. e

RED OAK, IA.—Red Oak St. R.R. Co. 1½ m, 4-2½ g. 20 lb r, 2 c, 4 h. Pres. John Hayes, V. Pres. Edw. Hayes, Sec. F. M. Byriket, Treas. & Supt. Marcus Bonham. a and r

RICHMOND, IND.—Richmond City R. R. Co. 4m, 3 g, 16 & 20 lb r, 13c, 40h. Pres. J. C. Shaffer, V. Pres. J. F. Miller, Sec. & Treas. H. I. Miller. Office, 15-21 S. 7th st. e

RICHMOND, VA.—Richmond City R. Co. 7½ m. RICHMOND, VA.—Richmond City R. Co. 7½ m.

S. 7th st. e
RICHMOND, ILL.—Richmond St. R.R. Co.
RICHMOND, VA.—Richmond City Ry. Co. 7½ m.
4 8½ g, 30-40 lb r, 42 c, 185 h. Pres. J. L. Schoolcraft,
Treas. Walter Kidd, Man. C. M. Bolton, Supt. Charles

4 8½ g, 30-40 lb r, 42 c, 185 h. Pres, J. L. Schoolcraft, Treas. Walter Kidd, Man. C. M. Bolton, Supt. Charles Selden. a
Richmond & Manchester Ry. Co. 3½ m, 4-8½ g, 38 lb r, 5 c, 26 h. Pres. J. E. Taylor, V. Pres. J. Bryan, Sec. & Treas, Jackson Brandt, Supt. B. R. Selden. a
ROCHESTER, N. Y.—Rochester City & Brighton R.R. Co. 37 m, 4-8½ g, 30-45-57 lb r, 170 c, 682 h. Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodworth, Supt. Thomas J. Brower. e
Citizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas. J. E. Pierpont, Supt. S. A. Green.
ROCKFORD, ILL.—Rockford St. Ry. Co. 62-5 m, 4-8½ g, 30-40 lb r, 13 c, 52 h, 26 mu. Pres. Anthony Halnes, Sec. H. H. Koblnson, Treas. N. E. Lyman, Supt. Fred. Halnes. c
ROCK ISLAND, ILL.—Rock Island & Milan St. Ry. Co. 12 m, 4-8½ g, 20, 30 & 40 lb r, 8 pass c, 8 ft c, 7 h, 2 moiors. Pres. & supt. Bailey Davenport, Sec. E. C. Hurst, Treas. J. F. Robinson. e
RONDOUT, N. Y.—Kingston City R. R. 2.78 m, 4-8½ g, 40 lb r, 8 c, 40 h. Pres. James G. Lindeley, V. Pres. S. D. Coykendall, Sec. & Treas. Peter E. Schoonmaker, Auditor, Oscar L. Eastman, Gen. Man. Geo. Coykendall.
J. RUTLAND, VT.—Rutland St. Ry. Co. 8 m, 4-8½ g, 20 lb r, 8c, 36 h. Pres. John N. Woodfin, Treas. A. H. Tuttle, Supt. M. McKeogh. Office, 7½ Center st. g
SACRAMENTO, CAL.—Sacramento City Ry. Co. 12-horse and 10 2-horse c. Prop. R. S. Carey, Supt. Geo. W. Carey.
SAGINAW, MICH.—City of Saglnaw St. R. R. Co. 2½ m, 4-8½ g, 42 lb r, 14 c, 50 h. Pres. David H. Jerome, V. Pres. Geo. F. Williams, Sec. & Treas. Geo. L. Burrows, Supt. Fred G. Benjamin. Office, 311 Court st. 5

L. Burrews, Supt. Fred G. Benjamin. Office, 311 Court st. 5 SALEM, MASS.—Salem & Danvers St. Ry. Co. 12 m, 4-8 m g, 35-45 lb r, 24 c, 117 h. Pres. Benj. W. Russell, Sec. & Treas. G. A. Vickery, Asst. Supt. David N. Cooke. Purchased by Naumkeag St. Ry.

Co. 6
Naumkeag St. Ry. Co. 24 m, 4-8½ g, 35-45 lb r, 83 c,
275 h. Pres, Chas. Odell, Clerk Joseph F. Hickey,
Treas. Henry Wheatland, Supt. Willard B. Fergu-

SALINA, N. Y.—Woodlawn and Butternut St.

Ry.Co.
SALT LAKE CITY, UTAH.—Salt Lake City
R.R Co. 13 m, 4-8% g, 20 lb r, 16 c, 106 mu. Pres. John
Taylor, Sec. David McKenzie, Treas. James Jack,
Supt. Orson P. Arnold. d

SAN ANTONIO, TEX.—San Antonio St. Ry. Co. 18 m, 4 g, 38 lb r, 40 c, 150 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas. J. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb.

Antonlo, V. Pres. F. W. Pickard, N. Y. City, Treas, J. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb. J
Prospect Hill St. R.R. Co. 1½ m, 1c, 2h. Pres. Sam. Maverick, v. Pres. & Gen. Man. P. J. Moss, Sec. Leonardo Garza, Treas. L. Wm. Menger. d
SANDUSKY, O.—Sandusky St. Ry. Co. 4 m, 4-8½ g, 32 lb r, 7 c, 25 h. Pres. Chas. V. Olds, Sec. & Treas. A. C. Moss, Supt. Clark Rude.

SAN FRANCISCO, CAL.—California Street Cable R. R. Co. 7 m, 3-6 g, 27 c, 25 dummles, 4 h. Pres. Chas. Mayne, V. Pres. Robt. Watt, Sec. T. W. Hinchman, Treas. A. Borel, Supt. J. W. Harris. Office, 1435 California st. f
Central R. R. Co. 12 m, 5 g, 45 lb r, 15 2 h & 16 l-h e, 290 h., Pres. Chas. F. Crocker, V. Pres. T. Hopkins, Sec. Jabez Hatch, Treas. N. T. Smith, Supt. J. F. Clark. Office, 44 Turk St. g
Clay St. Hill R. R. Co. 2 m. 3-6 g, 30 lb r, 11 c, 12 dummy cars. Pres. Joseph Britton, V. Pres. Chas. Mayne, Treas. Henry L. Davis, Sec. Chas. P. Campbell. Office, s w cor. Clay & Leavenworth Sts. h
Geary St. Park & Ocean R.R. Co. 9½ m, (5½ m cable, 4½ m steam) 5 g, 45 lb r, 39 c. Pres. Chas. F. Crocker, V Pres. R. F. Morrow, Sec. John N. Lynn, Treas. H. T. Smith, Supt. Johnson Reynolds. g
Market St. Cable Ry. Co. 25 m, 4-8½ g, 37-38 lb. r. 182 c, 2 motors, 86 h. Pres. Leland Stanford, V Pres. Chas. F. Crocker, Treas. N. T. Smith, Sec. J. L. Will-

cutt, Supt. H. D. Morton. Office, Fourth and Townsend streets. d
North Beach & Mission R. R. Co. 16 m, 5 g, 4 lb r, 50 two h. c, and 14 one h. c. Pres. Albert Meyer, Sec. H. W. Hathorne, Treas. Wm, Alvord, Supt. M. Skelly. Office, 4th & Louisa sts. h
Ocean Beach Ry. Co. (operated by Market St. Cable Ry. Co.) 2 m. Pres. Leland Stanford, V. Pres Chas. F. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt, Supt. H. D. Morton. Office, 4th & Townsend sts. d
Omnibus R. R. & Cable Co. 18 m, 5 g, 40-45 lb r, 60 c, 390 h. Pres. Gustav Sutro, V. Pres. D. Skein, Sec. G. Ruegg, Supt. M. M. Martin. Office 727 Howard st., Park & Ocean R. R. Co. 8 m, 35 and 40 lb r, 4-8½ g, 7 dummy engines, 16 pass. c, 6 flat and section c. Pres. Chas. F. Crocker, V. Pres. Timothy Hopkins, Treas. N. T. Smith, Sec. J. L. Willcutt, Supt. H. D. Morton. Office, 4th & Townsend sts. d
Potrero & Bay View R. R. Co. 3 m, 5 g, 35 lb r, 10 c, 43 h. Pres. Leland Stanford, V. Pres. Chas. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt, Supt. H. O. Rogers. Office, 4th & Townsend sts. d
Sutter St. R.R. Co. 13.5 m, 4-11 g, 45 lb r, 50 c, 155 h. Pres. R. F. Morrow, Sec. A. K. Stevens, Treas. M. Schmitt. Office, cor. Sutter & Polk sts. 1
Telegraph Hill R.R. Co. 1,550 ft, 4-8½ g, 45 lb r, 2c, — h. Pres. Gustave Sutro, V. Pres. C. Kohler. Sec. & Supt. Chas. J. Werner. Suspended operations. Cable taken up and stored away. e
City R.R. Co. 11 m, 5g, 45 lb r, 72c, 280 h. Pres. R. Woodward, V. Pres. Geo. E. Raum, Sec. M. E. Willis, Treas. Jas. H. Goodman, Supt. William Woodward, Master Car Builder, Frank O. Landgram. e
SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co. 8 m, 48 and 3 g wide g. 40 lb r, parrow g. on lb r. 98

City R.R. Co. 11 m, 5g, 45 br, 72c, 280 h. Pres. R. B. Woodward, V. Pres. Geo. E. Raum, Sec. M. E. Willis, Treas. Jas. H. Goodman, Supt. William Woodward, Master Car Builder, Frank O. Landgram. e

SAN JOSE, CAL.—San Jose & Santa Clara R.R.Co. 28 m, 4-8 and 3 g wide g, 40 br, narrow g, 20 br, 25 c, 75 h. Pres. S. A. Bishop, V. Pres. W. S. McMurtry, Treas. Jacob Rich, Sec. E. M. Rosenthal, Man. Wm. Fitts. Office, 20 W. Santa Clara st. 1 First St. R. & Willow Glen R. R. 4½ m, 3 g, 20 lbs. r, 6 c, 30 h, Jacob Rich, Sole Owner. Sec. E. M. Rosenthal. Office, 20 Santa Clara st. 12 First St. & San Pedro St. Depot R.R. Co.

Noith Side Horse R.R. Co. 2½ m, 3 g, 16 lb r, 3 c, 10 h. Pres. & Man, Jacob Rich, Sec. E. M. Rosenthal.

Treas. S. A. Bishop. f

Willow Glen R.R. 7½ m, 3 g, 20 lb r, 8c, 30 h. Sole owner Jacob Rich, Sec. E. M. Rosenthal. Office 20 W. Santa Clara st. k

SANTA BARBARA, CAL.—Santa Barbara St. R.R. Co. 22-5 m, 3-6 g, 3 c, 12 mu. Pres. A. F. McPhall Office, State st. 5

SARNIA, CAN.—Sarnia St. Ry. Co. 5m, 4-8 g, 22 lb r, 2 c, 9 h. Pres. J. F. Lester, Sec. & Treas. Thos. Symington, Supt. Henry W. Mills. Office, Canadian Block. c

SAVANNAH, GA.—City & Suburban R. R. 12½ m steam line, 6 m, street line, 5 g, 35, 38 & 42 lb r, 40 street c, 12 steam c, 130 h, 3 engines. Pres. J. H. Johnston, Sec. A. L. Hartridge, Treas. E. Schmidt, Coast Line R.R. Co. 7 m, 5 g, 35 lb r, 17 c, engine, 35 h, 5 m suburban line 35 lb T r steam. Pres. Geo. Parsons, New York, Sec., Treas. & Gen. Man. R. E. Cobb, Savannah. Office, Bolton st. c

SCRANTON, PA.—People's St. Ry. Co. of Luzerne Co. 10 m, 4-8½ g, 52-40-52 lb r, 20 c, 90 h. Pres. Wm. Matthews, Sec. & Treas. Horace E. Hayd, Supt. F. Pearce. k

Sec Miller, W. T.—Seatile St. Ry. Co. 91 h. Pres. Cobb, Savannah. Office, Bolton st. c

SCRANTON, PA.—People's St. Ry. Co. 94 m, 4-94 g, 90 lb r, 7 c, 6 mu. Pres. A. W. Yarnell Sc. Wm. Matthews, Sec. & Treas. Borace E. Hayd, Supt. F. Pearce. k

Sec Miller, W. T.—Seatile St. Ry. Co. 94 m, 4-95 g, 10 lb r, 9c, 24 lb. Pres. & Geo. Man. F.

South Bend and Mishawauka St. Ry. Co.

SOUTH CHICAGO, ILL.—South Chicago City
Ry. Co. 6 m (of which 3 m are 40 lb Johnson girder
1, 1½ m 35 lb tram & ½ m Tr, 7 c. 30 h. Pres. Douglass S. Taylor, Sec. & Supt. Andrew Krimbill. Office,
46 Calumet Bidg., Chicago.

SPRINGFIELD, ILL.—Citizens' St. R. R. Co.
½ m, 3-6 g, 20 & 36 lb r, 31 c, 100 mu. Pres. J. H.
Schuck, Sec. Chas. Herrman, Treas. Frank Reisch.
Office Washington st.

Springfield City Ry. Co. 7 m, 4-8½ g, 30-45 lb r, 10
open & 10 box c, 85 mu. & h. Pres. A. L. Ide, V.
Pres. Geo. H. Black, Treas. Wm. Ridgeley, Sec. Geo.
Brinkerhoff, Supt. Irwin Johnson. Office, Monroe
st., bet. 4th & 5th. d

SPRINGFIELD. MASS.—Springfield St. Ry. Co.

st., bet. 4th & 5th. d
SPRINGFIELD, MASS.—Springfield St. Ry. Co.
9%m. 4-8% g, 35 lb r, 40 c, 170 h. Pres. John Olmsted,
Auditor L. E. Ladd, Clerk Gideon Weils, Treas. A.
E. Smith, Supt. F. E. King. Office, 1 Main st. a
SPRINGFIELD, MO.—Citizens' Ry Co. of Springfield and No Springfield, 7 m, 4-8% g, 33-40 br, 15 c.
28 h, 48 mu. Pres. R. C. Kerens, V.-Pres. B. F. Hobart, Sec, and Treas. A. M. Longwell, Supt. F. B.

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See description elsewhere in this issue.

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Rhode Island Locomotive Works, Constructors.

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Dynamos and Motors of every Variety.

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Smith, Ex-Com. H. F. Denton, L. H. Murray, C. B. McAffee. Office, North Springfield. 3
SPRINGFIELD, O.—Citizens' St. R.R. Co. 11½
m, 4g, 301b r, 30 c. 145 h. Pres. D. W. Stroud, V. Pres. H. s. Bushnell, Treas. Ross Mitchell, Sec. F. S. Penfield. 2

Pres. H. s. Bushnell, Treas. Ross Mitchell, Sec. F. S. Penfield. a
STAMFORD, CONN.—Stamford Horse R. R. Co.
5½ m, 4-8½ g, 10 c, 40 h. Pres. F. M. Delano, Treas.
Philip Richardson, Supt. A. H. Lombard. 3
STATEN ISLAND, N. Y.—Staten Island Shore Ry.
ST. CATHARINF'S, ONT.—St. Catharine's, Merritton & Thorold St. Ry. Co. 5½ m, 4-8½ g, 30 lb r, 8
c, 33 h. Pres. E. A. Smyth, Sec. A. P. Friesman, Supt.
E. A. Smyth. b
ST. JOHN. N. B.—St. John St. Ry. Co. 7 m,
4-8½ g, 3-4-60 lb r, 15 c, 65 h. Pres. John R. Bothwell,
Treas. John F. Zebley. Office Room 39 Drexel Bidg.,
New York, and St. John, N. B.
ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m,
4-8½ g, 28 lb r 14 c, 56 mu. Pres. Richard E. Turner,
Sec. & Treas., Arthur Kirkpatrick, Supt. John F.
Meriam.

4-8½ g, 28 lo f 14 c, 56 mu. Fres. Richard E. Turner, sec. & Treas., Arthur Kirkpatrick, Supt. John F. Merriam. C
Frederick Ave. Ry. Co. 3½ m, 4-8½ g, 42 lb r, 10c, 75 h. Pres. D. D. Burnes, Sec. & Gen. Man. J. A. Corby, Treas. S. A. Walker. Office, 511 Francis st. d. Union Ry. Co. 3½ m, 4-8½ g, 20, 30 & 52 lb r, 29 c, 110 h. Pres. Seymour Jenkins, Sec. & Treas. A. Steinacker, Supt. Chas. S. Wilson. c
ST. LOUIS, MO.—Baden & St. Louis R.R. Co. 3½ m, 4-9½ g, —lb r, 10 c, 23 h. Pres. George S. Case, V. Pres. William Z. Coteman, Supt. John W. Archer. Office, Broadway, near Baden ave. e
Benion-Belietontaine Ry. Co. 8m, 4-10 g, 52 lb r, 57 c, 234 h. Pres. Chas. Parsons, Sec. & Treas. Robert McCulloch. Office, 4238 N. 20th st. d
Cass Avenue & Fair Ground Ry. Co. 8½ m, 4-9½ g, 69 lb r, 34 c, 278 h. Pres. Julius S. Walsh, V. Pres. & Treas. Jas. Campbell, Sec. Patk. Gorry, Supt. M. J. Moran. Office, 2900 Cass ave. e
Cittzens' R. R. Co. —m, —g, —lb r, —c, —h. Pres. Julius S. Walsh, V. Pres. J. P. Helfenstein, Supt. Thos. Gartland. Office, Easton ave., Three-mile House.
Forest Park. Laclede & Fourth St. Ry. Co. 5½ m,

Julius S. Walsh, V. Pres. J. F. Hehrenstein, Superthos. Gartland. Office, Easton ave., Three-mile House.

Forest Park, Laclede & Fourth St. Ry. Co. 5½ m, 4-10 g, 44 ib r, 20 c, 199 h. Pres. C. H. Turner, Sec & Treas. Wm. D. Henry. Office, 1,827 Market st. Jefferson Ave. Ry. Co. 5 m, 4-9 g, 56 lb r, 21 c. Pres. John Scullin, V. Pres. Frank Carter, Sec, Jas. H. Roach, Treas. Clement M. Seaman. Office, Jefferson ave. & La Salle st.

Lindell Ry. Co. 13½ m, 4-10 g, 45 lb r, 75 c, 407 h. Pres. John H. Maxon, Sec. & Treas. Geo. W. Baumhoff. Office, 2207 Washington ave. 6

Missouri R.R. Co. 11½ m, 4-10 g, 44 lb r, 50 c, 488 h. Pres. P. C. Maffitt, Sec Wm. D. Henry, Supt. James F. Davidson. Office, 1,827 Market st. 6

Mound City Ry. Co. Pres. John Scullin, V. Pres. Frank Carter, Sec. Jas. H. Roach, Treas. C. M. Seaman, Supt. Jas. Scullin. Office, 2,500A St. Louis ave. 7

Frank Carter, Sec. Jas. H., Roach, Treus. C. M., Seaman, Supt. Jas. Scullin. Office, 2,500A St. Louis ave. 7
Northern Central Ry. Co. 10½ m., 4-3½ g. 50 lb r. 60 c, 280 h. Pres. Julius S. Walsh, Sec. & Treas. Chas. K. Dickson, Supt. John Mahoney, Foren-an Wm. Inannigan, Cash. T.C. Callahan. Office, 2,401 Spring av. People's Line, Pres. Chas. Green, Sec. Jos. Perry, Supt. Patrick Shea. Office, 1,510 Park ave. Southern. Ry. Co. 7. 4-5 m., 4-10 g., 35-52 lb r, 49 c., 250 V. Pres. Harry E. Drew, Sec. J. S. Minary, Man. W. S. Johnson. Office, Broadway, near Osage. St. Louis R.R. Co. 11 m., 4-10 g., 38-44 lb r, 58 c., 375 h. Pres. C. Peper. Sec. & Treas. R. B. Jennings, Supt. Chas. Isocher. Office, 3,710 N. Broadway.
St. Louis Cable & Western Ry. Co. 6 m., 4-10½ g. 40 lb r, 86 c. Pres. Dwight Tredway, Auditor & Man. A. de Figueiredo, Supt. S. M. Sparklin. Office, Franklin & Channing aves. c.
Tower Grove & Lafagette Ry. Co. Pres. Chas. Green, Sec. Joseph Perry, Supt. Patrick Shea. Office, 1,810 Park ave.
Union Depot R.R. Co. —m., —g. —lb r, —c., —h. Pres. John Scuillin, V. Pres. & Treas. C. M. Seaman, Sec. Jas. II. Roach, Supt. Jas. Scullin. Office, Gravois & Jefferson aves. T. Paulius S. Walsh. V. Pres. J. P. Helfenstein, Sec. & Treas. C. N. Duffy, Supt. Michael Moran. Office, Kossuth ave., opposite Fair Grounds. 2
ST. PAUL, MINN.—St. Paul City Ry. Co. 52 m., 484 g., 45-52 lb r, 128 c., 650h. & mu. Pres. Thos. Lowry V. Pres. C. G. Goodrich, Sec. A. Z. Levering, Treas. W. R. Merriam, Supt. A. L. Scott, Auditor & Cashier G. C. Eddings. Office, cor. Oak, Forbes and Ramsey sts. 3

G. C. Eddings. Office, cor. Oak, Forbes and Ramsey sts. a
ST. THOMAS, CAN.—St. Thomas St. R. R. Co. 1½ m, 3-6 g, 30 lb r, 5 c, 9 h. Pres. Jos. Griffin, Sec. & Treas. Geo. Wegg. f
STONEHAM, MASS.—Stoneham St. R. R. Co. 2½ m, 4-8½ g, 28 lb r, 11 c, 30 h. Pres. A. F. Breed, Treas. F. H. Monks, Supt. G. F. Jones. Office, 35 Congress st. Boston. Consolidated with East Middlesex St. Ry. Co. Same officers.
STILLWATER, MINN.—Stillwater & Mcchanlesville St. Ry. Co. 4½ m, 4-8½ g, 25-30 lb r, 4 c, 6 h. Pres. W. L. Denison, V.-Pres, Lyman Smith, Gen. Supt. Peter Van Veghten, Sec. & Treas. Edw. 1. Wood. k
STROUDSBURG. PA—Strondshaws Beach.

Wood. & STROUDSBURG, PA.—Stroudsburg Passenger Ry. Co. 1½ m, 48½ g, 28-30 lb r, 3 c, 10 h. Pres. & Treas. J. Lantz, Sec. Jacob Houser. 4

& Treas. J. Lantz, Sec. Jacob Houser. 4

SYRACUSE, N. Y.—Syracuse & Onondaga R.R. Co. 2 3-5 m, 4-8 g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, V. Pres. Chas. P. Clark, Sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson.

Central City Ry. Co. 2½ m, 4-8½ g, 47 lb r, 12 c, 42 h. Pres. Daniel Pratt, V. Pres. Jonathan C. Chase, ec. & Treas. James Barnes, Supt. George Crampton. 4 Syracuse Savings Bank Bullding.

Fitch Ward R.R. Co. 2½ m, 4-8½ g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, V. Pres. John D. Grey, Sec. & Treas. O. C. Potter, Supt. Hugh Purnell. Office W. Washington st.

Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-8½ g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, V. Pres. Wm. H. H. Smith, Sec. & Treas. Geo. J. Gardner, Supt. W. J. Hart. Onondaga Savings Bank Bullding.

New Brighton & Onondaga Valley R.R. Co. 174 m, 48 g, 16-35 lb r, 2 c, 6 h, 1 dummy. Pres. Matthlas Britton, Sec. T. W. Meacham, Treas. J. II. Anderson, Supt. Arthur G. Markham. Office, 58 W. Rallroad

Seventh Ward Ry. Co. Pres. E. F. Rice, Supt. R.

Purnell. 2 Syracuse & Geddes Ry. Co. 2½ m, 4 8½ g, 30-45 lb r, 8c, 35 h. Pres. R. Nelson Gere, Sec. & Treas. Rasselas A. Bonta, Supt. Wm. J. Hart. Gen. offices, 1 Onondaga Co. Savings Bank Bullding. a Third Ward ky. Co. Pres. W. B. Cogswell, Sec. & Treas. W. S. Wales.

TAMPA, FLA.—Tampa St. Ry. Co. 2½ m. 3-3 g, 25 lbr, 7 c, 2 dummies. Pres. C. A. Martinez Ybor, Sec. & Treas. G. T. Chamberlain, Supt. C. E. Parcell Cell C.

cell. c
TAUNTON, MASS.—Taunton St. Ry. Co. 4 m,
4-8½ g, 14 c, 45 h. Pres. Wm. C. Lovering, Treas.
Henry M. Lovering, Clerk, Orville A. Barker, Supt.
Geo. C. Morse. j

Geo. C. Morse. J.

TERRE HAUTE, IND.—Terre Haute St. Ry. Co. 6 m, 48½ g, 38 lb r, 16 c, 8 h, 76 mules. Pres. Jos. Collett, V. Pres. D. W. Mimshal, Sec. J. R. Paddock, Treas. W. R. McKeen, Supt. Jos. G. Elder. Office, 101 N. Ninth St. c

TEXARKANA, ARK.—Texarkana St. Ry. Co. 3 m, 3 g, 16 & 24 lb r, 6 c, 10 h. Pres. C. E. Mitchel, Sec. & Treas. Thos. Orr, Supt. B. M. Foreman e

TOLEDO, OHIO.—Toledo Consolidated St. Ry. Co. 21 m, 4-8½ g, 42 lb r, 50 c, 255 h. Pres. & Treas. J. E. Balley, Sec. A. E. Lang. Supt. John Glimartin.

CO. 21 III, 4-2. 8, A. E. Lang. Supt. John Gilmartin. a
Metropolitan St. R.R. Co. 10 m, 3 g, 28-35 lb r, 30 c, 115 h. Pres. & Sec. Jno. J. Shipherd, Treas. II E. Wells, Supt. & Gen. Man. T. F. Shipherd. Office, Cherry St., near Bancroft. 6
Central Passenger R.R. Co. 9 m, 3 g, 27 lb r, 17 c, 80 h. Pres. F. E. Seagrave, Sec. C. F. Parkis, Treas. A. R. Seagrave, Supt. Joseph Murphy. a
TOPEKA, KAN.—Topeka City Ry.Co. 10 m, 4 g, 25, 28 & 38 lb r, 27 c, 55 h, 44 mu. Pres. Joab Murvane, V. Pres. D.W. Stormont, Sec. & Treas. E. Wilder, Supt. Jesse Shaw. Office, 116 W. 10th ave. b
TORONTO, CAN.—Toronto St. Ry. Co. 60 m. 410 % g, 30 lb r, 180 c, 850 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Franklin. Offices, 94 & 96 king st., east.

4-10% g, 301b r, 180 c, 850 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Franklin. Offices, 94 & 96 King St., east. J.—Trenton Horse R. R. Co. 5 m, 5-2g, 45 lb r, 12c, 54 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr., Supt. Thomas S Morris. Office, Clluton & Greenwood aves. Cluton & Greenwood aves. Clty Ry. Co. 10 m, 5-2½ g, 35 lb r, 24 c, 108 h. Pres. Adam Exton, V. Pres. W. H. Skirm, Sec. H. B. Howell, Treas. & Mang. Director Chas. Y. Bamford. Office, 264 Clinton ave. Treas. Adam. Exton. Pres. S. H. Jaffa, Treas. T. B. Colifer, Sec. R. L. Wootton, Supt. R. L. Pearson. CTROY, N.Y.—Cortland & Homer Horse R. Co., 4 m, 48½ g, 25-30 lb r, 2 c, —h. Pres. C. H. Garrison, Troy, V. Pres. E. A. Fish, Cortland, N.Y., Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Albia Horse R. R. Co. 3.33 m, 48½ g, 35-45 lb r, 10 c, 41 h. Pres. Thos. A. Knickerbacker, Sec. & Treas. Theo. E. Hasiehurst, Supt. W. R. Bean. Office 11 First St. Theo. E. Hasiehurst, Supt. W. R. Bean. Office 11 First St. Cort. Sec. & Treas. Joseph J. Hagen. Asst. Supts. L. C. Brown and C. H. Smith. Uffice, 205 River st. Tax. Urbana & Champaign St. Ry. Urbana & Urbana Inc. Urfice, 205 River st.

7, 95 0, 420 h. Pres. Charles Cleminshaw, V. Pres. Jos. B. Carr. Sec. & Treas. Joseph J. Hagen, Asst. Supts. L. C. Brown and C. H. Smith. Office, 205 River St. d. C. Brown and C. H. Smith. Office, 205 River St. d. C. Erown and C. H. Smith. Office, 205 River St. d. C. 2 m, 4-8½ g, 33 lb r, 4 c, 20 h. Pres. Wm. Park, 25c. & Treas. Frank G. Jaques, Supt. W. Park. 1 UTICA, N.Y.—Utica, Clinton & Binghamton St. R. R. Pres. Jas. J. Scollard, Sec. & Treas. Robt. S. Williams. Leased to and operated by Utlca Belt Line St. R. R. Co. a Utlca & Mohawk R.R. Co. 3¼ m, 4-8 g, 47 lb r, 8 c, 11 h. Pres. Jas. F. Mann, V. Pres. R. W. Sherman, Sec. Wm. E. Lewis, Treas. Geo. D. Dimon. Office, 26 Union Bidg. 4 Utlca Belt Line St. R. R. Co. 20m, 4-8½ g, 32 c, 97 h, Pres. J. Mather, V. Pres. J. W. Boyle, Treas. Chas W. Mather, V. Pres. J. W. Boyle, Treas. Chas W. Mather, V. Pres. J. W. Boyle, Treas. Chas W. Mather, V. Pres. J. W. Boyle, Treas. Chas W. Mather, 4 VALEJO, CAL.—Valejo St. Ry. Co. VICKSBURG, MISS.—Vicksburg St. Ry. Co. 1Hil City R. R. Co. Wincennes St. Ry. Co. 2½ m, 4-8½ g, 36 lb r, 4 c, 24 h. Pres. & Treas. Fredk. Graeter, Sec. Geo. W. Graeter. Office, Fair Ground ave. 4 WACO, TEX.—Waco St. Ry. Co. 5 m, 4-8½ g, 18 & 20 lb r, 15 c, 55 h. Pres. E. Rotan, Sec. & Treas. W. R. Kellum, Supt. J. W. Sedbury. WALTHAMI, MASS.—Waltham & Newton St. Ry. Co. 3.4 m, 3-8½ g, 36 lb r, 7 c, 20 h. Pres. R. E. Robbins, Treas. & Supt. Henry Bond. WASHINGTON, D. C.—Capital, No. O St. & So. Washington R. R. 13½ m, 4-8 g, 35 lb r, 45 c, 176 h. Pres. C. White, Sec. & Treas. W. E. Boughton, Supt. Andrew Glass. 6 h. Anacostla & Potomac River Ry. Co. 3 m, 4-8 g, 37 lb r, 9 c, 24 h. Pres. H. A. Griswold, Sec. & Treas. J. B. Pitcher. Office, Anacostla, D. C. Columbia R.R. Co. 5.a, —g, —lb r, 23 c, 71 h. Pres. H. A. Willard, Sec. & Treas. W. H. Boughton, Supt. Metropolitan R. R. Co. 19.44 m, 4 8½ g, 38 lb r, 113 c, 460 h. Pres. George W. Pearson, V. Pres. A. A. Wilson.

Supt. Elbert Clagett. Office, 15th st. and Boundary N. E. 4
Metropolitan R. R. Co 19.44 m, 4 8½ g, 38 lb r, 113 c, 460 h. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. Wm. J. Wilson, Supt. L. W. Emmart Office 2411 P st. N. W. g
Washington & Georgetown R.R. Co. 20 m, 4-8½ g, 42 lb r, 173c, 850 h. Pres. H. Hurt, Sec. & Treas. C. M. Koones, Gen. Supt. C. C. Saller. a
WATERBURY, CONN.—Waterbury Horse R. R. Co. 5 m, 4-8½ g, 40 lb. r, 13 c, 100 h. Pres. D. S. Plume, Sec C. R. Baldwin, Treas. E. T. Turner. Office, 4 Bank St. g.
WATERLOO, N. Y.—Seneca Falls & Waterloo R. R. Co. 5 m, 4-8½ g, 40 lb. r, 4 c, 2 dummies. Pres. S. R. Welles, V. Pres. A. H. Terwilliger, Sec. & Treas. A. G. Mercer, Supt. Albert Jewett. 5
WATERFORD, N. Y.—Waterford & CohoesR.R. Co. 2 m, 4-8½ g, 45 lb r. Pres. Thos. Breslin, Sec. & Treas. C. C. Ormsby. (Leased by the Troy & Lansingburgh R.R. Co.) Supt. E. A. Bradley. 2

WATERLOO, IA.—Waterloo St. Ry. Co. 2 m., 3 g, 20 lb r, 2c, 1 baggage wagon. 9 h. Pres. W. H. Hartman, V. Pres. & Supt. J. A. Foye, Sec. & Freas. T. N. Kellogg. 2
WEST HAVEN, CONN.—New Haven & West Haven Horse R.R. Co. 7 m, 4-8 g, 50 to 60 lb steel r, 24 c, 115 h. Pres. Geo. R. Kelsey, Sec. Sam'l L. Smith, Treas., Supt. & Gen. Man. W. W. Ward. a WESTPORT, CONN.—Westport & Saugatuck Horse R. R. Co. 1½ m, 4-8½ g, 42 lb r, 3 c, 6 h. Pres. A. S. Hurlbutt, Sec. and Treas. B. L. Woodworth, Supt. E. S. Downes. c WHEELING, W. VA.—Citizens Ry. Co. 10 m, 5-2½ g, 45 lb r, 16 c, 60 h. Pres. Dr. Geo. B. Caldwell, Sec. Frank P. Hall, Supt. Michael I oitus. a Wheeling & Elm Grove R.R. 7 m, 4-8½ g, 30 lb r, 12 c, 4 Baldwin Motors. Pres. J. D. DuBols, Sec. E. J. Rutter, Supt. C. Hirsch. Office, 1eth st. a WICHITA, KAN.—Wichita City Ry. Co. 18 m, 3-6 g, 20 & 25 lb r, 50 c, 300 h & mu. Pres. G. L. Rouse, V. Pres. B. H. Campbell, Sec. & Man. G. M. Dickson, Treas. J. O. Davidson. Office, 121 N. Market st. k WILKESBARRE, PA.—Wilkesbarre & Kingston Pass. R.R. 3 m, 5-2 g, 30-45 lb r, 10 c, 22 h. Pres. & Man. Wm. J. Harvey, Sec. & Treas. A. J. Davis. a Coalville Passenger R.R. Co. 2½ m, 4-8½ g, 20-34 lb r, 12 c, 12 h. Pres. Geo. W. Kirkendafl, Supt. A. S. Orr, Sec and Trens Geo. Loveland. Capital, \$62,675. a WILLIAMSPORT, PA.—Willlamsport Pass. Ry. Co. 3½ m, 4-8½ g, 36 lb center bearing r, 7 one h c, 26 h. Pres. Robt. P. Allen, V. Pres. Henry C. Parsons, Sec, R. J. C. Walker, Treas. and Gen. Man. S. A. Filbert. Office, 907 W. 4th st. a and j WILMINGTON, DEL.—Front & Union St. Pass. Ry. Co. 1½ m, 5-2 g, -1b r, 7 c, 22 mu. Pres. Geo. W. Lirkendafl, Scott, June St. Pass. Ry. Co. 1½ m, 5-2 g, -1b r, 7 c, 22 mu. Pres. Geo. W. Bush, Supt. S. Sm'l A Price, Treas. E. T. Taylor. Office, Front & Union St. e. & Wilmington City Ry. Co. 6½ m, 5-2 g, 47 lb r, 23 c, 81 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Windsor Electitic St. Ry. Co. 1½ m, 1 motor. 2 cars.

WINDSOR, CAN.—Sandwich & Windsor Passen-

WINDSOR, CAN.—Sandwich & Windsor Passenger R.R. Co. 12
Windsor Electric St. Ry. Co. 1½ m, 1 motor, 2 cars.
Van Depoele system. Pres. W. M. Boomer, Sec. &
Treas. A. H. Joseph. Office, 19 Sandwich st., W. 5
WINFIELD, KAN.—Union St. Ry. Co. 1½ m. 4
g, 28 lb r, 2c, 8 mu. Pres. A. J. Thompson, Sec. J. R.
Clark, Treas. John A. Eaton. Capital, \$25,000. a
WINNIPEG, MANITOBA, CAN.—The Winnipeg St. Ry. Co. 5 m, half single, half double, 4.8½ g, 35 lb r, 15 c, 15 sleighs, 100 h. Pres. Jas. Austin, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young. 2
WINONA, MINN.—Winona City Ry. Co. 4 m, 3-6
g, 27 lb r, 10 c, 37 h. Pres. B. H. Langley, Sec. & Treas.
C. H. Portee, Supt. L. Marion. Office, 119 Center St.

St. f. WOBURN. MASS.—No. Woburn St. R.R. Co. 4.82 m, 4 8½ g, 35 lb r. with 42 lb T r, 9c, 26 h. Pres. amos F. Breed, Treas. Frank H. Monks, Supt. Gilman F. Jones. Office, 35 Congress st., Boston. Consolidated with East Middlesex St. Ry. Co. Same of-

man F. Johes. Onlice, 36 Congress St., Boston. Conficers.

WORCESTER, MASS.—Worcester St. Ry. Co. 7½ m, 4-8½ g, 43-45 lb r, 32 c, 150 h. Pres. Geo. H. Seeley. Treas. H. S. Seeley. Supt. J. N. Akarman, Ass't. Supt. 1. B. Chapin. Office, 15 Market st. a Citizens' St. Ry. Co. 14½ m, 4-8½ g, 35 lb. r, 57 c, 70 h. Pres. Chas. B. Pratt, Sec. & Treas. H. S. Seeley, Supt. J. N. Akarman, Asst. Supt. I. B. Chapin. Office, 15 Market st. 6

WYMORE, NEB.—Wymore and Blue Springs Ry Co. 3½ m, 3-6 g, 4 c, 10 h. Pres. J. H. Reynolds, V. Pres. Ben Reynolds, Sec. & Treas. E. P. Reynolds, Jr., Supt. A. N. Bradfield. 3

YONKERS, N. Y.—Yonkers R. R. Co. 5 m, 4-8½ g, 42-48 lb r, 10 c, 70 h. Pres. D. N. Stanton, Sec. John F. Brennan, Treas. D. Perry Stanton. Office, 83 Main st. a

YORK, PA.—York St. Ry. Co. 1½ m, 4-8½ g, 38 lb r, 6 c, 11 h. Pres. W. H. Lannius, Sec. D. K. Trimmer, Treas. C. S. Weiser. Authorized capital, \$50,000. a

YOUNGSTOWN, O.—Youngstown St. R.R. Co. 2½ m, 3 g, 24 & 27 lb r, 6 c, 18 h. Pres. John R. Davis, Sec. & Treas. Alfred Smith. a

ZANESVILLE, O.—Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 51 h & mu. Pres. F. M. Townsend, Sec. W. C. Townsend, Treas. O. H. Townsend. a

CABLE RAILWAYS.

BROOKLYN, N. Y.—Brooklyn Cable Co. CHICAGO, II.L.—Chleago City Ry. Co. CINCINNATI, O.—Mt. Adams & Eden Park In-

CINCINNAII, Clined R. R. COL.—Denver Tramway Co.

BENVER, COL.—Denver Tramway Co.

HOBOKEN, N. J.—No Hudson Co. Ry. Co. Ele-

IIOBOKEN, N. J.—NO HUGSON CO. RY. CO. Elevated.

KANSAS CITY, MO.—Kansas City Cable Ry. Grand Ave. Ry. Co.
Corrigan Consolidated St. Ry. Co.
LOS ANGELES, CAL.—Second St. Cable Ry. Co.
Temple St. Cable Ry. Co.
NEW YORK, N. Y.—Third Ave. R. R. Co. Line
on Tenth ave.
OMAHA, NEB.—Cable Tramway Co. of Omaha.
OAK LAND. CAL.—Oakland Cable Ry. Co.
PEORIA, ILL.—Central Horse & Cable R. R. Co.
PHILADELPHIA, PA.—Phila. Traction Co.
SAN FRANCISCO, CAL.—California St. Cable
R. R. Co.
Market St. Cable Ry.
Omnibus R. R. & Cable Co.

Market St. Cable Ry.
Omnibus R. R. & Cable Co.
Clay St. Hill R. R. Co.
Geary St. Park & Ocean R. R. Co.
Sutter St. R. R. Co.
Telegraph Hill St. Ry. Co.
ST. LOUIS, MO.—St. Louis Cable & Western Ry.

ELECTRIC RAILWAYS.

APPLETON, WIS.—Appleton Electric St. Ry. BALTIMORE, MD.—Union Pass. Railway Co.

THE OVERHEAD CONDUCTOR— ELECTRIC RAILWAY.

THE SIMPLEST, THE MOST EFFECTIVE, AND BY FAR THE MOST ECONOMICAL METHOD OF OPERATING STREET RAILWAY CARS BY ELECTRICITY IS BY MEANS OF THE OVERHEAD CONDUCTOR.

THE EXPERIENCE OF FIVE YEARS

Has demonstrated that Street Railway Cars, propelled by Electric Motors, taking their supply of electricity from one or more Elevated Conductors, are an unqualified success.

THREE TIMES as much per car per mile to run with HORSES. TWICE as much per car per mile to run with ELECTRIC ACCUMULATORS. ONE-HALF MORE per car per mile to run with an ELECTRIC CONDUIT SYSTEM.

The inventions and patents controlling the essential features of the methods of supplying electricity to electric motors upon moving vehicles, by means of a traveler or rolling contact running upon an overhead conductor, are now united under one ownership.

The Overhead Conductor is comparatively inexpensive. It is quickly erected. It is not necessarily unsightly.

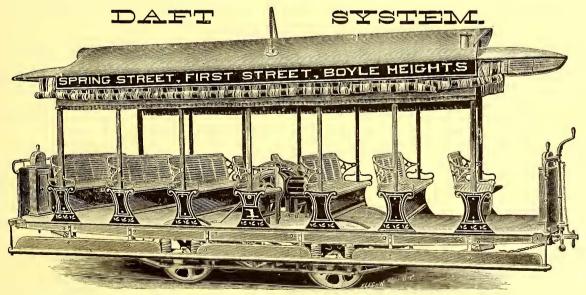
It does not waste electric energy. It does not easily get out of order. RAILWAY COMPANIES, CONTRACTORS and OTHERS desiring to secure licenses for the use of this system, upon OLD or NEW roads, will please address

THOS. B. KERR, Secretary, Pittsburg, Penn.

SAFETY ELECTRIC RAILWAY & POWER COMPANY.

Electric Railway Motors, Separate, or Attached Directly to Street or other Cars.

ELECTRIC LIGHT AND POWER MACHINES. ELECTRICAL CONDUCTORS.



We are prepared to equip railways with our electric system and supply Power and Light machines at the shortest notice.

The ONLY street railway in practical and economical operation by electricity in America is run by our system.

We guarantee the successful operation of our system. Heaviest grades no obstacle.

We are now building, in the city of Pittsburg, a road which will cost \$120,000. This road has a 14 per cent grade, and has overhead and underground conductors, if we metors.

The cost of electric power per car per day on the Baltimore road, operating our system, is \$4.00. Fifty or more cars could be run at an average of \$1.80 per day. The grade on this road is 350 feet per mile. Average speed, eight miles per hour. By horse power the speed was only four miles per hour, and the cost under the old system was \$6.50 per car per day. SEND FOR ESTINATES.

On receipt of full particulars of your road, or of power wanted, we will send you exact estimates for equipping and operating it by our system. SEND FOR CIRCULARS.

DENVER. COL.—Denver Tramway Co.
DETROIT, MICH.—Detroit Electric Ry. Co.
Highiand Park Ry. Co.
KANSAS CITY, MO.—Kansas City Electric Ry.
LIMA, O.—Lima St. Ry. Motor & Power Co.
LOS ANGELES, CAL.—Los Angeles Electric

Ry. Co.
MONTGOMERY, ALA.—Capital City Electric

St. Ry. Co.
PORT HURON, MICH.—Port Huron Electric

y. Co. SCRANTON, PA.—Scranton Suburban Ry. Co. WINDSOR, CAN.—Windsor & Walkerville Elec-

NEW ROADS.

NEW ROADS.

ALTON, ILL.—Alton Imp't Co. To operate h. or cable rys. Wm. Armstrong, Julius Ra'ble & others, incorporators. Capital, \$25,000. 5

ALLEGHENY, PA.—Observatory Hill Pass. Ry. Co. 4 m, 5 2½ g, 52 lb. Johnson steel r, 4 c, electric motors. Capital, \$125,00). Work now under way. Expect to open about Oct. 1. Pres. Oliver P. Scaife, Sec. Arthur Kennedy. 7

Allegheny Rapid Transit Co. From Northside bridge to California avenue. 6

ANSONIA, CONN.—Derby Horse Ry. Co. 3½ m, standard g, 46 lb r, 4 pass. 8 ft. c, 5 motors, Van Depoele system. Capital, \$40,000 paid in; will increase to \$50,000 or \$60,000. Began work May 2; will be in operation in Sept. Pres. John B. Wallace, V. Pres. If. Holton Wood, Sec. & Treas, Wm. J. Clark, Birmingham, supt. Jas. D. Kennedy. Office, 50 Main st. 8

ASHEVILLE, N. C.—Asheville Imp't & St. R. R.

ASHEVILLE, N. C .- Asheville Imp't & St. R. R.

A.SBURY PARK, N. J.—Seashore Electric Ry. O. Henry S. Iselin and others incorporators. Cap-

ASURY PARK, N. J.—Seashore Electric Ry. Co. Henry S. Iselin and others incorporators. Capital, \$100,000. 7

ATCHISON, KAN.—Atchison Rapid Transit Si. & Road Ry. Co. Mechanical traction. John Price, J. W. Parker and others incorporators. Capital, \$600,00. 5

ATH ENS, TENN.—Athens Mineral Land & Imp't Co. are ready to receive bids for a new railroad which they will build. 5

ATLANTA, GA.—Harry Hill is organizing a scheme for a belt St. ry. 5.

J. Haas, W. A. Hemphill and Hoke Smith have ormed a co.

E. C. Peters will build a dummy line. 7

East Atlanta Land Co. will build a dummy line. 7

BANTIMORE, MD.—Baltimore, Brooklyn & Cedar Hill Ry. Co. 9 m, 5.2g, 30 lb steel r, 20 c, 40 h. Work has begun and the road will be opened Sept. 10. Will run from Baltimore to Cedar Hill Cemetery, In Anne Arundel co., via Light st. bridge and the town of Brooklyn. Capital, \$50,000 and \$50,000 ist mortgage bonds. Office, 305 St. Paul st. Pres. C. Orrick Swann, Sec. & Atly. S. C. Long, Treas Levi Z. Condon, Supt. I. M. Thompson. a 7

BAYONE, N. J.—Elec. ry. talked of. 7

BELLEVUE, PA.—Elec. elevator and rr. Elevator will run to height of 90 ft.; from there plane will run back ½ m to center of town. Now building. 6

BANGOR, ME.—Electric ry. proposed, in which D. F. Longstreet and Joshua W. Wilbour of Providence, R. l., are interested. 5

BIDDEFORD, ME.—Electric ry. proposed, in which D. F. Longstreet and Joshua W. Wilbour of Providence, R. l., are interested. 5

BINGHAMTON, N. Y.—Van Depoele Co. will supply plant for new road; 6 c. 3

BHRMINGHANI, ALA.—Birmingham & Jones Valley St. R.R. 6 m, 45 lb, steel r. Heffin & Knox received proposals.

Smith & Eastman have made surveys for electric road to run 3 m from the city to their real estate near North Birmingham. 4.

Western Valley St. Ry. Co. 4 m, 48½ g, 24 lb r, 6 c, 20 mu; but will likely change motive power ultimately. Work to be commenced in 60 days and road opened in 3 or 4 months. Capital, \$50.00. Pres. J. C. Westbrook, V. Pres. W. E. Berry, Gen. Man. S. Torrey, 5

BOSTON, MASS.—

Westbrook, V. Pres. W. E. Berry, Gen. and S. Torrey. 5
BOSTON, MASS.—West End St. Ry. Co. H. M. Whitney, Asa P. Potter, Eben D. Jordan and others incorporators. About 8 m, 4-8½ g. Pres. H. M. Whitney, Treas. G. D. Braman. Hope to use electricity as motive power. Work to be commenced this summer. Capital, \$80,000. b
Suburban St. Ry. Co., proposes to lay tracks through Park, Beacon, Arlington and Mariboro streets to West Chester Park. 3
BRIDGETON, N. J.—Elec. ry. will be built here. 7

through Park, Beacon, Arlington and Marlooro streets to West Chester Park. 3

BRIDGETON, N. J.—Elec. ry. will be built here. 7

BRIOGETON, N. J.—Elec. ry. will be built here. 7

BROOKLYN, N. Y.—Annex St. Ry. Co. has been incorporated. 7

BROOKLYN, N. Y.—Annex St. Ry. Co. in progress, to be completed soon. Pres. F. M. Delano, New York, V.-Pres. H. H. Adams, Brooklyn. Treas. Philip Richardson, N. Y. Office, 204 Montague st., Brooklyn, N. Y. 1

Brooklyn & suburban St. Ry. Co. To run from Bedford ave. through Flatbush to Flatlands, with a branch to the Cemetery of the Holy Cross. Will use either horse or cable power. Geo, Malcom. Wm. Ziegler, Wm. J. Gaynor, Henry H. Adams, Jas. Ryan, Petter Sutter and Patk. McCanna, Directors. Paldup capital, \$100,000. 4

Union Ry. Co. of the City of Brooklyn. 11

Brooklyn Heights Ry. Co. Capital, \$160,000. To build along Montague street from Court street to Wall Street Ferry. Will use electricity. Pres. S. B. Chittenden, V. Pres. John Jay Pierrepont, Sec. Geo. W. Chauncey, Treas. Michael Chauncey. ½ m, 4 g, about 50 lb r, 6 c. 7

Capitalists interested in Calvary Cemetery road are building from Ash street to Park avenue. Pres. John McKewen, Sec. Michael Just, Treas. John A new road from Prospect park to Newtown creek, Greenpoint, is expected to be in operation before the close of summer. 7

Line from Brooklyn to Jamaica. 7 m. To use electricity, Van Depoele system. 7

Franklin Ave. R. R. Incorporated May 21. To run from Grand and Second sts., in the Eastern District, via Second st., Wythe ave., Franklin ave., and

Malbone st., to Flatbush ave., in the town of Flatbush. Capital, \$100,000. Wm. A. Wheelock and Walter R. Gorman of New York, and Thos. D. Jordan of Jersey City, are among the directors. 7

BRUNSWICIA. GA.

BUTTE, MONT. T.—Elec. ry. To be built in 4
months. Incorporators, Willard Bennett, Nelson
Bennett and S. E. Larable. 6

CALERA, ALA.—J. D. Hardy is interested in a
new line that is projected. 6

CARBONDALE, PA.—Co. formed for an elec.
ry. 7

CHARLESTON, W. VA.—Glenwood Co. will lay out a town near the city and ultimately construct a road 2½ m long. Supt. Benj. Brown. Capitai, \$55,-

400. 4
CHATTANOGGA, TENN.—North Side St. R. R. Co. incorporators, G. W. Thompson, Geo. W. Ochs and others. 5
City St. Ry. Co. has been organized by John T. Wildanson and others. 6
CHETOPA, KAN.—Chetopa St. Car Line Corporation. 2 m. Pres. Geo. D. Boon, Sec. W. L. Sly. Capital, \$5,000. 5
CHESAPEAKE, O.—Chesapeake St. Ry. Co. has been incorporated. 7

CHETOPA, KAN.—Chetopa St. Car Line Corporation. 2 m. Pres. Geo. D. Boon, Sec. W. L. Sly. Capital, \$5,000. 5
CHESAPEAKE, O.—Chesapeake St. Ry. Co. has been incorporated. 7
CHICAGO, II.I..—The Crosstown Pass. Ry. Co. of Chicago, 30 m, 48 1-2 g, 45 lb 1, 75 c, 500 to 800 h, Pres. John J. Currar, Treas. Geo. P. Bunker, Sec. James A. Taylor. Capital stock, \$1,000,000. Gen. office, room 18, No. 164 Washington St. Time of commencement of work undeedded. 1
Lakeside City St. Ry. Co. To operate h. or dummy roads in Chicago and its suburbs. Incorporators, Sam'l P. McConnell, C. H. Merrill and Theo. P. Elliott. Capital, \$230,000. 5
CHICOPEE, MASS.—New company started under the leadership of Haines Bros. Capital, \$25,000. Work to begin soon. Line to extend from Chicopee Falls through Chicopee Center to the point where the boundary line between Chicopee and Springfield crosses the River road. About 4 m, 4 8½ g, not less than 35 lb r. Chas. D. Haines and Geo. W. Stetson of N. Y. City are the largest stockholders. 4
CIAY CENTER, KAN.—Clay Center City Ry. Co. 5 m, standard g 25 lb r, 10 c, steam or elec. motor, 4 motors. Capital, \$200,000. Work was commenced in July, and 1 m to be in operation by Aug. 10, balance by Dec. 31. Pres. G. M. Stratton, V. Pres. J. M. Frank, Sec. & Treas. Wm. Sharpe, Gen. Man. O. E. Walker Office, 368 Lincoln ave. 6
COLUMBUS, MISS.—City R. Co Capital, \$21,-000. Pres. R W. Banks, Sec. & Treas. E. T. Sykes. Will build at once. 6
COLUMBUS, O.—Third & Schuller St. R. R. Co. Franchise granted by City Council June 6. Cars must be running within 2 years. 3½ m, 5-2g. May use electricity. Capital, \$75,000. Work will begin as soon as stock is taken. Pres. P. E. Blesch, V. Pres. II. Mithoff, Sec. C. Hermen, Treas. J. A. Kiemer, 7 COVINGTON, GA.—W. C. Clark & Co. incorporators and owners. 1 m, 20 or 30 lb r, 2 pass. c, 2 flat c, pass. cars for 1 h, 6 to 8 mu. or h. 2
CROOKSTON, MINN.—Crookston St. Ry. Co. Capital, \$100,000. J. E. Sawyer and others incorporators and owners. 1 m, 20 or 30 lb r, 2 pass. c, 2 flat c,

press. 11

DAVENPORT, IA.—Bridge, Second St. & Northwestern St. Ry. Co. to be built this year. Contracts to be given at once. Are investigating elec. rys. Sec. Jos. Ochs.

8

DAYTON, 0.—Dayton Terminal & Belt R. R. Co. Incorporated by J. O. Arnold and others. Capital, \$10,000.

\$10,000, 7

DECATUR, ALA.—Decatur Ry. Co. Incorporated by W. G. Wharton, H. G. Bond, W. E. Forest, E. E. Greenleaf and J. D. Roquemore. 7

DENVER, COL.—Denver Cable Ry. Co. Capital stock, \$500,000. Jas. McCord and others incorporators.

tors. 6
DETROIT, MICH.—East Detroit & Grosse Point
Electric Ry. Co. 8 m, 4 motor c, 2 motors, 3 open c.
Will build at once. 7

Will build at once. 7

DULUTH, MINN.—Duluth Highland Cable Ry. Co. Propose to build to the hill top unless the old Co. after notice build there. H W. Bradley and Wm. W. Bilison, of Duluth, and J. A. Willard, of Mankato, are interested. Capital, \$200,000. 5

Minnesota Point St. Ry. Co. Capital, \$100,000. Reginald W. Petre is one of the incorporators. 6

DURHAM, N. C.—Durham St. Ry. Co. 8 m, 4-8½ g, 16 lb r, 16 c, 25 h, and mu. Pres. W. T. Blackwell, V.-Pres, J. S. Carr, Sec. & Treas. R. D. Blackwell. Construction committee, R. D. Blackwell, W. Fuller, J. W. Blackwell. Capital stock, \$25,000. a, 4

W. Fuller, J. W. Biackwell. Capital stock, \$25,000.

a. 4

EAST ST. LOUIS, MO.—East St. Louis Motor Ry. incorporated by H. D. Sexton, Henry O'Hara and Wm. H. Hill. Capital, \$20,00.0

EAST PORTLAND, ORE.—Sellwood & Vancouver Ry. Co. Motors.

Willamette Bidge Ry. Co.

Stark St. Ferry Co.

EL DORADO, KAN.—Expect to finish road by middle of summer. Sec. R. H. Hazlett.

ELIZABETH, N. J.—Henry H. Isham of New York and Fredk. L. Heldritter are about to build a crosstown road from Fourth ave. to the Singer factory and Elizabethport station.

FLIMIRA, N. Y.—Articles of incorporation signed by J. H. Clark, John Brand, M. H. Arnot, D. C. Robinson and others. Location, Fifth ward. Capital, \$20,000. Will use horses. Hope to complete road in 2 months.

EUFAULA, ALA.—City of Eufaula St. Ry. Co. 4 m, 48% g, 20 lb r, 4 regular cars and severai excursion flats, 12 h. Will commence work very soon, and the road will be opened in September. Pres. E. B. Young, Sec. Geo. McCormick, Treas. Eil Shorter. Capital \$25,000. 4.

FINDLAY, O.—Elec. ry. Now building. 7

FLUSHING, N. Y.—Flushing & College Point Surface R. R. Co. Pres. Jos. Dykes, Sec. Arthur Herring, Treas. Henry Clement. Applied for a charter to run a line from Flushing to College Point. Electricity may be used. 7

A company of outside capitalists has applied for a similar franchise to the above. 7

FRAMINGHAM, MASS.—Framingham Union St. Ry. Co. \$60,000 capital. The Haines Bros. & Geo. W. Stetson, of New York, are interested. 7

Framingham Center Ry. Co. Capital, \$25,000. 2½

m, 48% g. 4.

m, 4-8½ g. 4.
FORRESTVILLE, GA.—A. W. Ledbetter is in-

FORRESTVILLE, GA.—A. W. Ledbetter is interested in the co.
FORT SMITH, ARK.—Belt Line St. Ry. Co.
Has been chartered.
Sulphur Springs Ry. Co. Has been chartered.
GADSDEN, ALA.—Gadsden Land & Imp't Co.
will build a dummy rr. via Bellevue to Black Creek
Fails, 2 m from city.
GAINESVILLE, FLA.—Gainesville City. & Suburban Ry. Co. 6 m, 4-8½ g, prob. about 20 or 24 lb. r,
motive power underded. Are just beginning to
build. Pres. W. H. Robertson, Gen. Man. R. L.
Robb. a
GRAND FORKS, DAK.—Secretary of State
McCormack, of Bismarck, has secured franchise, and
is said to be backed by Duluth and New York capitalists.
6

Is said to be backed by Duluth and New York capitalists.

GRAND ISLAND, NEB.—Grand Island St. Ry.
Co. Expect to have 3½ m of track in operation this month, and 4 m this year. 4 6 g, 20 lb steet Tr, oak ties, 5 c, 30 h. Will change to electricity when they can get a cheap and practicable system. Capital stock, \$100 000, of which 25 per cent is paid in. Pres. A. H. Baker, V. Pres. H. A. Koenig, Sec. O. B. Thompson, Treas. Wm. A. Hagge. h. 7

GRATIOT, M. CH.—Gratiot Elec. Ry. Co. 1½ m, 16 lb. steel r. Capital, \$25,000 Pres. Wm. F. Botsford, V. Pres. John F. Talbot, Sec. J. H. Talbot, Treas. Chas. A. Ward. 7

GREENVILLE, TEX.—Greenville St. Ry. Co. organized. Capital, \$50,00. 7

GREENVILLE, ALA.—J. T. Perry will build a st. ry. 6

GREENVILLE, ALA.—J. T. Perry will build a st. ry. 6
GREENVILLE, ALA.—J. T. Perry will build a st. ry. 6
GREENWICH, CONN.—Greenwich Horse R. R
Co. To run along Putnam and Greenwich aves. and steamboat road to the steamboat dock, with a branch along Railroad ave. to the N. Y., N. H. & H. station. Capital, \$30,000. Prob. 4 csrs. Delano-Richardson syndicate are back of the sch me. 5
HARTI AND, KAN.—Hartland St. Ry. Co. 2
m, narrowg, light r, 2 c, 1 mu. Pres. E. S. Snow, Sec. & Treas, Logan A. Garten, Supt. W. S. Handy. Capital stock, \$5,000. 3
HASTINGS, NEB.—Hastings Imp't Co. 3 m, 5 c ordered. Have ordered 3 m more track. 7
HARRISHURG, PA.—Electric road, Van Depoele system, 3½ m, to Steelton. 6
HIAWATHA, KAN.
HELENA, ARK.—Helena St. R. Co. Capital,

HIAWATHA, KAN.

HELENA, ARK.—Helena St. R. R. Co. Capital, \$30,000. Pres. Greenfield Quarles, Sec. D. T. Hargraves, Treas. S. H. Horner. 5

HOLDEN, MO.—Franchise granted to Wm. Steele, J. S. Jobnson, John T. Bruce, J. N. McDonald and Thos. C. Carter. To run on Olive st. from 2d to 14th, to Main, to 2d, to starting point. 6

HOPKIASVILLE, KY.—Hopkinsville St. Ry. Co. has been incorporated. 7

HUDSON, N. Y.—To be built just as soon as authority is granted, and cars prob. be running very soon. To cost \$20,000. With form a belt line in the upper part of the city, and connect the two railroad depots. Mr. Hadcock chiefly interested. 5

HUNTINGTON, N. Y.—3 m, from the Long

HUNTINGTON, N. Y.—3 m, from the Long Island R, R. station along the east side of Huntington Harbor. Stockholders, D. Schuberth and R. G. Phelps of New York, Henry S. Brush and others of Huntington. Capital stock, \$30,000.

HUNTINGTON, W. VA.-J. L. Caldwell will build a street railway here. 7

HUTCHINSON, KAN.—Metropolitan St. Ry. Co. Being rapidly pushed to completion. Capital, \$50,000. Directors G. W. Hardy, Jas. H. Perkins, Hiram Constant, J. W. Mulky and A. H. Robinson

Hiram Constant, J. W. Mulky and A. H. Robinson. 5

ITHIACA, N. Y.—Haines Bros. are building here, and will use the Datt system, under contract with the Safety Electric Ry. and Power Co. 4

JACKSON, TENN.—Jackson & Suburban St. Ry. Co. organized, capital, \$50,0"0. Pres. & Gen. Man. C. P. Heath, Sloux City, 1a; V. Pres. J. H. Duke; Sec. R. B. Crawford, Wayne, Neb.: Treas. John L. Wisdom. Will be in operation by middle of Sept. 7

JUNCTION CITY, KAN.—Junction City & Fort Riley St. Ry. Co. 8 m. Horses will be used in the city, and some other faster motor between Junction City and Fort Riley. Must obtain franchises from city, co unty and Congress. Expect to have bill through Congress by Feb. 1 for right of way on Fort Riley Reservation. Capital \$50,000. Pres. B. Rockwell, V. Pres. G. E. Harvey, Sec. & Treas. C. G. Thurston. 7

KANSAS CITY, MO.—Grand Avenue Ry. Co. Constructions and proctory.

Thurston. 7

KANSAS CITY, MO.—Grand Avenue Ry. Co
(For officers see Directory). Now constructing: 8
m, double track cable road.
People's Cable Ry. Co. Capital, \$750,000. Chicago
capitalists interested. Pres. J. Foster Rhodes, V.
Pres. C. F. Dwight, Sec. & Treas. W. P. Rice. Line
to be completed this year.
Cittzens' Cable Ry. Co. organized; capital, \$750,000.
First-class road, to extend from Sixth street south
on Holmes street to a point \$\frac{1}{2}\times mouth of southern
city limits. A. W. Armour, T. A. Harris, Bernard
and Thos. Corrigan and E. W. Lawless are the principal stockholders.

cipal stockho ders. 7
Elec. ry. Now building; \$25,000 expended already.
Council has repealed franchise of co. whose tracks

HAINES BROS., STEAM & STREET RAILWAYS,

55 Broadway, New York.

Promoters of Steam and Street Railways.

Builders of over a score of Railroads. Unlimited Capital furnished for Building and Extending Railways.

Purchase Street Railway Franchises.

Information upon Railway Materials and Matters pertaining to any branch of the Railway Business cheerfully given.

PUBLIC BENEFACTORS.—Burlington Free Press and Times.

ACCOMPLISHING WHAT FEW MEN WOULD UNDERTAKE TO DO.-Rutland Herald.

THEIR REPUTATION AS BUILDERS OF STREET AND SHORT LINE RAILWAYS HAS BECOME NATIONAL.—New York World.

THEIR WORK IS A GREAT TRIUMPH OF CONSTRUCTIVE GENIUS AND FINANCIAL SKILL.

-Syracuse Herald.

THEY NOT ONLY MAKE HAY WHILE THE SUN SHINES, BUT THEY SEEM TO BUILD RAIL-ROADS AFTER THE ORB OF DAY GOES TO SLEEP IN THE WEST.—Newburg News.

THESE GENTLEMEN, AS THEIR WORK AND HISTORY SHOW, ARE THE MOST EMINENT IN THE UNITED STATES ENGAGED IN THEIR PURSUIT.—Newburg Journal.

the elec. co. used, and the st. may now be taken up for a cable line. Supt — Henry. 7

KEYPORT, N. Y.—Co. will build at once, under the new law granting turnpike companies the right to lay horse railroad tracks on their roads.

KNOXVILLE, TENN.—Knoxville & Edgewood Ry. Co. Will build at once, and open in the fall. 2 to 5 m. Have proposals from other new lines to join them, and it will depend upon which they accept what mode of propulsion, car and rail will be adopted. Pres. Wm. Caswell, V. Pres. E. C. Camp, Sec. Arthur Swan. F. A. Moses, A. N. Jackson and S. R. Rogers also interested. Capital, \$26,000. 5

Fountain Head R. R. Co.Incorp'd by F. A. R. Scott, J. H. Cruze and others to build a dummy rr. 6

Knoxville Belt Ry. Work to begin at once. Capital, \$100,000. Pres. W. R. Tuttle, Sec. J. W. S. F. Ierson, Treas. Sam'l House. 5

Co. chartered by P. Kern, L. H. Hamilton, S. B. Luttrell and others. 7

LAKE CITY, FLA.—H. S. Haines, Gen. Man.

LAKE CITY, FLA.—H. S. Haines, Gen. Man. Sav., Fla. & W. Ry. and all the Plant system in Fla., has right of way.

has right of way.

LAKESIDE, O.—Contracts awarded for elec. ry.

3 m, 2 open c. Prob. use overhead conductors. 7

LAREDO, TEX.—Albert McLean and others will build a st. ry. here. 6

will build a st. ry, here. 6

LEXINGTON, GA.—Dummy rr. will prob. be built to Grawford, 3 miles. 7

LEAVENWORTH, KAN.—Leavenworth St. Ry. Co. Capital, \$500,000. Motor line, between the Penitentary, Soldier's Home, the city of Leavenworth and Fort Leavenworth. Expected that road will be in operation very soon. Capt. M. H. Insley, Paul E. Havens and other incorporators. 5

Lincoln, N. Els.—Elec. motor co. From city to stockyards. Capital, \$100,000. 6
So. Lincoln St. Ry. Co. Incorporated. To build to Insane Asylum, Penitentiary and other points within 5 miles of city. Capital, \$25,000. J. H. McClay, S. W. Burnham and C. D. Hyatt are among the incorporators.

Corporators. 7

LONG ISLAND CITY, N. Y.—Riker Avenue & Sandford's Point R. R. Co. 2 m, 4-8½ g, 47 lb steel r. Will have no cars of its own, but will be operated by steinway & Hunter's Point R. R. Co. Horses with first be used, afterwards electricity. Road is located half in Long Island City and half in Newtown,running along Bowery Bay beach. Press. J. H. Hempstead, Yonkers, Sec. & Treas, Oscar R. Steins. Capital \$20,000. Work in progress. Office, 107 E. Fourteenth st., New York. d

LOS ANGELES, CAL.—The American Rapid Transit Co. has been formed here, capital, \$500,000, to build from Pasadena to Monica, under the Enos elevated electric system.

vated electric system.

S. O. Brown will build a road 6½ m long to Glendale.

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LYONS, KAN.—E. A. Deupree, Sam Steiner, C. W. Shumway and others incorporators.

MACON, GA.—R. K. Ilines and others will build a st. ry. here.

MANSFIELD, O.—Mansfield Electric St. Ry. Co. Nettel & Oothout of New York are now building the road. 4½ m, 5 c, motors under cars, 4-8½ g, 43 lb. side bearing r. In operation soon. Datt system Extensions will be built during the summer. Capital, \$75,000. Pres. Edw. Oothout, New York, V. Pres. Huntington Brown, Sec. C. E. McBrilde, Treas. M. Van Rensselaer, New York, Engr. Knight Neftel, Supt. W. G. Root.

MARYVILLE, TENN.—Capital, \$5,000. Dr. John P. Blankenship, Rev. P. M. Bartlett, W. T. Parkham and others are interested.

McKEESPORT, P.A.—McKeesport Pass. Ry. Co. 6m. Commenced work this spring. Pres. J. C. Smith, Sec. & Treas. E. F. Woods.

MEMPHIS, TENN:—Union St. Ry. Co.

East End St. Ry. Co. Incorporator, Wm. Sneed, H. M. Neeley and others.

Line being built to Lake Park, 6 m. 3 Baldwin motors and 6 c to begin with. Capital, \$100,000. Cars running by Aug.1. Pres. T. J. Latham, V. Pres. J. A. Van Hoose, Sec. & Treas. T. A. Lamb.

MIDDLETOWN, CONN.—Electric ry. Daft system.

MILWAUKEE, WIS.—Milwaukee Cable Ry. Co.

MIDDLETOWN, CONN.—Electric ry. Daft system. 7
MILWAUKEE, WIS.—Milwaukee Cable Ry. Co. incorporated by Wm. P. McLaren, Geo. W. Mitchell and John A. Hinsey; capital, \$300,000. To build from center of city to western limits. 7
Chicago Cable Ry. Co. ask for a franchise from Broadway at Wisconsia st., via Oneida, Weils, Sixth, and Vliet to the city limits. 7
MILFORD, MASS.—New road to be built.
MINNEAPOLIS, KAN.—Co. to build a surface rr. or dummy line, 3½ m, torming a circle. \$10,000 paid in. 5
MINNEAPOLIS, MINN.—Minneapolis West

paid in. 5
MINNEAPOLIS, MINN.—Minneapolis West Side St. Ry. Co. Incorporators: Randolph Burgess, John T. Byrnes, A. G. Chamberlain, H. J. Mitchell and Matthew Walsh, all of Minneapolis. Capital stock, \$200,000. From Lake Calhoun to Lake street bridge, with a branch to Lakewood cemetery. 5

MINNEAPOLIS, KAN.—Co. to build a surface rr. or dummy line, 3½ m, forming a circle. \$20,000 paid in. 5 MUNCIE, IND.—Elec. ry. 7 MURFITEESBORO. TENN.— Murfreesboro St. R. R. Co. Capital \$10,000, Incorporators, J. L. McKnight, W. M. Bell and others. 5

McKnight, W. M. Bell and others. 5

NASHVILLE, TENN.—West Nashville Pass, Ry. Co. Has been chartered by S. W. Steel, Voiney James, Geo. K. Whitworth, B. T. Noel, L. H. Davis, J. II. Moore and others. 6

Hyde's Ferry St. R. R. Co. Incorporators, G. L. Ellinger and others. 5

Lake R. R. Co. has been organized by John Leityett, John McEwen and others. 6

Mansfield & University St. R. R. Co. 1½ m, to cost \$10,000.

Mansfield & University St. R. R. Co. 1½ m, to cost \$10,000. North Nashville St. Ry. Co. J. G. Jones, Theo. Selfred, A. W. Willis and others incorporators. 6 Charter for a line leading out the Charlotte pike. 7 Main St. & Gallatin Turnpike R. R. Co. organized. 7

E. T. Holman and others have charter for dummy rr. from Nashville to West Nashville, 3½ m. Wili begin active work as soon as right of way is obtained from Nashville City Council. 7 Overland Ry. Co. 9½ m, 4-8½ g, 45 lb Johnson steel r, 6 c, 2 steam motors. Work commenced in March, and the road will be opened soon. Capital, 4503,000. Pres. O. F. Noel, Sec. & Treas. Jas. E. Caldwell. a 7

NEW BRUNSWICK, N. J.—Elec. ry. contem-

well. a 7
NEW BRUNSWICK, N. J.—Elec. ry. contemplated. 7
NEW CASTLE, PA.—New Castle St Ry. Co. Organized, but mode of propulsion not yet determined. Sec. Chas. S. Walface. 3
NEW HAVEN, CONN.—Cable road projected by Frank Blake. 7
NEW LONDON, CONN.—New London Horse Ry. Co. John Tebbetts, Incoporator. 11
NEWTON, MASS.—Newton St. Ry. Co. 8 m, 48½ g, 6c, electric motors, 35 ib r. Pres. Horace B. Parker, V. Pres. J. W. Stover, Treas. & Clerk Herbert C. Pratt. Capital stock, \$50,000. Office, Newtonville, Work will commence when Aidermen grant location. b 7
NEW YORK, N.Y.—St. Nicholas and Crosstown R. R. Co. (Incorporated and franchises partly granted.) 11
North & East Rivers Ry. Co. To run through Fulton and Cortlandt streets, operated by Bentley-Knight electric system. Pres. W. W. Laman, Directors A. Hudnut, Ira Perego, David Bangs, Aaron Raymond, J. L. Truman, W. H. McDougal, W. G. Smith, Homer A. Nelson, R. R. Hazard, Robt. W. Blackwell and John T. Fanning, J. W. Childs, contractor for construction of road.

A. New York Underground R. R. Co. Pres. Edw. Lauterbach. J. Coleman Drayton is Pres. of New York Underground Construction Co., which has made application to open Lafayette place to operate under the Bentley-Knight system. Col. Rowland R, Hazard is prominent in the enterprise.

East & West Ferries R. R. Co. has been incorporated, with capital stock of \$50,000. Chas. W. Hough and others incorporators. 6
Twenty-eighth & Twenty-ninth St. R. R. Co. Secured franchise by agreeing to pay city 29.2 per cent of gross receipts for first five years and 31.2 per cent of gross receipts for first five years and 31.2 per cent of gross receipts for first five years and 31.2 per cent of gross receipts for first five years and 31.2 per cent of gross receipts for first five years and 31.2 per cent thereafter. Pres. Jona. N. Crane, V. Pres. Edw. P. NORRISTOWN, PA.—Cittzens' Pass. Ry. Co. 4
m. Will connect the hospital, Montgomery Ceme-

Beach, Sec. Fredk, A. Bartiett, A. Sa. 1918.
7
NORRISTOWN, PA. -Citizens' Pass. Ry. Co. 4
m. Will connect the hospital, Montgomery Cemetery and raliroad stations.
5
NORFOLK, NEB. -Norfolk St. R. R. Co. Capital, \$50,000. Incorporators, J. S. McClary, W. A. Rainbolt and others.
6
OBERLIN, KAN.-Oberlin St. Ry. Co. Capital, \$50,000. R. A. Marks, Everton Doom and others incorporators.
6
OLATHE. KAN.-Mr. Ogg has organized a co., Suthern

OLATHE, KAN.—Mr. Ogg has organized a co., to run a line between the Fort Scott and Southern

\$50,000. R. A. Marks, Everton Doom and others incorporators. 5
OLATHE, KAN.—Mr. Ogg has organized a co., to run a line between the Fort Scott and Southern Kansas depots. 5
OMAHA, NEB.—Cable line to be built by a Kansas City syndicate. Intended to have 3 m. in operation by next fail.
Lake Manawa R. R. Co. will run from Broadway down Eighth Street and then off in the direction of the Lake. Directors: Samuel Haas, J. J. Brown, D. W. Archer, George F. Wright, E. A. Benson, George Keeline, N. Merriam, of Omaha; H. H. Hay, of Minneapolis; T. J. Evans and Spencer Smith. 1
E. A. Benson, W. L. McCague and C. E. Mayne have formed a company which has received permission to build on Thirty-sixth street, Hamilton street and Institute boulevard; also on Lowe and Mercer avenues to Vista street; also on Leavenworth street, Lincoin place and west of Walnut hill to Institute boulevard. Work has begun. 4.
Omaha & So. Omaha St. Ry. Co. Capital, \$1,000,000. Cable road. Wm. A. Paxton, John E. Creighton and Isaac E. Corydon are among the incorporators. 5.
Omaha & Southwestern St. R. R. Co. Capital \$15,000. Incorporators; H. Ambler, S. J. Howell and others.
Omaha Motor Ry. Co. incorporated. Capital, \$500.000, of which \$50,000 to be paid in before commencement of business. Samuel D. Mercer, Cifton E. Mayne and others Incorporators. Now laying track, 7 Line to asylum and penitentiary. Ex-Gov. Dawes, Senator S. W. Burnham, J. M. Hoffman and others are interested. 6
So. Omaha St. Ry. Co. 5 m, 48 %g. Will use hower. Work to begin this fail, an1 the road to be opened next summer. Capital, \$100,000. To run from Twenty-first street at Armour, along Twenty-first, Wyman, Believue to the corporation limits, with a number of branches. Pres. D. Anderson, V. Pres. C. M. Hunt, Sec. C. C. Van Kuren, Treas. H. C. Bostwick. d

Omaha Horse Ry. Cable Co. 2½ m, 4-8½ g, 45 lb Johnson girder r, cable power. Capital, \$1,500,000. Work to commence very soon. Pres. Guy C. Barton, V. Pres. S. H. H. Clark, Treas. Henry W. Pope of Elizabeth, Capital stock, \$20,000

PAOLA, KAN.—Paola St. Ry. Co. Must be completed in 2 years from depots to park. Incorporators, S. D. Condon, J. H. Phillips and E. W. Robinson. 5

PASSAIC, N. J.—Passaic St. Ry Co. 3 m, from Garfield to Passaic through Clifton; and if the Paterson Main street road build their line to the race grounds the new co. will also build their line to meet

them. Bradstreet & Curtis, 35 Pinest., N. Y., are in-

them. Bradstreet & Curtis, 35 Pine st., N. Y., are interested in this co.

PEORIA, ILL.—East Bluff Horse R. R. Co. 1½
M, 48½ 30-40 lbr, 4 c, 24 h. Pres. N. Glies, Sec. R.
R. Boureaud, Treas. M. E. Culver. Capital stock, 811,000. Work in progress.

PEABODY, KAN.—Peabody St. Ry. Co. incorporated by W. E. Scott and others, with a capital stock of \$10,000. 7

PHILADELPHIA, PA.—Lehigh Ave. Ry.
Co. To run up Lehigh avenue from Second street to R dge avenue and directly to East Fairmount Park. Pres. Jos. T. Bunting, Sec. & Treas.
J. Mc K. Barron, Directors, Wm. R. Wister, John Wister, Langhorn Wister and Jas. P. Booth. Other large stockholders are Wm. Wharton, Jr., and Wm. L. Elkins. Capital, \$600,000, of which 60,003 is paid-in. Double track the whole length. Will have 6 miles of track. Nearly finished, will be opened this summer. 5-2½ g, 47 lb r. Will use either horses or electricity. Temporary office, 230 Wainut st. 7

PITTSBURG, PA.—From junction of cable road Squirrel Hill, and will utilize the old rails and rolling stock and horses of the road replaced by the cable. 3.

Wilkinsburg and East Liberty Ry. Co. 3 m, 4-81-2 g, Johnson Trails. Pres. Ed. Lay. Allen. Sec. and

rolling stock and horses of the road replaced by the cable. 3.
Wilkinsburg and East Liberty Ry. Co. 3 m, 4-81-2 g, Johnson T ralls, Pres. Ed. Jay Allen, Sec. and Treas, W. H. Allen. To use about 5 c. and 20 h. Not decided when road will be opened. Capital stock, \$15,000, Present office, 517 Wood st.
Pittsburg & McKee's Rocks St. Ry. Co. Has begun laying tracks, and cars will be lunning soon. 6 c. Supt. Wm. J. Burns. 6
Traction St. Ry. Co. V. Pres. Thos. M. Bigelow. Market st. to Point Breeze, along Fifth ave. Phila. Market st. to Point Breeze, along Fifth ave. Phila. Market St. Burns. 6 cost from \$1,000,000 to \$2,000,000.

000. 6
Pittsburg & East End R. R. Co. Capital, \$250,000.
Incorporators, Wm. L. Chalfort, John Bissel and others. 5
Central Transit Co. Cable road. 7
PLAINFIELD, N. J.—Elec. ry. will prob. be

PLAINFIELD, N. J.—Elec. ry. will prob. be built.

R.R. Co. 2½ m. 48½ g, rundecided, 6 to 10 c, 10 to 12 h, though electric motors will be used if the system is perfected in time. Capital stock, \$25,000. Joseph D. Thurber and others incorporators. Grant of location expiresin the fall but could be renewed. 5

PORT CHESTER, N. Y.—Port Chester & Rye Beach ky. Co. 4 m, 4-8½ g, 40 lb side bearing r, 6 c. Will use electricity. Work has commenced and the road will be opened Sept. 1. Pres. Chas. D. Haines, Sec. E. T. Halnes, Treas. F. H. Skeele. Capital, \$40,000.

Sec. E. T. Haines, Treas, F. H. Skeele. Capital, \$40,000. a 7

PORTSMOUTH, VA.—Portsmouth St. Ry. Co. Charter obtained, and will organize in a few weeks, Capital, not less than \$8,0.0 nor more than \$200,000. Wm. H. Skewart is interested. 7

RALEIGH, N. C.—Jas. Graham, who is backed by the Messrs. Pratt, the oll men, has obtained a franchise. 4.

READING PA.—Co. formed for an elec. ry. 7

RICHIFIELD SPRINGS, N. Y.—Richfield Springs & Canadarago Lake Surface R. R. 1 nn. D. C. Hadcock of syracuse organizer. Capital \$15,500.

RICHMOND, VA.—Richmond Un. Pass. Ry. Co. 12 m, 4-8½ g, 40 lb r, 40 c, Sprague electric motors, 2 on each c. Now building, Pres. J. Thompson Brown, Sec. & Treas. John F. Barry of Boston. 6

ROANOKE, VA.—Roanoke St. Ry. Co. Chartered, with capital of \$10,000. Pres. Thos. Lewis, Sec. F. T. Brinkley. 5

ROCKMART, GA.—S. E. Smith is interested. 6

ROCKMART, GA.—S. E. Smith is interested. 6 ROME, N. Y.—Rome City St. Ry. Co. 5 m. first-class track. To be built at once by Hill & Dayton of

class track. To be built at once by Hill & Dayton of New York.

ROME, G.A.—Rome Land Co. has purchased Rome St. Ry. Co. and will extend it at once to the ir lands. J. L. Bass is Sec. Board Trustees. 6

Rome Investment Co. will build dummy line through East Rome. Work to beg n soon. 7

SAN DIEGO, CAL.—Elec. ry. now building. 9

m., 440 H. P. motor c. 7

SAN FRANCISCO, CAL.—Powell St. Ry. Co. 11 m., 3-6 g, 38 lb r. 32 c. Pres. W. J. Adams, V. Pres. Thos. Magee, Treas. H. H. Lynch, Sec. G. H. Waggoner. Capital stock, \$2.000,000. Work in progress, Cable traction. Office, 32 Merchants Exchange. Will be opened in Oct. 15

Telpherage Electric Ry. Co. has been incorporated by Julius Loatz, F. M. Speed, R. A. Wilson and others. 5

by Julius Loatz, F. M. Speed, R. A. Wilson and others.

SANTA ROSA, CAL.—T. J. Glary, M. Doyle and A. B. Ware have formed co. with capital of \$25,000, work to begin within next two months.

SAVANNAH, GA.—Cars to be furnished by Pullman Palace Car Co. 3

SAYRE, PA.—Sayre St. Ry. Co. Pres. Howard Elmer. No work done.

SCHENECTADY, N. Y.—Schenectady St. Ry. Co. Jas. Graham, contractor. 5 c. aiready, and will have about 30 h. The Pratts (oil men) own all the stock and half the bonds.

SCHENTON. PA.—The Navang Crosstown R. R.

SCRANTON, PA.—The Nayaug Crosstown R.R. Co. Pres. G. Clark, V. Pres. H. C. Dowd, Sec. T. C. Snow, Treas. B. E. Leonard. Will build 5 m, and probably use electricity. Capital, \$50,000.

SELMA, ALA.—Selma Land Imp't & Furnace Co. will build electric st. ry. Capital, \$3,000,000. R. M. Nelson, W. Ullman and V. T. Vaughan are among the incorporators.

SHEFFIELD, ALA.—Sheffield & Tuscumbla St. R. R. Co. 6 m, broad g, heavy steel r, 2 c at first, steam dummy. Will be opened very soon. Pres. F. D. McMilian, V. Pres. J. T. Hull, Sec. Ed. B. Alman, Treas. Jo. H. Nathan. d.

SHERMAN, TEX.—H. A. Burnett will build a road this year.

road this year. 5
SIOUX CITY, IA.—H. W. McNell, Manager
Rasmussen cable, will build a road here, 2½ m. 3

SIOUX FALLS, DAK.—Sloux Falls St. R. R. Co. Company must have 2 m running by Nov. 1 and a mile each year for five years thereafter. Incorporators, L. F. Pettigrew, L. L. Dunning and S. L.

THOS. F. GRIFFIN & SONS,

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WESTMINSTER, LONDON, S.W.

Tate, Sioux Falls; Jas. Creighton, Chicago; Elnathan Sawtelle, Evansville, Wis. Capital, \$150,000. 5 SOUTH PITTSBURG, TENN.—SO. Pittsburg R. R. Co. chartered by W. M. Duncan, Sam'l Cowan and others. 7

SOUTH ST. PAUL, MINN.—Am. Rapid Transit Co. about to open electric rr. on Enos system. 7 Charter for motors or horse power to Thos. T. Smith, A. E. Clark and others. 7

SILLUN, A. E. Clark and others. 7
STAFFORD, KAN.—1 m. to be in operation soon.
Cars have been ordered.
STEELTON, PA. 3
STEUBENVILLE, O.—Haines Bros. propose building a new line here this year. 3
ST. CLOUD, MINN.—Co. incorporated, with capital of \$50,000. To run in St. Cloud, E. St. Cloud and Sauk Rapids. Incorporators, C. P. McClure, A. G. Whitney, O. W. Bald in, R. L. Gale, L. Troutman and F. Tolman.
ST. CATHARNES. ON T. The street of the street

ST. CATHARINE'S, ON r.—Electric road, on Van Depoele system, to be completed in August. 7 ST. JOSEPH, MO.—Elec. ry. Now building. 20 c. 7

ST. LOUIS, MO.—John Jackson, Julius S. Walsh, J. R. Helfenstein and others are interested in a new road on Grand avenue, to use horse, cable or electric power. 6
St. Louis Cable Ry. Assn. Capital, \$100,000. Julius S. Walsh and others, incorporators. 7
Elec. el. ry. to be built by Henry D. Loughten. 7

ST. PAUL, MINN —S. Paul Cable Ry. Co. V. Pres. Thos. P. Wilson. Now building. 7

SUFFOLK, VA.-Suffolk St. R. R. Co. Incorpo-

rated. 7
SYRACUSE, N. Y.—Butternut St. Ry. Co. 2m. To be built this year. 2
People's R. R. Co. Capital, \$300,000. 6 m, from Wolf st. to So. Onondaga st. Among those interested are Frank D. H. Robinson, of Cleveland; Frank J. Callanen; and Frank B. Klock, of Syracuse. 6
Palmyra St. Surface R. R. Co. Pres. John Hadcock, V. Pres. W. A. Beach, Sec. & Treas. T. D. Brewster. 7
Hudson St. Surface R. R. Co. Pres. D. C. Hadcock, V. Pres. W. A. Beach, Sec. & Treas. T. D. Brewster. 7
Lyons St. Surface R. R. Co. Pres. Wm. A. Beach, V. Pres. D. C. Hadcock, Sec. & Treas. T. D. Brewster. 7

TACOMA, WASH. T.—Allen C. Mason is interested. Will be pushed to an early completion. May use any power but steam, but the co. want this restriction removed, saying they will use a noiseless motor.

TALLADEC: A, ALA.—From city to Spring Lake park. Wiltis Shaw of Birmingham and W. H. Skaggs of Talladega are among incorporators. 7

TAUNTON, MASS.—Scadding St. Rv. Co. Franchise granted, 4 m. To build through Cedar street

from Main to Grant, thence through School, Purchase, Washington and Bay to Scadding's pond. Work begins at once. 4.

TEXARKANA, ARK.—State Line Ry. Co. Capital, \$25,000. E. A. Warner, Samuel Lemby and others are incorporators. 6

B. B. Harrell will build a new line. 7

TIFFIN, 0.—Tiffin St. Ry. Co. has been incorporated. Capital, \$10,000. Perry M. Adams and others, incorporators. May use elec. 6

TOPEKA, KAN.—Topeka Rapid Transit Ry. Co. 30 m, 48½ g, 35 & 38 lb r, 20 c, 10 noiseless steam motors. Pres. John Francis, Sec. J. B. Bartholomew, Treas. Jobn Norton, Supt. J. F. Gwin. 6 m built and road to be opened soon. Capital, \$250,000. Office, 623 Kansas avenue. a 7

Sixth Ave. & Deer Creek St. Ry. Co. Incorporators, Guilford Dudley, B. F. Golden, W. D. Alexander and others. Steam, electricity or other motive power. To accommodate the east side and to be built at once. 5

Highland Park Circle Ry. Co. Incorporated, and first 3 m, will be completed by Dec. 1. Steel r. nar-

power. To accommodate the east side and to be built at once. 5
Highland Park Circle Ry. Co. Incorporated, and first 3 m. will be completed by Dec. 1. Steel r, narrow g, dummy engine. Major Hudson is at the head of the enterprise. 5
TUSCALOOSA, ALA.—Tuscaloosa & Castle Hill Real Estate & Mig. Co. Have bought out Tuscaloosa St. Ry. Co., 1½ m. Have contracted for 2½ to 2½ m more. Work begun from city to Lake Lorraine. Standard g, 2.) to 40 lb r, 6 or 8 c, h. Capital, \$350,000. Gen. Man. W. W. Hill. b
UTICA, N. Y.—Oneida St. R. R. Co. Steel r, 3 c. Road to be opened soon.

WASHINGTON, KAN.-Co. organized.

WATERTOWN, BAN.—Co. organized. 5
WATERTOWN, DAK.—Chas. Joscelyne has received a franchise allowing him the use of any streets he wisnes, and to use either horse, steam or electric motors. At least 1 mile must be in operation by May 1, 1888. 5

WESTFIELD, MASS .- Steps taken for building

WICHITA, KAN.—Riverside and Suburban Ry. Co. Pres. J. O. Davidson, Sec. N. G. Lee. Capital stock \$100,000. Work now in progress. 2
West Find Motor Line Co. Capital, \$100,000. Wm. P. Carey is one of the Incorporators.

WINSTON, N. C.-Winston Eler, Light & Motor Power Co. will build a line. 7

WOONSOCKET, R. I.—Contract let, and cars will be running in a few weeks. Elec. ry. 7
WORCESTER, MASS.—Elec. ry. 7
WYANDOTTE, KAN.—Brighton Hill & Chelsea Park Ry. Co. Capital, \$100,000. Incorporators, D. M. Edgerton and Danlel D. Hoag of Wyandotte, Robt. Gillham of Kansas City, and others. 2 m, dummy road. 5

YANKTON, DAK.—Bids asked for the building of 2 m, work to commence in 30 days. 6

Recent Patents.

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ISSUED JULY 5.

Stove box for street car heaters. No. 366,087. J. W. Fowler, Brooklyn, N. Y.
Cable road for street cars. No. 366,119. C. Leavitt, Cleveland, O.
Fender for street cars. No. 366,015. A J. Mason and G. C. Hale, Kansas City, Mo.
Horse collar pad. No. 366,027. J. S. Pope, Madlson, Dak. Ter.
Instrument for the measurement of horses' necks for fitting collars. No. 365 873. R. P. Spence, Ladybank, county of Fife, Scotland.
Curry comb. No. 366,019. S. Norwood, West Green, Ala.

Ala,
Machine for forming harness loops. No. 366,024.
C. Pelisser, Concord, N. H.
Tool for clinching horseshoe nails. No. 365,974.
J. W. Delano, Skowhegan, Me.
Cable railway construction. No. 365,964. Z. P.
Boyer, Philadelphia. Pa.
Horse collar. No. 365,463. J. N. Crabb, Richmond,
Ind.

rare register. No. 365,697. J. W. Meaker, Chicago, III. Martingale. No. 365,694. C. E. Lincoln, Erie, Pa. Cable railway. No. 365,756. F. H. Morse, St. Louis,

ISSUED JULY 12.

Conductor's trip book. No. 366,579. A. R. Gustafson, Marinette, Wis. Grooved girder for street car rails. No. 366,507. C. A. Richards, Boston, Mass. Combined hame and horse collar. No. 366,219. N. Johnson, Gladstone, Ill. Hame fastener. No. 366,275. G. M. Sturges, West Stratford, Conn.

Breeching ring for harness. No. 366,495. H. C. Maxwell, Rome, N. Y. Machine for making horseshoes. No. 366,373. H. H. Rurden, Troy, N. Y. Cable railway. No. 366,199. G. B. Bryant, Philadelphia, Pa. Curred crossing for street railways. No. 366,497. A. J. Moxham, Johnstown, Pa. Moyable tongue switch for street railways. No. 366,598. A. J. Moxham, Johnstown, Pa.

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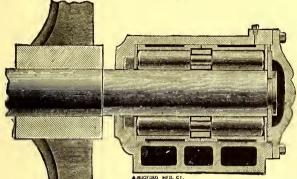
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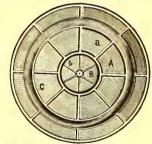
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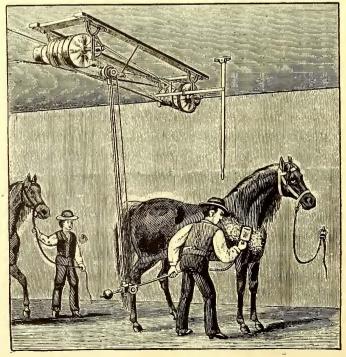
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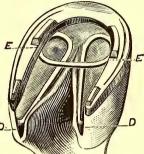
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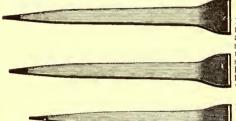
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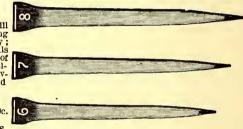


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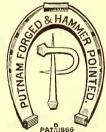
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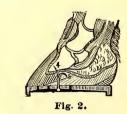


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These drawings show how many horses are made lame and permanently injured by the use of the COLD CUT and sheared-pointed Nails. This process of manufacture produces lamination, causing the iron to form in layers, and when driven into the foot, the horny fibers of which the hoof is composed cause the nail to separate at the point, and one portion passes into the foot.

No. 4 represents one of these nails which was driven into the hoof and slivered in driving, one thin blade passing into the quick or sensitive sole; No. 5 the thick blade of the nail passed out of the wall of the hoof for clinching. After a few days the horse was returned lame, and upon the removal of the shoe, a nail similar to the above was broken off, leaving the sliver in the foot: Lock-Jaw ensued, from which the horse died. Upon dissecting the foot a portion of the nail was found to have penetrated through the coffin bone, as seen in Fig. 2, letter A, thus sacrificing the life of a valuable animal.

It requires but little observation and reflection, one would think, to arrive at the conclusion as to the kind of nails to be used in the horse's foot, whether a mangled piece of iron rendered DANGEROUS by the COLD ROLLING AND SHARING process, or one made from the rod at a welding heat, where all the fibers remain intact and a perfect oneness maintained and being pointed by the hammer, rendering such an accident as slivering utterly impossible.

The foot is the Most important member of the animal's body, to which the greatest care and attention should be directed; for when it becomes injured or

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The horse at every step brings an immense power and weight to bear upon the foot. The hoof is a thing of life and yields to the pressure. The Puty am Nail being forged accommodates itself to the pressure of the hoof. It is far otherwise, however, with stiff rolled and cut nails. They remain rigid and their sheared edges are therefore pressed like sharp knives against the horny fiber. This is what causes the broken and rotten appearance so frequently seen in horses shod with cheap cut nails. Can a horse owner afford to attempt to save a few cents in price of nails and ruin his horse? Surely not, for the old adage is true as ever,

As the remedy lies with the owner of the horse, it is for him to prohibit any cold-rolled or sheared nails being used in his horse's feet.

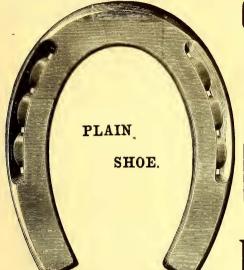
The only Hot-Forged and Hammer-Pointed Horse-Shoe Nail in the

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There are no welds in the shoe to break, the calks being solid forged up from the

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CALK
HORSE
SHOE.

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We present illustrations of some of the many designs of shoes manufactured by us.

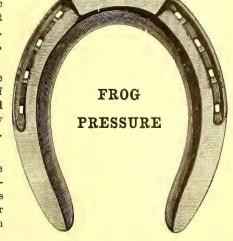
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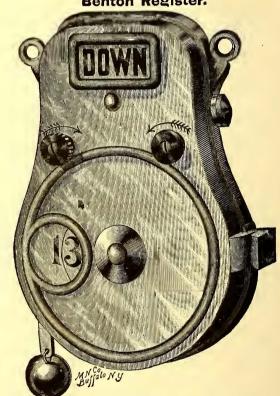
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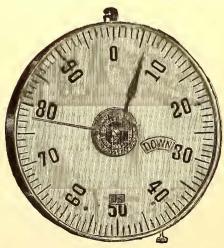
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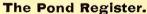
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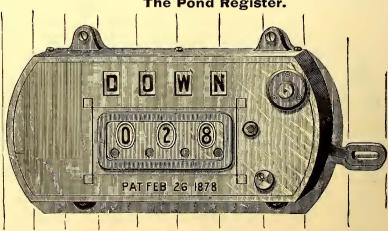


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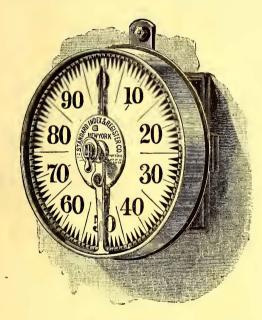
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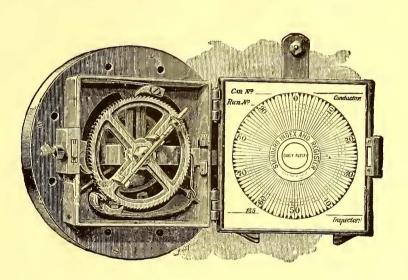
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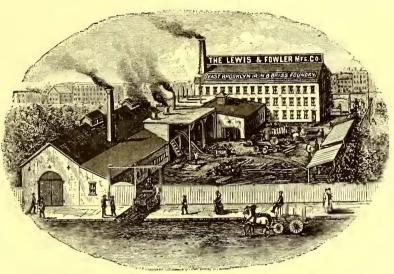
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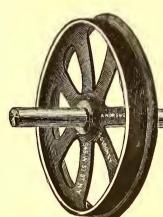
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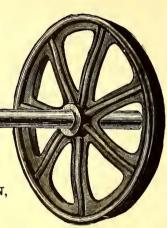
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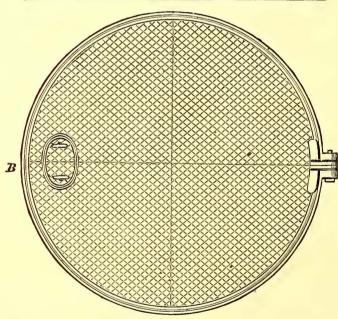
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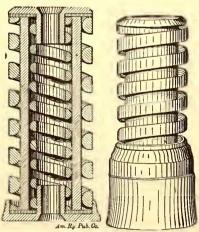
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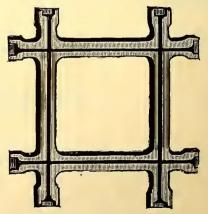
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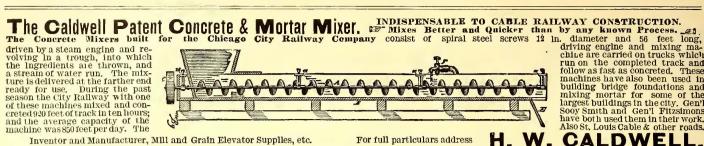
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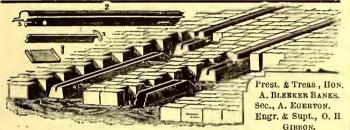
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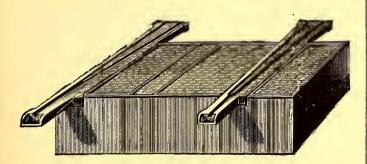
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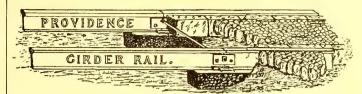
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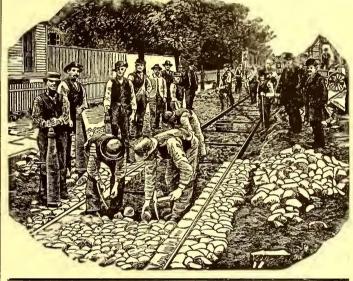


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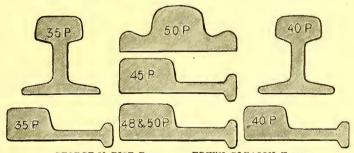
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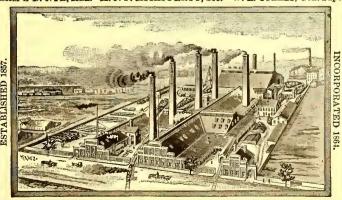
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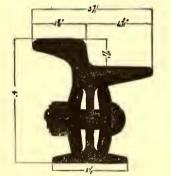
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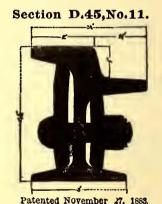
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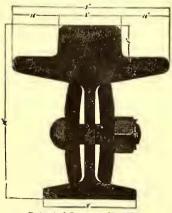


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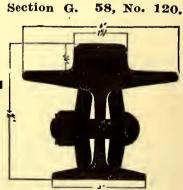




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Saves Room, Adds to Available Braking Power, and Gives the Driver the Best Possible Control over the Car.

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Our brands of Portland Cement have been subjected to the most severe and exacting tests, and have been found superior to all others. Owing to their great strength and perfect condition they have been selected in every instance in the construction of the several Cable Systems of Chicago, Kansas City and Omaha. We guarantee perfect results with our Cements, and they are especially adapted for all work where great strength is required. The following Companies have used our brands exclusively:

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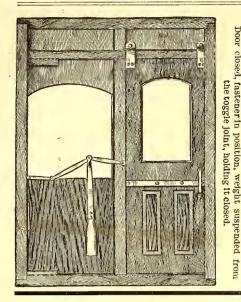
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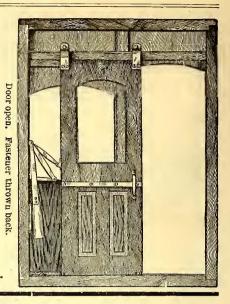
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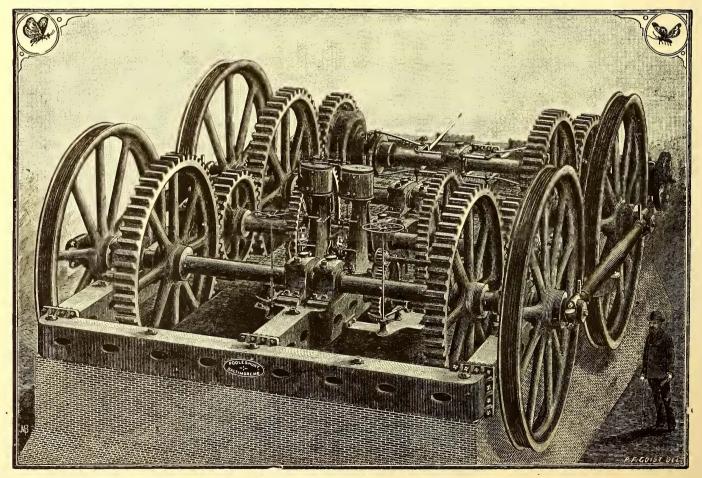
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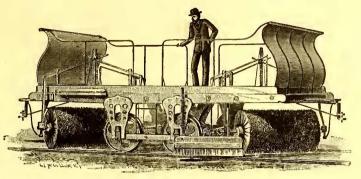


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BROOKLYN, N. Y.

DRY DOCK, EAST BROADWAY & BATTERY
R. R. Co., 'NO. 605 GRAND STREET,
PRESIDENT'S OFFICE,
NEW YORK, Feb. 6, 1887.

THE BROOKLYN RAILWAY SUPPLY CO.:
GENTLEMEN—The sweepers constructed by you for
this Company have been most thoroughly tested on
the four lines we operate, on narrow streets mainly,
and have in all respects met our expectations, not
only as to wear and tear, but in the efficiency of the
work performed by them, as demonstrated during
several seasons, both in light and heavy falls of
snow.

Yours respectfully,
WM. WHITE, President.

OFFICE RICHMOND CITY RAILWAY, RICHMOND, VA., Feb. 9, 1887.

Mr. CHAS. B. ALLYN, Pres't, Brooklyn, N. Y.:

DEAR SIR—It gives me pleasure to testify to the worth of your sweeper. I purchased one about fourteen months since, and have tested it thoroughly and am satisfied of its efficiency. Before using it, we found it always necessary to double up our teams whenever a few inches of snow fell. Since using we are able to run our usual schedule with ordinary teams.

Respectfully,
CHANNINO M. BOLTON,
Manager Richmond City Railway.

Manager Richmond City Railway.

PIITSBURG, ALLEOHENY AND MANCHESTER
PASSENOER RAILWAY COMPANY,
MARKET AND LIBERTY STREETS,
PITSBURG, PA., Feb. 12, 1887.

BROOKLYN RAILWAY SUPPLY Co., Brooklyn, N. Y.:
GENTL'MEN—In response to your inquiry respecting the performance of the sweeper we bought of you lass November, we have to say that fortunately our snows have not been heavy the past winter, still sufficient to afford an ample test of what was claimed for the sweeper.

We used it only in removing snow, but occasionally in clearing away soft mud in anticipation of its freezing on the rail.

We are now fully prepared to state, which we do with pleasure, that the machine is all that was promised for it. It performs its work perfectly, and to our enil e satisfaction in every particular. Our Siperintendent is delighted with it.

Respectfully yours, etc.,
CHAS. ATWELL, Pres't.

OFFICE OF
FAIR HAYEN AND WESTVILLE RAILROAD CO.,
NEW HAVEN, CT., May 20, 1887.

BROOKLYN RAILWAY SUPPLY CO.:
The snow sweeper this Company purchased of you last fall was used during the winter in cleaning our tracks, and gave perfect satisfaction in all respects.
We consider it by far the best machine we have ever used.
Yours respectfully,
H. B. IVES, Pres't.

JERSEY CITY AND BERGEN RAILROAD CO.,
NO. I EXCHANGE PLACE,
JERSEY CITY, Feb. 19, 1887.

Mr. Chas. B. Allyn,
37 Walworth st., Brooklyn, N. Y.:
Dear Sir—Yours of the 8th inst. in relation to
the sweepers manufactured by "The Brooklyn Railway Supply Company," I referred to our Superintendent, and inclose his reply, by wblich you will
notice that they have given entire satisfaction.
We have had them in use for four winters, and
they are decidedly the best we have ever met with,
working as they do in either direction, and moving
easily around curves.

C. B. Thurston, Pres't.

JERSEY CITY AND BEROEN RAILROAD CO.,
SUPERINTENDENT'S OFFICE,
JERSEY CITY, Feb. 16, 1887.

Mr. C. B. THURSTON, Pres't:
DEAR SIR—In reference to the snow sweepers build by the Brooklyn Railway Supply Co., I do not hesitate in saying that I believe it to be the best sweeper in use. We have three of them now in use, and one M. M. White Sweeper, which was of no use until we had the machinery and broomsaltered by the Brooklyn Railway Supply Co., and it is now asgood as any of the other sweepers we have in use. The first one we have used four winters, the second one three winters, and the White Sweeper we had rebuilt over we have used three winters, and the last one we

purchased this winter is what is called the improved, and I think is the best one we have. About the only expense we have had for repairs is for new rattan used, which, of course, with the constant wear on the paving stones, wears out, which cannot be prevented on any machine. vented on any machine.

Very respectfully yours,

T. M. SAYRE, Supt.

OFFICE OF THE
CONEY ISLAND AND BROOKLYN RAILROAD CO.,
SMITH AND IUNTINGTON STREETS,
BROOKLYN, Feb. 8, 1887.

THE BROOKLYN SUPPLY CO:
GENTLEMEN—Having used one of your snow sweepers for over five years, I can cheerfully testify to their great superiority over all others.
During that time we never had occasion to double up teams; not in the most heavy snow-storms.
The great saving in sait, as well as the enormous saving to horses, must be apparent to all who use your machines.

Respectfully yours,
WM. FARRELL, Supt.

BROOKLYN CITY R. R. CO. REPAIR SHOP, 1129 MYRTLE AV., BROOKLYN, March 11, 1887.

BROOKLYN, March 11, 1887.

C. B. ALLYN, ESQ.:

DEAR SIR-Yours in reference to certain sweepers built by the Brooklyn Supply Co. and in use on several of our roads is at hand. In reply I am gratified to say that they all have given us entire satisfaction, and have proven all that they were represented to be. The small one received a year ago with horizontal lift, I consider a decided improvement, a d much prefer it to the angle lift on the first four sweepers received from you. With this new horizontal lift I consider your build of R. R. sweepers as about perfect.

Yours respectfully,

A. W. DICKIE,

Supt. Repairs, B. C. R. R. Co.

OFFICE OF CENTRAL RAILWAY COMPANY, PRESTON AND CONSTITUTION STS., BALTIMORE, Feb. 11, 18 7.

CHAS. B. ALLYN, Esq.,
Pres't Brooklyn Raliway Supply Co.:

Pres't Brooklyn Raliway Supply Co.:

DEAR SIR—We have your letter of 7th Inst., asking if our snow sweeper, purchased from your Company, gives satisfaction, etc. In reply we have to state that the machine has given us entire satisfaction, and we cheerfully recommend it as the best appliance for clearing street raliway tracks of snow that we know of. We think it will soon pay for itself in saving cost of sait and usual labor of clearing away snow.

Walter Blakistone,

Walter Blakistone,

Sec'y and Treas.

NORTH CHICAGO STREET RAILROAD CO., OFFICE, 444 NORTH CL RK ST., CHICAGO, Feb. 10, 1887.

CHICAGO, Feb. 10, 1887.)
THE BROOKLYN RAILWAY SUPPLY Co.,
Brooklyn, N. Y.:
GE TLEMEN—I am happy to testify to the excellence
of your sweepers. Think more work has been required of them this winter than any for a long time.
They have given thorough service, and with very
little expense for repairs—in fact, it is seldom they
need any. They are the best make of sweeper we
know of.
Respectfully yours,
CHAS. T. YERKES, Pres't.

THE 42D STREET, MANHATTANVILLE AND ST.
NICHOLAS AVENUE RAILWAY CO.,
118 AND 120 EAST FORTY-SECOND STREET,
NEW YORK, Feb. 11, 1887.

NEW YORK, Feb. 11, 1801.

THE BROOKLYN RAILWAY SUPPLY CO.:

GENTLEMEN—Your snow sweeper has been used by us during the past winter, and after a fair trial we are pleased to say it has given perfect satisfaction.

Yours truly,

JOHN S. FOSTER, Pres't.

OFFICE OF
BRIDGEPORT HORSE R. R. CO.,
BRIDGEPORT, CONN., Feb. 5, 1887.

BROOKLYN RAILWAY SUPPLY CO.:
GENTS—I ship by boat to-day per "Pler 25, Bridgeport Steamboat Company dock," New York, broom

heads for our sweeper. I wish you would fill tell same and return to us as soon as possible, as we shan need them for the next storm.

The broom is giving megreat satisfaction, and I can cheerfully recommend lt. B. F. Lashar, Supt.

THE NEW WILLIAMSRURGH & FLATBUSH R. R. CO.
AND GREENFOINT & LORIMER ST. R. R. CO.,
GENERAL OFFICE—COR, NOSTRAND & PARK AVS.,
BROOKLYN, Feb. 12, 1887.

TO THE BROOKLYN R'Y SUPPLY Co., 37 Walworth street, City:

37 Walworth street, City:

GENTLEMEN—In answer to yours of the 7th Instant
would say that we are using three (3) of your improved
snow sweepers on our four (4) lires with great success
and to our entire satisfaction, and without any hesitation can say that your sweepers have no equal.

Yours respectfully,
CHAS. E. HARRIS, Supt.

KANSAS CITY CABLE RAILWAY Co., KANSAS CITY, Mo., April 9, 1886.

KANSAS CITY, Mo., April 9, 1886.
THE BROOKLYN R'Y S PPLY Co., Brooklyn, N. Y.:
GENTLEMEN—I beg leave to beer testimony to the excellent service rendered by your snow sweeper on this line during the past winter.
One trip with it after a snow-storm left the track in good condition for cars to run on. So effectual were its services that we did not lose a single trip on account of snow.
I can safely recommend it to any one desiring a good serviceable machine.

EDW. J. LAWLESS, Supt.

OFFICE OF CITIZENS' PASSENOER RAILWAY CO., N. W. COR. TWELFTH & SUSQUEHANNAH AVE., PHILADELPHIA, Feb. 9, 1887. CHARLES B. AILVN:

CHARLES B. AILYN:

DEAR SIR—We have used your Brooklyn sweeper on our road for two years, and find it the most efficient machine we have ever had on the road, and would recommend it to any parties needing ore.

Yours res

OFFICE OF THE B'KLYN CABLE CO., 355 PARK AV., BROOKLIN, N. Y., Feb. 9, 1887.

CHAS. B. ALLYN, Esq., 37 Watworth st., Brooklyn, N.Y.:

37 Walwoith St., Brooklyn, N. 1.:

Dear Sir—Yours of Feb. Sth, in which you ask my opinion of your sweeper, at hand.

I will say that the two that I have had in use in Cleveland have proven perfectly satisfactory.

I believe your sweeper to be the best in the market.

Very truly yours,

Tom. L. Johnson,

OFFICE OF THE CREAM CITY RAILROAD CO., 440 EAST WATER STREET.
MILWAUKEE, May 9, 1887.

MILWAUKEE, May 9, 1887. J
BROOKLYN RAILWAY SUPPLY Co.:
We have given to the sweeper you sent us a year
and more since a prolonged trial, intended to be
thorough. Bo'h in winter and summerit has been
found to be most efficient, surpassing anything we
ever used before for cleaning track, Our manager
feels that he would on no account dispense with it,
and we expect, therefore, to rely upon the use of
your sweeper hereafter.

WINFIELD SMITH.

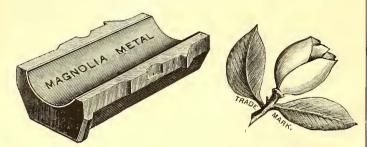
FED. ST. & PLEASANT VALLEY PASSENGER RY., PEOPLE'S PARK PASSENGER RAILWAY, ALLEOHENY CITY, Feb. 12, 1887.

BROOKLYN R. R. SUPPLY CO., Brooklyn, N. Y.:
GENTLEMEN—We regard the track sweeper purchased from you two years since as a "perfect" machine. During the present season we have frequently used it for no other purpose than to afford perfect footing for the animals, for which alone it is invaluable.

Resp'y yours,

WM. J. CROZIER, Supt.

Magnolia Anti-Friction Metal.



TESTIMONIAL

L. PFINGST, MASTER CAR BUILDER, THIRD AVENUE SURFACE ROAD, NEW YORK, Jan. 21, 1887.

CHARLES B. MILLER, Proprietor of Magnolia Anti Friction Metal, New York City.

SIR—I have taken out the metal given me by you, piaced it under Car No. 85 on our road. I find yours as sound as when put in, and the others entirely gone. This is the invention of Samuel Singley. You can call and see the journal bearings if you so desire.

I am, yours truly,

L. PFINGST,

Formerly with Pullman Car Works.

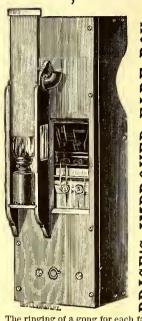
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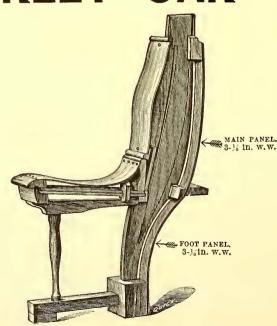


The ringing of a gong for each fare, checks the passenger as well as driver, and hence conductors' bell punch is unnecessary.

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Hamilton-Corliss Engine.
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Rails, Splices, Spikes, Bolts & Nuts of all Kinds.

STREET CAR SEATS & BACKS.



THREE-PLY CAR SIDES.

Having given our three ply white wood car sides a thorough trial for a number of years in our city street and ratiway lines, which test has left them as firm and good as the day they were put in, we unhesttatingly place these sides in the market as a superior article. They are composed of three white wood (or poplar) veneers, each ½ inch thick, the grain of the center layer running at right angles with the two outside layers. Hence they derive all the special and well-known advantages of glued up wood over single ply, namely:

1st. They are fully 75 per cent stronger, for they brace and stiffen the car.

2nd. They are lighter, being only 3-8 inch thick, and so do not add so much dead weight to the car.

3rd. They will not check or split by change of atmosphere.

4th. They will not split or crack when nailing into place, even though the nail be placed near the edge.

5th. Being laid over a form to suit the shape of the car frame or post they cannot buckle or twist, a feature which also adds strength to the car.

For repairing cars these sides have no equal.

Our Three Ply Car Seats and Backs, so well known all over the world, are now the most popular seat and back in the market, and recommend themselves especially for their Lightness, Cleanliness, Healthfulness and Beauty, as also their Cheapness and Durability. For they are indestructible by moths (the great enemy of upholstering), and will not harbor vermin or Insects, or carry or communicate contagion or disease. Our trade in this line has grown in thirteen years to vast proportions, which in itself is a sufficient guarantee of their merits. They are made either perforated or plain to suit customers. Birch is the wood most generally used. Today fully one-half the railroads in the country are using these seats and backs. We would also call attention to our Veneer Ceiling for cars. They are made either plain, perforated or decorated, and greatly add to the beauty of the car. For repairing cars they have no equal; for they are placed over the carlines and cover all the old paint and wood work. The woods generally used are Birch, Birdseye Maple, Oak and Mahogany.

GARDNER & CO.,

Manufacturers of Car Seats and Ceilings and Depot Seating,

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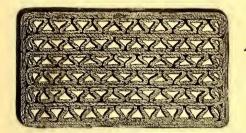
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Street Car Seats 🕍

of every description.

Our Patent Spring Scats covered with Rattan or Carpet are fast being adopt-ed by the best railroads in the country. Seats for Steam Cars a Specialty.



Many R. R. Co's use our Rattan Pat. Canvas Lined Seats for Summer and cover the same with carpet for Winter. This method of seating we recommend as durable and economical, for the reason both a Summer and Winter seat is obtained in one

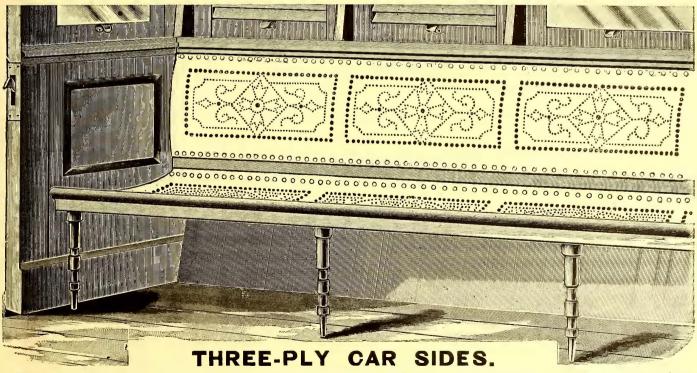
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A TRIAL SOLICITED.

OFFICES: 48 & 50 NO. SIXTH ST.

FACTORIES: 615 to 621 Filbert St.,

PHILADELPHIA, PA. Cut of section of cross for summer car.



These seats and backs have been in use a number of years and have given universal satisfaction. They have received such a thorough test and are so well known that they show their good qualities and we need say nothing for them. Our facilities for doing this work are the largest in the world. We own the forest from which our lumber is cut. We cut our own veneer and do our own work in all its departments. We keep, laid up in stock, seats and backs and can fill all orders promptly. Our 3-ply white wood car sides, ends and roof add fully 75 per cent to the strength of cars. We can also furnish car cellings made of any kind of wood desired, plain a decorated. Send for Railroad Catalogue.

Frost & Peterson, 161 & 163 West 18th St., N.Y.

P. SECUINE, Manager Railroad Department, PURDY & HUNTINGTON CO., Limited, Agents, 59 Shoe Lane, London, E.C.

RUFUS MARTIN & CO.,

13 Park Row, New York.

MANUFACTURERS OF AND DEALERS IN

STREET RAILWAY SUPPLIES.

BRILL'S PATENT DUST AND OIL-TIGHT EQUALIZING GEAR.

This improved running gear needs oiling but twice a year, and the brasses will wear upwards of six years. No waste is required in the box, and the friction is reduced upwards of fifteen percent. In ordinary running gears, oiling is necessary once or twice a week. Brasses wear out in less than one year, and the boxes require frequent re-stuffing with waste. This is the most comfortable, easy running and lasting gear in the market. It can be had to fit any ordinary pedestals.

Brake shoes, (improved pattern) sold by the pound.

BRILL'S PATENT RATCHET BRAKE HANDLE,

Made of Bronze and of Malleable Iron. The ratchet enables the driver to adjust the handle to any position, where he can obtain increased leverage and power. This Brake Handle will prove an economical attachment to any car, and can be attached to any shaft.

BRILL'S PATENT CHANGEABLE SIGNAL LIGHT.

An arrangement for altering the Signal Lights of a car, by which different routes can be designated. The center or stationary lens, or "bull's-eye" is white, and the two changeable lights may be had of any desired color. These lights are used to advantage in connection with the Reversible Signs, described below, and can be easily attached to any car.

BRILL'S PATENT REVERSIBLE SIGNS FOR CARS.

This is a Wooden Sign, placed on the sides or end of the cars, on the edge of the roof, and is used to designate certain streets or routes through which the car passes. Also to designate terminal points. The castings are sold complete, and it is an easy matter to fit in the board sign. When in place, a simple upward push will turn the sign and expose the reverse side. Done in an instant. Send for sample set of castings.

MARTIN'S IMPROVED CHANGE BELT.

SINGLE & DOUBLE HARNESS, HALTERS, WHIPS & BLANKETS, BODY & DANDY BRUSHES, CURRY COMBS, SPONGES & CHAMOIS.

Card Signs and Change Envelopes.

Conductors' Badges, Numbers, etc.

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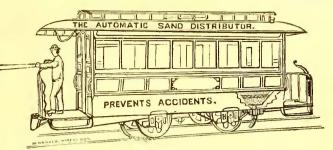
Registers, Indicators and Punches.

WESTERN

AGENCY

Wichita Construction and Supply Co., - - Wichita, Kan.





THE AUTOMATIC SAND DISTRIBUTOR,

For Horse, Cable, Electric and Steam Cars.
Charges the Sand direct on top of rail, in front of wheel, in any quantity, whenever wanted. Acts instantaneously by foot pressure.
Patented and manufactured by

The Jordan-Mills Manufacturing Co., 32 Nassau Street, New York.

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SUCCESSOR TO

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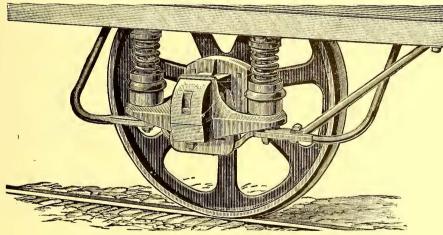
MANUFACTURERS AND DEALERS IN-

Street Railway Supplies OF EVERY DESCRIPTION.

Worswick Patent Journal Box.

GEAR SUPPLIES A SPECIALTY.

THE BEMIS CAR BOX COMPANY,



The Bemis Patent

Light Draft, Easy Riding, Durable, Economical. Brasses are warranted for 10 years, and Journal for 20 years. Requires oiling or inspecting but once in 12 months. Boxes are positively dust proof.

We Refer to the

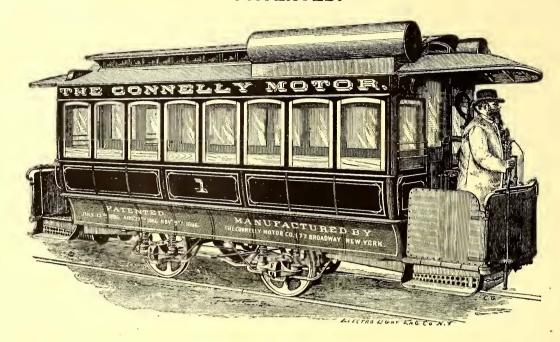
Boston Consolidated St. Ry. South Boston R. R. Cambridge, Mass., R.R. Lynn & Boston R. R. Union R. R., Providence, R. I. Globe St. Ry., Fall River, Mass. Citizens' St. Ry., Worcester Brooklyn Cross Town R. R. Second Ave. R. R., New York. Forty-second St. & Grand St. Ferry Ry., New York. Rochester City & Brighton Ry. Buffalo St. R. R. Co. Citizens' Pass. Ry., Pittsburg. Pittsburg & Birmingham Pass. Ry., P'burg. Columbus Consolidated St. Ry. Detroit City Ry. Louisville City Ry. Denver City Ry. Milwaukee City Ry. Cream City Ry., Milwaukee. Minneapolis St. Ry. St. Paul City Ry. Galveston City Ry. North Baltimore Pass. Ry. Chicago Pass. Ry. Co. and others. SEND FOR CATALOGUE TO

THE BEMIS CAR BOX COMPANY.

SPRINGFIELD, MASS., or 18 & 20 Platt St., NEW YORK.

THE CONNELLY MOTOR.

PATENTED.



No Fire! No Smoke! No Dust! No Ashes! No Fireman! No Engineer! Complete within Itself! Generates its own Power! Perfectly Independent! Can run on any Track!

No Cables, "grips" or expensive conduits.

No "Central Station" for generating power.

No loss of power in transmission,

No dangerous Electric currents.

No tearing up of streets for repairs.

No suspension of traffic for repairs.

It excels all other motors in ECONOMY and CONTROLLABILITY, and stands alone in its INDIVIDUALITY.

It carries a supply of fuel for a day's run, and consumes but ONE GALLON OF NAPHTHA PER HOUR.

The daily expense of operating a road with these motors IS IN EXACT PROPORTION TO THE NUMBER OF MOTORS IN USE, which cannot be said of any Cable or Electric system.

The cost of equipping a road with them is about ONE-HALF the cost of any Electric system, and less than ONE-FOURTH the cost of any Cable system.

The cost of operating, including Fuel, Lubrication, Care, Repairs and Royalties, will not exceed \$2.00 per day, being about HALF the cost by Cable or Electricity.

Any road can adopt these motors without making any change in their system, without interruption to their business, and without risking any investment in special plant, as a few motors can be put into use along with the Horse-cars, and the number gradually increased.

All companies desiring to abandon the use of horses should examine fully into the merits and peculiar advantages of our system, before making any contracts, as it is the only system that can be applied with equal economy on both large and small roads.

All parties interested in street or suburban roads are requested to correspond with us.

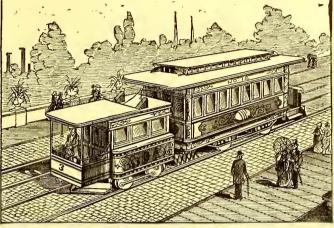
THE CONNELLY MOTOR CO., 177 BROADWAY, NEW YORK CITY.

STREET

ROLE

Differential Lever Car Starter, Runner & Brake.

Starts easily, Brakes as certainly and effectively as the air or Steam brake.



CAA

Standard No. 3 Motor

Specially Designed Low Pressure
Condensing Engine

of great power in small space and having no escapes on the street.

MOTOR SYSTEM.

The system can be operated by compressed air and is so recommended where good all-the-year-round water power can be secured to compress the air. Can be operated by storage battery, electricity or soda, ammonia, and other motive powers.

Warranted to climb hills, start on hills, and when the track is so slippery that the driving wheels will slip round under the motor, we still guarantee the motors starting by a system of ground levers.

WE ARE FULLY SECURED BY PATENTS.

We claim the only motor system capable of starting and going when the tracks are slippery, excepting only the cable motor. Ours is a cheaper outfit.

Correspondence solicited.

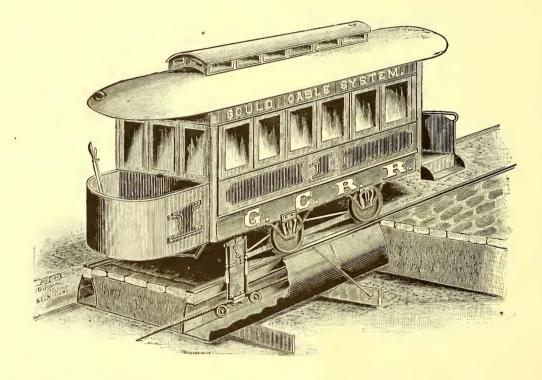
Pole Street Car Motor System,

310 Chestnut Street, Philadelphia, Pa.

THE GOULD DOUBLE CONDUIT.

A CONDUIT FOR THE CABLE AND AN EXTRA CONDUIT FOR TELEGRAPH,
TELEPHONE AND ELECTRIC WIRES, ETC.

Constant Tearing up of the Street Avoided.



The Conduit for the Cable is placed at the side, doing away with the Central Conduit entirely.

A Conduit on the other side is supplied for Electric and Telegraph Wires, Gas, Steam, Etc.

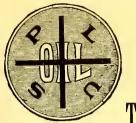
The Rails are Tied Together at the Surface.

The Slot which admits the Grip is placed outside the rails. The construction of the Grip is the simplest known.

THE INVENTOR WILL MAKE FAVORABLE TERMS WITH PARTIES WISHING
TO PUT THIS SYSTEM IN OPERATION, OR TO FORM COMPANIES
IN THE DIFFERENT STATES OR CITIES.

Address all communications to

J. H. GOULD, Ninth and Market Streets, Philadelphia, Pa.



DUX LUBRICANT.

Trade Mark Pat. Mar. 13, 1883. The Leading New Grease for Street Railways. Trade Mark Pat. Mar. 13, 1883

The Best Lubricant for Street Railways Known.

Will run for One Year on One Packing. Cars will run easier packed with Dux, than with oil and waste. Why? Because we give you a better lubricant. No drip from Car Boxes when packed with Dux, and, therefore, keeps the car boxes and

Try it and you will use no other Lubricant.

DUX FOR STREET RAILWAYS.

PITTSBURG, ALLEGHENY & MANCHESTER RY. CO., PITTSBURG, PA., Aug. 13, 1885.

Leib Lubricating Co.:

Gentlemen—We have used Dux Lubricant for the past nine months. It has given entire satisfaction; in fact, it is the best I have ever used. Think it fully as good as represented.

Your Struly,

J. C. Cotton, Supt.

OFFICE OF CAMDEN HORSE RAILROAD CO., CAMDEN, N. J., Dec. 14, 1886. Leib Lubricating Co., 196 and 198 Chicago st., Buffalo. We have used your '. Dux Lubricant' for about two years and regard it as the best and cheapest lubricant ever used by this company. John Hood, Supt., etc.

OFFICE OF ACUSHNET STREET RAILWAY CO., RED. DEAR.

The Leib Lubricating Co., Buffalo, N. Y.:

DEAR SIR—We have used several packages of your "Dux" and like it very much. We can recommend it to any one us ng axle grease.

Yours very truly,

A. P. SMITH, Treas.

Byron Weston, First-Class Ledger and Record Paper, Daliton, Mass., Oct. 15, 1886.

Leib Lubricating Co., Buffalo, N. Y.

Gentlemen-Yours of the 13th Inst. received. In reply; we like your Dux

Lubricating Compound very much, and when this is used up that we have on hand shall order more. I find on heavy bearings where no other oil or grease would cool it yours did the work.

Yours truly,
HARRY W. HITT, Supt.

FAULKNER MILLS .- F. J. HASTINGS & CO., MILLERS.

FAULKNER MILLS.—F. J. Hashings.

So. Acton, Mass., Dec. 23, 1886.

Leib Lubricating Co., Buffalo, N. Y.

Gents:—Your favor of the 17th inst. duly received. In reply we would say, that for several years we had much trouble and annoyance to find a lubricant for our heavy bearings that would stand, and tried various articles on the market without being satisfied, until a friend connected with a large manuacturing concern gave us a few pounds of the Dux Lubricant to try. It worked so much better than anything we had ever had that we ordered enough from you to give it further trial, and as a result have used it ever since, and can truly say it is the brist lubricant we ever used. It will stand heat, gives off no drip and is economical, and we are very much pleased with it and do not hesitate to declare that it is our firm belief that there can be nothing ever made to equal it. Our experience on wagons has been equally satisfactory; our first attempt being on a heavy wagon used every day, heavily loaded, ran 21 days when it went into the shop to be painted, and then was in a good condition to run longer. The only thing we regret is that we did not at once try and arrange to sell it in this locality, still one of our townsmen to whom we gave your address, Mr. Littlefield, has since obtained the agency, we learn, and we can obtain it through him.

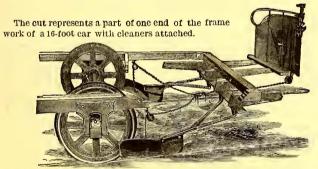
Yours truly,

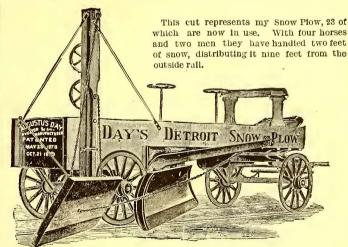
F. J. Hastings & Co.

MANUFACTURED BY

The Leib Lubricating Co., 196 & 198 Chicago St., Buffalo, N.Y.

DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.





It is adapted to single or double track roads, adjustable where necessary; built in the most thorough and substantial manner of the best matereial. The Plow is not intended to supply the place of the small Track Cleanrs, but be auxiliary to them. For execution in deep snow, ease, and convenience inhandling, it surpasses all others in use. Orders should be given three month in advance. Reference is made to the following roads that use them:—Detroit City Ry., Detroit, Mich. (Two plows.) Rochester City & Brighton R.R., Rochester, N. Y. (Two plows.) Cream City Ry., Milwaukee, Wis. West Side Street Ry., Milwaukee, Wis. Chicago City Ry., Chicago, Ill. (Three plows.) Grand Rapids Street Ry., Grand Rapids, Mich. Highland St. Ry., Boston, Mass. Buffalo St., Ry., Buffalo, N. Y. (Two plows.) Johnstown Pass. Ry., Johnstown, Pa. Minneapolis St. Ry., Minneapolis, Minn. (Two plows.) St. Paul St. Ry., E. Paul, Minn. (Two plows.) Kalamazoo, St. Ry., Kalamazoo, Mich. Worcester St. Ry., Worcester, Mass. South Bend Ry., South Bend, Ind. Milwaukee City Ry., Milwaukee, Wis,

For Further Information and Price. Address:

For Further Information and Price, Address:

AUGUSTUS DAY, 76 State Street, cor. Park Place,

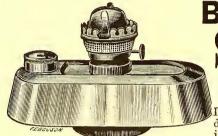
Detroit, Michigan, U. S. A.

EDWARD C. WHITE, Brass & Bronze Works.

531 West 33rd St., New York.

Superior Quality Journal Bearings; Car, Locomotive and Machine Castings; Railway Hardware & Supplies.

Clute's Patent Double



Bottomed

s one that assures safety durability, and is perfect in regard to leakage.

GEORGE M. CLUTE, Sole Manufacturer;

Also Dealer in Car Reflectors, Chimneys, Burners, Etc.

WEST TROY, N. Y.

BEADLE.

Sole Manufacturer

OF THE

Eureka Folding Mat.

The Most Durable, Easiest Cleaned and Repaired Wood Mat ever made.

I would respectfully call the attention of Managers of Street Railways to my latest improved Reversible Folding Mat, made to fit any size car. Sample order solicited.

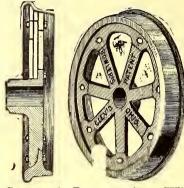
1193 Broadway, New York. FACTORY—CRANFORD, N. J.

The "BROADWELL CAR STARTER," having been subjected to practical tests, is now placed on the market at a very low price.

C. B. BROADWELL.

169 Laurel Street,

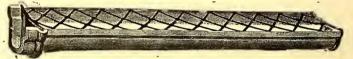
New Orleans, La.



Cleveland Foundry,

Manufacturers of

Car and Locomotive Wheels either Chilled or Steel Tired; with or without axles. Street Railway Wheels, Turnouts and Turntables. Patent Chilled Face RR. Frogs. Engine & Heavy Castings a Specialty.

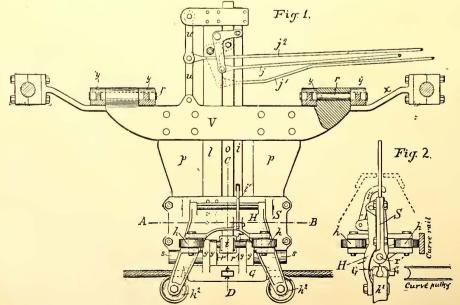


Graded Stable Cutter with Straight or Curved Cover.

Descent ¼ inch per foot. Pieces 5 feet lengths; short pieces furnished to suit any length. Spouts to connect with sewer.

They control and make N. P. Bowler's Patent Street Railroad Wheel. The tire of this wheel is cast separately from the hub and spokes; the latter is made of soft strong iron, and is perfectly free from strain—therefore can be made much lighter and more durable. The tires and the spokes or center of the wheel are made perfectly interchangeable so that when the tire or rim is worn out another can be put in its place by any employee with no other tool than a common wrench.

Bowler & Co. Winter St. Cleveland, O.



Simple, Durable, Efficient.

Cable may be dropped and picked up without leaving the platform. The whole under the constant control of the gripman.

Most efficient device in existence for releasing and gripping cable in crossing other roads.

Can be worked from either end of the car.

Mechanism Simple and not Liable to get out of order.

The rope may be dropped at any time to a lower level than the path of the gripping device and again raised into the gripping jaws at the will of the gripman with perfect ease and safety.

2313 RIDGE AVE., PHILADELPHIA, PA.

PECKHAM'S Patent Elastic Street Car Wheel,

WITH INTERCHANGEABLE WEB, TUBULAR FIBROUS CUSHION AND

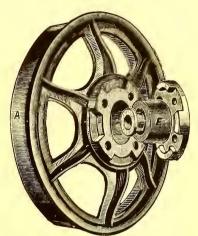
INDESTRUCTIBLE CLUTCH JAW HUB.

The only Cushioned St. Car Wheel.

The only Interchangeable

Street Car Wheel.

No Crystalization of Wheels or Axles. Noise and Jolting of Cars Prevented.



No Special Machinery or Skilled Labor Required for Renewals.

Price Lists, Descriptive Circulars and Blue Prints furnished upon application.

All Parts Interchangeable and Warranted,

The Peckham Car Wheel Company,

SYRACUSE, N. Y

CAR HEATING

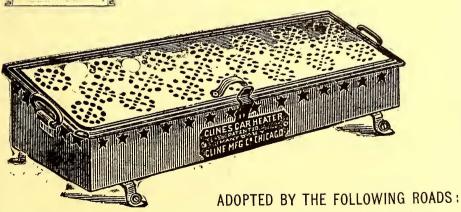
BY CLINE'S PATENT

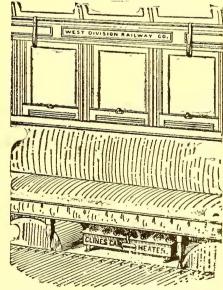
Aromatic Carbonic Compound Fuel.

Cheap. Convenient. Safe.

Once Filling lasts 18 hours.

NO CUTTING OF CAR TO PUT IN.





CHICAGO WEST DIVISION; CITY OMNIBUS CO., Chicago; SOUTH CHICAGO CITY RAIL-WAY CO.; PEOPLE'S PASSENGER, Philadelphia; PITTSBURG & BIRMINGHAM AND OTHERS.

CLINE MANUFG. CO., 277 and 279 South Canal Street, CHICAGO, ILL. SOLE AGENCY FOR MISSOURI & KANSAS, 219 & 221 MARKET ST., ST. LOUIS, MO.

"PAY HERE." Fare Boxes and Change Receptacles



Front or Passengers'

OUR NEW FARE BOX NO. 3

Is pronounced by the many Street Car Companies using it to be the best.

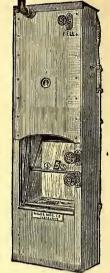
The following are some points of superiority in this box over others:

Simplicity of Construction, Quickness and Convenience of Cleaning, Security of Money Drawer, Beauty of Finish and Much Cheaper in Price.



Descriptive and Illustrated Circular on application.

Examine the merits of this box and get our prices before buying.

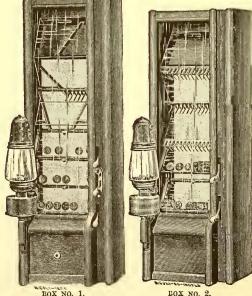


Box No. 3. Back or Driver's

The only satisfactory arrangement in use for making change with the driver.

ALES MANUF. CO., 76 & 78 E. Water St., Syracuse, N.Y.

IMPROV



Patented Oct. 14, 1873.

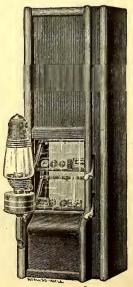
Fares Cannot be Extracted or boxes Robbed without violence.

Roads Equipped with Boxes on Trial, and if not satisfactory, returned without any expense to the company trying them.

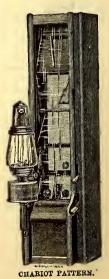
Ornamental to any Car.

Special Sizes built to order.

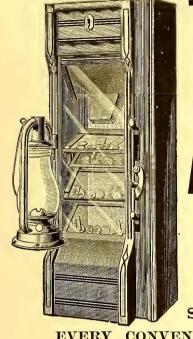
NOTICE.-All parties are cautioned against using fare boxes recently placed on the market which are direct infringements on our patents.



BOX NO. 3.



Write for Descriptive Circular and Price List. Address all correspondence to A. A. ANDERSON, INDIANAPOLIS, IND.



THE BEAMAN FARE BOX.

MANUFACTURED UNDER TWO PATENTS OF FEB. 15th, 1887.

Absolutely Secure, Whether Fastened to the Car, or Not.

No Fares can Possibly be Turned Out or Abstracted by any Known Means.

EVERY CONVENIENCE PROVIDED FOR THE INSPECTION OF FARES.

Easily Cleaned, Simple and Durable in Construction.

The Smallest Detail has been Carefully Designed.

Its many New and Important Features, it is Conceded, place It Beyond Competitors.

For Full Particulars, Address,

BEAMAN, Knoxville, Tenn.

SLAWSON'S PATENT FARE BOXES

These Boxes are of the latest and most approved pattern, and contain a front door, by opening which all of the glassinside can be conveniently cleaned. This is a late patent, and is a very valuable improvement over the old method of taking the boxes apart for that purpose. They are well made and not liable to get out of order, cannot possibly be picked, and even if all the glass is broken no fare can be extracted from the drawer.

The late J. B. Slawson originated the "FARE BOX SYS-



TEM," and all of his Boxes, Change Gates and Drivers' Change Box are protected by several patents, and parties using them are not liable to claims for iniringements, as may be the case with some boxes which are now being offered for sale.

These Boxes, etc., are now in use not only in the United States and Canada, but in Mexico, South America, Europe, Asia, Africa and Australia—in fact, nearly all places where street cars are used.



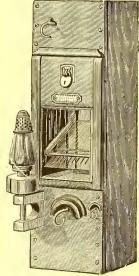




View.

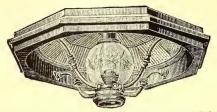
The prices have been greatly reduced, and are made to fit the times. Orders will be promptly filled by addressing,





MILTON I. MASSON, Agent, 365 AVENUE A, NEW YORK.

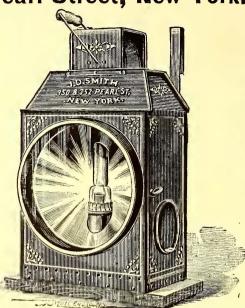
JOSEPHINE D. SMITH, Successor to the late WILLARD H. SMITH, 350 & 352 Pearl Street, New York.



No. 3. Bombay Center Car Lamp, fancy arms, 25 in. corrugated glass reflector, with cover. Finished in brass or bronze.

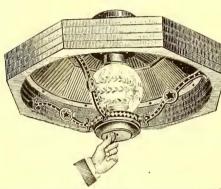


No. 1. Bombay Center Car Lamp, fancy arms, 25 in. corrugated glass reflector, with cover. Finished in brass or bronze.

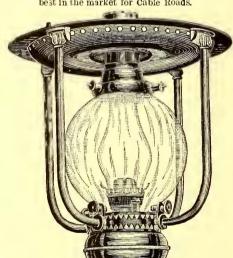


No. 10. Head Light. As used on Tenth Avenue, New York, Cable Road. Throws a powerful light 100 feet. The best in the market for Cable Roads.





No. 4. Bombay Center Car Lamp, fancy arms, 25 in. corrugated glass reflector, with cover. Finished in brass or bronze.



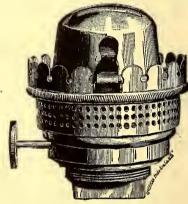
No. 2. Center Car Lamp, 14 in. Nickel Reflector. In general use throughout the United States and Canada.



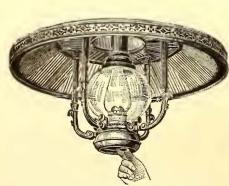
No. 14. Center Car Lamp, with 25 in, corrugated glass reflector.



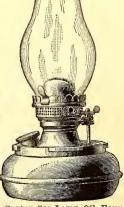
No. 1. Center Car Lamp, with 25 in. corrugated glass reflector; in general use on horse railways throughout United States and Canada.



J. B. M. Two-spring Burner.
This is the best double-spring burner
made.
Universally used for Street Car Center
and Box Lamps.



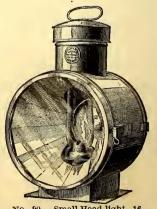
No. 3. Center Car Lamp, with 25 in. corrugated glass reflector.



Center Car Lamp Oil Fount, with J. B. M. Burner and patent wick raising attachment. This fount interchanges with all of my Center Car Lamps.



No. 3. Brass Box Lamp, with drip pan and J. B. M. Burner.

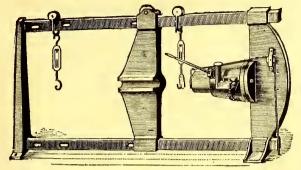


No. 20. Small Head-light, 16 in. high over all. 10 in. face.

Manufacturer of Smith Patent Center Car Lamps & Reflectors.

For Street Cars, Cable, Elevated & Steam Passenger Coaches. Also all kinds Trimmings pertaining to Car Lamps, Burners, Chimneys, Globes, Wicks, Corrugated Reflector Glass, etc., etc.

HAND POWER, LEVER AND HYDRAULIC PRESSES



Screw and Hydraulic Jacks.

Watson & Stillman

Watson & Stillman. 204 to 210 East 43d Street. N. Y.

ESTABLISHED 1847.

A. WHITNEY & SONS,

CAR WHEEL WORKS,

PHILADELPHIA, PENN.

CAST CHILLED WHEELS,

AXLES AND BOXES

FOR EVERY KIND OF SERVICE

Street Railway Wheels of all Sizes.

ROBERTS' PATENT WOVEN-WIRE

Gar Seats and Backs.

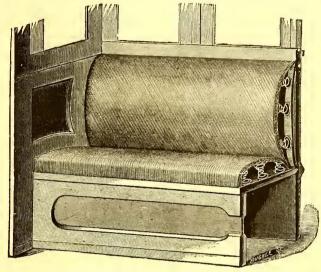
Especially adapted to Street Car use.

Cleanly, Durable, Economical, Cool, Comfortable.

Cannot be Cut, Injured or Defaced.

Being entirely of Metal will last indefinitely.

Can be covered in Rattan, Carpet, Leather or other material, with less labor in covering and less expense in material than any seat in the market.



Send for Catalogue with illustrations. Prices and estimates cheerfully given on application to

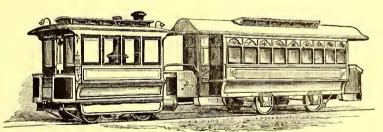
THE HARTFORD WOVEN-WIRE MATTRESS CO., P. O. BOX 363, HARTFORD, CONN.

Established, BALDWIN LOCOMOTIVE WORKS. Annual Capacity, 600.

BURNHAM, PARRY, WILLIAMS & CO., Props.,
PHILADELPHIA, PA.

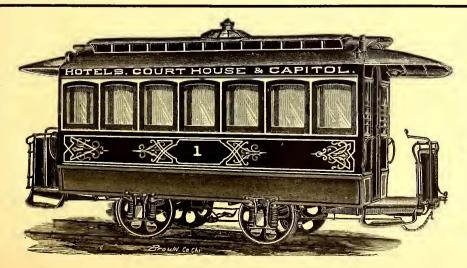
LOCOMOTIVE ENGINES,

Adapted to every variety of service, and built accurately to standard gauges and templates. Like parts of different engines of same class per feetly interchangeable.



Noiseless Motors and Steam Cars for City and Suburban Railways.

Catalogue sent upon application of customers.



ROBINSON & HITT,

WATERLOO, IOWA,

Manufacturers of all kinds of

Street Cars.

BEST OF FACILITIES, COMPLETE MACHINERY RUN BY WATER POWER.

Also builders of all kinds of

OMNIBUSES

RICHARD VOSE,

13 Barclay Street,

PATENTEE AND MANUFACTURER OF

Graduated Street Car Springs.

RUBBER

Patented, April 15th, 1879.

ADAPTED TO THE

STEPHENSON,

BEMIS,

RANDALL,

HIGLEY.

BRILL.

JONES,

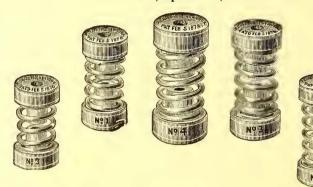
BALTIMORE,

VOLK,

CHAPLIN.

LACLEDE

And all other Boxes.



No. 0, for 10-ft. Light Cars.

No. 1, for 10-ft. Cars.

No. 2, for 12-ft. Cars.

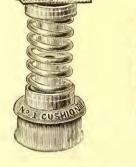
No. 3, for 14-ft. Cars.

No. 4, for 16-ft. Cars.

No. 5, for 16-ft. Cars. (Single Pedestal.)

No. 1, Cushion, for 16-ft. Cars.

No. 2, Cushion, for 12 and 14-ft. Cars.







Adapted to Pedestal AND Post Gears.



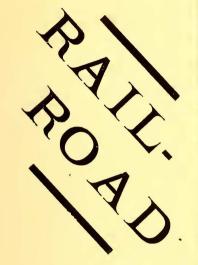
Slow.

It has no Rapid Vibrations.

This Spring is weakest on the ends, and strongest in the center. The bar is coiled on a mandril of equal diameter throughout. Thus where the greatest strength is needed the greatest amount of metal is found. The load first compresses the ends of the coils, and as the load is increased the center of the spring is brought into requisition.

Pullman's Palace Car Co.,

Manufacturers Of



CARS

Pullman, Illinois.



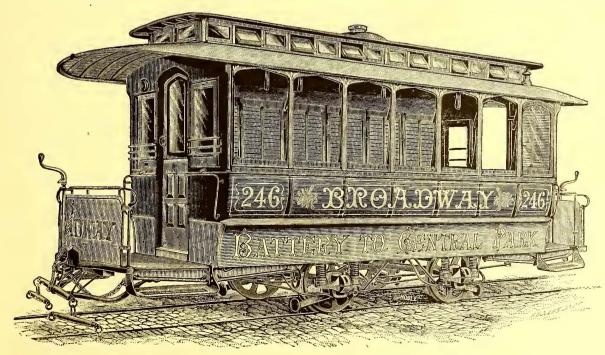
Make a Specialty of

Stract, Cable Crip

Riccipic Motor

CARS.

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CARS FOR STREET RAILWAYS.

TESTIMONIAL.

PATERSON, N. J., June 13, 1887.

MESSRS. FEIGEL CAR COMPANY.

GENTLEMEN: We have received your two Open Cars, which are now doing daily service on our lines in this city. It is but just to say to you that we have had these cars examined and we find nothing about them that does not meet our approval. In appearance they are such as to commend them to people who ride, and in workmanship they are entirely satisfactory in every detail.

You have our order for two exactly like them, which we ask you to hasten, and if they give us equally good satisfaction, we shall feel warranted in giving you our orders in the future.

Our intercourse with you gives us such satisfaction that we cheerfully testify to your promptness in filling our orders and supplying us with a class of car which is a credit to your Company, and at the same time a delight to our patrons.

Yours, very truly,

H. ROMAINE, Manager,

PATERSON CITY RAILWAY, CO.

HUTTON & SWAN, Managers,

FACTORY: New Utrecht, N.Y.

OFFICE: 108 Wall St., New York.

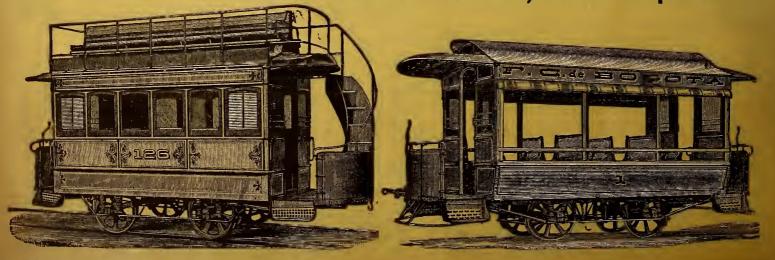
J. G. BRILL COMPANY,

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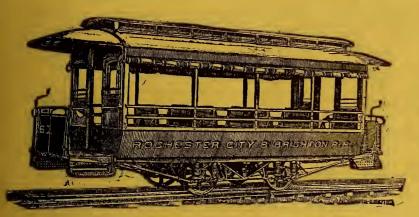


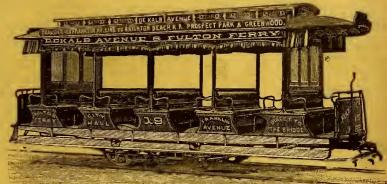
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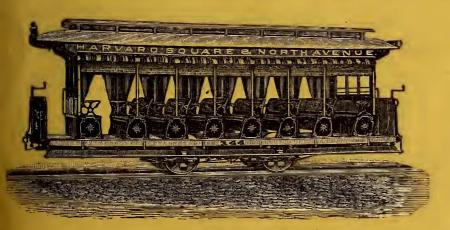
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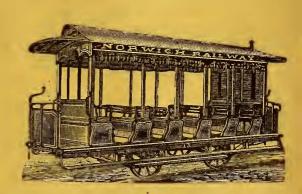
RAILWAY& TRAMWAY CARS





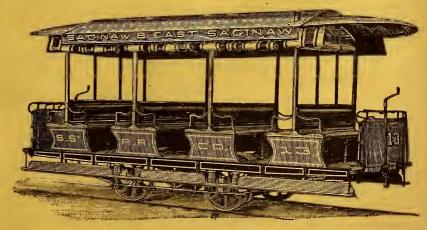
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Construction Cars, Cane Cars, Power Hand Cars, Small Merchandise Cars.

