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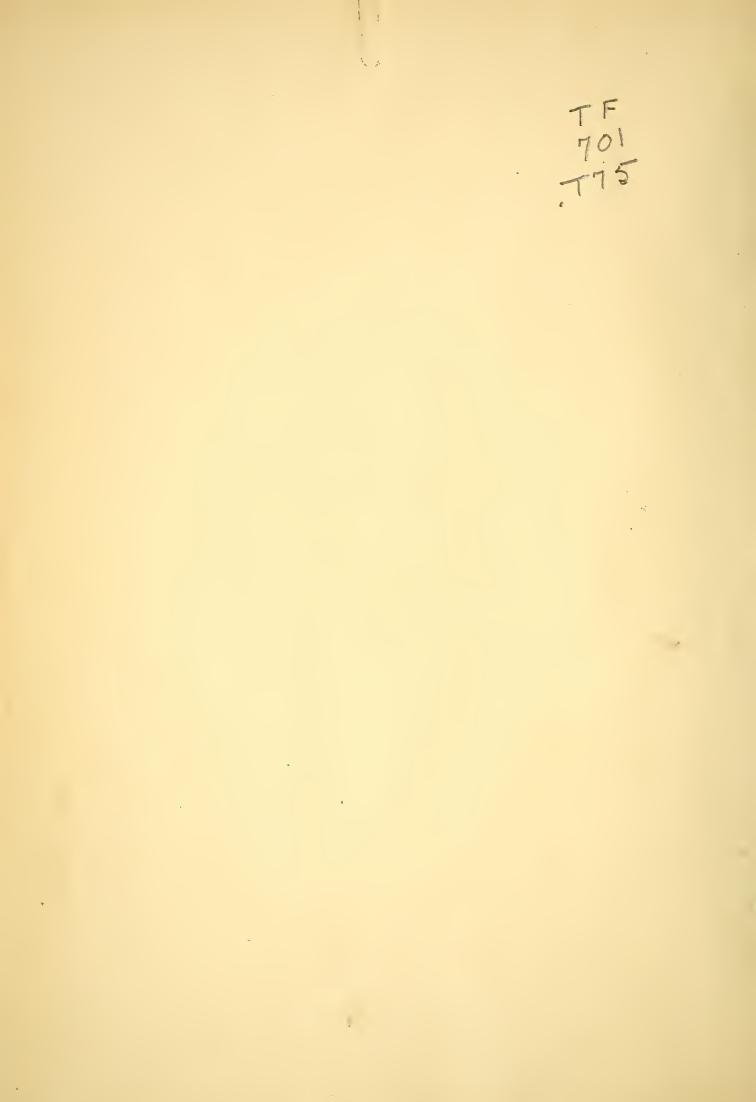
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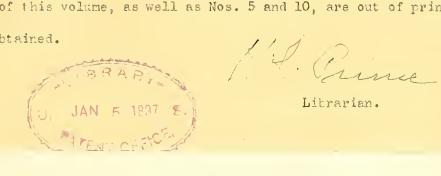
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Title Page of this volume, as well as Nos. 5 and 10, are out of print and cannot be obtained.





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| NEW YORK: | | 32 Liberty Street. | VOL. II.

November, 1885.

{ CHICAGO: } {Lakeside Building.} NO, 1.

Julius S. Walsh.

The newly elected President of the American Street Railway Association has been prominently identified with various important industries in St. Louis, as well as with the Street Railways in the capacity of President, and has been an earnest worker for the promotion of the interests of the Association since its organization.

Mr. Walsh was educated at St. Louis University and St. Joseph's College; graduating from the latter in 1861, and receiving from the former in 1863 the degree of Master of Arts, and from Columbia College, in 1864, the degree of L.L.B.

Early in life Mr. Walsh was engaged in mercantile business, but soon abandoned it and turned his attention to the street railway system of St. Louis, and is among the most active of those who have contributed to its extension and development.

Mr. Walsh is now President of the People's, the Tower Grove, Citizen's and Park Railroads, and has held at different times various important positions in connection with public institutions and banks.

During his Presidency of fonr years, of the St. Louis Agricultural and Mechanical Association, a large part of the improvements were made which now render the grounds so attractive. Among other prominent positions which

he has filled is the Presidency of the St Louis Bridge Company.

Mr. Walsh is an earnest, warm-hearted, but nno-tentatious man, who will discharge with ability the duties of the office to which the Association has wisely elected him.

Methods of Propelling Street Cars.

We have before ns a pamphlet report to the President of the "City" Railroad of San Francisco, which discusses the more prominent systems of propelling street cars with a view of selecting one snitable to the conditions of that road, to supplant its present animal power service. The report is by Wm. H. Milliken, cable railroad engineer, and is sufficiently interesting to warrant us in giving a synopsis.

Speaking of the "City" road, the writer describes it as having 41 miles of double main track and $1\frac{1}{4}$ miles of branch line. The service is carried on with 34 single horse-cars, requiring 285 horses; the daily expense for motive power for each car being set down at \$6.50 per car. The grades are practically level, there being but two short inclines of 1.92 per cent and 5.3 per cent rise.



JULIUS S. WALSH, PREST. AM. STREET RY. ASSOCIATION.

and in discussing its availability, the conclusion is arrived at that mechanically considered, its merits are undisputed, having no competitors on steep grades-though for levels and moderate grades it has formidable rivals in both compressed air and electricity.

Much stress is laid upon the importance of constructing underground tubes for cable roads in a most thorough manner, and instances are given where flimsy structures have already gone to decay.

This system is found unavailable where a line passes along the track of an existing cable line, as often occurs in large cities, because two independent tubes and cables are not practical in one road-bed. The system is highly recommended for economy aud development of both traffic and property interests along a route, but is spoken of as too expensive for roads having light husiness

The various electric systems are mentioned. The storage battery plan, and the one using an overhead conductor, are not thought practical. Speaking of the system

using an underground conductor the writer says:-

"The underground conductor of necessity requires an underground tube, a tube not unlike that required in the cable system, though perhaps a trifle smaller. As this tube will be subject to all the conditions and requirements attending the use of the cable tube, especially as to its supporting ordinary street traffic, it will need to be equally strong and of quite an expensive construction; any attempt to lay down a cheaply constructed tube would be poor economy. The matter of insulating the conductor will prove a difficult problem to solve, and constant care will need to be exercised to preserve it. The rolling stock will need to be new, and more expensive, probably, than that of the cable system, whilst but very little difference in cost of engine house plant can be expected.

"Whilst I am at present unable to state what the actual cost of

The cable system is elaborately reviewed, | an electric plant would be to serve the requirements of your road, I can say positively that it will vary but little from the cost of the cable system, as each requires au underground tube, continuous conductor, (cable or rod) expensive engine house plant, and special motors or rolling stock.

"A disadvantage belongs to the electric system relating to the speed with which the dyuamos on the cars are run; as the ordinary speed of a street car wheel is about 80 revolutions per minute, and as it is necessary to run the dynamos about 1,200 revolutions, there is required a system of speed reducing gears to trausmit the motion from the dynamo to the car wheels. These gears

make a great noise, and render it uncomfortable for passengers to ride near them. This difficulty was found to be very prononnced in the experimental cars lately ruu on the Garden Street line in Cleveland, Ohio; the noise from the transmitting gears was so great, that it was difficult to hear the loudest conversation within the car; otherwise the system is free from most of the objections nrged against the employment of mechanical motors, but it is not established that a reasonably profitable nseful effect can be obtained.

"Of the several electric roads now running, none operate under the conditions of your case, so that should your company adopt this system, it would be purely an experiment without precedent anywhere, and no satisfactory deductions could be made as to its availability, until you had built and equipped your road thoroughly and completely."

The nsnal objections are made against steam motors, as being expensive, too heavy for ordinary road-beds, they carry too much dead weight, whilst they are not sufficiently cleanly, and free from smoke and fumes to be acceptable to the public.

Coal gas motors are condemned because they lack reenperative power, have no reverse motion, are complicated in structure, difficult to stop and start, and expensive to operate and maintain.

The high pressure compressed air system is favorably considered, and claimed to be satisfactory under proper conditions.

The machines, however, are found to be necessarily heavy and cumbersome, and require a heavy road-bed and track. They cannot be profitably employed to carry light loads, and make frequent trips; whilst they are expensive to construct, and somewhat wasteful of power.

The following is a description of the Pardy Low Pressure Compressed Air System, finally recommended for the "City" Railroad Company's adoption:—

This system proposed by Mr. George Pardy, cousists in employing a number of light weight motors, supplied with receivers to contain about fifty enbic feet of air at about 100 lbs, pressnre per square inch. These receivers are placed on the car ofther on the sides over head, or under the seats; in either position, owing to their small dimensions, they are not unsightly. Ordinary locomotive engine cylinders are carried under the floor of the car, and connections are made directly with the car axles or wheels. There is an underground pipe placed between the up and the down track, four to six inches diameter, running the entire length of the line. At every 500', a branch from this pipe leads to the center of each track, these branches terminating in a peculiar form of valved ontlet, having 21" diameter opening at the street surface.

The street openings are left nncovered, but any dust, dirt, water, &c., which passes into them is caught in a receptacle, to be removed periodically, or it may pass into the adjacent sewer. There is a flexible nozzle carried on the car connected with the receivers, which nozzle the engineer pushes

down into these street openings to open the valved outlets and form air tight connections with the receivers, whenever he desires to replenish them. The operation of replenishing requires about six seconds, and takes place during the ordinary stops the car makes to pick np or let down passengers.

The underground pipes are kept constantly filled by compressing machinery located anywhere near the route, and shut off valves are placed at intervals, so that short sections of the pipe may be temporarily closed for repairs, when leaks are discovered. The car is provided with a long slotted opening in its floor or platform where the engineer stands, through which slot the nozzle is inserted into the street opening, so that if the car stops anywhere within 7' of the opening, the engineer has full access to it.

The Pardy system is an improvement upon the high pressure systems in the following very important particulars:—

1st. As it is operated with a low air pressure not exceeding 100 lbs, per square inch, the air may be compressed at one operation in a single machine, instead of progressively in several, thus saving the original cost of, and power necessary to run these additional machines; also at this low pres-sure the proportional useful effect is much 2nd. It permits the adoption of greater. light weight motors, so that an ordinary road-bed and track will amply sustain them, and the power required to move them will be much less. 3rd. It permits the replenishment of the air to recuperate the power at any point on the line, so that at every starting the motor may exert its maximum power. 4th. In its adoption the system involves less expenditure of capital in providing motors and compressing machinery, and avoids the cost of replacing a roadbed. 5th. It would be less of an experiment mechanically and financially, offering no risk whatever in its adoption. 6th Tt permits the application of the machinery and motive power upon the ordinary form of car, without encreaching upon the space reserved for passengers.

It improves noon the cable system in the following points:--

1st. It can be put in operation at about one-fourth the cost. 2nd. It can be operated at about 30% less expense. 3rd. It is never liable to get cut of order to such an extent as to suspend traffic. 4th. A better schedule time may be made. 5th. It may be operated on branch lines running on streets already having cables. 6th. It can be put into operation without interfering with traffic or disturbing the roal-bed. 7th. It involves no financial experiment, as its daily running expenses, including interest on capital, will not increase, but rather materially decrease expenses.

It is better than the electric system-

1st. Becanse it will not cost over onethird the money to put it into use. 2nd. The daily expenses will be about 20% less, including interest on capit d invested. 3rd. There will be no disturbance of present road-bed. 4th. It will not be affected by storm water which, in the electric system, will, at times, flood the underground tube, destroy insulation, and suspend the operation of the whole line.

The following table exhibits an approximate estimate of the cost of constructing and operating each system, exclusive of such items as taxes, licenses, engine house or stable rent, drivers' and officers' salaries,

&c., for these items being common to all systems, they may be omitted without impairing the accuracy of the comparison.

COMPARATIVE TABLE, SHOWING COST OF CONSTRUCT-ING AND OPERATING VARIOUS SYSTEMS.

· System.	Cost of Plant.	Daily Expenses.
Cable	\$450,000	\$203.00
Electric	375,000	165.00
Coal Gas	139,000	200.00
High Pressure Air	175,000	164.00
Low Pressure Air	105,000	125.00

The estimated cost of the construction of the different systems is based upon the assumption that each will be provided with thirty-four motors and necessary machinery to run them.

In the concluding "recommendation" the writer says:---

"The cable system will not suit the conditions of your case, because of the great expense attending its adoption. The electr.c system being both expensive and undeveloped, would be experimental, both in a financial and mechanical sense, with, I am convinced, a positive cortainly of its proving mastisfactory. "The only system that I feel warranted in

"The only system that I feel warranted in accepting is the Pardy Low Pressure Air System, which is at once the cheapest, and promises to be the best for your purpese; and inasmnch as the Risdon Iron Works Company offer, nuder certain reasonable coulditions, to put this system into practice on any suitable line at their own risk, terms can be made which will completely relieve your company of all consequences of mechanical failure."

Parties interested desiring further information may address Mr. Milliken, at 22 California St., San Francisco.

Florence Marryat's Advice.

Miss Marryat says, "We must sit on the men," In a lecture addressed to her sex:

We must sit on them once and then sit again; 'Tis the way to solve problems that vex.

"As you've done in the past continue to do; The men will be wiser for it;

Wherever you find a male biped or two, Sit down on them, sisters, O, sit!"

We interpret this vigorous injunction to mean— If to illustrate we are allowed—

That women must sit not behind nor between, But always on men in a crowd.

This will simplify matters upon the street cars If the women, whenever they sit,

Will look o'er the lot, when the seats are so scarce, And pick out the men that will fit.

In case explanation is needed of that, We would add, this is just what we mean: That fat women sit on the men that are fat, And lean ones on those that are lean.

Next Convention, Cincinnati third Wednesday in October. Subjects for disenssion: Causes, Prevention and Settlement of Accidents; Sanitary Condition of Street Caus; Ventilation, Lighting and Care of Cars; Progress of Cable Motive Power; Progress of Electric Motive Power.

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This is the only paper devoted wholly to street railway interests. \$1.00 a year.

Andrews & Clooncy's Street Railway Snow Plow.

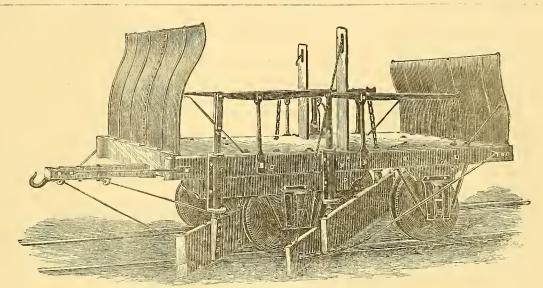
Our illustration gives so clear an idea of the working of this plow* that much description is unnecessary. It is operated entirely by levers, which raise and lower the plows very easily. There are, also, rope attachments to fasten to the mould boards, which are wings of the plow and are intended to reach out further into the street. They can be easily operated from the platform by means of the ropes, pulling them out of the way of passing vehicles or in narrow streets, or when the tracks run near curbstones, etc. The power used is six, eight, or ten horses according to the showing its capacity for snow. It excited the admiration of all those Western gentlemen who saw a sweeper for the first time. The agent received orders for four of them ou the spot.

Watson & Stillman's Hydraulic Press.

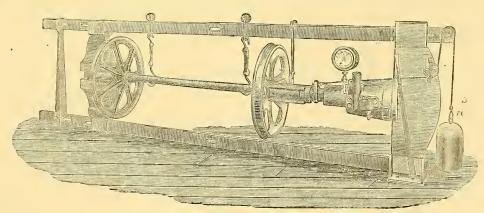
This press embraces many changes and additions, and is a very complete tool for use in street railroad shops, small railroad repair shops and engine shops, for forcingin shafts, etc. The makers* siy: "The hydraulic part is our most reliable and convenient style of large jack. The lever works perpendicularly and at right angles to line of press, and couvenient for operatemplate for the other end of axle. The block is also used when forcing a shaft into a wheel. The pull back weight is now suspended from upper bar and so does not require any pit."

Schwaab's New Method of Shoeing.

This is a radical innovation in horse sheeing, the merits of which are worth looking into by horse owners. The inventor says in a letter describing his idea. "I advocate a new method to permanently shoe horses, without the barbarism of nailing. It is an absurdity to claim that nailing does not hurt the horses. My shoe is constructed in two sections, inwardly rim-



ANDREWS & CLOONEY'S STREET RAILWAY SNOW PLOW.



WATSON & STILLMAN'S HYDRAULIC WHEEL PRESS,

amount of snow on the track, and roads using it and following it with the improved sweeper will have a very clean and handsome track. They are in use on many of the principal lines of street cirs in our large cities and we are told give excellent satisfaction.

An exhibition of one of their largest size snow sweepers, made for the Union Depot R.R. Co. of St. Louis, Mo., and drawn by ten horses, was had in that eity on Friday before the convention, the ribbons being in the hands of Mr. Wm. M. Morrison, Supt. of the Bushwick R.R. of Brooklyn. It did its work admirably in mud and dust, thereby

*Andrews & Clooney, 545 W. 23d St., N. Y. City.

tor to easily watch the work. The valves are large, perpendicular and easy of access. The piston is entirely enclosed, thus preventing all grit or foreign material getting into the pnmp and cutting or preventing its working. The cylinder is made from crucible steel and has a good bearing on stationary beam. The movable beam runs on rollers upon the lower bur, which is planed. The moving beam is recessed so that blocks may be placed in it of sufficient thickness to act as a template in forcing on car wheels, etc. A swinging chuck is placed against the ram of jack to act as as

*Watson & Stillman, 470 Grand Street, New York City.

med or flanged, jointed at front toe and secured by lock bolt. It is provided with a full protecting sole plate so as to allow the horse to always staud on a level platform, no matter how uneven the road he has to travel, thus avoiding painful distortions and preventing from hurting against and picking np any sharp encumbrances. The pad is secured on inside of shoe rim by rivets and is provided with strap and buckle on the upper small part of hoof-wall, so as to help in concert with lock-bolt to firmly secure the shoe to the hoof. Calks are steel-hardened and so constructed as to prevent transverse slipping. It is a very un-*Law. Schwaab, 70 Varick street, N. Y. City.

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practical method to drive 24, or 28, sharp edged and pointed iron spikes through the poor animal's hoofs, thus unnaturally pinching him at every step. This shoe will prevent snow-balling, corns, blubber legs, falsely termed shoulder lameness, in most instances the natural result of nailing. It is conveniently taken off after toil, so as to make the animal's rest perfect and natural."

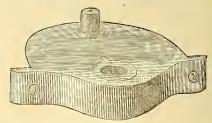
Gould's Track-Support, Traction Cable and Electric Conductors Conduits.

We illustrate herewith a combined railway track-support and traction-cable and electric-conductors conduit* designed to pro-

phonic, telegraphic, and electric-light wires. D and E represent railway-rails, which may be formed integral with the tubes AB, or be fastened thereto.

In laying the structure the ground will be excavated in two parallel channels to receive the conduits, leaving a ridge between on which the cross-pieces C C, will rest. The tubes A B, which are formed in sections of suitable or convenient length, are then laid in the excavation and the sections fastened end to end, or jointed together in any suitable manner, as by bolting. The earth is then filled over the cross-pieces and around the tubes, and the paving laid, the tops of the tubes being on a level with the paving.

not to have an extension plate connected with it. With the old arrangement the stud or bolt, fastening the pawl, is apt to wear the wooden sill of the car and become



loose, so that the pawl will get ont of the proper working position in reference to the ratchet wheel. The improvement consists in joining the stud firmly to the shaft bear-

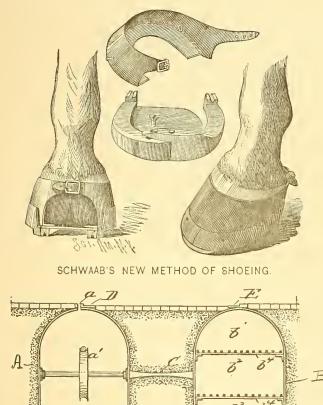


Fig. I. GOULD'S CONDUITS.

vide a structure that will form a support or bed for railway and street-railway tracks. and also conduits for a traction-cable and for electric conductors. Fig. 1 is a vertical section of the device; Fig. 2 a side elevation, and Fig. 3 a plan view. A and B represent two tubes of metal which are held parallel and in fixed relation to each other by cross-pieces C C. The tube A is slotted longitudinally on its upper side, as shown at a, for the passage of a gripping-lever to engage with a traction-cable running on pulleys a', in the tube. The tube B has a man-hole b, in its outer side to permit access to the conductors therein, and the tube may be divided horizontally into compartments b1 b2 b3, by means of shelves b4, for the reception and separation of different classes of electric-conductors-viz., tele-

• John H. Gould, Philadelphia, Pa.

and cleetric cable conduits. An advantage derived from the use of the device is that the necessity of repeated tcaring up of the streets is obviated, while the employment of timber is entirely avoided.

The device is ap-

plicable to horse-

railways, and all

other railways, in-

cluding the electric

roads, and the tubes

are designed for tele-

phone, telegraph,

An Improvement in Brake Reel Attachments.

Our illustration shows an improvement in the construction and arrangement of bearing for reel shaft, for street and other railway cars. The invention* is specially



designed for street cars. The usual custom is to fasten the reel block to the sill, but

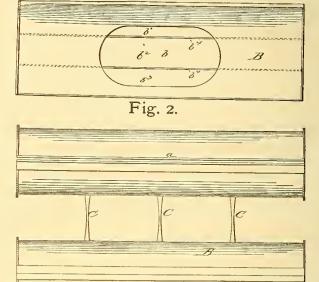
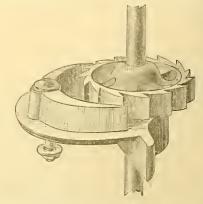


Fig. 3.

ing, in fact casting the whole in one piece. To allow for the wearing of the jonrnal of the reel shaft, an adjustable bushing is inserted in the casting, which can be replaced when worn. The stud is fitted with a square hole on the bolt, which facilitates removing the attachment, as will be seen by



reference to the cuts. The bushing for the bearing of the shaft is made tapering, and may be made of better material than is used for the other part of the block; the whole tending to keep the shaft, the ratchet wheel and the pawl in their proper relative positions.

• I. H. Randall, Metropolitan St. Railway Co., Boston, Mass.

The Cable Railways.

Among the busiest men in this city are the officers of the New York Cable Railway Company. The report of the commissioners appointed by the Supreme Court to pass upon the question whether the railways mentioned in the petition of the Cable Railway Company ought to be constructed and operated, unanimously recommended the construction of the railways.

Mr. W. C. Andrews, representing the syndicate which will furnish the money to carry on the work, says: "We are abundantly able to go on with the plan which we have laid out, and we are thoroughly convinced of the entire practicability of the cable system. There is a pressing need in this city of additional street railroad facilities, and to properly appreciate what this demand is it is necessary to study the vast increase of the past fifteen years in the business, traffic and population within the limits of this island. We propose simply to supply New York City with an ideal surface system of communication. It is intended to furnish a thorough system of transit, with due consideration to the convenience and economy of the people and the development of property interests. Our plan embraces three axial lines, partly on the surface and partly elevated, to give continuous transit from the Battery to Harlem River. The other lines are transverse and chiefly surface ones, intersecting the axial lines and connecting with the ferries on the Hudson and East rivers. These axial routes in connection with the cross-town lines will, it is thought by the commissioners, lead to a great improvement in the taxing values of property on the cross streets and lateral portions of the city, which are now comparatively out of the way. The great popular advantage of the system is that a person starting anywhere in the city may, on payment of a single fare of five cents, reach any other point in the city. The system of transfers will be such as to admit of this, and with the least inconvenience to the passengers."

".The plan of a comprehensive system of lines, all under one management and ownership, is desirable to the public who patronize the street railroad, as well as to all others in any way affected. The proposition of the company to carry passengers for single trips over the main line and branches at a single five-cent fare is entirely practicable, so far as the management of the business is concerned, and it presents to that very large class of our people to whom the expense of street car fares is an unavoidable tax, the possibility of choosing comfortable residences far away from the more crowded portions of the city without any increase in this personal tax. A careful study of the existing street car traffic in this city shows that, exclusive of the Fourth avenue horse car line, which makes no separate report, the fourteen other surface roads show, in February, 1885, a market value of 48.61% greater than the par value of their stocks and bonds. Their gross earnings for the

year 1883 amounted to \$8,355,545, equal to 30.17% upon their total capital. An expensive operating system left them still a total, net, of \$2,407,871, or about 8.69% upon the entire nominal capital, taking them good and bad together. Their total market value at this time, distributed on the mileage of 1883, amounts to about \$431,000 per milc."

"There is a wonderful amount of opposition shown to these cable roads, but it is not unlike that which opposed the elevated roads. Lot-owners thought that the iron road was like a Juggernaut to them, but instead it has turned out to them a very Argonaut of wealth. The cable road will undoubtedly be a great benefit to New York. The problem is a growing one every day. There was a passenger traffic in 1874 of 152,927,233. Ten years later (1884) that traffic became 302,183,362. Now, that is an incresse of 200%. Carry that forward ten years longer in the same ratio, and it will be 604,000,000. How are these people going to live here and do business? The elevated roads carried 96,000,000 of people last year, and have reached their capacity; all other railroads, 187,000,000, and we are hanging by the strap now, there are no seats for the people who ride. When we get a surplus over that in ten years of 420,-000,000 of people who can neither get a seat nor hang on the strap, what are we going to do? This is the exact question before us. A great many people who now ride on the elevated railroads don't like it because they have got to walk a distance at either end to get to the stations. They will take the cable cars because they can ride to their very doors. But there is this fact before us-there is this 420,000,000 to be provided for ten years hence, very soon after these cable roads can be completed; a 420,000,000 who, with all our present methods, can neither get a seat to sit on nor a strap to hang on. That is the problem to, solve. And in that question and its solution lies the future interest, growth and welfare of our city."

Our Startling Age.

The following lines, by Citizen George Francis Train, of Tramway note, and who has previously contributed to our columns were specially composed for the STREET RAILWAY JOURNAL.

> Genius en regle never stands: It cuts and carves its own career, Making new rules with its own hands, Independent of Prince and Feer!

Canals are always dug by rule (As Grundy Fashion's Cosmos way In Custom Pond of Stagnaut Pool;) But Rivers flow both night and day Untaught in any worldly school.

The Patent office shows what mind When Genius mad iu world can find, To Psycho evolute mankind;

It laughs at time and shortens space, To clevate the Human Race.

Electric currents laugh at steam In lightning flashes on machine! With wire and type, with light and sound, It talks to Cosmos earth around!

(As pulse beats thought with car on ground.)

Fare Register for Tramcars.

A patent check designed to show the number of passengers who travel in any tramcar to which the patent may be applied was recently tested at Belle Vue Gardens, Manchester, in the presence of the representatives of various carriage and tram companies. A working model of a tramcar, with the patent apparatus attached, was run several times round the large ballroom. In this model are sixteen seats, separated from each other much after the fashion adopted in first-class railway carriages. Each seat rests on mechanism which communicates with a number of rollers in a box at the end of the tramcar. In this box is a long roll of paper, perforated by wheels, which correspond in number with the seats in the car. When a passenger takes his seat one of these wheels is brought in contact with the roll of paper; when he leaves the car the pressure of the wheel on the paper is removed. At Thursday's trial of the patent passengers were represented by weights which were placed on the seats at any point suggested by those who were present. At the end of each journey the box at the rear of the car was unfastened and a portion of the roll of paper was cnt off. On each occasion this slip of paper correctly showed the number of seats which had been used and also the length of time each seat had been occupied. The objection to the system is that if a passenger in a car fitted with the patent shifted from one seat to another the roll of paper would apparently indicate two passengers, one of whom had left the car at the point where the other got on. This defect, it was remarked, was sufficient to prevent the adoption of the patent in Manchester, though it might be found serviceable, perhaps, in towns where the tram companies have adopted the system of penny stages .- Mech. World, Eng.

A Singular Car Accident.

A horse car of the Fourth and Eighth Street Line, Philadelphia, was passing up Walnut street recently, loaded with passengers, when it suddenly sank into the earth above the wheels, toppling the car slightly on its side. Women and children began to scream, while the men hustled themselves to the platform, eager to make their escape. At the intersection of Walnut and Fifth streets workmen are employed in laving a large water main, and the earth having been dug away close to the track caused the car to break through the road. It was blocked for a long time. None of the passengers were seriously hurt.

THERE WAS A WAILING BABY in a young mother's arms, and that child (it was on a day-time trip) screamed so that all the passengers were uneasy, and all friendly offers failed; whereupon the conductor tapped on the shoulder a man who sat by the window next the driver, and saying "maybe it 'll quiet to see the horses," persuaded him to change seats with the disheartened little mother. The child stopped crying as if by magic. So there was one man who understood his business—to the credit of conductors be it said, they generally do.— *Phila. Ledger.*



MONTHLY, \$1.00 PER YEAR.

E. P. HARRIS, General Manager.

American Railway Publishing Co., 32 Liberty st., New york. Lakeside building. chicago.

S. L. K. MONROE, Sec'y and Treas.

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Philadelphia, Pn., 419 WALNUT ST. G. B. HECKEL, Manager.
J. H. McGRAW, Manager Subscription Department,

St. Louis Backbone and Generosity.

The Street Railway Managers of the country have had, during the past month, an opportunity of witnessing the demonstration in their St. Louis brethren of two qualities which rarely exist in so marked a degree in combination. We speak of backbone and generosity, both of which are, not only admirable in themselves, but we behave quite essential to sueeessful street railway management,

The position taken by the St. Louis Managers in a strike which occurred at the worst posible time, and the firmness and consistency with which under the most trying circumstances, that position has been maintained, presonts to the railway peoplo of America, an example which if always followed; would soon render strikes unheard of.

The generosity shown by the hospitality extended to the delegates of the Street Railway Association and their friends in allied industries, during their stay in St. Louis, eould hardly be surpassed. Such generosity—whon manifested in the form of courtesy to the public consideration, for the comfort of passengers and welfare of employees, can hardly result in anything but suecossful railway management.

Volume II, Number I.

This number of THE STREET RAILWAY JOURNAL is the beginning of a new volume. The past year's experience has proven most conclusively the need of such a journal, and the constant increase in numbers of our subscription list indicates that wo have filled that want. Our pages have increased from sixteen to forty in the present issue, and the files are replete with practical matter that is of great value to street railway men. The interests of every Company will be better taken eare of it its entire staff are provided with it. Look this number over and order your subscriptions to begin with this volume.

Euphony and Right Names.

It is said of an ex-conductor the company "let him go" on account of "a small eard," or he was eaught "knocking down," and "got through." Why not call things by their right names? "Let him go," "small card," "knocking down," "got through," etc., are comparatively euphonious words, but would it not be better English and move conducive to correct ideas to say, he was discharged for *stealing* fares. Stealing is stealing, whether in the ease of a conductor or eashier. In either ease it is a crime which is not lightly regarded by the right minded, and should not be smoothed over by wrong words.

First Count the Cost.

When we mean to build We first survey the plot, then draw the model; And when we see the figure of the house, Then must we rate the cost of the erection: Which if we find outweighs ability, What do we then, but draw anew the model In fewer offices; or, at least, desist To build at all?

Henry IV., 11, i, 3. This country is full of metaphorical halfdry wells; some fair and round, well placed, elean-eut and straight, some rough, eareless, and in spots where no return need have been expected for the toil of the digger even had he pierced the lowest strata.

Railroads which start nowhere, run through no place in particular, and end in No Man's Land; factories for making impossible things from impracticable materials; societies for producing Utopian results from incongruous members; all these are the half-dry wells of which we speak. The projectors do not count the cost. Since the world got well to spinning through space, it has required money to make the mare go, whether for work, or pleasure, or deeds of merey.

Nearly three centuries ago, the myriadminded bard of Avon, writing of times then past by 200 years, put into the mouth of Bardolph, urging eaution before hazarding a battle, the quotation with which we head these paragraphs. The eaution was then apt and wize; it is no less so to-day and we may apply it with use and profit, in all our on-goings of to-day and of all days to come.

The Strike at St. Lonis.

Early last month a large part of the drivers and conductors on the various street ear lines in St. Louis struck for shorter hours and higher wages. A local organization had been formed under the name of the Knights of Industry its ostensible objeet being benevolence. Such was its character however that it was readily merged with the Knights of Labor, who on complaint being made by street railway employees wrote a formal letter to the managers of the various lines requesting them to eall and adjust the difficulties complained of by its members. The official naturally failed to respond to this request, paid little or no attention to the note, and deelined to recognize the Knights of Labor.

With the strike that followed and destruction of property attending it our readers have been made pretty familiar by the daily press. Employees hired to take the places of strikers were beaten, attempts made to blow up ears, ears overturned, horses injured haruess eut and in all about \$25,000 worth of property destroyed. The managers of the railways however, made up their minds at the outset to manage their business in their own way even at the saerifiee of their property and of the loss of revenues from the immense traffie eaused by the Fair then in progress. Within three days the places of the 650 strikers were filled with new men and the companies began to turn away applicants. At last accounts the striking conductors and drivers were either idle or engaged in other pursuits. It is safe to say that those of the strikers who do not regret the action and wish themselves back on the ears at the old wages and hours are the exceptions to the rule.

Cable Traction for Elevated Railroads, Our worthy neighbor the Car Builder in its September issue says:—

The article of Angus Sinclair on the Work of Operating Elevated Railroad Trains, which was published in our July number, has elicited quite a good deal of discussion in the technical press and among railroad mechanical men. The general opinion appears to be that the experiments gave a correct estimate as to the amount of work that had to be done. In several instances exception is taken to some parts of the article, but the general conclusions are uot disputed. The STREET RAILWAY JOURuot disputed. The STREET RAILWAY JOURNAL thinks, assuming the figures to be eorreet, "that there is ample reason for looking into the eable system for the shackly elevated railroads of New York." We do elevated railroads of New York." We do not think such a change advisable. An indispensable requirement of a railroad performing traffie of the kind done by suburi an and elevated roads is pruetuality in the running of trains. The public will insist that trains of this kind shall be operated in the manner that provides the most regular service. To operate the New York elevated roads by cable traction, it would be necessary to keep the cables running at the maximum speed of the trains, which is about thirty miles an hour. El giveels connected with existing eable reads, where the speed is about ten miles an hour, say that it would be impracticable to operate trains with a cable running thirty miles an hour, or that the wear and tear would be enor-mous. Where cable traction is used, even with the low speed employed, breakages that cause several hours' stoppage of the cable are by no means uncommon. The city of New York would be in great thmult the Elevated Railroad Company were operating the Third Avenue line by eable, and a break occurred at 4 o'clcek P. M., that could not be replired in less than three hours. There are numerous other objec-tions to cable traction for rapid suburban transit, but as there is no probability of the system being applied to moderately highspeed trains, there is no use in discussing it.

Apropos of this we might offer, without comment, the following from a N. Y. daily of recent date:—

A derangement of the maebinery of the locomotive of one of the Third Avenue Elevated trains, near the Twenty-eighth street down town station, at 6:40 A. M., yesterday, eansed a long interruption to travel, a considerable amount of profanity and loss of money to working men and women who were unable to reach their shops at 7 o'eloek. The blockade continued for half an hour and the trains were banked close to each other as far as Eightyninth street. The cars were erowded and the third commandment was generally violated. Some of the passengers became so impatient that they walked from the trains to the stations on the side of the track.

We don't think that much argument is needed in this connection!

American Street Railway Association. OFFICERS, 1885-6.

President.—Julius S. Walsh, President Citizens Rallway Co., St. Louis, Mo. First Vice-president.—Wm. White, President Dry Dock, East Broadway & Battery R. R. Co., New York

Dock, East Broadway & Battery R. R. Co., New York City, N. Y.
 Second Vice-president.—C. B. Holmes, President Chicago City Ry. Co., Chicago, Ill.
 Third Vice-president.—Samuel Little, Treasurer Highland St. Ry. Co., Boston, Mass.
 Secretary and Treasurer.—William J. Richardson, Secretary the Atlantic Avenue Rallway Co., Brook-lyn, N. Y.
 Excentive Committee.—C. A. Richards, President Metropolitan R. R. Co., Boston, Mass.; Jno. Kilgour, President Cincinnalt v. Ry. Co., Cincinnatl, O.; Jno.
 McGuire, President City R. R. Co., Mobile, Ala.; T.
 W. Acklev, President Thirteenth & Fliteenth Sts.
 Pass. Ry. Co., Philadelphia, Pa., and C. W. Wood-worth, Secretary Rochester City & Brighton R. R.
 Co., Rochester, N. Y.

American Street Railway Convention.

The Annual Convention of the Association met in the Southern Hotel, St. Louis. Mo., Wednesday Oct. 21st, at 10:30 o'elock A. M. The meeting was ealled to order by the President, Calvin A. Richards of Boston, and the following delegates were found to be present:-

Highland Street Ruilway. Sam'l Little, Treas.; J. E. Rugg, Supt.

Metropolitan, Boston, C. A. Riehards, Pres.; I. Randall, Supt. Car Cons.

Brockton (Mass.) Street Railway. aee B. Rogers, Supt.; C. J. Kingman, Director.

Atlantic Avenue Railroad Company, Brooklyn, Wm. Richardson, Pres.; W. J. Richardson, Sec.

Brooklyn City Railroad, Wm. H. Hazzard. Pres.

Bushwick Railway Co, W. M. Morrison, Supt.

Buffalo East Side Railway Co., S. S. Spanlding, Pres.

Buffalo Street Railway Co., Henry M. Watson, Pres.

Chieago City Railway Co., H. H. Windsor, Sec.; T. C. Penniugton, Treas.

Chicago West Division, James K. Lake, Supt.

No. Chicago City Railway Co., V. C. Turner, Pres. and Supt.; Jacob Rehn, Vice Pres.; Augustine W. Wright, Supt. of Track.

Ciucinnati Street Railway Co., A. G. Clark, Vice Pres.

Mount Adams & Eden Park Inclined Plane Railway, Cincinnati, J. P. Kerper, Pres.; John Harris, Supt.; Benj. F. Houghton, Pur. Agt.

Superior Street Railroad Co., Cleveland, F. De H. Robison, Pres.

Brooklyn Street Railway Co., Cleve-land, A. J. Moxham, Vice Pres.

East Cleveland (O.) Street Railway Co., H. A. Everett, Sec.; G. E. Herrick, Direc.

Woodland Avenue & West Side Street Railway Co., Cleveland, J. B. Hanna, See.; J. F. Carl, Director.

Columbus, (O). Consolidated Street Rail-way Co., A. Rodgers, Pres.; E. K. Stewart,

See.

Dayton, Ky. Newport & Dayton Street Railway Co., W. W. Bean, Pres. and Supt. Dayton, (O). Street Railway Co., J. W. Stoddard, Pres.; A. W. Anderson, Supt.

Oakwood Street Railway Co., Dayton, O. Chas. B. Clegg, Pres.

Denver City Street Railway Co., D. F. Longstreet, Director,

Easton, (Pa.) & South Easton Passenger Railway Co., H. A. Sage, Pres.

Globe Street Railway Co., Fall River, Mass., John H. Bowker, Supt.

Hartford (Conn.) & Wethersfield Horse Railway Co., E. S. Goodrieh, Pres. & Treas.

Citizens' Street Railway Co., Indianapo-lis, Ind., Tom L. Johnson, Treas.

Jersey City, (N. J.) & Bergen Railroad Co., Charles B. Thurston, Pres.; E. F. Brooks, Engineer.

Lexington (Ky.) City Railway Co., John Cross, Pres.

Long Island City, N. Y. Steinway & Hunter's Point Railway Co., Chas. J. Campbell, Supt.

Louisville (Ky.) Central Passenger Rail-way Co., Thos. J. Minary, Vice-Pres.

Louisville, (Ky.) City Railway Co., H. H. Littell, Supt.

Lowell, (Mass.) Horse Railroad Co., J. A, Chase, Gen. Man.;

Lyons, (Ia.) Clinton & Lyons Horse Railway Company, R. N. Rand, Viee Pres.

Memphis City Railroad Co., R. Dudley Frayser, Pres.

Minneapolis, (Minn.) Street Railway Co., Thos. Lowry, Pres.; C. G. Goodrieh, Sec.

Mobile, (Ala.) City Railroad Co., John Maguire, Pres.; M. Frohliehstein, Director. New Albany (Ind.) Street Railway Co.,

Mrs. L. V. Vredenburgh, Treas.

Central Park, North and East River Raitroad Co., C. Densmore Wyman, Vice Pres.; J. L. Valentine, Treas.

Dry Doek, East Broadway & Battery Railroad Co., New York. Wm. White, Pres.

Omaha, (Neb.) Horse Railway Co., W. A. Smith, Supt.

Central City Horse Railway Co., Peoria, Ill., H. R. Woodward, Pres.; Eliot Callen-der, Treas.; Jas. A. Smith and Joseph Elders Director.

Fort Clark Horse Railway Co., Peoria, Ill., J. H. Hall, Pres.

Lombard, & South Streets Passenger Railway Co., Philadelphia, John B. Parsons, Pres.

Pittsburgh, Allegheny & Manchester Passenger Railway Co., C. Atwell, Pres.; J. Pittsburgh, T. Speer, Man.

Pittsburgh, (Pa.) & Birmingham Passen-er Railroad Co., W. W. Patrick, Pres.

Pittsburgh, (Pa.) Oakland & East Liberty Passenger Railway Co., J. T. Jordan, Pres

Union Railroad Co., Providence, R. I. D. F. Longstreet, VicePres.

Belle City Street Railway Co., Raeine, Wis, Chas. Hathaway, Treas.

Rochester (N. Y.) City & Brighton R. R. C. C. Woodworth, Sec.

Saginaw (Mich.) Street Railway Co., F. G. Benjamin, Supt.

Naumkeag Street Railway Co., Salem, Mass. Chas. Odell, Pres.; Wm. B. Ferguson, Supt.

Salem (Mass.) & Danvers Street Railway Co. Benjamim W. Russell, Pres.; Thos. H. Johnson, Director.

Salt Lake City (Utah) Railway Co. Orson P. Arnold, Supt.

City Railway Co., San Francisco, Cal. R. B. Woodworth, Pres.; O. W. Meysenberg. Sioux City (Ia.) Street Railway Co., E.

T. Evans, Sec. Citizen's Street Railway Co., Springfield, O., D. W. Stroud Pres.

Benton-Belfontaine Railway, St. Louis,

Mo., J. G. Chapman, Pres.; Chas. Parsons, Vice Pres.; Robert McCulloch, See.

Citizens' Railway Co., St. Louis, Mo., Julius S. Walsh, Pres.

Lindell Railway Co., St. Louis, Mo., John H. Maquon. Pres. ;John H. Lightner, Viee-President.

Missouri Railroad Co., St. Lonis, P. C. Maffit, Pres.

People's Railway Co., St. Louis, Mo., Chas. Greco, Pres.

Southern Railway Co., St. Lonis, Mo., E. R. Coleman, Pres.; W. L. Johnson General Manager.

St. Paul (Minn.) City Railway Co., Thos. Lowry, Pres.

Taunton (Mass.) Street Railway Co., ---Pres.

Toledo (O.) Consolidated Street Railway Co., J. E. Bailey, Pres.

Troy (N. Y.) & Lansingburg Railway Co., Charles Cleminshaw Vice-President.

The following new roads were added to the Association:

Cre m City Railroad Company, Milwan-kee, Wis., Winfield Smith, Pres.; Newburykee, Wis., Winheid Smith, Pres.; Newbury-port & Amesbury Horse Raihoad Com-pany, Newburyport, Mass., E. P. Shaw, Lessee; Kansas City Cable Railroad Com-pany, Kansas City, Mo., Edward J. Lawless Supt.; St. Louis Railroad Company, St. Louis, Mo., Christian Peper Pres.; Washing-tern fr Coorganous Company, St. ton & Georgetown Rullroad Co., Washington, D. C., Henry Hunt, Pres.; Cass ave. & Fair Grounds Bailroad, St. Louis, Mo., W. R. Allen Pres.; Dayton Street Railroad Company, Dayton, O. A. W. Anderson Supt.; Union Depot Railroad Company, St. Louis, Mo., John Scullin Pres.; South Boston Railroad Company, Boston, Mass., Daniel Coolidge Supt.; Des Moines (Ia.) Street Railway Company, M. P. Turner Pres.; Mrs. M. A. Turner, Treas.; St. Clair Street Railway Company, Cleveland, O., Chas. Hathaway Pres., M. S. Robison See.

Letters were received from the following regretting the necessity of their absence.

WALTER A. JONES wrote from Carlsbad, Austria, making suggestions as to distribntion of officers, and referring to his tour and return to Amoriea in December.

WM. MACNAMARA, Pres. Albany (N. Y.) Street Ry.

A. S. CHASE, Pres. Duluth, Minn., Street Ry.

J. W. FOSHAY, Pres. Broadway and Seventh Avenue, N. Y., R. R.

H. C WHITEHEAD, Treas. Norfolk, Va., R. R.

JAMES GREEN, Sec. Toronto Street Ry.

E. TUSHER, General Manager Montreal, Can., City Passenger Co.

The minutes of the last meeting were adopted as printed, without reading.

PRESIDENT RICHARDS then addressed the convention as follows:

GENTLEMEN OF THE CONVENTION:-

Let me assure you at the beginning, that the first words of your presiding officer, will be to extend to one and to all a hearty, glad and joyous welcome. I welcome you as you come from the sea-washed shores and pine tree forests of New England, and you also who come from her busthing eities and busy towns; I welcome you from all parts of the Empire State, and from the great metropolis, New York City, and you from the sister city of Brooklyn; I welcome you from the great and teeming marts of trade, and from the rich and prosperons towns of the Middle States; I welcome you from all parts of that boundless Empire of the West; I welcome yon from the revived, growing, and regenerated cities and towns of the Sunny Sonth, and I welcome you from the Golden Gate of California. I welcome you all, from the Pacific to the Atlantic coast, and from our Canadian border. Indeed, I extend to one and to all of the representatives of this great and widespread country, a most hearty, cordial, and fraternal greeting.

The convention to which yon have been summoned, presents to us among its many benefactions, nothing richer, nothing better, and nothing of deeper import or more lasting value, than the opportunity it offers for the permanent enrichment of those social bonds that have in the past, and will in the fnture, do so much to encourage, cheer, and benefit in every way these toilsome lives of ours. Indeed, I may say, that in the cluster of advantages that frame these annual gatherings, the social ties that are formed are more productive than anything else for the good work in which we are engaged. And let me hope that the cordial and friendly greetings that you have exchanged together, and the kindly emotions of friendly fellowship, will remain with you as the most pleasaut event of this oceasion. It has seemed to me the last few hours that the severance between the rails of all our companies was now connected. and the electric current from the batteries within our breasts had flashed from rail to rail, nntil we were all united in one grand and glorions n t-work of brotherhood, each and all glad and ready to receive and to impart the teachings of their experiences during the time that has passed since our last parting words were said.

With my greetings I also offer words of sincere congratulation, I congratulate you upon the results of a successful year. Favoring circumstances have, as far as I know and can learn, given us all an opportunity to reap from their results what may be termed a good, strong, successful business. I wish just here to remark that in my judgment it is not alone the prevailing low prices of provender and of all materials that are used, that have contributed to that result. Is it uot a fact, and may we not continue to look right here for it? Is it not because there is a stronger, and more abiding sentiment abroad, all over the world, as to the real value and importance of the street railway, as a most important factor in the prosperity and growth of every city or town where its sails are laid, and where the merry and eulivening sound of the car bells is heard? Do you not find this to be true, when you consult the statistics and learn the steady, strong and unvarying advance in the value of street railway securities, plainly pointing to a settled fact, that the public believe in their ultimate and permanent prosperity?

The street railway is a domestic institution, it is nsed around and about our homes, it needs no exhaustive inquiries to ascertain its prosperity or its adversity. The **public** coutribute to its gains every day,

and all days, as they go from their homes to the scenes of their daily employment. The constant dropping of the regular and ever increasing receipts into the treasury, can be seen, contributed to, and understood by all. Again the street railway comes as a benefactor, its mission is to create, not to destroy. It is the pioneer who causes the ontlying and waste places to spring up into life. It furnishes an incentive for the ambition, and goes hand in hand with the progress of every city and towu. Hand in hand, do I say? No, uot that; it marches ahead of the colnmn and flonrishes with drum major pomp its invitation to follow. It beckons on the twin brothers, prosperity and progress.

The day has passed and vanished forever, into the dark night of error, when onr business can le derided, or pnt aside. It now belongs to all classes, and especially to the poor. It needs not greater age than mine, or of the majority of you here to-day, to recall the early history of the street railway car. In those days a ride for a poor man was almost nnknown, its cost banished it from amongst his pleasnres or his necessities. Even the rich rarely rode then for pleasure. Locomotion other than walking was the exception, uever the rule. Look at the difference to-day. The horse car has been well named, it is the poor man's carriage. The poor, aye the very poor, can now ride for pleasure. The introduction of the open car has developed and opened the door, and has given to the poor man a blessing that comes into his every-day life, to bestow a beneficent privilege. No longer must he and his family be shut up in the hot and crowded city, away from all those sweet and health-giving blessings, that nature has so freely given for his welfare, No need now for those sad and touching lines.

> " Oh, but to breathe the breath Of the cowslip and the primrose sweet, With the sky above my head And the grass beneath my feet; For only one short hour To feel as I used to feel, Before I knew the woes of want And the walk that costs a meal."

Is there a man here to-day who can contemplate that phase of his business and not feel that he is assisting, as an instrument, in the design of a kind Providence, who careth for, and provides for the poor and lowly, as well as for the rich and prosperous. Often have I felt this emotion as I have been riding out into the country on a pleasant spring Sunday, and have seeu the seats of the car filled with the class of people I have spoken of. Here was the father, toilworn and careworn; here was the mother, sickly and shrinking from the nuaccustomed situation; and here the little family of children, clean, neat and oh, so happy, all so pleased to simply see the green grass and the blne sky, to hear the birds sing, or to gather the simplest wild flower of the field. Proud, pleased and gratified beyond measure was I, that the means was thus provided that this pleasure. and this health giving privilege was now within the reach of all. And I repeat, it is

because of this and the many advantages to the daily life and wants of the whole commnnity, that makes the STREET RAILWAY a grand factor in the prosperity and progress and perpetuity of our modern civilization.

But let me turn to other matters. We have met to day, gentlemen, as all conventions of business men meet, actuated by one sole motive,-to exchange the ideas that spring from the knowledge and best thought of our daily business experiences; to give and to receive; and to take back to onr homes the newer thoughts derived from an analyzation of old and familiar things, and the fresh born intelligence gained from an examination and discussion of new ideas, new inventions, and new theories, that belong to our business. We need that, so that we may return to onr labors with fresh invigoration, and with better understanding, and let us hope with a more determined purpose, to do all that lies within us, to elevate and improve the standard of our business. We need it so that it shall continue to hold that high position in public estimation that we desire for it. Let me therefore, gentlemen, beseech you all to enter now into the spirit aud meaning of the occasion. It invites your grave and careful participation in these debates, and I ask you not to refrain from giving expression to your ideas upon the subject matter under discussion. I ask you to present to the convention your best and earnest thoughts; so that the light may break in upon matters now darkened by a want of understanding.

I invite you now to this preliminary bauquet, enriched by the regular dishes, made from our daily business experience, and garnished with entrees of fresh and novel ideas, the whole festive board decorated, enlivened colored, and sweetened to both the eye and the taste, by those lovely flowers, true brotherhood, fraternal respect, and social affection; so that man's most earnest and most constant want, "true friendship," shall be supported into life so lasting that its years can only be numbered by the days allotted to each one of ns to live.

Gentlemen, we will now proceed and open the regular business of the meeting.

The secretary then read the

REPORT OF EXECUTIVE COMMITTEE, Which stated that immediately following

the adjournment of the last meeting the following subjects were chosen for discnssion at this meeting, viz:

Diseases common to car horses, and their treatment.

Progress of the cable system of motive power.

Progress of clectricity as a motive power. Repairs of tracks,

Rules governing coudnetors and drivers. Taxation and license

Ventilation, lighting and care of cars.

Committees were promptly appointed and it was expected that from the great variety of subjects to be considered the meeting would be of unusual interest.

Report stated that as all were more or less concerned in them all, uo matter what motive power was used, or what was the nature of construction and equipment, that improvement in street railway methods and appliances was very rapid, and he was a prudent man who kept abreast of the times in these matters; that through the medium of this Association, street railway men were better enabled to keep informed in this matter than in any other way.

MEMBERSHIP,

The Association began its last session in New York with a membership of seventyfour companies, and closed with twentyeight added, making 102.

During the year twenty-three companies have joined.

Total membership was 125 companies (not including those joining at the meeting), the largest companies with scarcely an exception being enrolled. Indeed there is hardly a city of any prominence in the United States and Canada, that has not one or more street railway companies hailing from it in this Association. All known kinds of successful motive power, from horses, about which we all claim to know something, to electricity, of which the wisest know so little, are in use by our members, while it is quite safe to assume that nearly if not quite three-quarters of the streetrailway wealth of America, is represented in the association.

FREE PRINTED MATTER.

Committee stated that while the free distribution of its printed matter in the past had been beneficial in adding very greatly to the membership at the last meeting, it was deemed wise to now discontinue the sending of same to non-members. A letter was accordingly sent out by the Secretary setting forth this fact and calling attention to the great value of legal opinions published by the association; and as a result of this letter several new members were added.

SALT.

The publication of the pamphlet giving the report of the committee on the following: "Track cleaning and the removal of snow and ice. Is salt necessary? If so, is its use detrimental to the public health, and especially is it injurious to horses?" and other valuable papers desired in connection with the subject, had been of great value in correcting public opinion on this subject. Reference was made to its beneficial effects in removing obnoxious laws in Philadelphia and in bringing about a change in the code in New York State, whereby the free use of salt is now permitted, whereas it has heretofore been made a misdemeanor.

FIRE INSURANCE.

The idea of a mutual fire insurance company for street railways, having been suggested by President Chas. J. Harrah, of Phila., was discussed by the New York State Street Railway Association, a letter issued by the Secretary eliciting the fire insurance statistics from all the companies in New York State. These showed that the street railway companies were charged an amount far in excess of what they should be.

The Executive Committee of the American Association then took the matter up, a letter being issued to all companies, which

having been received by all we need not here reprint.

The following is a summary of statistics of one hundred and seventy-eight companies as completed from replies to the circular letter referred to:

In view of these facts the Excentive Committee took suitable measures to secure the passage of a law anthorizing the formation of a Street Railway Mutual Insurance Company. This law as our readers know was passed and was printed in onr issue of June 1885, page 166. The company was then organized, as reported in former issues of the STREET RAILWAY JOURNAL. The committee strongly commended the plan and the company as a means of greatly reducing the cost of street railway insurance.

LEGAL PAPERS.

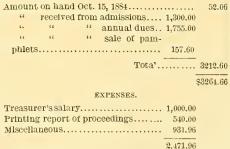
Attention was called to the legal papers published by the association, reference being made to their great value and companies being urged to forward promptly to the Secretary opinions in cases in which they are interested, whether for themselves adversely decided or otherwise.

REDUCED RATES OF FARE TO MEETING.

Reference was made to the correspondence of the Secretary with the New York Central & Hudson River Railroad, in relation to special rates of fare, and hearty appreciation of the consideration and courtesy of that road was expressed.

The belief was expressed that the time has come when all the steam railroad lines, by reason of the natural sympathy that exists between their business and that of the street railways, should and will gladly secure to the latter the consideration of reduced fares in traveling from one part of the country to another to attend annual meetings.

The report closed by saying that notices had been sent to all street railways in the United States and Canada, inviting the participation of all in so interesting an occasion to the street railway community, Then followed the Treasurer's report, which showed the



on the evening of the third day to participate in a banquet.

On motion of Mr. Wm. Richardson, the invitation was accepted with thanks.

The Sec'y then read the report of the special committee on Diseases Common to Car Horses, and Their Treatment. The report being of great length and containing a great many technical words and phrases, on motion of Mr. White of N. Y. only the conclusions were read. The substance of this report together with remarks made thereon by Mr. White of N. Y. and Mr. Cleminshaw of Troy, will be given in a later number of the JOURNAL.

MR. AUG. W. WRIGHT of Chicago then read the report of the special committee on the Progress of Electricity as a Motive Power, after which the convention adjourned to meet at three o'clock P. M.

AFTERNOON SESSION.

Meeting called to order at three o'clock. The Sec. read the report of the special committee on Repairs of Track. Some positions were taken relative to the life of hemlock and spruce for ties and sleepers, from which Mr. Hazzard of Brooklyn dissented, and at his suggestion the discussion of the report was deferred until Mr. Moxham of the committee could be present, when he desired to give the result of his experience against the conclusions arrived at in the report. On motion the report was accepted.

The discussion of Mr. Wright's paper on the Progress of Electricity as a Motive Power was then taken up. The conclusions of this paper may be summarized in the statements that while there is much interest and some expectation on the part of street railway men as to the future of electricity as a motive power for street railways, the results as yet attained have not demonstrated its practicability and economy. Attention was however called to the Bentley-Knight Co.'s offer to put in their plant, the payment for which should be entirely conditioned upon its economical and satisfactory results to any street railway company who saw fit to avail themselves of the offer.

MR. HERRICK from Cleveland made some remarks on the Cleveland experiment with the Bentley-Knight system, the substance of which was that as yet the system had not proven itself either economical or satisfactory as to the uniformity and control of speed and the ability to stop and start at pleasure.

Mr. PARSONS of Philadelphia, made some remarks as to his observation of the test of an electric motor, saying that its speed and power were very much less near the end of the route than at the beginning. He could get no data as to the cost, and the system must have a third rail. He thought some motor besides horses would soon be used for propelling street cars, but as yet his experience in the matter of electricity had not been satisfactory.

THOMAS L. JOHNSON OF Cleveland gave as the result of his observation of the Clevelend experiment the opinion that it was neither economical or otherwise satisfactory. Mr. WILLIAM RICHARDSON OF Brooklyn

made some remarks as to the result of the Cleveland experiment and a test witnessed sometime since by him at Menlo Park; he thought the plant in the latter case altogether too expensive to render the system practicable. He was glad to hear of the offer made by the Bentley-Knight Co., where they offer to take the chances on the success of their system. He also referred to the use of the Daft system in Baltimore. He read a letter received from Mr. T. C. Robbins, General Manager of the Union Bailroad of that city. Mr. Robbins said that since Sept. 1st, 1885, two motors, two cars each, had been at work on that road, and that two more had been ordered, each motor costing about \$2,000; each requiring steam power costing about one-half that of horse power for same work, the cost of the plant being about \$12,000. Cars run every half hour; maximum grade being 353' to the mile, and in one place the cars run on a curve 90' radius and 40' grade, and in another 350' grade on a curve of 70' radius equaling 470' grade on a straight track. Mr. Robbins considered the system entirely satisfactory and asserted that with the Daft motor electricity is under as complete control as when used for telegraphy or electric He gave as advantages more lighting. speed and less dirt. He was satisfied that in the matter of cost the figures would show in favor of electricity; he farther added that the conduit (above ground) cost \$2,000 a milo.

MR. HERRICK of Clevcland, when asked why he did not give the cost of running by electricity in that city, said he did not consider figures as to dollars and cents in place when "it did not run at all."

MR. LONGSTREET of Providence, said that he granted the Bentley-Knight people permission to try their system on his road, but after obtaining it they confessed that they would be unable to propel his cars as cheaply as it could be done by horses.

MR. RICHARDS, of Boston, made a similar report.

MR. WINDSOR of Chicago, had no less authority than Cyrus W. Field for the assertion, that while cars may be run by electricity and with reasonable speed, that they could not be run as cheaply as by horses was beyond a doubt. He made some assertion as to the loss of power in the Chicago Cable R.R., in reply to some previous remarks of Mr. Wright; but this, and the response of Mr. Wright, were ruled out of order.

MR. WM. RICHARDSON thought that all should make further inquiries as to the Daft experiment in Baltimore and watch it.

MR. HAZZARD spoke of a previous experiment of the Daft system.

The report of the special committee on the Progress of the Cable System of Motive Power having been read by the Secretary, was then discussed. As this report will be given at length later in the STREET RATE-WAY JOURNAL, we will not repeat it here. Some interesting figures were given.

MR. LAWLESS, formerly of San Francisco, uow of the Kansas City Cable Road, made remarks showing the favorable working of

that road, and stated that the traffic was much larger than had been anticipated and was beyond the capacity of their present equipment. Said the beauty of the system was, that having the reserve power which should always be provided, the road was ready at any moment for a practically unlimited amount of traffic by simply adding cars. He gave as the life of the cable in San Francisco on the Sutter Street road eighteen months, and on the Clay Street twenty-four months. He thought about seven miles per hour a desirable speed for the cable to travel. He favored long cables. The longest he knew of was that in St. Louis, 35,000'. He then gave some figures as to the cost of road, but being uncertain in his own mind we do not reproduce them.

Mr. LONGSTREET asked if cars could be run on level road by the cable system more rapidly than the cable travels; also if it was practicable to gain speed on down grade by releasing the grip.

MR. LAWLESS replied that it was not usual to gain speed on down grades by letting go of the cable, but that it was doue by drivers in some iustances to gain time.

MR. D. J. MILLER, Engineer of the Third Avenue Compauy's Cable R.R. of N. Y., referring to Mr. Longstreet's question, as to the possibility of running cars more rapidly than the cable traveled on level road, said it could be done for a few feet, owing to the cable regaining its slack, but the amount was so little as to be of uo account in practice. He said that in New York the cars do release the cable on down grades and thereby gain time. Said that the New York Cable Road runs its cable eight miles an hour. Various improvements had been made in the tube for cable railroads. Mr. Miller when asked under what patent the most improved tubes were built, did uot reply directly, but from his remarks was inferred that various conflicting claims were made. In reply to the question how much did the N. Y. Cable Road cost a mile, he said about \$90,000, iucluding the cable and carrier wheels, but not including the pavement. This was for new road.

MR. LAWLESS spoke of the increase in value of real estate on cable roads. In reply to the question whether the Market Street road in San Francisco was built under later patents than the earlier roads, said, the patents were substantially the same, the only improvements being in miuor detail.

THURSDAY MORNING SESSION.

The discussion of the Special Committee's report on the Repairs of Track was taken up.

MR. WRIGHT of Chicago gave, as the result of several hundred experiments with different kinds of spikes in the same wood, and the same spike in different kinds of wood, the general conclusion that the holding power of spikes was found to be in proportion to the friction on the surface; thus the same metal in four 4" spikes presenting twice the surface would hold twice as much as one inch spike. Regarding the durability of timber he called attention to the fact that it was dependent largely upon such

circumstances as the time of year at which it was cut, whether it had been girdled, whether it grew upon high or low land, and especially whether it was well seasoned; stated that low land timber being porous and sappy was much less durable, and if girdled the timber had lost its life and was therefore less durable than it would otherwise be. He said that on their road, timber was all thoroughly air seasoned, most of the stringers being piled up three or four years before using them. He spoke of taking out last year some pine ties which looked as good as new after laying nine years and new track was relaid on the old ties.

MR. ATWELL of Pittsburgh thought watersoaked timber would last longer and warp less. He asked Mr. Wright if this opinion was founded on fact, to which Mr. Wright replied that water-soaking for removing sap was a very good substitute for air seasoning.

MR. HAZZARD of Brooklyn thought that spruce of all timbers was the poorest for places where it was alternately wet and dry; thought hemlock much better, but much the same; white and yellow pine for wet and dry places he found to be about equally dnrable. He said that, while lumber kept constantly wet would not rot, if taken out and replaced it would soon decay. He spoke of timber lasting 60 years below low water mark, and of removing Manhattan water pipe in excavating for the N.Y. Produce Exchange, which had been laid at least 50 years; the latter not being in a wet place but having been kept from the air. He had yet to find a rotten log below low water mark. The time of year of cutting had much to do with durability of timber and the farther it was under ground the better it would last. Used oak and chestnut ties and yellow pine stringers; thought high ground white oak the best for durability. In reply to the question as to the durability of cypress said he knew little personally about it, but believed that the average life of ties on the Brighton Beach steam road was five years, the ties being on the surface of the ground. Believed yellow pine the best to lie still and straight. In reply to a question could not say as to the effect of salt for preserving timber but ships in which salt was carried were said to be preserved from decay.

MR. MOXHAM thought the question difficult to deal with by the committee excepting in one way, and that was to give as large a fund of information as possible, drawing only certain general conclusions, leaving the individual roads to make special applications of the data, according to local circumstances.

MR. WHITE thought that while stringers might be in good condition apparently when removed for relaying track, he would not advise relaying them if they had lasted nearly the natural life of the timber, as their exposure to the air and relaying under different circumstances would most invariably cause them to rot.

MR. THURSTON of Jersey City called attention to different soils and pavements as $_{a}$, affecting the life of timber, saying that in their experience timber lasted longer in damp than in sandy soil.

President RICHARDS thought soil was the touchstone of the whole matter.

MR. PAGE, of Easton, spoke of the influence of rafting logs down the river upon their durability.

MR. JOHNSON, of Cleveland, thought street sprinkling tended to very greatly lengthen the life of timber; had taken up oak ties which had been laid twenty years where the streets were constantly sprinkled and found ninety per cent of them good.

MR. HAZZARD said that white hemlock would last much longer than red.

MR. ATWELL, of Pittsburgh, called attention to the fact that rats would not trouble hemlock.

MR. LITTELL, of Louisville, spoke of three quarters of a mile of track laid iu 1864 in which not more than twenty stringers had ever been renewed. Stringers were of white hill oak, floated down the river in the log, track paved with cobble stone, a part of it constantly sprinkled and a part of it not. In reply to a question from Mr. Wright, Mr. Littell said the rails were of iron 45 lb. 5" tram, and had never been renewed but had been repunched.

MR. WOODWARD, of Rochester, spoke of some track fifteen years old.

In reply to a question from Mr. Hazzard, Mr. Johnson said he attributed the longer life of timber where streets were kept sprinkled to their exclusion from the air.

MR. LITTELL thought that oak ties and streets kept constantly sprinkled would last twice as long as where uot sprinkled.

MR. RICHARDS thought the debate was on questions the answers to which were foregone conclusions.

MR. MAGUIRE, of Mobile, spoke in favor of creosote as a preservative of wood; in their country pine was largely used but cypress would stand the hot sun and rain better.

MR. CLEMINSHAW spoke in favor of Southern pine. The opinion was expressed that the holding power of spikes was of minor importance as the heads would wear off most invariably before the spike would draw.

MR. SMITH, of Milwaukee, made a few remarks, after which on motion the committee's report on Repairs of Track was accepted.

The special committee on the Rules for the Government of Conductors and Drivers, then reported through the Secretary.

RULES REGARDING THE CONDUCT OF CONDUC-TORS AND DRIVERS.

The report contained many interesting points. We shall endeavor to find space for it in a later number, but as the discussion is intelligible without the report, we give the substance of the remarks which followed.

MR. LAWLESS, of Kansas City, thought the driver should look out for possible passengers and the conductor on the rear of the car should give his attention to the accommodation and comfort of passengers inside the car. The opinion was expressed that the lriver had all he could do to look after his horses, to which Mr. Lawless replied that his experience being with cable roads "horses" were under complete control of the driver.

MR. WHITE, of New York, in quite extended remarks emphatically expressed the opinion that in no material respect could the street railway companies' treatment of the public be improved, that not one complaint reached him out of one million passengers carried, and he thought that if there were many he should hear of them. "If there be uo rejoinder to this assertion," he said, "let us consider it conclusive as the sense of this meeting." He would submit that the street railway companies were victims of the grossest misrepresentation on the part of the public and the press.

MR. FRANZER thought it best in hiring conductors and drivers to iu all cases, if possible, hire those who are natives of the city, and whose interests were identified with it; thought that foreigners were much more apt to create dissatisfaction among employees.

To the remark of Mr. White, that eternal vigilance is the price of success in street railway business, that uight and day the street railway manager was on the alert for the improvement of his system of operation, Mr. Littell thought eternal vigilance is the price of liberty, to which Mr. White responded, concurring with what Mr. Littell said, and stating that if he were to sacrifice his independence in the street railway business he would get out of it at once.

Mr. KERPER thought that when strangers came well recommended they should be taken in.

MR. PARSONS, in the course of au interesting talk, said that if street railways could select their employees from among those who intended to make railroading a permanent business, instead of from those who merely embark in it as a make-shift, a large part of the difficulty in management of conductors and drivers would vanish, He thought that either the companies had uot_educated the public up to the point where it regarded railroading as a respectable occupation, or such men were uot selected as to give it that position in the public mind; that a large proportion of those who presented themselves as applicants were only interested in their day's wages. As many changes were now necessarv as before the register and punch were introduced. Thought the driver should look out for passengers, and that it was a great improvement to exclude passengers from the front platform as rigidly as possible.

MR. THURSTON, of Jersey City, dwelt upon the importance of requiring couductors and drivers to report at once the full circumstances of any accident which should occur on their line, getting the uames of witnesses; that he made the first accident merely a cause for suspension, while the second was regarded as sufficient reason for discharge.

tion and comfort of passengers inside the car. The opinion was expressed that the lriver had all he could do to look after of employees in Philadelphia, stating that they had men who had been in the employ of the company 20 years, and that there was no reason why they should not be 20 years more.

MR. WYMAN, of New York, thought that commiseration should be tendered the roads of Philadelphia for the condition of affairs represented by Mr. Parsons. On his road he had 75 men who had been in the employ of the company a year or more, and others ten, fifteen or eighteen years. With him employment was not sought as a mere temporary resort, but railway employment was considered desirable. He had applications from mechanics who wished to have steady work, even at lower wages than they were accustomed to, and from clerks in brokers' offices, and various similar positions of life. He thought the street railway companies paid higher and got a better class of help than any other class of employers in the country; men could be secured with sufficient politeness and courtesy for their positions.

MR. WINDSOR, of Chicago, thought one of the strongest bonds of union between employer and employee might be formed by encouraging the men to save their wages, and he thought it practicable and advisable to reserve such deposits, to receive deposits of such earnings and to allow interest on them, and said that his company had now \$40,000 of its employees' money on this plan.

At this point a letter was read from Mr. C. B. Holmes, of Chicago, expressive of his regret at his inability to be present, and expressing satisfaction with the year's work with his cable road.

The Chair theu appointed the following committee ou nominations of officers for the ensuing year: Messrs. Cleminshaw, Longstreet, White, Green, Johnson, Kerper and Wright.

FRIDAY MORNING SESSION.

MR. WHITE, of New York, spoke against the present departure from the former rules in allowing reporters of the press to be present.

Mr. CLEMINSHAW, of Troy, also spoke in the same vein.

MR. FRAYSER, of Memphis, Tenn., thought reporters should be admitted.

A letter was read from Walter Jones, from Carlsbad, Austria, regretting his inability ou account of ill health to prepare a report of his committee on the "Ventilation, Lighting and Care of Cars." It was best, however, to discuss the subject without report.

MR. WOODWORTH, of Rochester, N.Y., desired information ou the washing and cleaning of cars.

MR. HAZZARD, of Brooklyn, said he employed meu for this purpose, aud had a room especially devoted to it, using hot water in the winter and cold water in the summer, with bristle brushes made for that purpose, aud gave special directions to his cleaners to use different brushes to get the mud off the cars.

MR. CLEMINSHAW had a man and room for the purpose, which was heated in winter.

MR. RICHARDS, of Boston, thought there was nothing the public more desired than clean cars. Said that his plan was substantially that of Mr. Hazzard. Thought it important to have the car house detached from the stable, in order that the odor from the barn would not affect the cars. In reply to a question by Mr. Hazzard, Mr. Richards said, regarding signs in cars, that he was formerly applied to by ladies' church fairs, theatres, etc., and found it a great source of annoyance. But he had now leased the advertising privilege in all his cars, and not only found it a great relief, but that the patrons of the road actually liked to see the advertisements in the cars. He only reserved space for their own official notices and the privilege of posting on the dashboards any attraction of the day, like base ball games, etc. He said that the ladies felt gratified to have something for the gentlemen to look at, especially the gray headed ones, when they entered the car, instead of staring at them. The only restriction placed upon the contract matter of the advertising privilege was that nothing should be placed in the cars objectionable to him (Mr. Richards). He said he finally let the front windows for stained glass advertisements. They never allowed dodgers to be hung up in the cars to strike the passengers' faces. In reply to the question as to what he received for the advertising privilege in his cars, he said it was between \$2000 and \$3000. He also stated that he sold the privilege of selling newspapers in his cars to a contractor who uniformed his boys, and took the risk of injury to them. For this privilege he received a number of hundred dollars. He subsequently stated that for the entire advertising privilege of all cars they receive \$4000. He would advise the street railway companies to take this course.

Recurring again to the car cleaning subject, Mr. Wright, of Chicago, 'said they had a room heated in the winter in each car house in which to wash cars. To a question he stated that he had heard of no difficulty on account of the heat affecting the car washer. Different brushes were used on different parts of the car and hose pressure was also made use of. In reply to the question what water cost, he said twenty cents for the first hundred thousand gallons aud eight cents afterward. Said that their cars were put through the car honse and varnished yearly as a rule.

MR. TURNER used salt on the platform to prevent water from freezing, after washing the car, before it evaporated.

MR. ATWOOD of Pittsburgh had the dashboard washed every trip. Stated that water should not be allowed to freeze on the car.

MR. CLEMINSHAW thought this the most important subject yet brought up for discussion; his cars were washed and dried before removing from the room to prevent injury to the varnish; thought that care in this direction paid well by preserving varnish.

MR. LITTELL thought a good quality of sheep's wool sponge was preferable to

brushes or other devices for cleaning cars. Mr. WM. RICHARDSON had separate men for cleaning cars who understand the business.

MR. WHITE of New York said he kept thirteen cleaners busy day and night, one of whom was a foreman receiving fifty cents more a day than the others, and was held responsible for the work.

Mr. RICHARDS, at the request of the Convention, made somewhat lengthy but very interesting remarks descriptive of his system of management which we shall give at length iu a later number of the STREET RAILWAY JOURNAL.

WM. RICHARDSON of Brooklyn, thought that no matter how large the road, the President should meet personally every conductor and driver hired, and see every horse bought. He thought best for conductors to turn in money every trip. He would not hire a new man unless the applicant could get one of the old men on the road to brake him in. He had blanks on which the conductor must report every accident. The company's surgeon was always sent iu case anyone was hurt no matter through whose fault.

In reply to a question by Mr. Hathaway, of Cleveland, Mr. Richards said his conductors must always know how to drive. He said, "tow boys" made good drivers.

MR. Richardson never made drivers conductors, and always promoted receivers, starters, inspectors, etc., from the ranks of conductors.

MR. WOODRUFF of Rochester, has trouble with tow boys, and thought it better to hire men for driving horse to help car up hill.

MR. WHITE of New York, employed men at \$1.75 per day.

The following officers were reported by the nominating committee for the ensuing year, and were elected unanimously.

President—Julius S. Walsh, St. Louis; First Vice President—Wm. White, New York; Second Vice President—C. B. Holmes, Chicago; Third Vice President—Samuel Little, Boston.

Executive Committee—C. A. Richards, Boston; Jno. Kilgour, Cincinnati; Jno. McGuire, Mobile; T. W. Ackley, Philadelphia, and C. C. Woodworth, Rochester.

Secretary and Treasurer-Wm. J. Richardson, Brooklyn.

Motions were made by Mr. White, to return thanks to special committees for their able reports; to the retiring President for his efficient services, and the press for reports of meetings.

MR. CLEMINSHAW moved to thank the Secretary and Treasurer for his efforts in behalf of the Association,

MR. WRIGHT moved to thank the friends of St. Louis for their whole-souled hospitality. On motion the officers of the St. Louis

On [motion the officers of the St. Louis Fair grounds were also thanked for their hospitality.

Brief remarks were then made by the retiring President, and Mr. Walsh the newly-elected President was introduced, and also spoke briefly. The convention then adjourned to meet in Cincinnati, on the third Wednesday in October next.

The Banquet.

The banquet given the delegates to the Street Railway Convention and their friends in the Southern Hotel, St. Louis, on the evening of October 23, was one of the finest ever given in that magnificent house.

Julius S. Walsh, the newly elected President of the Association. presided. After the numerous dishes and delicacies of an elaborate *menu* had been served, with flowers, plants, beautiful decorations, and in the sound of the sweet strains of an orchestra, employed for the occasion, and a happy speech by the President, the following toasts were proposed by him.

[We regret that our lack of space prevents us from giving an abstract of the speeches which abounded in wit, wisdom and even in some cases verging upon sublimity and pathos.]

TOASTS.

"Our Guests." Response by President Thomas Lowry, of Minneapolis.

"Our Retiring Officers: As a reward for their servises, they cary with them the respect of the Association, and the consciousness of duties well done." Response by President C. A. Richards, of Boston.

"Our Homes: Mid scenes of business and pleasure our hearts fondly revert to home." Response by President William Richardson.

"Our Patrons: As all classes are our patrons, we support all classes when they wisely decide to ride." Judge C. H. Krum, of St. Louis.

"Our Employees: That labor is best which is based upon confidence, honesty and good will." Response by Supt. Aug. W. Wright, of Chicago.

"Our Absent Friends: Remembering with affection, we deeply sympathize with them in the loss they sustain by their absence." Response by Pesident William White, of New York.

"The Supply Men: What would they be without us; and where would we be without them." Response by Secretary H. C. Simpson, of the Lewis & Fowler Manufacturing Company.

"The Press: The mirror of civilization. May it never reflect anything but the truth." Response by E. P. Harris, of the STREET RAILWAY JOURNAL.

Judge Barrett, of Minneapolis, being present, also spoke, being called upon by the President. Laughter and frequent applause showed the hearty appreciation of the various speeches, and also the recitations of the celebrated Gus. Williams, who was present.

The St. Louis street railway people entertained the delegates, and their friends, by giving them drives to the exposition, to the Fair grounds and city parks, and by a royal banquet. The last named is described elsewhere.

The Street Railway Journal Exhibit at the Convention.

The exhibit of Street Railway Appliauces at the Southern Hotel, St. Louis, under the auspices of the STREET RAILWAY JOUR-NAL, embraced the following:

THE JOHN STEPHENSON Co., New York, showed a section of car platform with latest improved draw head, step, and windlass handle; a pedestal and fixtures of their most perfect super spring running gear with life guard attached. Also a section of car body which exhibited their new sash with metal stiles, the glass being held in rubber grooves, preventing noise and rattling, and giving larger scope of vision; telephone, by which seated passengers can communicate with the conductor; improved signal light, giving a distinguishing color to the car at night and also containing lettering to indicate special route.

LEWIS & FOWLER M'F'G Co., Brooklyn. The "Alarm" Passenger Register operated mechanically and by electricity. "Randall's" Improved Running Gear. "Small's" Automatic Fare Collector. "Naylor's" Patent Sash & Blind Spring. "Otis" Safety Coupling Pin. "Van Tassel's" Patent Brake Rod, &c., most of which are familiar to street railway people, but some of which we shall describe in a later issue.

ANDREWS & CLOONEY, New York, showed a variety of patterns of car wheels, springs and street railway castings. They also exhibited in the city, one of their most improved street sweepers, before which ten horses were driven.

THE RAILWAY REGISTER M'F'G Co., Buffalc, Beadle & Courtney, agents, New York and Philadelphia, showed the Bell Punch and Monitor, Benton, Pond, Hornum and Chesterman Fare Register's.

BEADLE & COURTNEY showed a sample of the Eureka Folding Mat.

E. W. Ross & Co., Springfield, O., showed a heavy power Feed Cntter of which they make a full line for street railways. The machine will cut hay from oue-eighth of an inch in length up, a four horse power machine cutting five tons per hour. Has upward cut adjustable selffeeding rollers. More will be said later about this very useful machine.

W. G. PRICE, St. Louis, a new patent Fare Box with "push back" so designed as to ring a bell when pushed back and fare or ticket deposited, but would not ring by merely pushing back without depositing fare or ticket. The bell is caused to ring by the coin or ticket obstructing two combs from passing through each other and not by weight of ticket or coin.

SHOBE & EDGAR, Jerseyville, Ill., showed a system of Metal Street Railway which we shall describe later.

J. H. PITARD & Co., Mobile, Ala., showed a new Brake Shoe for street cars provided with wooden face with end of grain to the wheel.

NEVERSLIP HORSE SHOE Co. Shoe with removable steel centre calk.

CUTTER REVOLVING CAR Co., Galveston. A car which is itself supplied with a turn table. May be turned at any place in the street. Gearing is claimed to be lighter, cheaper and more durable than the ordinary gear.

P. GOLDMAN, New York. An assortment of Uniform Caps, including his patent Spring Top Cap, which is so supplied with springs as to keep it₃ shape in all kinds of weather and under all kinds of treatment.

W. L. EVERIT, New Haven, Conn., Everit's patent Ornamental Car Window, so constructed as not to rattle, and to be readily handled.

Everit's patent Car Floor Rack, a cheap and clean floor covering.

COVERT M'F'G Co., West Troy, New York. A liue of chains, snaps, halters and varions economical devices for street railway harness.

G. B. GREENSFELDER & Co., St. Louis. Sponge, Chamois, &c.

J. P. REASONER & Co., Halstead, Kansas. Street Car Starter, patented by Emil Utz.

STARK NUT LOCK CO., St. Louis, Mo. A new Nut Lock with groove in uut and bolt and spring key to hold nut in place.

TOM L. JOHNSON, Induanapolis, Ind., showed samples of his improved Fare Box, which is already familiar to the street railway public.

D. F. LONGSTREET, Providence, R. I., showed the Providence Girder Rail, which has already been freely described in the STREET RAILWAY JOURNAL.

THE JOHNSON STREET RAIL Co. showed sample of Rails, Frogs, &c., of which we hope to say more later.

Cousiderable attention was attracted by the devices shown, some of which were entirely uew, and it was frequently said by street railway men, that the exhibit added materially to the interest of the Convention. It would not be surprising if this small beginning was the nucleus of a large and interesting annual display of Street Railway Appliances.

Convention Briefs.

The St. Louis Cable road was visited.

The John Stephenson Co.'s exhibit attracted much attentiou.

It was the kind of a convention to make abseutees wish they had been there.

The Brownell & Wight Car Co., had carriages at the hotel, for all who wished to visit its works.

C. A. Richards said at the banquet : "I have heard of three important cities, somewhere in the Northwest, Minneapolis, St. Paul and Tom Lowry."

H. C. Simpsou in response to a toast at the banquet told an amusing true story, showing the potency of banquet in reducing the amount paid for leases of street railways.

F. T. Lerned, of Andrews & Clooney, made a very satisfactory display of one of their largest size street railway sweepers with teu horses before it. It takes about ten horses to make a good team for Lerned.

The following gentlemen went to the m

convention in special Parlor car, "Marlbough & St. Nicholas," as guests of the Lewis & Fowler M'f'g Co., Messrs Andrews & Clooney, and the National Car Spring Co:

Presidents—C. A. Richards President, of the Convention; D. W. Russell; Chas. Odell; E. P. Shaw; John Gordon; C. G. Goodrich; J. S. P. Speer; Chas. Atwell; A. L. Rogers; E. S. Goodrich. Directors—T. J. Johnson; Mr. Chase; G. J. Kinman; John Ryer; D. J. Miller Chief Engineer (Cable System.) Superintendants—W. B. Ferguson; Danl. Coolidge; J. H. Bowker; Wm. Morrison; Chas. Campbell; H. B. Rogers; Isaac H. Randall; John W. Fowler; F. T. Lerned; H. C. Simpson; Wm. Silver; E. Pace; John England; T. Bishop; Chas. Stearns.

The following supply men, were among those present at the Convention: J. W. Fowler; F. T. Lerned; D. W. Pngh; H. C. Evans; W. Meisenburg; H. C. Simpson; E. Packer; L. E. Roberts; J. H. Small; R. G. Mattern; Jno. S. Pugh; S. E. Lincoln; N. G. Price; M. A. Hunt; C. A. Edgar; S. H. Frohlichstein; S. Brady; O. M. Edgerly; J. S. Silver; W. S. Silver; Chas. Hathaway; A. W. Slee; W. P. Williams; A. S. Littlefield; C. G. Stearns; Edw. Beadle; Jno. Courtney; A. L. Johnson; Wm, Sutton; Geo. Morris; Geo. S. Brown; A. Rapp; Edw. Brill; Geo. H. Kirk and Mr. Brownell.

The Effects of Strikes and Riots.

The question is sometimes asked, Why do great corporations yield to the demands of strikers, who seize on their property, obstruct public and private business, threaten life and limb, and generally clog even if they do not actually injure the wheels of human progress?

"In the meantime, the effect of the constant progress of wealth has been to make iusurrection far more terrible to thinking men than maladministration. Immense sums have been expended on works which, if a rebellion broke out, might perish in a few hours. The mass of movable wealth collected in the shops and warehouses of Londou alone exceeds five hundred-fold that which the whole island contained in the days of the Plantagenets; and if the government were subverted by physical force, all this movable wealth would be exposed to the imminent risk of spoilation and destruction."-Hist. England, Vol. I., Chap. 1.

If for "insurrection" we substitute "riots," and for "maladministration" we read "impudent and extortionate demands," the first sentence, written thirty years ago, in reference to events which took place prior to the Restoration, we find in great measure applicable to New York or Cleveland or Chicago.

The Convention report and other matter so crowds this issue that we are obliged to carry several valued favors over till next month [All our readers are particularly requested to send us, at the earliest possible moment, notes concerning actual or proposed improvements in street rallways It is by this means that the STREET RAILWAY JOUR NAL will increase its usefulness to each one who re ceives it.]

THE PEOPLE'S LINE, Springfield, (O.) is extending about half a mile.

THE NASHVILLE CITY has been consolidated with the Nashville & Edgefield.

THE ST. NICHOLAS AV. (N. Y. City) road was incorporated at Albany, Oct. 26.

THE NEWFORT, R. I., people are excited over a proposed new street railroad. It is chartered but not located.

THE SPRINGFIELD, (O.) Street Railway will construct about two miles of track using Johnson 40 lb. rail.

WYMORE (Neb.) & BLUE SPRINGS is a new street railway building about two miles of track. Reynold's Bros., proprietors.

ATHENS, GA. The Classic City Street Railroad Co., has awarded the contract for building its road to Janes G. Scott.

WABASHA, MINN. The Wabasha Street Ry. Co. has obtained a charter, but has not commenced work as yet on the road.

DAVENPORT, IA. The Brady Street line belongs to the Davenport Central Street Ry. Co. The City Ry. Co. is leased by H. Schuitger.

THE CHARLE'S RIVER, Cambridge, Mass., road have a four cent fare on one of their lines, the result of the competition with the old company.

MONTGOMERY, ALA. The Capital City Street Railwey Co., has increased its capital stock and will extend its lives and build a large stable.

THE CITIZEN'S STREET RAILWAY, MEMPHIS TENN., has gained the suit permitting it to build tracks and will at once construct and equip its lines.

NEW YORK CITY. The Aldermen have granted franchises for cross-town lines ou every street but one from Twenty-ninth to Thirty-fourth Street.

CROSS-TOWN LINE FRANCHISES IN NEW YORK. The Aldermen have granted franchises for roads through Thirty-second and Thirty-third Street.

CAMBRIDGE, MASS. The difficulties between the Charles River Street Ry. Co. and the Cambridge Company are still an unsettled question.

STERLING, ILL. The street railway here is as yet only a scheme on paper. The prospect of the enterprise being pushed through is said to be very slight.

MONTREAL, CAN., is to have a system of elevated railways through the principal streets, and around the mountain and to the surrounding villages.

NEW YORK ELEVATED SUITS. William Watson and others have been awarded a verdict of \$19,600 damage by the Park Place and Church Street station. KANSAS CITY CABLE Co. The officers of the company, recently elected, are Wm. J. Smith Pres. and Treas.; Wm. H. Lucas Sec. and Auditor; Edward J. Lawless Supt. BELLEVILLE, ILL. The Citizeu's Horse

Ry. Co., is an enterprise as yet all on paper. Its promoters, we understand, are not very sauguine of an early completion of the scheme.

PITTSBURGH, PA. The officers of the Union Passenger Railway Company, for the ensuing year, are Pres., Chas. Atwell, Sec. C. Seibert; Tres., J. J. Donnell; Cash., Saml. C. Hnnter; Supt., James C. Cotton.

THE BLEECKER ST. (N. Y.) cars now run down Broadway to Aun St. Mr. Sharp has secured all the privileges from the courts which he claimed, and which Com. of Public Works Squires denied his right to.

LACROSSE (WIS.) CITY RAILWAY Co. The officers of this company for the ensuing year are:-Geo. F. Guud, Pres.; B. E. Edwards, Vice Pres.; Fred Tillman, Treas.; Mills Tonetellotte, Sec.; George Smith, Supt.

CHARLOTTE N. C. is soon to have a line of street cars propelled by electricity. The line is to be built by a Chicago firm, who will firmish the electric engines to propel the cars. Work, it is said, will soon be commenced.

SOUTH CHICAGO ST. RY. Co. This company has just placed au order for three uew cars with Messrs. Robinson & Hitt, of Waterloo, Ia. This is the second order placed with the same parties within the last few months.

MELBOURNE, AUSTRALIA. Messrs. Dankes & Barnes write us that they have contracted with the Victoria Government to work a line of street cars with their new Tram Car Motor. They expect to have their cars running next month.

New ORLEANS EXPOSITION. An electric railway, similar to that ou the grounds of the Canadiau Exposition at Toronto, will be completed before Nov. 10., on the grounds of the Exposition. The Vau Depoele Electric Mfg. Co., of Chicago, are the contractors.

THE NEVERSLIP HORSESHOE Co., of Boston, have just received a large order from Dr. M. P. Turner, proprietor of the Des Moines Street Ry., for their Neverslip Shoes, Calks, etc. Mr. Turner has been experimenting with this Shoe and has evidently found it very much to his satisfaction.

IMPROVED STREET CAR WINDOW. Mr. W. L. Everit of New Haveu, Ct., has procured a patent ou uew window sash for cars. Sash $22\frac{1}{2} \times 28\frac{1}{2}$; glass 20×24 . The glass is packed in rubber on both sides, and in place of the usual mortise and tenon there are brass clasps. By this means the objectionable wide rail is avoided. It is firm and noiseless and makes a good appearance.

CABLE ROAD IN BROOKLYN. The Montague Street Railroad Company, which was incorporated a few days ago with a capital of \$500,000, will start its engineers and surveyors at work this week. It is proposed to lay a line of route from Wall Street Ferry to the City Hall at once. It is to be a cable road, built after the most approved model, and so constructed as not to impede travel or interfere with carriages or vehicles on the streets or crossings.

BROOKLYN, N. Y. A track is being laid by the Brooklyn City and DeKalb Avenue Companies on Johnson street, from Fulton to Washington street. It will be used as a siding for the accommodation of theatre cars, aud will be used only late at night and possibly on the afternoous when matinees are given. But one track will be laid, both companies bearing an equal amount of the expense. It will not be extended further than one block.

We regret to learn that Mr. Samuel Lewis, of Lorrimer street, Brooklyn, the manufacturer of street car mattings, has recently met with a severe loss by fire. His improved machinery, devised mostly by himself, as the result of many years' practical experience in the ueeds of his business, was nearly all swept away, and such was the inflammable nature of his factory, that he was unable to get iusured. With indomitable energy, however, Mr. Lewis has ordered new machinery and is rapidly reconstructing his factory. There will be little or no delay in filling his orders, and we trust they may pour in upon him.

THE CABLE ROAD on Teuth Avenue, N. Y., has some of the fluest equipment of rolling stock of auy surface road in the country. The open cars invented by Mr. J. H. Robertson, Supt., are about perfect, as to style, comfort, and appointments. They have panels made to inclose the sides in the winter, adapting them to all kinds of weather. The box cars are uusurpassed, in appearance aud comfort, being higher than the ordinary cars, and with a larger seating capacity. They were built in the Third Avenue Company's shops.

THE BROADWAY (N. Y.) STREET CARS are bringing a great deal of trade down town that for some years has stayed above Fourteenth Street. The Keep Manufacturing Company, No. 640 Broadway, whose main products are shirts, collars and cuffs, are according to Mr. J. H. Dunham, manager of the retail department, \$25,000 ahead of last year's sales. "We were," he contiuued, "569 special custom orders ahead on Monday the 12th, of the same number of months in 1884. One reason for our success is the putting on of cars and the taking off of the Broadway 'busses.' The cars bring trade down town that never came down before."

BROCKTON, MASS. "The Montello & Warren Avenue Street Ry. Co.," is the name of the new street railroad corporation. The road will run from the corner of Montello and Plain streets through the principal streets of the city. The distance traveled will be about six and one half miles. The capital stock is fixed at \$70,000, divided into 700 shares at \$100 each. The following directors have been chosen: H. W Robinson, C. C. Bixby, D. H. Blanchard,
F. E. White, E. Goldthwaite, E. E. Dean and Ellis Packard. Other stockholders are
William S. Green, Baalis Sanford, L. F.
Severance, F. M. Bixby, Edward Crocker,
S. J. Gruner and Veranus Filoon.

HOLYOKE, MASS. The result of the first year's ruuning of the Holyoke Street Railway is a gratifying exhibit. For stockholders to receive a four per cent dividend the first year is unusual in street railway history. The people at large are beginning to realize what a great accommodation the road is, and the fact that the average of the 14,365 round trips was fourteen passengers to each trip, shows that the road is appreciated. When the year began the road was running but five horses and the whole number of cars was not bought. The road-bed is laid in an especially good manner and the outfit is first-class. The road was especially fortunate in its selection of Treasurer, Mr. C. F. Smith, whose management during the past year is shown in the above result. The prospect for the coming year is much better than it was a year ago.

THE TRENTON (N. J.) IRON COMPANY are manufacturing steel or charcoal iron wire rope of superior quality, for inclined planes, cable railroads, tramways, etc. In a circular letter they say: "This system furnishes, without doubt, the most economical means of transportation. In our opinion the wire rope tramway is peculiarly adapted to the requirements of this country; independence of snows and floods, and the absence of cuttings, embankments and bridges being among the various advautages offered. In view of the increasing demand for such a system, it is our purpose to make special endeavors to secure a general introduction of the wire rope tramway into this country. If you are interested in this matter, we shall be pleased to mail you our pamphlet upon the subject." The company's New York office is 17 Burling Slip.

THE FIFTH AVENUE (N. Y. City) RAIL-WAY. This company is energetically pushing its enterprise. They have issued a circular offering the first issue of \$1,000,000 stock exclusively to residents along the proposed line. The amount each investor is permitted to take is limited to 500 shares, so that every resident will have opportunity to become a stockholder if he desires. The opposition to the scheme is, as would be expected, very strong, but the agitation has developed the fact that a large number of the property owners on the avenue are in favor of having the road built; and it is only a question of time, mouey, and much litigation. The road is bound to be built. Some people profess to see Jay Gould's hand in the matter, because one of the directors is president of his bank, the Fourth National. The company announce that they will use a peculiar rail that will make the road practically noiseless.

HOUSTON STREET AND HOBOKEN FERRY. Articles of incorporation have been filed by the Houston street and Hoboken Ferry

Railway Company. The capital stock is \$1,-000,000. The directors are John J. Patterson, Fred M. Walton and Josiah F. Bailey, all of Philadelphia; Jacob Kunzmann, Rastus S. Ransom, Henry R. Hoyt, and E. J. Knauer, all of New York. The length of the road is to be three miles, commencing at the eastern end of Grand street, running through Grand to East street (double track), to Broome, to Tompkins street (single track), to Rivington, to Orchard, to Houston, to First street, to the Bowery, to Great Jones, to West Third, to Sixth avenue, to Washington place, to Barrow, to Bedford, to Grove, to Waverley place, to Mercer, to Fourth, to First avenue, to First street, to Houston, to Suffolk, to Stanton, to Tompkins, to Rivington, to East, to Grand, and through Grand to the eastern end thereof.

PHILADELPHIA TRACTION CO. Some changes are to be made in the Market street system of the Traction Company about November 1. As soon as the Novelties Exposition closes the traction cars are to be temporarily withdrawn aud the Market street cable, which now crosses below the Seventh and Ninth street cables, is to be raised above them. This will do away with the necessity of using horse power, as at present, to propel the Market street cars across Seventh and Ninth streets. Another improvement is the substitutiou of heavier cog-bearings. Those at present in use are fourteeu-inch wheels, which will be replaced with wheels twenty-six inches in diameter. This has been found necessary, owing to the great strain ou the wheels, especially at curves, when several cars take the grip at about the same moment. These alterations will take from six to ten days to complete, after which the cable road will be iu full operation and the Traction Company will sell its horses and stable property.

BROOKLYN (N. Y.) RAPID TRANSIT. It is reported that the Long Islaud R. R. aud the Kings County Elevated R. R. Co., will jointly use an elevated track from the Bridge to East New York. The former company will build an elevated structure over its surface tracks in Atlantic ave., from Flatbush ave., to East New York; and the Kings County Company is to build the elevated structure in Flatbush ave., aud Fulton street, from the Long Island depot to Adams and Willoughby streets. At this point a uniou depot will be erected, and a trunk line will be erected by the two companies jointly iu Adams street to the Bridge. It is expected that the bridge cars will run over this trunk line to the union depot, and a fare of two ceuts will be charged npon it, the city having the right to buy the structure at any time in seven years. The project of a cable elevated road in Boerum place and Atlantic ave, will be given up. No freight cars will be run over the elevated structure, and the Long Island Railroad cars will uot ruu further than the present depot, the cars ou the extension of the road to be of the light rapid transit pattern. Only two tracks will be built in Flatbush ave. and Fultou street.

A provisional agreement has been made by the companies interested to carry out the scheme.

WORCESTER, Preliminary steps for the formation of a new street railway company in this city, under the state law, have been taken. The following are the directors: Charles B. Pratt, Henry S. Pratt, Hiram Forbes, Eli J. Whittleman, of Worcester, Griffits M. Haffards and Azarah Tripp of Fall River and Frank S. Stevens of Swansea. They have organized with Charles P. Pratt President; Frank Brightman of Fall River Treasurer and R. James Salmon of Worcester Clerk. Of the capital stock of \$100,000, \$85,000 was subscribed, mostly by the out of town members of the board of directors. The company proposes to build out Pleasaut street direct from Main street to Park avenue; and in Salisbury, Boynton, Agricultural, Elm and Hudson street to connect with the main line in Pleasant street; and in Merrick, Chandler and Piedmont streets, to connect the main line in Pleasant street and the present line in Main street; in West and Cedar streets, to connect with the line in Pleasant street and the line in Agricultural street. One of the considerations which led to the favorable action on the new company's petitions is that the proposed lines be built by July 1.

NEW YORK CITY. The Citizens Railway Company of New York City, was incorporated Oct. 10. The capital stock is fixed at \$2,500,000, to consist of 25,000 shares of \$100 each. The length of the road is five miles. The seven directors are Isaac B. Newcombe, William D. Hatch, James S. Negley, Frederic Taylor, C. Weidenfeld, Henry S. May, all of New York, and James McCormick, of Brooklyn, The subscribers of stock are F. E. Trowbridge, Windsor Hotel; Hoffmau Miller, No. 270 Madison avenue; Howard Meyer, Fifth avenue; F. H. Hatch, No. 5 Nassau street; C. L. Montague, No. 5 Nassau street; Samuel Lichtenstater, C. F. Wetmore, Henry Altman, Mitchell J. Ash.

The road is to commeuce at the intersection of West Fourth street and South Fifth aveuue and will be built through West Fourth street to Mercer street, to Howard, to Hester, to Baxter street, to Chatham, to Roosevelt, to Madison street, to Rose, to Frankfort, to William, to South William, to Broad, to Water, to Moore, to South.

Also from the tracks at the intersection of Broadand South William streets through Broad to Nassau, to Spruce street, to Williaw, and there connecting with the tracks to be laid on William street; also from the tracks to be laid ou William street at its intersection with Frankfort street, through William street to Duane, to Park, to Mulberry, to Hester, to Baxter, there connect ing with the tracks to be laid at the intersection of the two last named streets, together with the uccessary switches, sidings, turnouts, turutables and suitable stands for the convenient working of the road.

Subscribe for Street Railway Journal,

Street Railway Construction.

EDS. STREET RAILWAY JOURNAL:---

It is almost impossible to write upon Street Railway Construction, without encroaching on and borrowing the ideas of others, but as we are all aiming for the same results, viz., durability of structure, ease and comfort of passengers, and the minimum first cost, with a reduction of expenses in repairs for the future, we can allow any such trespass.

We know from experience what the timber cross ties and stringer system, with spikes, bolts, plates, knees, etc., (and their name is legion) costs, and we are aware of the great annoyance such a system entails upon citizens during its construction, which have long to be endured, for the system is very, very slow in construction. And but a very little while after construction "trouble and sorrow" begin, not only to the railway company but to the passengers, from low joints and loose spikes, and but a few years intervene before streets are again tor up and the same old story has to be repeated.

The stable manager could a "tale unfold" of the over consumption of grain, and also the great depreciation in value of horses, caused by defective road. Horses, as well as steam engines, require extra fuel to keep up steam, for heavy grades or bad roads, and bad track soou unmakes both engine and horse, leaving them only fit for the scrap heap.

Timber "has but a short time to live, and full of trouble" to superintendents, and a source of great expense to railway companies, and the only way to remove these evils is to remove the cause.

The renewing of timber and redriving spikes is at the best only patching up. The trouble and expense still exists. Would it not, therefore, be well to substitute iron or steel longitudinal sleepers in place of the present timber cross ties and stringers?

The former would make a *permanent* track, while we know the latter is a perishable oue.

Iron cross ties have been used on railways in India for forty years with no perceptible depreciation, and it is fair, under such a test, to say it would save at least the expense of renewals, and would insure a smooth, easy passage of the cars and consequently light pulling for the horses.

There are now practically but three systems in use in this country. *First.* The timber system, above described. *Second.* The same as the first, with the exception of cross ties, for which are substituted iron tie rods and bolts. *Third.* The girder rail system; the rail resting on the ground and supported at intervals by metal chairs, which are spiked to cross ties or embedded in concrete, the rails being spliced together by fish plates, bolts and nuts.

The lateral and vertical stiffness is obtained by great increase in depth of web, and cousequently heavier rail.

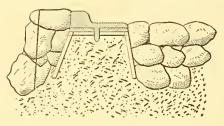
Now all these systems use timber and some if not all the objectionable features, which entail permanent anuoyances and expenses.

These are some of the thoughts which have suggested themselves, respecting the value of these systems, and we might multiply them by asking if the system of deep digging for cross ties and stringers is not a misfortune, by pierciug the crust, the compact part of the road-bed, and building on softer substratum.

It is a rational deduction, that the system would be more thoroughly supported in the compact crust, then it now is by the soft substratum.

"The railroad timber system while *in* the road-bed" is in no sense *part thereof*; there is uo natural bond of cohesion. By natural bond we mean the tendency of all particles to interlock and become mutually supporting.

It does not appear impossible to depend upon the compact upper surface of the road-bed for support of the track, and to secure in a street railroad a perfect bond



with the street as shown on this cross section.

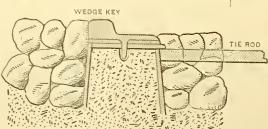
In your August issne you illustrated a system a new departure^{*}, which I think is far above in merit any other system; it removes all the objectious of the present system, and meets the requirements for a durable, and smooth track. The vertical and lateral stiffness must exceed in this system at least three to one, as compared with a 45 lb, rail and a $5'' \times 9''$ strivger combined.

It further presents an opposing surface to movement in any direction, capable of perfect jointing, it is absolutely continuous and must be regarded as a system and not as a single rail.

Heuce it has an element of strength contributing to its stability which is absent in every other system.

Any force applied to move or displace it, such as the impact of a heavy wagon, can only be applied at one point, this is met by resistance at all points. The part attacked caunot yield unless the whole system goes too.

It is not necessary to fall back upon the strength and stability of this system, in



paved streets the bond and strength needs no discussion. In macadam or gravel it • Metallic Street Raiway Co., Albany, N. Y.

will be equally efficacious; its unity of parts, made so by the wedge key passing through the mortices in the sleeper and the slots in the web or girder of the rail, is absolute, and although the rails are locked together yet they are individual and can move in the space allowed by expansion and contraction, which no other known system can.

The transverse tie rod when placed in the sockets of the sleepers, not only ties the tracks together, but accurately gauges the track also.

The fewness of parts, viz., rail sleeper, tie rod and wedge keys, and all of them locked together by simply driving the wedge key, is a marvel of simplicity, and the system must be laid with great rapidity.

I should, and no doult others would, (who are interested in this important branch,) like to see an article from your pen, ou construction of street railway, and material to be used.

TRAMWAY.

Where Chicago is Ahead of Philadelphia.

A correspondent of the Philadelphia Press writes it as follows:

"Everybody has noticed the fact, doubtless, that whenever there is a strike of horse car employees, the great majority of the community in which it occurs sympathize with the strikers. This is evideut in Chicago, where a strike of large proportions has been in force for four days past. The Press, July 2."

Yes, and the West Division Railroad Company of Chicago runs open Summer cars, one minute apart, allows smoking on the three rear seats and sells coupon tickets entitling the holder to twenty-five rides for one dollar.

When will old fogy Philadelphia awake from its Van Winkle sleep? Look at any great city and compare the local transportation lines with those of this city.

C. B. S.

Wharton's Patent Durable Shovel.

Among the exhibits at the Novelties Exhibition of the Frankhin Institute, Philadelphia, is a shovel * the peculiar construction of which, it is elaimed, adds from 50 to 100% to its durability. The object in construction is to prevent the rapid wear and subsequent curling over of the shovel uear the end. This is accomplished by rolling the steel plates from which the blades are made in such a manner that when cut into lengths there is a band about 2" wide

of slightly increased thickness across the end of each shovel blade. The added weight is less than one ounce to each shovel.

G. B. H.

* Wm. Wharton, Jr., & Co., (Limited), 25th st. and Washington ave., Philadelphia.

THE STREET RAILWAY JOURNAL is the only paper in this country devoted to the street railway interests. Subscribe for it and know what is going on in the street railway world. Only \$1 a year

Lateral Stiffness of Street Railway Track.

MESSRS EDITORS:-In relation to the "Lateral Stiffness of Street Tracks," treated by you editorially in the September JOURNAL, I would note :--

The ordinary width of timber-stringer, equal to width of rail, is five inches. The greatest depth probably never exceeds nine inches. With me it is seven inches. Of course the tendency of the car when stationary is simply to deflect the track. But I think you greatly overestimate the strains resulting from the car in motion to spread the track. If the track is not tight gauge, the car wheel exerts little strain to spread the rails. The lateral inequalities are so slight, comparatively, and the speed so slow, the track would not spread. This is proved to be true, by track laid with center bearing rails, which does not spread nearly so much as a side bearing rail. The reason is to me obvious. Our tracks are spread by the heavily loaded teams that seek its smooth surface, and must turn out for the cars. Consider the force exerted by the front wheels of a heavily loaded truck drawn by four or more horses, and acting with a leverage equal to the distance from the end of the tongue to the center of the front wheel. One half the weight of vehicle and its load must be lifted one inch, for this is the height of the head of our rail above the train. This is the great force tending to spread our tracks, not the ear wheels, in my opinion.

If I am right this force is applied at the top of the rail at the inside corner. The head being 2" wide it acts 2" from the outside. The tendency is to turn the stringer on the lower outer corner, the height being greater than the width. This is prevented by the outside knee if it be firmly spiked. The stringer can then give only by its bottom coming in. This is prevented by the small knee. In my practise there are four knees upon each cross-tie and the cross-ties are spaced 4' from center to center. The small knee is 2" high. It is fastened to the cross-tie by two spikes $\frac{5}{16}'' \times \frac{5}{16}'' \times 5''$ and to the stringer by one spike $\frac{5}{16}$ " $\times \frac{5}{16}$ " $\times 3$ ". The outside knees come up to the bottom of the rail. Their height varies with that of the stringer. They are fastened to the crosstie by three spikes $\frac{5}{16}$ $\times \frac{5}{16}$ $\times \frac{5}{16}$ and to the stringer by an old rail spike $\frac{1}{2}'' = \frac{1}{2}'' \times 4''$ say. The base of the small knee is 4" and the large knee 8", not 4" high and 3" base as you assume.

This construction is costly. My small knee weighs 23 lbs. and large knee 8" high 73 lbs. They might have been made lighter, but I err on the sideof strength. Light knees would be so frequently broken by careless workmen in putting them on, that the breakage would go well towards paying for the increased weight, and I do not see why these knees should not outlast several stringers.

Your "strap knees" as proposed would interfere with the paving. Some roads depend upon wrought iron & round iron tie

rods with large square wronght iron washers upon each outside end to hold stringers to gauge. But the width of their stringers varies. Common workmen will not cut out just enough if the stringer be too wide. He invariably cuts out too much and sticks in a "chip" when it is too narrow, between the washer and the stringer. This chip soon drops out or at best in a short time rots and the track spreads. Mr. Crosby of the Sonth Boston road used a flat tie rod, $1_{\frac{8}{5}}'' \times \frac{8}{5}''$ weighing 10 lbs. 6 oz. These were twisted half around at the stringer and spiked to the top of stringer under the rail. This is better than the round rod: bnt both interfere more or less with stone pavements.

I have never experienced any trouble from my spikes in the knees getting loose, as you describe. A $\frac{5}{16}$ " spike does not crush the fibre of the wood, as does a half inch spike. See my paper in the American Engineer, May 1881, npon "The Adhesion of various Nails, Spikes and Screws."

Everything considered, I think the cast iron knee the best.

AUGUSTINE W. WRIGHT. Chicago, Ills.

Luminous and Musical Cars.

EDS. STREET RAILWAY JOURNAL:-The learned, poetical and very facetious writer in this journal, has edified and amused us by the vivid descriptions he has given of luminous cars. If his strange fancies shall ever become realities, the luminous car would put Barnum's wonders into the shade. A well lighted street car is attractive; and it is in the interest of every compauy to have the cars brightly illuminated. But how to have them luminous is not yet well defined. Perhaps a coating of phosphorus would give this luminous glare to the cars in running through unlighted streets of a dark night. But suppose you could make the cars as luminous as Elijah's chariot, would it not rather tend to repel than to attract passengers?

For the people would look at the car ablaze, For the people would look at the car ablaze, So luminous and so bright, And some would open their eyes and gaze, Or spelibound linger in strange amaze, Beholding this wonderful sight; While through binds haif-open, and doors ajar, The timid would peep at this phantom car.

Although this is an age of progress and invention, yet it is an utilitarian age. The main object of most of the companies, is to secure the dollars and cents; and I suppose they consider the luminous car scheme too quixotic for the prosaic shareholders, and too chimerical for the business portion of the passengers.

Now another scheme is introduced-the musical car; not the tinkling of the bells to warn the carter of the approaching car, but real, artistic, symphonious music. The hints given, as to how the thing could be done, show that it is not altogether autopian attainment. The scheme might be realized, but the time of its accomplishment is too remote for me to enjoy it.

The luminous cars and luminous harness-and I may add luminous horsesand why not luminous conductors and

drivers? and the passengers like blanched spectres, blinded through excess of lightall this glare would not be half so attractive in winning passengers as the musical car.

By all means let us have a tuneful car. Too often the passengers complain of the harsh, grating, discordant music of the street car. So whether we invoke the aid of Timotheus or Cecilia, to elevate mortals or draw down angels, it matters little so long as it increases the number of passengers and adds to the revenue of the company. Where there is no ear for music, there can be no heart for love. But why omit the Americans in the selection of tunes? Would not Yankee-doodle and Dixie-land be apppropriate? Or you might take selections from your Fourth of July music, such as would be most in keeping with the tastes of the people. I know a company that gives the successful conductors a half yearly bonus. An aspiring conductor gained the first prize by having a musician in his car, which so attracted the young people that he took a first place.

The evenay be charmed with the harmony of colors, but more soothing to the heart and more thrilling to the ear is the harmony of sweet, melodions sounds by which sweet memories are awakened, and a longing desire created for joys yet to come.

Dancing music would be unsuited for a street car. No room for dancing there, the mnsic would be a failure if there were. Sacred music would displease the gay and frivolous, so there must be special music selected or composed for the Street Railway Musical Cars. VERITAS.

Quebec.

Capital and Labor.

EDITORS STREET RAILWAY JOURNAL:-

I am glad you have opened on capital and labor. Each in its proper sphere is the willing helpmeet of the other. 'Tis only when the scheming, intriguing mountebank unlimbers his jaw-tackle to foment dissatisfaction amidst

That hydra-headed, fickle-minded, monster thing-The fantastic, changeling crowd-the popular school,

that the unthinking brawn worker arrogates to his class all the rights that labor has. Fortnnately, habits of quiet thought are gaining ground, where brnte force used to rule supreme, and the gassy, gabby parasite, who has found it easier to lead in turmoil thau to serve under the grand law. which bids him earn his bread by the sweat of his own brow, is losing ground.

Capital and labor are not at "onts." A skilled-industry hunting hand is capital; an industrious, disciplined mind is capital; where theu can we draw the line of independence

Twixt labor and its part—'twixt labor and its sense Tis the strife for dominion, that ignorance breeds, Which gives vigor to senseless and turbulent creeds, Feed the memory full and the product is pride, Train the reason to work, 'tis humility's bride.

Every prosperous industry has its pimps, parasites, baruacles, camp-followers, et al., and intrigue rules the unthinking units. There's only one way out of the state of

meutal development which is never at home in a healthy atmosphere, and that is education to the habit of counting the cost of any act, any expression, not storing the memory with a mass of flippant surdsa lot of platitudes. Without the budding mind is trained, as it should be, in infancy and youth, it will not be as a valuable chest of tools to its owner. No amount of schooliug without subsequent and life-long habits of thought, will counteract vicious training in the cradle. "As the twig is bent, &c."

Frank Stockton was right in his scheme for the "training of parents." Some one might take equal pains to show the value of adequately paying teachers.

Whisky is an excellent servant, but when it dominates so as to get ten times as much of the wage-workers' earnings as is put on their children's schooling, it is time for capital to give toue to the moral atmosphere surrounding its elements.

ED. B. MEATYARD.

Tramway Junctions and Crossings.

Under the above caption, the Mechanical World of London says as follows:

"During the present era, which has perhaps been justly called the "wire age," no small amount of time and consideration has beeu given by our engineers, both civil and mechanical, to what has proved itself to be one of the most convenient and perhaps the cheapest system of locomotion on the high roads aud public thoroughfares. Much time, labor, and money have been speut in experiments so as to prove the superiority of steam power (in different forms), compressed air, and electricity as a cheaper mode of applying tractive force, over the power of the venerable horse. Much thought has also been given to the mode of carrying the rails, so that the permanent way shall be as durable as it is possible to make it, whilst what may be termed as a weak link in au all important chain, has almost entirely escaped notice, as would appear from the limited uumber of devices now iu use at junctious, crossings, and passing stations, and the great number of incouveniences felt by the public in delays due to the cars taking the wrong direction at a junction, facing point or passing station, which often necessitates bringing the horses to the opposite end of the car, or otherwise pushing the car back by haud, either of which will frequently lose three to five minutes, while cases are not wanting iu which many a good horse has been lamed by being thrown down, and its haunches getting under the car, or a car wheel being wreuched off by the horses pulling along one way and the heavy car running in au-The straight, deep groove will do other. well enough at passing stations where the traffic iu one directiou always takes one side, as loug as it is clean and free from stones, but a pebble will sometimes alter this eutirely. At junctions, however, it is quite different; the loose switch is mostly used; this too may be deemed a safe means of altering the course when in proper care,

but unfortunately it appears to be much neglected, aud often unattended, in which case the couductor acts as pointsman, and as the driver does not wish to bring the car to a stand (out of respect for his horses) the conductor rnus in front and ofteu tries to put the switch over by the use of his boot heel, in which he often fails, resulting iu a delay. Where cars follow frequeutly these poiuts should have a poiutsman, and where the traffic will not warrant this outlay, a man should be constantly walking the length to keep clear these points and crossings, so as to admit of their more certaiu action. Perhaps the best arrangement we have seen is in Liverpool, where several junctious are worked by signal and levers from a sigual box, as at a railway junction."

Perhaps the Liverpool method might be of some use in oue or two places iu Brooklyu and Boston, but take it all in all, we think that our British cousins could take a few lessous from this side the Atlantic. We have a good many systems by which the weight of the horse (or mule) is the operating force to open or close the switch, when desired to move it.

The Van Depoele Electric Motor.

The electric motor invented by Mr. Charles J. Van Depoele, which has been tried in Toronto, and very highly spoken of by the press of that city, will be applied on various street railway in the United States. Coutracts have been made to equip roads at South Bend Ind., Minniapolis, Detroit and New Orleans. The results at these points will be looked for with interests as the proprietors of the system, the Van Depoele Electric M'fg., Co., Chicago, are very sanguine of success, and the results thus far attained by them, certainly merit au investigation of the plan on the part of live street railway men. We shall soon have more to say on the subject.

OFFICIAL LIST OF THE 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.

The following is a complete list of the Street Rall-The following is a complete ist of the Streef Rain-ways of the United States and Canad, so far as we bave received the official returns from the various roads. Will those roads not reported kindly fill out the blanks sent them and mail to us without delay, so that they may be properly represented in the STREET RAILWAY JOURNAL?]

ABREVIATIONS-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.

AKRON, O.-Akron St. Ry. & Herdic Co. 2% m, b, 81 h. Pres. Ira M. Miller, V. Pres. James Christy, reas. B. L. Dodge, Sec. F. M. Atterholt, Supt. John

ALBANY, N. Y.-Watervilet Turnpike R.R. Co.
ALBANY, N. Y.-Watervilet Turnpike R.R. Co.
74 m. 26-51 lbr, 72 C, 143 h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster.
The Albany Ry. 10 m, 4-8½ g, 33-47 lb r, 51 c.
194 h. Pres., Supt. and Treas. Jobn W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St.
ALLENTOWN, FA.-Allentown Pass. R.R. Co.
3½ m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balilet, Supt. Rusel A. Thayer.
ALTON, HLL.-Alton & Up. Alton Horse Ry. Co.
ALTONA, PA.-City Pass. Ry. co. of Altoona.
3½ m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John P. Levan, Sec. & Treas. L. B. Reifsneider, Supt. John J. Buch.

[November, 1885. AMSTERDAM, N. Y.-Amsterdam St. Ry. Co. 1% m, 4-8 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. President's office 112 Front St., L. Island City, N. Y. ANISTON, ALA.-ASHTABULA, O.-Ashtabula City Ry. Co. 4 m, 4-8/4 g, 40 lb r, 6 c, 60 h. Owner & Prop. Jno. N. Stewart. ATCHISON, KAN.-Atchison St. Ry. Co. 55/6 m, 4-8/8 g, 20-30 lb r, 19 c, 60 h. Ores. Gen. Man. J. H. Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. ATCANTA, GA.-West End & Atlantic R.R. Co. 2m, 4-8/4 g, 20 lb r, 6 c, 34 mu. Pres. J. D. Turner, V. Pres. T. L. Langston, Sec. & Treas. B. H. Brum-head, Man. & Purch. Agt. Jno. S. Brumhead. Atlanta St. R.R. Co. 2m, 4-8/4 g, 28-30 lb r, 6 c, 34 mu. Pres. J. D. Turner, V. Pres. T. L. Langston, Sec. & Treas. B. H. Brum-head, Man. & Purch. Agt. Jno. S. Brumhead. Atlanta St. R.R. Co. 2m, 4-8/4 g, 28-30 lb r, 3 c, 12 h. Pres. D. M. Osborne, Sec. & Treas. Co. 22 m, 4-8/4 g, 16 lb r, 7 c, 26 h. Pres. L. B. Nelson, V. Pres. L. DeGlve, Sec. & Treas. John Stephens, Solictor, A. Remharat. Metropolitan St. R.R. Co. AUBURN, N. Y.-Aulunt & Owasoo Lake R.R. Co. 1/4 m, 4-8/4 g, 28-30 lb r, 3 c, 12 h. Pres. D.M. Osborne, Sec. & Treas. C. B. Koster, Supt. B. F. Andrews. AUGUSTA, GA.-Augusta & Somerville R.R. Co. 1/4 m, 4-8/4 g, 28-30 lb r, 3 c, 12 h. Pres. D.M. Osborne, Sec. & Treas. C. B. Fosters, Supt. B. F. Andrews. AUGUSTA, GA.-Augusta & Somerville R.R. Co. 1/4 m, 4-8/4 g, 4 c, 17 h. Pres. W. T. Norton. BAHTINORE, HD.-Baltimore & Powhatan Ry. Co. 6 m, 5-4/4 g, 4 c, 17 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Clark, Supt. J. M. Ketrick. Baltimore Union Pass. Ry. Co. Baltimore & Catonsville Ry. Co. Baltimore & Catonsville Ry. Co. Baltimore & Halls Spring R.R. Co. Baltimore & Balls Spr

Childen's Ry, CO. 20 m, 5-432 g, 46 lb 7, 34 c, 360 h.
Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed.
Monumental City Ry, Co.
North Baltimore Passenger Ry. Co.
People's Pass. Ry, Co. 6½ m, 5-4½ g, 42-45 lb r, 30 C, 200 h. Pres. R. E. Hamilton, Treas. Gustavus Ober, Sec., Supt. & Pur. Agt. Wm. A. House, Jr. Office, Fort Ave. & Johnson St. Soon move to Druid Hill Ave. York Road R. R. Co.
Nature E. CRUEEN, MICH. Fastic Gustave.

York Road R.R. Co. BATTLE CREEK, MICH.—Battle Creek Ry. Co. BATTLE CREEK, MICH.—Battle Creek Ry. Co. 5m, 36 g, 28 lb r, 8 c, 18 h, 3 mu. Pres. Geo. Det-J. White, V. Pres. H. H. Brown, Sec. Chas. Thomas. Supt. John A. Wbite, Gen. Man. J. W. Hahn. BAY CITY, MICH.—Bay City St. Ry. Co. $7\frac{1}{2}$ m, $48\frac{1}{2}$ g, 18 lb r, 13 c, 35 h. Pres. James Clements, Treas. Wm. Clements, Sec. Edgar A.Cooley. BEAVER FALLS, PA.—Beaver Valley St. Ry. Co. 3 1-10 m, 5 c, 21 h. Pres. M. L. Knight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whitla.

BELLAIRE, 0.—Bellaire St. R.R. Co. BELLEVILLE, ONT., CAN.—Believille St. R.R.

BEREA, O.-Berea St. Ry. Co. 1% m, 3-6 g, 28 lb r, 2 c, 2 h. Pres. C. W. D. Miller, V. Pres, T. Chinch-ward, Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bis

ward, Sec. & Treas. A. H. Pomeroy, Supt. A. w. Bishop. **BINGHAMTON, N. Y.**—Washington Street & State Asylum R.R. Co. 44' m. 4 g, 16-25 lb r, 13 c, 23 h. Pres. B. H. Mcagley, V. Pres. Geo. Whitney, Sec. C. O. Root, Treas. F. E. Ross, Binghamton Central R.R. Co. 34' m (24' lald), 3 g, 28 lb r, 6 c (not in operation). Pres. Geo. L. Crand-all, V. Pres. Nelson Stow, Sec. & Supt. Chas. O. Root, Treas. H. J. Kneeland. Offices 63 Court St. Binghamton & Port Dickinson R.R. Co. 5 m, 4-83% g, 20-30 lb r, – c, – h. Pres. Harvey Westcort, Sec. & Treas. G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 State St. Main, Court & Chenango St. R.R. 5 m, 4-85, 40 lb r, lo c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St.

 (c, 2) a. (c) and (c) ashington St.
 (c) BIRMINGHAM, ALA.—Birmingham St. Ry. Co.
 (c) BIRMINGHAM, ALA.—Birmingham, M n, 48 g, 16 lb r, 4 c, 12 m. Pres. B. F. Roden, Sec. Treas. J. II. Williams. BLOONFIELD, N. J.-Newark & Bloomfield R. & Tr

R BLOOMINGTON, ILL.-Bloomington & Normal

H

BOONE, IA. BOONE & BOONSDORO St. Ry. Co.
 BOONE, IA. BOONE & BOONSDORO St. Ry. Co.
 134 m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds
 Treas. J. B. Hodges, Supt. A. B. Hodges.
 BOONSBORO, IA. White Models and Streas A. B. Hodges, Sec.
 S. K. HUNTSINGER.
 B. Hodges, Hickland St. Ry. Co. 2 m.

Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger.
BOSTON, MASS.,-Highland St. Ry. Co. 19 m, 4-8½ g, 50 lb r, 187 c, 925 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg.
Lyna & Boston. 34½ m, 4-8½ g. 25-48 lb r, 114 c, 514 h. Pres. Amos F. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.
Metropolitan R. R. Co. 80 m, 4-8 g, 50 lb r, 700 c, 3,600 h. Pres. C. A. Richards, Sec. H. H. Harding, Treas. Chas. Boardman. Office, 16 kilby St. Middlesex R.R. Co. 26 m, 4-8½ g, 50 lb r, 150 c, 700 h. Pres. Chas. E. Powers, Treas. & Supt. John H. Studley. Address, 27 Tremont Row, Boston.
So. Boston Ry. Co. 13 m. 4-8½ g, 42-50-60 lbr, 193 c, 900 h. Pres. Chas. H. Herscy, V. Pres. Jas. C. Davis, Sec. & Treas. Win. Reed, Supt. Janiel Coolidge.
BRADFORD, PA.-Bradford & Kendall R.R. Co. 12 m, 4-8½ g, 38 lb r, 3 c, 4 h. Pres. James Brodey, scc. N. B. Parsons, Gen. Man. & Supt. Lenos Parsons.
BRIDGEPORT, CONN.-The intidgeport Horse

BRIDGEPORT, CONN.-The Bridgeport Horse R.R. Co. 5 m, 4-8% g, 42 lb r, 14 c, 70 h. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar. BROCKTON, MASS.-Brockton St. Ry. Co. 8% NOVEMBER, 1885. J m, 24 c, 97 h. Pres. W. W. Cross, Treas. & Sec. Z. C. Keith, Supt. H. B. Rogers. BROOKLYN, N. Y.-The Atlantic Avenue R. K. Co. of Brooklyn. 24½ m, 48 g, 60 lb r, 244 c, 882 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost. Office cor. Atlantic & Third Aves. Broadway R.R. Co. 10 1-10 m, 4-3½ g, 45-50-60 lb r, 166 c, 657 h. Pres. W. H. Husted, V. Pres. Edwin Beers, Sec. & Treas, Robert Sealey, Supt. Joshua Crandall. Office 21 Broadway, E. D. Brooklyn Cross Town R.R. Co. 8 m, 4-8½ g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ezra B. Tutick, Sec. & Treas. John R. Connor, Supt. D. W. Sullvan. Offices 585 Manhattan Ave. Bushwick R.R. Co. 20 m, 4-8½ g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, Y. Pres. Wm. H. Hus-ted, Treas. & Sec. S. D. Hallowell, Supt. Wm. M. Mor-rison. Office 22 Broadway, N. Y. The Brooklyn, Bushwick & Queens County R.R. 6 m, 4-5½ g, 42-47 lb r, 41 c, 17 h. Pres. Richard H. Green, V. Pres. James W. Elwell, 59 South St. N.Y. Sec. John D. Elwell, Treas. Dandel F. Lewis, Asst. Sec. Francis E. Wrigler, Offices 8 & 10 Fulton St. Brooklyn City R.R. Co. 44 m, 4-8½ g, 60 lb r, 761 c, 3.045 h. Pres. William H. Hazzard, V. Pres. William M. Thomas, Sec. & Treas. Dandel F. Lewis, Asst. Sec. Francis E. Wrigler, Offices 8 & 10 Fulton St. Brooklyn City R.R. Co. 11 m, 4-8½ g, 45-60 lb r, 128 c, 419 h. Pres. Louis Fitzgeraid, N. Y. City, Sec. & Treas. H. A. Schuz, Supt. H. W. Bush. Office cor. DeEkalh & Central Ares. Calvary Cemetery, Greenpoint & Brooklyn Ry. Co. Concey Island, and Brooklyn R.R. Co. 11 m, 4-8½ g, 45-60 lb r, 128 c, 419 h. Pres. James Jourdan, Sec. E. M. Furation, Supt. William Farrell, Office cor. Smith & Huntington Sts. Constin & Huntington Sts. Constin & Huntington Sts. Constant A. McClemer, V. Pres. Daniel Mone, Sec. John McMahon, Sheepshead Bay, Treas. Horack Vakuyh, Office 18 Red Hook Lane. Crostown Line, Hamilton Ferry to Bridge. Grand St. Newtown R.R. Co. 197 c, 195 lb, 72 c, 2

50 b7, 72 c, 250 h. Pres. Martin Joošt, Séc. & Tréas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First St. Grand Street, Prospect Park & Flatbush R.R. Co. 44^{\vee} m, 45% g, 50 b 7, 75 c, 244 h. Pres. Louis Fitz-gerald, 120 Broadway, N. Y., Sec, & Treas. Duncan B. Cannon, Supt. Jno. L. Helns. Offices Franklin Ave. and Prospect Place. Greenpoint & Lorimer St. Prospect Park & Coney Island R.R. Co. 4 7-10 m, 45-50 lh r, 4-8% g, 69 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, Supt. Robert Attlesey. Offices Ninth Ave., 19th & 20th Sts. Prospect Park & Flatbush R.R. 1½ m, 4-8½ g, 24 ib r, 70 c, 260 h. Pres. Lottis Wood, Sec. & Treas. Sam'l Parkhill, Supt. Lottis Wood, Sec. & Treas. Suth Brooklyn Central R.R. Co. 7m (4¼ m iadd), 45% g, 60 br, 42 c, 192 h. Pres. Wm. Hichardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Ruddy. The New Williamsburgh & Flatbush R. R. Co. 6½ m, 4-8½ g, 47-50 ib 7, 74 c, 255 h. Pres. Geo. W. Van Allen, 54 Ann St. New York, Sec. W. B. Waitt, 34th St. & 9th Are. New York, Treas. C. B. Cottirell, 8 Spruce St., N. Y. City, Supt. Chas. E. Harris, Nost-rand Ave. & Carroll St., Brooklyn. The Union Railway Co. of the City of. Brooklyn mot in operation. Wan Brunt St. & Erle Basin R.R. Co. 1½ m, 4-8½ g, 45 b f, 7, c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry. BRUNSWICK, GA.-Brunswick St. R.R. Co. PUEFELO, UL. Sec

BRUNSWICK, GA.-Brunswick St. R.R. Co.

BRUNSWICK, GA.-Brunswick St. R.R. Co.
BUFFALO, ILL.-See Mechanicsburg, Ili.
BUFFALO, N. Y.-Buffalo St. R.R. Co. 17% m, 45% 5, 501b r, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. P. P. Pratt, Sec. S. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards.
Buffalo East Side St. R.R. Co. 24 4-5 m, 4-8% g, 42 lb r, 47 c, 218 h. Pres. S. Spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Watson, Supt. Edward Edwards.
BURLINGTON, IA.-Burlington City R.R. Co. 28 (M and K) g, 20 lb r, 9 c, 30 h. Pres. John Patterson, Sec. & Man. C. T. Patterson.
Unlon St. Ry. Co.
CAHRO, ILL.-Calro St. R.R. Co.

Sec. & Man. C. 1. Fatterson.
Unlon St. Ry, Co.
CAIRO, ILL.—Cairo St. R.R. Co.
CAMBRIDGE, MASS.—Cambridge R.R. Co. 43
m, 48% g, 50 lb 7, 435 c, 1410 h. Pres. Prentiss Cummings, Treas. & Clerk F. T. Stevens, Exec. Com. I.
M. Simpson, P. Cummings, O. S. Brown, Clerk of Directors; O. S. Brown, Supt. Wm. A. Bacroft.
Charles River St. Ry. Co. 10 45 m, 2-8% g, 50 lb 7, 50 c, 330 h. Pres. Chas. E. Raymond, Corp. Clerk C.
E. Harden, Treas. Daniel U. Chamberlain, Supt. John N. Akarman.
CAMDEN, N. J.—Camden & Atlantic St. Ry. Camden Horse R.R. Co. 9 m, 5-1 g, 35-47 lb 7, 26 c, 55 h. Pres. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood.
CANTON, O.—Canton St. R.R. Co. (new road.)
CAPE MAY, N. J.—Cape May & Schellenger Landing Horse R. R.
CARTHAGE, MO.—
CEARTHAGE, MO.—
CEARTHAGE, MO.—
CEARTHAGE, MI.

CEDAR RAPIDS, IA.—Cedar Rapids & Marion St. Pass. Ry. Co. CHANPAIGN, ILL.—Champaign R.R. Co. Urbana & Champaign St. R.R. Co. (See Urhana.) CHARLESTON, S. C.—Charleston Cliy Ry. Co. 8 Jm, 48J g, 38-43 lb r, 22 c, 84 h. Pres. Jno. S. Riggs, Treas. Evan Edwards, Sec. Frank Whelden, Supt. Jno. Mohlenhoff. Enterprise R.R. Co. 12 m, 5 g, 42 lb r. 14 c, 51 h. Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. T. W. Passalialgere. CHATTANOOGA, TENN.—Chattanooga St. R. R. Co. 2½ m, 4-8½ g, 14-25 lb r, 8 c, 50 h. Pres. J. H. Warner, Sec. C. R. Gaskill, Supt. A. B. Wingfield. CHESTER, PA.—Chester St. Ry. Co. 5½ m, 5-2½ g, 12 c, 70 h. Pres. Richard Peters, Jr., Solicitor, Yeo. B. Lindsay, Treas. Sam'l A. Dyer, Sec. E. M. Cornell.

CHICAGO, ILL.—Chicago City Ry. Co. 87 m, 4-8½ g, 45 lb r, 567 c, 1,416 h, cable doing work of 2,500 h.

THE STREET RAILWAY JOURNAL.

Pres. C. B. Holmes, Sec. H. H. Windsor, Treas. T. C Pennington, Supt. C. B. Holmes. Chlcago West Division Ry. Co. 40 m, 4-8½ g, 40 lb r, 620 c, 3,425 h. Pres. J. R. Jones, Sec. George L. Webb, Supt. Jas. K. Lake. Chicago & Hyde Park St. — m, — g, — lb r, — c, — h. Pres. Douglas S. Clarke. North Chicago City Ry. Co. 35 m, 4-8½ g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. C. Turner, V. Pres. Jacob Rehn, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Threedy, Supt. Horse Dept. Roht. Atkins, Purch. Agt. John W. Roach, Master Mechanic J. Milter. CHILLOOTHE, O.—Chilleothe St. R.R. Co.

Mechanic J. Miller. **CHILLICOTHE**, **O.**—Chillicothe St. R.R. Co. 13 M, 3 g, 16 h, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewel McMartin. **CINCINNATI**, **O.**—Clncinnatl Inclined Plane Ry. C. 3 m, 5-2 χ g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith, Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill. Cinclennati St. Pr. Co. Mathematical Science (Science) (Science)

Co. 3 m, 5-2½ g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith, Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill.
Cincinnati St. Ry. Co. 98 m, 5-2½ g, 43 lb r, 254 c, 1.815 h. Pres. John Kilgour, Sec. & Aud. James A. Collins, Treas. R. A. Dunlap, Con. Eng. F. R. Welzenecker, Supt. John Harris.
Cincinnati & Mount Auburn R.R. Co. Columbia & Cincinnati St. R.R. Co. 3½ m, 3 g, 35 lb r, 3 c, 6 dumny r. Pres. C. H. Kilgour, Y. Pres. John Kilgour, Treas. B. F. Branman, Sec. A. H. Meier, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O. Mu. Adams & Eden Park Inclined R.R. Co. 3½ m, 5-2½ g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdoch, Supt. John Harris, Purchasing Agt. Benj. F. Houghton.
So. Covington & Cincinnati. (See Covington, Ky.)
CLEVELAND, O.—The Brooklyn St. R.R. Co. 8½ m, 48½ g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, Y. Pres. A. J. Moxham, Sec. J. B. Hoefgen, Treas. John Keconneli, Supt. A. Loohnson.
Broadway & Newburg St. R.R. Co. 6 m, 4-8½ g, 10 c, 160 h. Pres. & Supt, Joseph Stanley, V. Pres. Sam'l Andrews, Sec. & Treas. E. Fowler.
Superior St. R.R. Co. 15 m, 4-8½ g, 53-db r, 92 c, 450 h 1 electric motor. Pres. A. Everett, V. Pres. Chas. Wason, Sec. & Treas, H. A. Everett, Supt. The East Cleveretand R.R. Co. 20 m, 4-8½ g, 35-40 lb r, 93 c, 450 h 1 electric motor. Pres. A. Everett, V. Pres. Chas. Wason, Sec. & Treas, H. A. Everett, V. Pres. Chas. Wason, Sec. & Treas, H. A. Everett, V. Pres. Chas. Wason, Sec. & Treas, H. A. Everett, V. Pres. Chas. Wason, Sec. & Treas, H. A. Everett, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mulhen.
South Side St. Ry, Co.
St. Clair Street Ry, Co.—m-g,—lbr—c,—Pres. Chas. Hathaway.

Hathaway. West Side R.R. Co.

CLINTON, IA .- Lyons & Clinton Horse R.R. Co.

(See Lyons.) COLUMBUS, GA.—Columbus St. R.R. Co. 3 m, 4-8% g, 16 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Ga-

bourgh. COLUMBUS, O.—Columbus Consolldated St. R.R. CO. 19 m, 5-2 g, 30.46 fb r, 83 c, 350 h. Pres. A. Rodg-ers, V. Pres. H. T. Chittenden, Sec. & Treas. E. K. Stewart, Supt. J. H. Atcherson. Glenwood & Greenlawn St. R.R. Co. 445 m, 3-6 g, 24 lb r, 9 c, 25 c. Pres. A. D. Rodgars, V. Pres. B. S. Brown, Sec. R. S. Rockley, Treas. S. S. Rickley, Supt. Jonas Wilcox.

Jonas Wilcox. **CONCORD, N. H.**—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag. **' CORTLAND, N. V.**—Cortland & Homer Horse Ry. Co. 4 m (23/ laid), 4-8½ g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y. See, J. M. Milne, Treas. S. E. Weich, Supt. S. E. Weich. (Leased to D. N. Miller.) Office 23 No. Mercer St. **COULT BUTTER 14** Coupel Bluffs St. P. P.

COUNCIL BLUFFS, IA.—Council Bluffs St. R.R. COVINGTON, KY.—So. Covington & Clacianati St. Ry. Co. 173 m, 5-24 g, 43 lb r, 46 c, 296 h. Pres. E. F. Abbott, Sec. S. C. Buntou, Treas. G. M. Abhott.

DALLAS, TEX.—Dallas St. Ry. Co. 41/ m, 4.81/ g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec. Harry Keller, Supt. C. E. Keller. Commerce & Way St. R.R.

DANVILLE, ILL.-Citizens' St. Ry. Co. 4 m, 4 20 lb r, 7 c, 35 mu. Pres. Wm. I. Cannon, V. Pres. Gen. Man. Wm. Stewart, Sec. & Treas. Adam P.

Samuel. DAVENPORT, IA.—Davenport Central St. R.R. 2½ m, 4.8½ g, 20 in r, 12 c, 36 h. Pres. James Grant, V. Pres. W. L. Allen, 'Treas. J. B. Fldler, Supt. B. Rumsey, Sec. O. S. McNell. Davenport City Ry. Co. H. Schuitger, Lessee. DAYTON, KY.—Newport & Dayton St. Ry. Co. 2 m, 5-2½ g, 44 ib r, 9 c, 36 h. Pres. & Supt. W. W. Bean. DAYTON O. Dayton St. Ry.

2 m, 5-2% g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean. **DAYTON, O.**—Dayton St. R.R. Co. 3% m, 4-8% g, 44 lh r, 23 c, 66 h. Pres. J. W. Stoddard, V. Pres. H. S. Williams, Sec. C. B. Clegg, Supt. A. W. Anderson. Oakwood St. Ry. Co. 3 l-3 m, 4-8% g, 38 lb r, 13 c, 60 h. Pres. Charles B. Clegg, Sec. M. P. Moore, Supt. Wm. Davis. The Wayne & Filth St. R.R. Co. 3% m, 4-8% g, 34 28 lb r, 5 c. 30 h. Pres. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. N. Routzahn. **DECATUR, 1LL**.—Decatur Horse Ry. Co. Clitizens' Street R. R. Co. 2 m, 4-8% g, 20 lb T r, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. Kinney. **DEERING, ME.**—See Portland. **DEINISON, TEX.**—Denlson St. Ry. Co. 3 m 3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Waterhonse, supt. S. A. Robinson. **DENVER, COL.**—Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 50 c, 250 h. Pres. Geo. H. Holt, 10 Wall St., New York City, Treas. & Man. G. E. Randolph. **DENVER, I.A.**—Des Moines St. Ry. Co. 10 m, 3g, 25-30-85-52 lb r, 18 c, 100 h. Pres. M. P. Tur-ner, Sec. M. A. Turner. Des Moines & Sebastopol St. Ry. Co,

DETROIT, MICH. – Fort Wayne & Elmwood Ry. Co. 6 m, 48% g, 45 lb r, 30 c, 189 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Treas. George B. Pease, Sec. N. W. Goodwin, Supt. Geo. S. Hazard. Detroit City Ry. 30 m, 48% g, 40-49% lb r, 180 c, 700 h. Includes Jefferson Ave. fine, Woodward Ave. Inc, Michigan Ave. Ine, Grattot Ave. Ine, Brush St. Inc, Gass Ave. Ine, Congress & Baker line. Pres. Sidney D. Miller, Treas. George Hendrie, Sec. James Bleugh, Gen. Supt. Robert Bell, Mast. Mech. John Willis. Grand River St. Ry. Co. 32% m 455% of 000 for the

19

Grand River St. Ry. Co. 2% m, 4-8% g, 42 lbr, 13 c, 110 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dailey, Supt. C. M. Dalley.

Supt. C. M. Dalley. **DOVER**, N. H. – Dover Horse R.R. Co. 2 2-5 m, 3 g, 30 lhr, 4 c, 14 h. Directors, Z. S. Wallingtor, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Cyrus Littlefield. eid

Haley, Frank Williams, Cyrus Littleneid, Treas. Cyrus Littleiteid.
DUBUYUE, IA.—Dubuque St. R.R. 5 m, 4-8% g, 21 c, 45 h. Pres. J. A. Rhonberg, Sec. & Treas. B. E. Linehan, Supt J. J. Linehan.
DULUTH, MINN.—Duluth St. Ry. Co. 3 m, 3-6 g, 30 lh r, 6 c, 7 h, 31 mu. Pres. A. S. Chase, V. Pres.
O. P. Stearns, Sec. & Treas, L. Mendenhall, Snpt. & Pur. Agt. W. T. Hoopes.
EAST OAKLAND, CAL.—Oakland, Brooklyn & Fruitvale R.R. Co.
EAST SAGINAW, MICH.—Street R. R. Co. of East Saginaw. —m, 4-8% g, 30 lb r, 14 c, 35 h. Pres. & Supt. W. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.

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EAST ST. LOUIS, ILL.-East St. Louis St. R.R. Cc

EAST ST. LOUIS, ILL.—East St. Louis St. R.R. Co.
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.
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. Elisha br., 6 c, 20 h. Pres. H. A. Sage, Sec & Treas. H. W. Cooley, Supt. Elisha br., 6 c, 20 h. Pres. H. A. Sage, Sec & Treas. H. W. Cooley, Supt. Samuel Berry.
EAU CLAIR, WIS.—Eau Clair City Ry. Co. ELGIN, ILL.—Elgin City Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne.
ELIZABETH, N. J.—Elizabeth & Newark Horse R.R. Co. 14 m, 5-2½, 4-10½ g, 30 lh r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard. ELKHARDT, IND.—Fikhardt City R.R. Co.
ELMIRA, N. Y.—The Elmira & Horseheads Ry. Co. 92 m, 4-8½ g, 25-30-40 lb r, 15 c, 34 h. Pres. 6 d. Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Officers, 212 E. Water, St.
EL PASO, TEX.—El Paso St. Ry. Co. 2½ m, 4-S½ g. 20 lb r, 8 c, 25 h. Pres. 6 B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magoffice, Sec. & Supt. I. A. Tays.
EMPORIA, KAN.—Émporia City Ry. Co. 3½ m,

Trays.
EAIPORIA, KAN.—Emporia City Ry. Co. 3½ m, 5g, 2010 r, 6c, 23 m. Pres. Van R. Holmes, Treas. A. F. Crowe, Sec. & Man, J. D. Holden.
ENTERPRISE, MISS.—Enterprise St. Ry. Co. 1½ m, 3-6 g, 24 10 r, 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. Jno. Gaston.
ERIE, PA.—Erie City Passenger Ry. Co. 5 m, 48½ g, 3040 ib r, 17 c, 70 h. Pres. Wm. W. Reid, Treas. J. C. Spencer, Sec. A. L. Lettell, Supt. Jacob Berst.

EUREKA SPRINGS, ARK.-Eureka Springs City Ry. Co.

EUREKA SPRINGS, ARK.-Eureka Springs City Ry, Co.
EVANSVILLE, IND.-Evansville St. Ry. Co. 12 m, 4-8 g, 28 ib r, 31 c, 190 mu. Pres. John Gilbert, Sec. P. W. Raleigh, Treas. John Gilbert, Supt. W. Bahr.
FALL RIVER, MASS.-Globe St. Ry. Co. 12 m, 4-8½ g, 40-46-47 lb r, 40 c, 160 h. Pres. Frank S. Ster-ens, Treas. F. W. Brightman, Sec. M. G. B. Swift, Supt. John H. Bowker, jr.
FORT SCOTT, KAN.-Bourbon County St. Ry. Co. 1 m, 4g, 22 lh r, 2 c, 4 m. Pres. Isaac stadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.
FORT SMITH, ARK.-Fort Smith St. Ry. Co. 2 m, 3-6 g, 16-28 lh r, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks.
FORT WAYNE, IND.-Citizens' St. R.R. Co.
FORT WORTH, TEX.-Fort Worth St. Ry. Co. 7½ m, 4 g, 25-38 lb r, 16 c, 73 m. Pres, K. M. Van-zandt, Treas. W. A. Hoffman, Acting Sec. & Gen. Man. S. Mins.
FRANKFORT, N. Y.-Frankfort & Hion Street Dr Co. 2 Marks.

Man. S. Mims. FRANKFORT, N. Y.—Frankfort & Ilion Street Ry. Co. 2½ m, 5 g, 4 c. Pres. A. C. McGowan, Frank-fort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Fredk. Gates, Frankfort. FREDONIA, N. Y.—Dunkirk & Fredonia R.R.Co. 3½ m, 4 10 g, 25 lb r, 5 c, 8 h. Pres. Wm. M. McClas-try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.

try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.
GAINSVILLE, FLA,—Gainsvil ♥
GAINSVILLE, TEX,—Gainsville St. Ry. Co. 2%
m, 3-6 g. 17 lb r, 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Sec. & Treas. F. R. Sherwood.
GALESBURG, ILL.—Galesburg Horse R.R. Co.
GALVESTON, TEX.—Galveston City R.R. Co.
GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 13 m, 4-8-3/g 20-35 lb r, 21 c, 175 h. Pres. C. A. Otis, Cleveland, O. V. Pres. L. H.
Withey, Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. Weston, Grand Rapids, Asst. Sec.
Jas. Pickands, Cleveland, O.
GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8-3/g 23 lb r, 3 c, 12 h. Pres. & supt.
Rogers.
GREENVILLE, S. C.—Greenville City R. Co.

GREENVILLE, S. C.-Greenville City Ry. Co m, 5g. - 1br, 5c, 20h. Proprietors, Gilreath &

Harris, B. H. R., C.G., The Hamilton St. Ry. Co. 4 m., 3g, 28 ib r, 11 c, 12 h. Pres. James F. Griffin, Sec. O. V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow, HANNIBAL, MO.-Hannibal St. Ry. Co. 2 m., 4-8% g, 16-36 lb r, 6 c, 22 h. Pres. K. Supt. M. Doyle, Sec. & Treas. James O. Hearn.
HARISBURGH, PA.-Harrisburgh City Passenger Ry. Co. 2% m, 5-2% g, 42-47 lb r, 15 c, 36 h, Pres. H. A.Kelker, V. Pres. Daniel Epply, Sec. John

Ro

Harris

20

T. Ensminger, Treas, R. F. Kelker, Supt. S. B. Reed. HARTFORD, CONN.-Hartford & Wetberstield Horse R.R. Co. 12 m, 4-8½ g, 45 bf, 49 c, 250 h. Pres. & Treas, E. S. Goodricb, Sec. Geo. Sexton. HAVERHILL, MASS.-Haverhill & Groveland St. Ry. Co. 4½ m, 4-8½ g, 30 br, 10 c, 19 h. Pres. Jas. D. White, Treas. John A. Colby, Supt. L. R. Mitchell.

HAVERHILL, MASS.-Havenin & Obverance
Bt. Ry. Co. 44% m, 45% g, 301b r, 10 c, 19 h. Pres.
Jas. D. White, Treas. John A. Colby, Supt. L. R. Mitchell.
HELENA, ARK.-Helena St. Ry. Co.
HBRKIMER, N. Y.-Herkimer & Mohawk St.
Ry. Co. 1½ m, 4-8% g, 25 lb r, 3 c. Pres. J. M. Ansmen, Sec. Joab Small, Treas. H. D. Alexander.
HOBOKEN, N. J.-North Hudson County Ry.
Co. 16½ m, 4-7 g, 50-60 lb r, 116 c, 630 h Pres. John H. Bonn, Sec. F. J. Mallory, Treas, Fredk. Mickel, Union, Supt. Niebolas Goetz, Union.
HOLYOKE, MASS.-Holyoke St. Ry. Co. 2 m, 4-8% g, 35 lb r, 8 c, 24 h. Pres. Wm. A. Chase, Treas.
C. Fayette Smith, Supt. H. M. Smith.
HOT SPRINGS, ARK.-Hot Springs R.R. Co. 3 m, 4-g, 25 lb r, 11 c, 30 b. Pres. S. W. Fordyce, Sec.
C. E. Maurice, Supt. J. L. Butterfield.
HOUSTON, TEX.-Houston City St. Ry. Co. 14
HOUSTON, KAN.-Hutchinson St. Ry. Co.
HUTCHINSON, KAN.-Hutchinson St. Ry. Co.
HUTCHINSON, KAN.-Hutchinson St. Ry. Co.
HUTCHINSON, KAN.-Hutchinson St. Ry. Co.
Systemington, Supt. Frederick Gates.
INDIANAPOLIS, IND.-Citizens' St. Ry. Co.
St. Ry Co. 530 h. Pres. A. Marion Ry. Co. 23/m, 5 g, 25 lb r, 4 c, 6 h. Pres. A. C. McGowan, Sec. J. Lewis, Treas, F. Remington, Supt. Frederick Gates.
INDIANAPOLIS, IND.-Citizens' St. Ry. Co.
St. Ry Co., Indianapolis, Treas. Tom L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Main, W. T, Steele, Indianapolis, Auditor F. Woodridge, Louisville, Ky.
HUTNGTON, N. J.-Newark & Irvington R.R. Co.
JockSON, MICH,-Jackson City Ry. Co. -m, Jon Actigens, Hran H. Smith, Treas.

dridge, Louisville, Ky.
IRVINGTON, N. J.—Newark & Irvington R.R.
Co.
JACKSON, MICH.—Jackson City Ry. Co. —m,
g. — Ib r, 11 c, 40 h. Pres. Hiram H. Smith, Treas.
Samuel Hopewell, Gen. Supt. Henry H. Smitb.
JACKSON, MISS.—Jackson Street Ry. Co.
JACKSON, MISS.—Jackson Street Ry. Co.
JACKSON, TENN.—Jackson Street Ry. Co.
Jacksonville St. Ry. Co.
See, Geo. R. Foster, Treas. W. P. Hardee, Savannah,
Ga., Supt. G. W. Haines.
JACKSONVILLE, ILL.—Jacksonville Ry. Co.
JAMAICA, N. Y.—Jamcstown St. Ry. Co.
JAMESTOWN, N. Y.—Jamcstown St. Ry. Co.
JAMESTOWN, N. Y.—Jamcstown St. Ry. Co.
JAMESTOWN, N. J.—Jersey & Bergen R. R.
Co. 21 m, 440 g, 560 lb r, 73 c, 494 h. Pres. Chas. B.
Thurston, V. Fres. Wm. Keeney, Treas. C. B. Flace,
See. Warren E. Dennis, Newark, Supt. Thos. M.
Sayre.
Pavonla Ferry Ry. Co.

Initiston, v. 1165. With Rockey, 11635. O. J. Ako, Sayre.
Pavonla Ferry Ry, Co.
JOHNSTOWN, N. Y.—The Johnstown, Gloversville & Kingsboro Horse R.R. Co. 54 m, 4-54 g, 26 lb r, 6 c, 16 h. Pres. James Younglove, V. Pres. K. Fancher, Sec. & Treas. I. M. Law.
JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 64 m, 5-3 g, 41-43 lb r, 13 c, 56 h. Pres. James McMillen, Sec. & Treas. I. M. Law.
JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 64 m, 5-3 g, 41-43 lb r, 13 c, 56 h. Pres. James McMillen, Sec. & L. Yeagley, Treas. W. H. Rosensleet, Jr. JOLHET, ILL.—Jollet City R.R. Co. 3% m, 4-5% g, 40 lb r, 16 c, 30 h. & mu. Owner, J. A. Henry, A. Bischman, Cash. J. E. Henry.
JOPLIN, MO.—
KALAMAZOO, MICHL.—Kalamazoo St. Ry. Co. 10 m, 4-8% g, 35 lb r, 25 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P. H. Brown.
KANSAS CITY, MO.—Kansas City Cable Ry. Co. 22 m, 4-8% g, 45 lb r, 10 pass. cars, 10 dummy cars. Pres. W. J. Smith, Sec. W. L. Lucas, Eng. Robert Gillham. Supt. Edward J. Lawless. Corrigan Consolidated St. Ry. Co. 20 m, 4-1 g, 30 lb r, 80 c, 350 h. Pres. Jas. T. Kelley. Jaokson County Horse R. R. Co. Kansas City & Rosedale St. Ry. Co. 4m, 4-8% g, 27 lb r, 10 c, 42h. Pres. Jas. H. Anderson, V. Pres. Jos, G. Anderson, Sec. R. James Anderson, V. Pres. Jos, G. Anderson, Sec. R. James Anderson, V. Pres. Jos, G. Anderson, Sec. R. James Anderson, V. Pres. Co. % M. S. 40 h. Pres. Jas. H. Anderson, V. Pres. Jos, E. Anderson, Sec. R. James Anderson, Treas. & Supt. W. Z. Anderson.
KINGSTON, ONT., CAN.—Kingston St. R.R. Co. % J. S. Supt. Jo, 30 h. Jb, 30 (jb r, 90 c, 32 h), 10 (jb 36 h). Pres. Robert Car-

JOS, G. Anderson, Sc. K. James Anderson, Treas. & Supt. W. Z. Anderson.
KINGSTON, ONT., CAN.-Kingston St. R.R. Co. & m, 3-6 g, 9 lb r, 10 c, 36 h. Pres. Robert Car-son, Sec. & Treas. F. Sargent, Man. William Wilson KNOXVILLE, TENN.-Knoxville St. Ry. Co. 9 m, 4-38, g, 22 lb r, 5 c, 2 h.acks, 30 h. Pres. W. W. Woodruff, Sec., Treas. & Supt. T. L. Beaman.
LACONIA, N. H.-Laconia & Lake Village Horse R.R. 24 m, 3 g, 34 lbr, 5 c, 17 h. Pres. A. G. Folsom, Treas. Edmund Little, Man. Bela S. Kenniston.
LA CROSSE, WIS.-City Ry. Co. of La Crosse.
24 m, 4-9 g, 24 lb r, 5 c, 16 h. 3 mu. Pres. Geo. F. Gund, V. Pres. B. E. Edwards, Sec. Mills Tonetel-lotte, Treas. Fred Tillman, Supt. Geo. F. Smith. La Crosse St. Ry. Co. Pres. B. E. Edwards, Treas, G. Van Steenyk, Sec. Mills Tourteilotte, Supt. Peter Valler.

LAFAYETTE, IND.-LaFayette St. Ry. 2% m, 48% g, 35 th r, 6 c, 38 h. Pres F. B. Caldwell, LaFay-ette, Sec. & Treas, E. G. Jones, Decatur, III., Supt. F. Greer, LaFayette.

LANE CITY, FLA.—Lake City St. Ry. Co. LANE CITY, FLA.—Lake City St. Ry. Co. LAMPANAS SPRINGS, TEX.—Lampasas City y. Co. 334 m, 48% g, 22 lb r, 6 c, 15 h. [Owned by rs. L. R. Snodgrass.] Gen. Man. Geo. M. Snod-

LANCASTER, PA.-Lancaster & Millerville St.

Ry. Co. Lancaster City St. Ry. Co.

LARCHMONT, N. Y.-Larchmont Manor Co. 1 m, 4.8 g, 25 lb r, 2 c, 8 h. Pres. C. H. Murray, Treas, S. H. French, 38 East Fourteenth St., N. Y. City. LAWRENCE, KAN.-Lawrence Transportation

Co. 3% m, 4-1 g, 38 lb r, 7 c, 30 h. Pres. H. Tlsdale, Sec. W. H. Bangs. LAWRENCE, MASS.—Merrimack Valley Horse R.R. Co. 5 4-5 m, 4-8% g, 48 lb r, 20 c, 70 h. Pres. Wm. A. Russell, V. Pres. James Walton, Methuen, Clerk & Treas. James C. Eaton, Supt. A. N. Kimball, Law-rence. rence

rence. LEWISTON, ME.—Lewiston & Auburn Horse R.R. Co. 7% m, 48% g, 32 lb r, 16 c, 45 b. Pres.Frank W. Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinch-R.R Treas. H. C. J

field, Auburn.
LENINGTON, KY.-Lexington City Ry. Co. 5
m, 4-10g, 20 lb r, 20 c, 35 h. Pres. John Cross, V.
Pres. C. R. Diver, sec. & Supt. Bert. Cross.
LENINGTON, NO.-Lexington St. Ry. Co.
LINGOLN, NEB.-Capital City Ry. Co. 3 m, g, --lb r, 5 c, --h. Pres. E. B. Durfee, Sec. & Supt.
H. B. Durfee.
LUTTE E ROCK. ARE _-Little Bock St. Ry. Co.

g, --- lb r, 5 c, --h. Pres, E. B. Durfee, Sec. & Supt. H. B. Durfee. LITTLE ROCK, ARK.--Little Rock St. Ry. Co. Citizens', st. Ry. Co. 4% m, 410 g, 20 lb r, 22 c, 80 b. Pres. Jobn Cross, Sec. and Treas. F. C. Reed, Supt. C. R. Diver. Hot Springs St. Ry. Co. LOGANSPORT, IND.--Logansport Ry. Co. 2 m, 4 g, 28 lb r, 6 c, 29 mu. Pres. Frank. G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques. Office, Urbana, Ill. LONDON, CAN.--London St. R.R. Co. 3 m, 48% g, 30 lb r, 12 c, 30 h. Pres. V. Cronga, Sec. Jas. H. Flock, Supt. Henry Thos. Smith. LONG ISLAND CITY, N. Y. - Steinway & Hunter's Point R.R. Co. 26% m, 48%, 947 lb r, 60 c, 150 h. Pres. Wm. Stcinway, Steinway Hall, N. Y. City. V. Pres, Henry A. Cassebeer, Jr., Steinway. P. O., Long Island City, N. Y. Sec. Arreas. Chas. F. Tratbar, Steinway Hall, N. Y. Scut, Streas, Chas, J. Campbell. Officers Steinaway Hall, N. Y. Dutch Kills & Hunter's Point R.R. - m, -g, - lb r, - c, -h Pres, R. J. Gleason. Long Island City & Newtown Ry. Co. 3 m, 48% g, 45-55 lb r, 25 c, 60 h. Pres. Isaac Buchannan, N. Y. City, Sec. Geo. S. Crawford, Broklyn, N. Y. Treas. Patrick J. Gleason, Supt. Michael Conway. Officers 112 Front St. LONGVIEW, TEX.-Longview & Junction St.

abiso 101, 200, 00 ft. 1105. Isado Ddohna M., Y., Treas, Patrick J, Gleason, Supt. Michael Couway. Officers Patrick J, Gleason, Supt. Michael Couway. Officers 112 Front St.
LONGVIEW, TEX.-Longview & Junction St. R. Y. 39, 36, 62, 20, 4. Press. F. T. Rembert, Sec. R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth. LOS ANGELES, CAL.-Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Fernando St. R.R. Co. 7 m, 3-6 g, 16 lb r, 13 c. -h. Press. E. T. Spencer, Sec. F. X. Palmer, Supt. J. A. Fairchild. City R.R. ot Los Angeles. 4% m, 4-8% g, 36 lb r, 9 c. 75 h. Press. I. M. Heilman, V. Pres, W. J. Brodrich, Sec. John O. Wheeler, Supt. V. H. Hawks. Los Angeles & Aliso Ave. St. R.R. Co. Main St. & Agricultural Park R.R.
LOUISVILLE, KY.-Kentucky St. Ry. Co. 5 m, 5-2 g, -lb r, 20 c, -h. Pres. T. J. Minary, Sec. & Treas. Thos. Donigan. Central Pass. R.R. Co. -m., -g, -lbr, 2c, -h. Pres, M. J. Birddrich Pass. R.R. Co. -m., -g, -lb r, 20 c, 1300. N. Pres. Main St. R.R. Co. -m., -g, -lb r, 199 c, 1300. N. Pres. Mai, Alexander Henry Davis, Syracuse, N. Y., V. Pres, St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell.
LOWELL, MASS.-Lowell Horse R.R. Co. 6 m, 4-8% g, 28-47 lb r, 28 c, 100 h. Pres. Vin. E. Livingston, Gen. Maan. J. A. Chase.
LYNCHBURG, VA. - Lynchburg St. R.R. Co. 42% m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. N. J. Joyce, V. Pres, & Man. R. N. Rand.
MACON, GA.-Macon & Suburban St. Ry. Co. 6 m, 4-84 g, 29-10 r, 17 r, 12 c, 44 mu, 51 0 h. Pres. & Supt. T, J. Carling, Sec. & Treas. H. R. Brown. Office, 151 Second St.

Second St. MADISON, IND.-Madison St. Ry. Co. 2½ m, 4 g, 15 lh r, 7 c, 8 h, 10 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenlius, Supt. & Treas. Chas. F. Tuttle. MADISON, WIS.-Madison St. Ry. Co. 2½ m, 3 g, 23 lh r, 6 c, 21 h. Pres. E W. Keyes, V. Pres. Sec. & Treas. D. K. Tenney, Supt. G. W. Carse. MANCHESTEIR, N. H.-Manchester Horse R.R. 4½ m, 3-½ g, 27-84 lb r, 12 c, 41 h. Pres. S. N. Bell, Treas. Frederick Smyth, Clerk J. A. Weston, Supt. A, O. Guage.

reas, Frederick Smyth, Clerk J. A. Weston, Supt. Q. Guage.
 MARSHALLTOWN, IA. -3 m, 4 g, 25 lb r, 7 c, bh. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. Giliman, Supt. A. E. Shorthill.
 MARYSVILLE, CAL. -City Pass. R.R. Co. (No Super Science)

ret MECHANICSBURG, ILL. — Mechanicsburg & uffalo Ry. Co. 3% m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. N. Fullenweider, Treas. A. T. Thompson, Sec. J. T. ullenweider.

ullenwelder. **MEMPHIN, TENN.**—Memphis CityR.R. Co.—m, g. —lbr, —c, —h, —Pres, R. Dudley Frayser. **MERIDIAN, MISS.**—Meridian St. Ry. Co. 14/ h, 4-8 g, 16 lh r, 3 c, 12 h. Pres. J. J. Shannon, V. res. J. L. Handley, Sec. R. M. Houston. **MIDDLETOWN, O.**—Middletown & Madison St. V. Co.

RJ MILLERSVILLE, PA.-Lancaster & Millersville

RY. Co.
MILLERSVILLE, PA. — Lancaster & Millersville St. R.R. Co.
MILWAUKEE, WIS. — Cream City R.R. Co. 8 1-6 m, 4-8% g, 27-38 ib r, 74 c, 307 m, 2 h. Pres. Winfield Smith, V. Pres. Christian Prensser, Treas. Ferdinand Knehn, Sec. Wm. Damkoehler, Supt. Henry Berg.
Milwaukee City Ry. Co. 15 m, 4-8% g, 27 lb r, 75 c, 430 h. Pres. Peter McGeoch, Sec. & Treas. Geo. O. Wheatcroft.
West Side St. Ry. Co. Owner & Manager, Wash-ington Becker, Supt. — McNaughton.
MINNEAPOLIS, JHINN. — Minneapolls St. Ry. Co. 45 m, 3-6 g, 27-35-45 lb r, 146 c, 725 h and mu. Pres. Thos. Lowry, V. Pres. C. Morrissey, Treas. W. W. Herrick, Sec. & Supt. C. G. Goodrich.
MOBILE, ALA. — City R.R. Co. 17% m, 5-29, 32 lb T-r, 68 c, 240 h. Pres. Jno. Maguire, Sec. I. Strausse, Treas. Myer I. Goldsmith, Supt. A. Moog. Dauphin & Lafayette St. Ry. Co. 2 m, 5-2% g, 40 br, 9, 62 h. Pres. D. P. Bestor, V. Pres. G. Y. Overall, Sec. & Treas. James W. Gray, Pur. Agt. & Man. J. G. Robertson.

NOVEMBER, 1885.

Mobile & Spring Hill R.R. Co. 8 m, 5-2% g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Daniel M. Neill, Sec. & Treas, C. F. Sheldon, Man. F. Ingato. **MOHAWK**, N. Y.-Mobawk & Ilion R.R. Co. 1% m, 4-8% g, 30 lb r, 4 c (contract for motive power). Pres. O.W. Bronson, V. Pres. John Brown, Sec. H. D. Alexander, Treas. R. M. Devendorff, Supt. O. W. Bronson. Bron

Bronson. MOLINE, ILL.-Moline Central St. Ry. Co. 1% m, -g, -lb r, 3 c, 11 h. Pres. S. W. Wheelock, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway. Moline & Rock Island St. Ry. Co. 5 m, 4-8% g, 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Buford, Treas. C. Lyons, Supt. Wm. Gamble. MONTREAL, CAN.-Montreal City Pass. Co. 21 m, 4-8% g, -lb r, 76 c, 465 b. Pres. Jesse Joseph, V. Pres. Wm. Smith, Sec. & Man. Ed. Lusher, Supt. T. H. Robiliand. MOULTREEVILLE, S. C.-Middle St. & Subl-

Pres. Will. Sinito, Sec. & Man. Ed. Lüsher, Supt. T.
H. Robiliand.
MOULTRIEVILLE, S. C. - Middle St. & Sullivan's Landing Ry.
MUSKEGON, MICH. --Muskegon Ry. Co. 4% m, 3-6g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V.
Pres. Cbas. Merriam, Boston, Mass. Sec. Tbomas Munroe. Treas. G. R. Sherman, Supt. C. H. Newell.
NASHUA, N. H. --Nasbua St. Ry. Co.
NASHVILLE, TENN.--Nashville & Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield an Mashville St. R.R. Co., one management.
5 m, 5 g, 16 lb r, 21 c, 100 h. Pres. Jno. P. White, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Deaderlick. erlck

erick. McGavock & Mt. Vernon Horse R.R. Co. Nashville D. & N. St. R.R. Co. 7½ m, 5 g, 16-32 lb r, 25 c, 140 mu. Press. Jno. P. White, V. Press. B. F. Wil-son, Sec. & Treas. H. B. Stubblefield, Supt. D. Dead-erick. erick

son, Sec. & Treas. H. B. Stubblefield, Supt. D. Deaderlek.
Soutb Nashville St. R.R. Co. 4½ m, 5 g, 16-20 lh r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.
NEWADA, MO.-Newada Street Ry. Co.
NEW ALBANY, IND.-New Albany St. Ry. Co.
6 m, 411 g, 25 lb r, 15 c, 50 h. Pres. Geo. T. Vance, Sec. G. Vance, Treas. Letitla V. Vredenburgh, Supt. Wm. L. Timberlake.
NEWAIRK, N.J.-The Newark & Bloomfield St. R.R. Co. 7 m, 5-2½ g, 47 lb r, 22 c, 140 h. Pres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Broad St. R.R.
NEW BEDFORD, MASS.-New Bedford & Fairbaven St. Ry. Co. 7½ m, 4-8½ g, 35-40 lb r, 38 c, 138 h. Pres. Warren Ladd, Treas. Andrew G. Pierce, Clerk Edward T, Pierce.
Acushnet St. R.R. Co. (not in operation.) Pres. Cbas. E. Cook, Sec. & Treas. A. P. Smith.
NEWBURYPORT, MASS.-Newburyport & Amesbury Horse R.R. Co. 6 1-3 m, 12 c, 54 h. Pres. W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens, Lessee, E. P. Shaw.
NEW HAVEN, CONN.-Fair Haven & Westville P. Co. 7 m 4 22 c, 141 h. Pres.

NEW HAVEN, CONN.-Fair Haven & Westville R.R. Co. 7 m, 4% g, 42 lb r, 23 c, 151 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Waiter A.

NEW HAVEN, CONN.—Fair Haven & Westville R.K. Co. 7 m, 4% g, 42 br, 23 c, 161 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Waiter A. Graham. New Haven & Centreville Horse R.R. Co. 2% m, $4\%\chi$ g, 42 br, 4c, 30 h. Trus tee Corneilus Pierponu-State Street Horse R.R. Co. 2% m, 4.8 g, 43 br, 4c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. C. Blatchen. The Whitney Ave. Horse RY. 2% m, 4.8χ g, 25 br 3c, 25 h. Pres. Geo. H. Watsons, Sec. George D. Watson, Treas. Ell Whitney, Jr. NEW ORLEANS, LA.—Canal & Claiborne St. R.R. Co. 13 m, 5-2% g, 37 br, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. John H. DeGrange. Crescent City R.R. Co. 26 m, 5-2% g, 35-45 br, 90 c, 400 h. Pres. Frank Roder, Sec. & Treas. Jno. J. Ju-den, Supt. A. V. Smith. New Orleans & Carrolton R.R. Co. 8 m, 4.8% g, 3045 br, 65 c, 200 h. 19 engines. Pres. Wm. Benthuy-sen, Sec. Waiter F. Crouch, Supt. C. V. Haile. New Orleans St. R.R. Co. Orleans R.R. Co. - m, -g, - br, 32 c, 140 h. & mu. Press, K supt. H. Larquie, Sec. & Treas. P. Cougot. Office, cor. Winte & Laharque Sts. St Charles St. R.R. Co. 15 m, 5-2% g, 32 br, 60 c, 366 m. Pres. K supt. Alden McLeilan, Sec. Vincent River.

NEWPORT, KY.-Newport St. R.R. Co.

NEWPORT, KY.-Newport St. R.R. Co. NEW YORK, N.Y.-Ninth Ave. R.R. Co. 8 m, 4-84 g, 60 lb r, 45 c, 380 h. Pres. W. H. Hays, Sec, & Treas. James Affleck, Supt. Herman, B. Wilson. Offi-cer, North Ave., cor. 59th. St. Broadway & Seventh Ave. R.R. Co. 7 m, 4-84 g, 47-60 lb r, 150 c, 1,530 b. Pres. James W. Foshay, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell. Office 761, Seventh Ave. Central Crosstown R.R. Co. 2 % m, 4-84 g, 52 lb r, 42 c, 231 b. Pres. Jobn B. Slawson, V. Pres. A. Cam-mack, Sec. M. J. Masson, Treas. John L. Macaulay. Office 365 Ave. A. Central Park North & East River R.R. Co. 14 m, 454 g, 60 lb r, 162 c, 1,225 h. Pres. J. H. Scrbiner, V. Ares. C. D. Wyman, Sec. H. Scribner, Treas. J. L. Christopher & Tenth St. R.R. Co. 5 m, 4-8 g, 45 lb r, 47 c, 290 h. Pres. Jacob Sharp Treas. W. T. Hatcb, Sec. & Supt. George W. Lynch. Office, 168 Christo-pher St. Dry Dock, East Broadway & Battery R.R. Co. 112 m, 484 g, 60 lb r, 187 c. 1132 h. Pres. William Whyle

Sec. & Supt. George W. Lynch. Office, 168 Christopher St.
Dry Dock, East Broadway & Battery R.R. Co. 11½
m, 4-8½ g, 60 lh r, 167 c, 1,132 h. Pres. William While, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred F. White. Offices, 605 Grand SS.
Eightb Ave. R.R. Co. 10 m, 4-8½ g, 60 lb r, 112 c, 1155 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. H. B. Wilson. Office, Eigbt Ave., & 50th. St.
Forty-Second Street & Grand Street Ferry R.R. Co. 5½ m, 8-4 g, 64 lb r, 50c, 500 h. Pres. Chas. Curtis, Sec. & Streas. E. S. Allen, Supt. John M. Calhoun.
Office, 653 W. 23d. St.
Harlem Bridge, Morrisania & Fordham Ry. 4½ m, 4-5½ g, 4-60 lh r, 55 c, 233 h. Pres. Henry Sprater, Y. Pres. Richard M. Hoe, Sec. & Treas. Wm. Caldwell.
Office, North Third Ave, near 170 St.

Houston, West Street & Pavonla Ferry R.R. Co. 5 m, 4-S4 g, 60 lb r, 50 c, 400 h. Pres. Richard Kelly, Sec. & Treas. Daniel B. Hasbrook. Office, 415 E. 10 St.

Set. a Treas, Danier E. Hasbrook. Onder, 43 E. Jerome Park R.R. 1 m, 4-8½ g, 50-56 lb r. Pres. Leonard M. Jerome, Sec. Fred A. Lovecraft, Treas. Theodore Moss, Office, cor. 5th. Ave. & 22d St. New York Clty St. Ry. Co. 10 m, [not In operation]. Pres. Loomis L. White, Sec. W. L. McCorkle, Treas. Wm. L. Skidmore. New York & Harlem R.R. Co. 5½ m, 4-8½ g, 56-75 lb r, 144 c. 1,408 h. Pres W. H. Vanderbilt, V. Pres. & Sec. Cornellus Vanderbilt, Treas. Ed. V. W. Rossi-ter, Supt. Alfred Skitt, Pur. Agt. Chas. Reed. Sixth Ave. R.R. Co. 4m, 4-8½ g, 60 lb r, 127 c, 1296 h. Office, 756 Sixth Ave. South Ferry Ry. Co. 32 m, 4 8½ g, 60 lb r, 13 c, 41 h. Pres. Henry Hart, Sec. Wm. N. Cohen, Treas. Albert J. Ellas, Supt. Chas H. Meeks. Office 20 Whilehall St. The Second Ave. R.R. Co. 13 m, 4 8½ g, 60 lb r, 316

Albert J. Enas, Supt. Chas H. Meeks. Office 20 Whilehall St. The Second Ave. R.R. Co. 13 m, 48% g, 60 lb r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second Ave. cor. 96th St. The Third Ave. R.R. Co. 13% m, 4.8% g, 60 & 74 bl r, 318 c, 2150 h. (3% m of cable road on 10th ave.) Pres. Lewis Lyon, 739 Madison ave., V. Pres. Henry Flart, 110 Tribune Building, Sec. Alfred Lazarus, 436 W. 61st st., Treas. John Beaver, 211 E. 112th st., Supt. John H. Robeitson, 307 E. 65th st. Twenty-third St. R.R. Co. 7 m, 4-8% g, 54 lb r, 102 c, 692 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Treas, Lewis May, Act-Supt. George Ferry. Office 621 West 230 St. NIAGARA FALLS, N. Y.-Nlagara Falls & Sus-

621 West 250 St. NIAGARA FALLS, N. Y.—Nlagara Falls & Suspension Bridge Ry. Co. 2½ m, 4-8½ g, 38-42 1b r, 8 c, 36 h. Pres. Benj. Flagler, V. Pres. Alva Chich, Sec. W. J. Mackay, Treas. A. Schoellkopf. NORFOLK, VA.—Nortolk & City R.R. Co. 3¼ m, 5-2 g, 44 fh r, 1S c, 65 h. Pres. John B. Whitehead, Treas. H. C. Whitehead, Supt. E. W. Savage. NORTHAMPTON. MASS.—Northampton St.

NORTHAMPTON, MASS.—Northampton St. Ry. Co. 3½ m, 4-8½ g, 32 lb r, 7 c, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C.

Ry. Co. 3% m, 45% g, 32 lb r, 7 c, 26 l. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark.
NORWALK, CONN.—Norwalk Horse R.R. Co. 2 m, 410 g, - lb r. 7 c, 20 h. Pres. James W. Hyatt, V. Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt, NOR WICH, CONN.—Norwich Horse R.R. Co. OAKLAND, CAL.—Alameda, Oakland & Pied-mont R.R. Berkley Villa R.R. Broadway & Pledmont St. R.R. Co. Fourteentb St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, — h. Pres. & Supt. Walter Blair, Sec. P. J. Van Loben. Oakland R.R. Co. OGBEN CITY, UTAH.—Ogden City Ry. Co. 3m, 44% g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtleff, Ogden City, V. P. & Supt. O. P. Arnold, Salt Lake City, Sec. & Treas. H. S. Young, Ogden City. OLEAN, N.Y.—Olean St. Ry. Co. 11-10 m, 3-6 g, 25 lb r, 3 c, 8 h. Pres. M. B. Fobes, Sec. & Treas. M. W. Barse.
OMAHA, NEB.—Omaha Horse Rv. Co. 15 m

Barse. OMAHA, NEB.—Omaha Horse Ry. Co. 15 m, 4-8% g, 35 lb r, 40 c, 300 h. Pres. Frank Murpby, V. Pres. Guy C. Barton, Treas. W. W. Marsb, Supt. W. A. Sml

A. Smith.
A. Smith.
ONEIDA VILLAGE, N. Y.—Onelda St. Ry. —
m, — g, — lb r, — c, — h. Pres. Jerome Heacock.
OSHKOSH, WIS.—Oshkosh St. R R. Co. 3½ m,
45% g, 27 lb r, 9 c. 24 h. Pres. Tom Wall, V. Pres.
F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L.
Thompson

F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson. OSWEGO, N.Y.—Oswego St. Ry. Co. 2 m, 4-8³/₂ g, 45 lb r, 3 c, — h. Pres. Jas. F. Johnson, V. Pres. R. J. Ollphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor. [Not in operation yet.] OTTAWA. ONT.—Ottawa City Passenger Ry.Co.

A. 5. Onfoldati, Sect. Maile, July Jack Matter, Hote, K. 1998, Robert O. 1998, Jack Matter, July Jack Mater, Ju

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PHILADELPHIA, PA.—Cltizens Pass. Ry. Co. ½ m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John Mc-arthy, Sec. & Treas. John J. Adams, Supt. Sam'l Cline.

Cline. Frankford & Southwark Phila. City Pass. R.R. Co. 181-10 m, 5-2 g, 47 lb r, 91 c, 8 dummy c, 580 h. Pres. Henry Gelger, Sec. & Treas. Geo. L. Gaudy, Supt. W.

Henry Gelger, Sec. & Treas. Geo. L. Gaudy, Supt. W.
H. Janney.
Hestonville, Mantua & Falrmount Pass. R.R. Co. 20
m, 5-2 g, 43 lh r, 50 c, 480 h. Pres. Charles F. Lafferty, Sec. & Treas. W. C. Foster.
Lehigh Ave, Pass. Ry. Co. Pres. John Lamon, Sec.
Cbas. A. Porter, Treas. John L. Hill. (Track not laid.)
Lombard & South Sts. Pass. Ry. Co. - m, 5-2g, 43
lb. r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas.
Francis Hazelhurst, Supt. Jon M. Gughen.
People's Pass. Ry. Co. 44 m, 5-2g, 47 lb r, 125 c, 1,080
h. Pres. C. J. Harrab, V. Pres. C.J. Harrab, Jr., Sec.
& Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiler.
Philadelphia City Pass. Ry. Co. 7 m, 5-2% g, 47 lb

r, — c, — h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. Philadelphia Traction Co. 109 m, 5-2½ g, 45-78 lb r, 595 c, 3,160 h. Pres. W. H. Kemble, V. Pres. P. A. B. Widener & W. L. Elkins, Sec. & Treas. D. W. Dick-

Middel d. H. A.
 Philadelpbia & Gray's Ferry Pass. R.R. Co. 10 1-3
 Philadelpbia & Gray's Ferry Pass. R.R. Co. 10 1-3
 m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C.
 Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-

ett. Ridge Avenuc Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 55 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lam-bert, Sec. & Treas. Wm. S. Blight, Supt. William

Good & Third Sts. Pass. Wm. S. Blight, Supt. William Ingles. Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William F. Miller, Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William F. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens. Seventeenth & Nineteenth Sts. Pass. Ry. Co. 7% m. Pres. Matthew S. Quay, Sec. & Treas. John E. Fed-dle. [Leased to Philada. Traction Co.] Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 g, 43 lb r. 32 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas. Thos. S. Harris, Supt. Wm. B. Cooper. Union Pass. Ry. Co. 70 m, 348 c 1, 724 h. Pres. Wm. H. Kemble, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. West Philadelphia Pass. Ry. Co. 18% m, 122 c, 646 h. Pres. Feter A. B. Widener, Sec. & Treas. D. W. Dickson. (Leased by the Phila. Traction Co.) **PH1LLIPSBURGH**, **N. J.** –Pbillipshurgh Horse Car Ry. Co 2% m, 48 g, 351b r, 4 c, 13 h. Pres. Daniel Runkle, Sec. & Treas. James W. Long. **PITTSBURGH**, **PA**.—Central Pass R.R. Co. 3m, Treas. E. R. Jones, Supt. R. G. Heiron. Beaver Falls & New Brighton Ry. Co. Citizens' Pass. Ry. Co. 16½ m, 5-2% g, 47 lb r, 40 c, 337 h. Pres. Jno. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner. Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, F-24% g, 46-50 lb r, 20 c, 154 b. Pres. Wm. H. Creery, Treas, James Boyle, Supt. Wm. J. Crozler, Allegbeny City. PeoDely's Park Pass. Ry. Co. 2 m, 5-2% g, -- b r, Path.

Treas. James Boyle, Supt. Wm. J. Crozler, Allegbedy Clty.
People's Park Pass. Ry. Co. 2 m, 5-2½ g, -- lb r, 10 c, 75 h. Pres. Wm. McCreery, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny Clty.
Pittsburgh, Allegheny & Manchester Pass. Ry. Co. 5 m, 5-2½ g, 46 lb r, 40 c, 275 h. Pres. Chas. Atwell, see, & Treas. Chas. Selbert, Supt. James C. Cotton.
Manager J. P. Speer.
Pittsburgh, Oakland & East Liberty Pass. Ry. Co. 11 m, 5-4½ g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T. Jordan, See. Jobn G. Traggardtb, Treas. D. W. C. Bldwell, Supt. H. M. Cherry.
Pittsburgh Union Pass. R.R. Co. 5 m, 5-2½ g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, See. & Treas. Cbas. Selbert, Cash. Saml. C.

r, 29 c, 170 h. Pres. Chas. Atwent, Supt. James C. Cotton, Sec. & Treas, Cbas. Seihert, Cash. Sanl, C. Hunter.
Pittsburgh & Birmingham Pass. R. R. Co. 3½ m, 5-2½ g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec. D. F. Agnew, Treas. John G. Holmes.
Pittsburgh & West End Pass. Ry. Co. 3½ m, 5-2 g, 55 lb r, 13 c, 75 h. Pres. John C. Reilly, Sec. & Treas.
Pittsburgh & Wikinsburg St. Ry. Co. 3½ m, 5-2 g, 60 h. Pres. D. Z. Brickell, Sec. & Treas.
Second Avenue Pass. Ry. Co. 3½ m, 5-2% g, 45 lh r, 12 c, 80 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Wałlace, Supt. W. M. Rosborough.
Transverse Pass. Ry. Co. 64 m, 5-2 g, 52 lb r, 39 c, 243 h. Pres. C. F. Klopter, Sec. & Treas. Wm. R. Ford, Supt. Miller Elliot.
PITTSTON, P.A.—Pittston '55t. R.R. Co. 1½ m, 3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris, Sec. William Allen.
PORT HURON, MICH.—Port Huron St. Ry. Co.
Man. 48½ g, 7 c, 22 h. Pres. Jno. P. Sanborn, V. Pres. F. Rand, S. Read, Sec. Treas, Man. J. R. Wastell. tell

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PORTILAND, ME. - Ocean St. R.R. Co.
Portland R.R. Co. 7% m, 48% g, 30-33-45 lb r, 34 c,
154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A.
Newman, Supt. Geo. W. Soule.
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.
POTTSVILLE, PA. - People's Ry. Co. 9% m,
16 c. 56 h.

16 c, 56 h. POUGHKEEPSIE, N. Y.—Clty R.R. of Pough-keepsie, 3 m, 4-8½ g, 35 lb r, 11 c, 38 h. Pres. Aaron Innis, V. Pres. G. B. Adriance, Sec. A. B. Smitb, Treas. Hudson Taylor, Supt. C. M. Davis. Office 491 Wain St. Main St

Treas. Hudson Taylor, Supt. C. M. Davis. Onlice 491
Main St.
PROVIDENCE, R. I.—Union R.R. Co. 50 m, 4-836 g, 24-54 lb r, 240 c, 1,200 h. Pros. Jesse Metcalf, V. Pres, & Gen. Man. D. F. Longstreet, Sec. and Treas. C. A. Babcock, Aud. B. A. Jackson.
QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-837 g, 45 lb r, 9 c, 40 h. Pres. Chas. st. Michel, Quebec, V. Pres. G. Renfrew, Quebec, Sec., Treas. & Supt. Samuel Moore, Book-Keeper, Francis Boomer.
Quebec R.R. Co.
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. Stoner
RACINE, WIS.—Belle City St. Ry. Co.—m.g.— lb r,—c.—h.Pres. — Sec. — Treas. Chas. Hatha-way.

way.
 READING: PA.—Reading Clty Pass. Ry. Co.
 21-5 m, 5-2% g, 45 lb r, 19 c, 44 h. Pres. B. F. Owen,
 V. Pres. Jas. L. Dourlass, Scc. & Treas. H. A. Muhlen-

V. Preš. Jas. L. Douglass, Scc. & Treas. H. A. Multicher, berg, Supt. J. A. Riggs. Perklomen Ave. Pass. Co. 21-5 m, 5-2½ g, 451b r, 14 c, 36 h. Pres. Chas. Brenelser, Sec. & Treas. Isaac Hlester, Supt. John B. Houp. **RED OAK, IA.**—Red Oak St. R.R. Co. 1½ m, 4-2% g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V. Pres. Geo. West, Sec. F. M. Byriket, Treas. & Supt. F. O. Judkins. O. Judkins.

RICHTHOND, IND.-Richmond City Ry. Co. 3 m, 3 g, 25 lb r, 9 c, 30 h. Pres. J. Y. Miller, V. Pres. Joseph Ratliff, Treas. H. I. Miller, Supt. F. M. Fran-

RICHMOND, ILL.-Richmond St. R.R. Co.

RICHMOND, VA.—Richmond City Ry. Co. 7 m, 4-8½, g, 60-40 lb r, 40 c, 180 h. Pres. J. H. Scboolcraft,

Sec. & Treas. F. D. Mellen, Man. C. M. Baeton, Supt.

21

Charles Sieders. ROCHESTER, N. Y.-Rocbester City & Brighton P. P. Co. 22 m. 4-8% g, 45 lb r, 120 c, 500 h. Pres. C. R.

ROCHESTER, N. Y.-Rocbester City & Brighton R.R. Co. 22 m. 4-8% g, 45 lb r, 120 c, 500 h. Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodwortb, Supt. Thomas J. Brower.
 Citizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas. J. E. Pierpont, Supt. S. A. Green.
 ROCKFORD, HLL.-Rockford St. Ry. Co. 6 2-5 m, 4-8% g, 20 lb r, 13 c, 52 h. 16 m. Pres. Anthony Halnes, V. Pres, L. Rhodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Halnes.
 ROCK ISLAND, ILL.-Rock Island & Milan St. Ry. Co. 7 m. 4-8% g, 20-20-42 lb r, 10 c, 7 h. Pres. & Supt. Bally Davenport, Sec. E. H. Gayer, Treas. John Peety.

RONDOUT, N. V.-Klngston Clty R.R. Co. 24-5 m, 4.8½ g, 40 lb r, 10 c, 40 h. Pres. James G. Linds-ley, V. Pres, S. D. Coykendoli, Sec. & Treas. John C. Romeyee, Supt. Wm. H. DeGarmo. SACRAMENTO, CAL.-Sacramento City St.R.R.

Co

SAGINAW, MICH.—Saginaw St. R. R. Co. 252 m, 48% g, 42 lb r, 10 c, 50 h. Pres. David H. Jerome, V. Pres. Geo. F. Williams, Sec. & Treas. Geo. L. Bur-rows, Supt. Fred G. Benjamine.

SALEM, MASS.—Salem & Danvers St. Ry. Co. 6 m, 4-8½ g, 35-47 lh r, 15 c, 45 h. Pres. Benj. W. Rus-sell, Sec. G. A. Vickery, Treas. Geo. W. Williams, Supt. W. B. Furgurson, Asst. Supt. David N. Cook.

Naumkeag St. Ry. Co. — m. 4-8½ g, 30-25-45 lbr, 50 c, 140 h. Pres. Chas. Odell, Clerk Joseph F. Hickey, Treas. Henry Wheatland, Supt. Willard B. Ferguson.

SALT LAKE CITY, UTAH.—Salt Lake City R.R Co. 18 m, 4-8% g, 20 lb r, 20 c, 115 mu. Pres. John Taylor, Sec. David McKenzle, Treas. James Jack, Supt. Orson P. Arnold.

SAN ANTONIO, TEX.—San Antonio St. Ry. Co. 15 m, 4 g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. Clty, Treas, I. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb.

John Robb. Prospect Hill St. Ry. Co. SANDUSKY, O.—Sandusky St. Ry. Co. 2 m, — g, — lh r, — c, — h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude.

g. - li, r. - c. - h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude.
SAN FRANCISCO, CAL. - California St. R.R. Oo. Central R. R. Co. 6 m, 4-8 g, 45 lb r, 31 c, 290 h
Pres. Chas. Main, V. Pres. Jos. Roseberg, Treas. A. J. Gunnison, Sec. C. G. LeBreten, Supt. J. F. Clark Clay St. Hill R.R. Co. 1 m, 3-6 g, 30 lb r, 11 c, 12 Jummy cars. Pres. Joseph Britton, V. Pres. James Moffit, Treas. Henry L. Davis, Sec. Cbas. P. Camp-hell, Supt. Joseph Britton.
Clay St. Park & Ocean R.R. Co. Market St. Cahle Ry. Co. 10 9-10 m, 4-S½ lh r, 137 c, 2 motors, 73 h. Pres. Leland Stanford, V. Pres. Chas.
F. Crocker, Treas. N. T. Smitb, Sec. J. L. Willcutt North Beach & Mission R.R. Co. 8 m, 5 g, 46 c, 400 b. Pres. Jos. Rosenberg, Sec. H. W. Hathorne, Treas. Carl Ahfel, Supt. M. Skelly.
Omnibus R.R. & Cable Co. 8½ m, 5 g, 35-45 lb r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Ruegg, Supt. M. M. Martin.
Portrero & Bay View R.R. Co. 14 m, 5 g, 35 lb r, 50 c, 64 h. Pres. Leland Stanford, V. Pres. Chas.
Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt.
Sutter St. R.R. Co. 5½ m, 4-11 g, 35-45 lb r, 30 c, 785 h. Pres. Gustav Sutro, V. Pres. Chas.
Crocker, Treas. N. T. Smith, Sec. A. K. Stevens, Treas.
M. Schmitt, Supt. James McCord.
Telegraph Hill St. Ry. Co. 1,707 ft, 4-11 g, 36 lb r, 36 c, meas. C. J. Werner.
Tbe City R.R. Co. 5½ m, 5 g, 48 lb r, 73 c, 285 h. Pres. R. B. Woodward, V. Pres. Geo. E. Raum, Sec. M. E. Wills, Treas. J. H. Goodman, Supt. William Woodward.
SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co.

SAN JOSE, CAL.-San Jose & Santa Clara R.R. SAN JUSL, C.L., Co. First St. & San Pedro St. Depot R.R. Co. Market St. & Willow Glen R.R. Co. North Side R.R. Co. People's R.R. Co.

SANTA BARBARA, CAL.—Santa Barbara St. R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPbail. SAUGATUCK, CONN.—Westport & Saugatuck

SAVANNAH, GA.—Clty & Suburban Ry. Co. 1835 m, 5 g, 16-30 lh r, 49 c, 110 h, 3 engines. Pres. J. H. Jobnson, Asst. J. W. Alley, Treas. E. Schmidt.

Joonson, Asst. J. W. Aney, Freas, E. Schmudt, Coast Line R.R. Co. 7 m. 5g, 30 lbr. 17 c, 37 h. Pres. Geo. Parsons, New York, Sec., Treas. & Gen. Man. R. E. Cobb, Savannah. SAYRE, PA.-Sayre St. R7. Co. Pres. Howard Elmer (organization not completed).

SCRANTON, PA.—People's St. Ry. Co. 9½ m, 48½ g, 25-52 lb r, 19 c, 70 h. Pres. Wm. Matthews, Sec. & Treas. J. C. Platt.

SEARCY, ARK.—Searcy & West Point R.R. Co, 8 m, 4-8½ g, 20 lb r, 7 c, 6 mu. Pres. A. W. Yarnell. Sec. W. H. Lightle, Treas. Jasper Hicks.

SEATTLE, W. T.-Seattle St. Ry. Co. 3½ m, 4-8½ g, 351b r, 5 c, 20 h. Pres. F. H. Osgood Sec. Geo. Kinnear.

SEDALIA, MO.—Sedalla St. Ry. Co. 2% m. 4-10 g. 54 lb r 6 c 31 h. Pres. Joseph D. Sicher, V. Pres. Louis Deutsch. Treas. F. H. Guenther, Sec. & Supt. Chas. S. Conrad.

SELMA, ALA.—Selma St. R.R. 2½ m, 18 lh r. 5 c, 8 h. Pres. E. Gilman, Sec. & Treas. J. H. Hoflis, Supt. W. Bohlia. SENECA FALLS, N. Y .- Seneca Falls St. Ry. Co.

SHREVEPORT, LA.-Shreveport Clty R.R. Co. 1% m, 4-4 g, 46 lh r, 6 c 14 h. Pres. Peter Youree.

SILVER CLIFF, COL.-Silver Cliff St. R.R. Co. SILVER CLIFF, COL.-Silver Cliff St. R.R. Co. SIOUN CITY, IA.-Sloux Clty St. Ry. Co. 5 m, -g, -t, 6 C, 8 h, 4 mu. Pres. Fred. T. Evans, V. Pres. D. A. Magee, Sec. & Treas, F. T. Evans,

SHERMAN, TEX.-Sherman City R.R. Co.

Horse R.R.

SOUTH CHICAGO, ILL.—Chicago Horse & Dummy R.R. 5 m, 483% g, -hr, -c, -h. Pres. D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bilss. [Not in operation.]

SOUTH PUEBLO, COL.—Puehlo St. R.R. Co.
 SPRINGFIELD, ILL.—Citizens' St. R.R. Co.
 9% m, 3 6 g, 20-36 ib 1, 23 c, 100 h. Pres. J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman.
 Springfield City Ry. Co.

SPRINGFIELD, MASS.—Springfield St. Ry. Co. 4-839 g, 33-40 hr, 28 c, 115 h. Pres. John Olmstead, Auditor L. E. Ladd. Clerk Gldeon Wells, Treas. A. E. Smith, Supt. F. E. King.

E. Smith, Supt. F. E. King.
SPRINGFIELD, MO.—The People's Ry. Co. of Springfield, vo. 3% m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Sheppard, Supt. H. F. Denton.
Springfield R.R. Co. 2 m, 30-40 lb r, 4-8% g, 7 c, 19 h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas. E. F. Hohart, Supt. J. A. Stoughton, No. Springfield.
SPRINGFIELD, O.—Cltizens' St. R.R. Co. 10 m, 4g, 29 c. 135 h. Pres. D. W. Stroud, V. Pres. A. S. Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hanford.

STATEN ISLAND, N. Y .- Staten Island Shore Rv.

ST. CATHARINE'S, ONT.—St. Catharlne's, Mer-rliton & Thorold St. Ry. Co. 5% m, 4-8% g, 30 lh r, 7 c, 30 h. Pres. E. A. Smythe, Sec. S. R. Smythe, Supt. E. A. Smythe.

ST. JOSEPH, MO.-Cltizens' St. R.R. Co. 3 m, 4-8½ g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F.

Sec. & Treas. Arthur Kirkpatrick, Supt. John F. Mer iam.
Frederick Ave, Ry, Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h.
Pres. Thomas E. Tootle, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas. Thomas W. Evins, Supt. S. Rowen.
St. Joseph & Lake St. R.R. Co.
Union Ry, Co.
ST. LOUIS. NO. — Baden & St. Louis B.B. Co.

H. Willams.
Cltzen's Ry. Co. -m, -g, -lb r, -c, -h. Pres. Julius S. Walsh.
Jefferson Ave. Ry. Co.
Lindell Ry. Co. 13½ m, -g, -r, 65 c, 475 h. Pres. John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas. Gco. W. Baumhoff, Supt. Jos. C. Llewellyn.
Mussouri R.R. Co. -m, -g, -lb r, -c, -h. Pres. P. c. Maffit.
Mound City R.R. Co. - m, -g, -lb r, -c, -h. Pres. Sorthern Central.
Springfield Ry. Co. 2 m, 4-8½ g, 25-40 lb r, 7 c, 40 h. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart. Springfield, Supt. J. A. Stughton, No. Springfield, Asst. supt. Frank B. Smith, No. Springfield.

Southern Ry. Co. 74-5 m, 4-10 g, 35-52 lb r, 49 c, 250 Pres. E. R. Coleman, Sec. J. S. Minary, Man. W.

b. Pres. E. R. Coleman, Sec. J. S. Millary, Stat.
 L. Johnson,
 St. Louis R.R. Co. and the People's R.R. One management, 11 m, 4-10 g, 38-44 10 r, 58 c, 375 h.
 Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt.

Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt. Patrick Shea. Tower Grove & Lafette R.R. Union Depot R.R. Co. —m, -g, —lb r, —c, —h. Pres. John Sculla. Union R.R. Co. **STONEHAM**, MASS.—Stoneham St. R.R. Co. 2% m. 4-8% g, 33 lb r, 10 c, 28 h. Pres. A. V. Lynde, Welrose, Treas. & Clerk Lyman Dyke, Supt. John HU HII

IIII.
ST. PAUL, MINN.-St. Paul City Ry. Co. 25 m, 4-8½ g, 80 c, 150 h, 924 mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. J. H. Randall, Treas. Clint-on Morrison, Supt. A. L. Scott.
STILLWATER, N. Y.-Stillwater & Mechanics-ville St. Ry. Co. 4½ m, 4-8½ g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H. O. Balley, Mechanicsville, Treas. E. N. Smith.

STROUDSBURGH, PA. — Stroudshurgh Passenger R.R. Co. 145 m, 4 Sy g, 28:30 b r, 3 c, 9 h. Pres. & Treas. J. Lantz, Scc. Jacob Houser.
 SVRACUSE, N. Y. — Syracuse & Onondaga R.R. Co. 23-5 m, 448 g, 28:47 lb r, 9 c, 18 h. Pres. Peter
 Burns, Sec. & Treas. Lyman C. Smith, Supt. Henry Thompson.

Burns, Soec, & Treas, Lyman C, Mith. Supt. Henry Thompson.
Central Clty Ry, Co. 2½ m, 4.8½ g, 40 lb r, 12 e, 37
n. Pres, George N, Kennedy, V, Pres, Danlel Pratt, sec, & Treas, James Barnes, Supt. George Crampton, 4 Syracuse Stylings Bank Building.
Fifth Ward R.R. Co. 22 m, 4.8½ g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas, O. C. Pot-ter, Supt. Hugh Purnetl. 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. Roht, G, Wynkoop, Sec. & Treas, Geo, J. Gardiner, Supt. W. J. Hart, Onondaga Sartings Bank Building New Brighton & Onondaga Valley R.R. Co. 17₄ m, 4.8 g, 16 35 lh f, 2 c, 4 h. 1 dummy. Pres. Matthias Britton, Sec. T. W. Meacham, Treas, J. H. Anderson, supt. J. H. Anderson.
Syracuse & Geddes Ry, Co. 2 m, 4.8½ g, 55-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasse-las A. Bonta, Supt. Wm, J. Hart.
TAUNTON, MASS.—Taunton St. Ry, Co. 4½ m, 48 g, 14 c, 44 h.
TERRIE HAFTEE, IND.—Terre Haute St. Ry, Co. 4½ m, 4.8½ g, 25 lb r, 16 c, 45 h. Pres. T. C. Buntlo, V. Pres. Josephus Collett, Sec. John R. Hagen, Supt. John T. Shriver.

TEXARKANA, ARK .- Texarkana St. Ry. Co. TOLEDO, OHIO.—Tokana St. Ry. Co. Co. 17 m, 4-8 g, 42 hr, 37 e, 180 h. Pres. John E. Balley, Sec. A. E. Lang. Adams Street Ry. Co.

Adams Street Ry. Co. Metropolitan St. Ry. Co. 8% m, 3 g, 29 c, 88 h.

Pres. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F. Shipherd, Supt. Jno. A. Wat-on. Monroe Street R.R. The Central Passenger R.R. Co. of Toledo, O. 8 m, 3 g, 27 h r, 17 c, 70 h. Pres. F. E. Seagrave, V. Pres. & Treas. James Pazneer, Sec. Chas. F. Parkis, Supt. A. R. Seagrave. ToDeta Street R.R. Co.

TOPEKA, KAN.—Topeka Clty Ry. Co. 9 m, 4 g, 25-48 lh r, 25 c, 90 h. Pres. Joah Mulvane, V. Pres. D. W. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse Shaw.

TORONTO, CAN.—Toronto St. Ry. Co. 18 m, 4-1034 g, 301b r, 136 c, 670 h. Pres. Frank Smith, Sec. James Green, Supt. John J. Franklin.

TRENTON, Sup. John J. Frankin. **TRENTON**, N. J.—Trenton Horse R.R. Co. 1½ m, 5-2 g, 43-47 hr, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr., Supt. Thomas Sillorris. City Ry. Co. 3 m, 5-2 g, 45 hr, 15 c, 69 h. Pres. Adam Extolr, V. Pres. W. H. Skinn, Sec.H. B. Howell, Treas. & Mang. Director Chas. J. Bramford.

Treas. & Mang. Director Chas. J. Bramford. **TROY**, N.Y.—Cortland & Homer Horse R.R. Co. 4 m, 4-8%g, 25 30 lb r, 2 c. —h. Pres. C. H. Garri-son, Troy, V. Pres. E. A. Fish, Cortland, N.Y., Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Alhia Street Ry. Co. 3% m, 4g, 35 45 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Haslehurst, Supt. W. R. Bean. Troy & Lansingburgh R.R. Co. 20% m, 4-8% g, 47 lb r, 91 c, 466 h. Pres. William Kemp, V. Pres. Charles Cleminshaw, Sec. & Treas. Joseph J. Hagen, supt. Leander C. Brown. 295 River St. URBANA, ILL.—Urbana R.R. Urbana & Champalgn St. Ry. Co. 2 m, 4-8%g, 33 lb r, 4 c, 20h. Pres. Wm, Park, Sec. & Treas. Frank G. Jaques, Supt. W. Park.

UTICA, N.Y.-Utlca, Clinton & Binghamton St. R.R. 7% m, 4-8% g, 43-56 lb r, 17 c, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt.

Isaac Maynen, etc. a. 1998. Roger Rock. The Utica & Mohawk R.R. Co. 2½ m, 4-8½ g, 25-40 Ib r, 9 c, 5 h. Pres. Chas. W. Hutchinson, V. Pres. Nathan S. Haynes, Sec. Geo. M. Weaver, Treas. Joshua W. Church.

VAITSBURGH, N. J.-Newark, So. Orange, erry St. & Hamburg Place R.R. Co. VALEJO, CAL.-Valejo St. Ry. Co. VICKSBURG, MISS.-Vlcksburg St. Ry. Co. Ferry

VINCENNES, IND.-Vincennes St. Ry. Co.

WACO, TEX.-Waco St. Ry. Co. 5 m, 4-8 g, 14 18 lh r, 9 c, 44 h. Pres. E. Rotan, Sec. & Treas. W. R. Kellum, Supt. J. W. Sedbury.

WALTHAM, MASS.-Waltham & Newton St. Ry. Co. 3½ m, 4.3½ g, 30 lh r, 6 c, 14 h. Pres. R. E. Robbins, Sec. & Treas. Henry Bond.

Robbins, Sec. & Treaš. Henry' Bond.
WASHINGTON, D. C. — Capital, No. O. St. & So. Washington R.R. Anacostla & Potomac River Ry. Co. 3 m, 4-S g, 37
lb r, 9 c, 24 h. Pres. H. A. Griswold, Sec. Edward Temple, Treas. T. E. Smithson. Columbia R.R. Co. of the District of Columbia. 2%
m. — g. — Dr, 19 c, 56 h. Pres. H. A. Willard, Sec & Treas. Wm, H Clayette, Supt Thos. E. Benson. Metropolitan R.R. Co. 21% m, 4 S g, 38 lb r, 90 c, 400 h. Pres. George W. Pearson, V. Pres. A. A. Wilson, sec. & Treas. William M. Morse, Supt. L. W. Emmart. Washington & Georgetown R.R. Co. 10 m. 4-8% g, 42 lh r, 161 c, 750 h. Pres. H. Hunt, Sec. & Treas. C. M. Koones, Gen. Supt. C. Sailes.
WATERFORD, N. Y. — Waterford & Cohoes R. B.

WATERFORD, N. Y.—Waterford & Cohoes R.R. Co. 2 no. 4-8% g, 451b r. Pres. Thos. Breslin, See. & Treas. C B. Ormsby. (Leased by the Troy & Lan-singburgh R R. Co.) WEST HURON, CONN .- New Haven & West

llaveo R.R WESTPORT, CONN .- Westport & Saugatuck

WICHITA, KAN.-Wichita City Ry. Co. 6 m, 8 res. J. W. Ground, Sec. & Mangr. E. R. Powell.

Pres

WHEELING, W. VA. --Citizens Ry. Co. Wheeling & Elm Grove R.R. 7 m, 4-82 g, 30 lb r, 12 c, 4 Baldwin Motors. Pres. J. D. DuBols, Sec. E. J. Kutter.

WILKESBARRE, PA.-Wilkesbarre & Kingston Pass. R.R. Wilkesbarre & Ashley Passenger R.R. Co

Coalville Passeoger R.R. 2½ m, 4-8½ g, 20-84 lb r, c. 10 h Pres. Chas. A. Miner, Sec. & Treas George oveland, Supt. Albert G. Orr.

WILLIAMSPORT, PA.-Williamsport St. R.R. C

WILMINGTON, DEL.-Front & Union St. Pass-

Wilmington City Ry. Co. 4½ m, 5-2½ g, 45 lb r, 20 c, 82 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett.

WINDSOR, CAN.-Sandwich & Windsor Passen-er R.R. Co.

WINNIPEG, MANITOBA, CAN.—The Winnipeg St. Ry. Co. 5 m, 4 S₂ g, 35 lb r, 13 c, 75 h. Pres. Duncan MacArthur, See. & Mangr. Albert W. Austin, Supt. Geo. A. Young.

WINONA, MINN.-Winona City Ry. Co. 4 m, 3-6 g, 27 lh r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.

B. H. Langley, Sec. & Treas, C. H. Porter.
WOBURN, MASS.-No. Wohurn Horse R. R. 2% m, 48 g, 4c. 4 h. Pres. & Treas, John Carter, See J. G. Magulre, Supt. Dexter Carter, WORCESTER, MASS.-Worcester St. Ry. Co. 2% m, 4-3% g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley, Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas & supt. Harry S. Searls, Worcester.
YOUNGSTOWN. O.-Youngstown St. R.R. Co. ZANESVILLE, O.-Bellaire, Chillicothe & Canton.

ZANES (TELE, C. Bonner, C. 3 m, 3-6 g, 38 lb Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend, Treas. T. B. Townsend.

SPECIAL NOTICES.

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PHILADELPHIA, PA.



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One-Horse Street Cars.

10 Second-Hand

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No. | Broadway, New York.

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ISSUE OF AUG. 4, 1885.

323,817—Car for cable rallways. Grip. G. P. H. Loftis, San Francisco, Cal. 323,629-Car-starter. T. F. Bourne, Bloomfield, N. J.

323,384—Fare-box, signal attachment. W. J. Abern-ethy, Minneapolis, Minn.

323,553—Fare-recorder. E. Baldwin, New York, N. Y.

ISSUE OF AUG. 11, 1885. 324,084-Car draft apparatus. J. W. Cloud, Al-toona, Pa.

333,962-Car-starter. J. C. Price, Taylorsville, Ill. 323,967—Car window-sash. J. Stephenson, New York, N. Y.

ISSUE OF AUG. 18, 1885. 324,396-Fare-box register. F. F. Mattoon, Bos-

ton, Mass. 324,731—Rullways. Rail-scraper for street and other. W. H. Robertson, Toronto, Ontarlo, Canada. ISSUE OF AUG. 25, 1885.

325,135—Cars. Lamp-box for street. J. J. Walton, Newark, N. J. ISSUE OF SEPTEMBER 1, 1885.

325,348—Fare box. F. O. Landffrane and M. E. Willis, San Francisco, Cal. 325,551—Combined rallway track support and trac-tion cable and cleatric conductor conduit. J. H. Gould, Philadelphia, Pa. ISSUE OF SEFTEMBE 8, 1885.

336,043-Car starter. A. Kruzner and F. Tent-schert, Vienna, Austria. 25,908-Street car. F. M. Brooks, New York, N.Y. ISSUE OF SEPTEMBER 15, 1885. 36,537-Street railway car. T. B. Stewart, Hart ford, Conn.

ford, Conn. 336,535—Cable railway. A. Bonzrno, Phœnixville

326,535—Cable rahway, A. L. D. Isaacs, Oak-Pa. 326,120—Street cable rahway. J. D. Isaacs, Oak-land, Cal. 325,198—Hydromotor for street r hways. R. F. Bridewell, San Francisco, Cal. ISSUE OF SEPTEMBER 22, 1885. ISSUE OF SEPTEMBER 22, 1885. Oct Starter C. Dickenson, Portland, Ore-

325,585-Car starter C. Dickenson, Portland, Oregon.

326,730—Car stprter. F. Rousseau, Detroit, Mich. 326,779—Fare box. W. O. Pride, New Orleans, La. 326,729—Fare register and recorder. J. Corbett New York, N. Y. ISSUE OF SEPTEMBER 29, 1885.

327,096—Switching wheel for street cors. H. G. Lowrie, Denver, Col.

ISSUE OF OCTOBED 6. 1885. 327,632-Street car-motor. W. C. Trussell, Bosten,

ISSUE OF OCTOBER 13, 1835. 328.12I-Street car-pole. W. H. Keller, Boston,

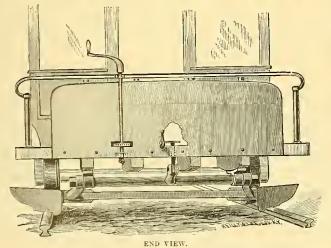
Mass. 328,326-Fare-box. T. Mangan and J. T. Wilson,

328,326—Fare-box. T. Mangan and J. T. Wilson, New Orleans, La. ISUE OF OCTOBER 20, 1855. 328,493—Car-starter and brake. J. Kubler, Hot Springs, Arkansas. ISUE OF OCTOBER 27, 1855. 329,104—Elec,ric cable conveyance. C. J. Van De-pole, Chicago, III. 329,170—Car cable Railway Grip. S. W. Jackson, Chicago, III. 329,319—Car starter. J. A. Lane and J. M. Thorp Detroit, Michigan.









Patented June 16th, 1885.

These scrapers are forged from the best steel and wrought iron-no castings These scrapers are forged from the best steel and wrought iron-no castings to break-easily attached and removed from any street car without disfiguring or cutting the dash. They can he instantly applied to remove any obstruction on the track, or as quickly raised ont of position. They have the great advantage over all other scrapers of being controlled by the foot of the driver, allowing him the full use of his hands to handle the brake lines, make change, etc. Having once tried them yon will abandon all others.

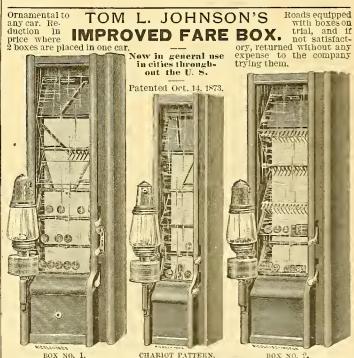


LOUISVILLE, KY.

WIRE CABLES

STREET RAILROADS:

Broderik & Bascom Rope Company,



The second secon

 $\hat{2}\hat{6}$



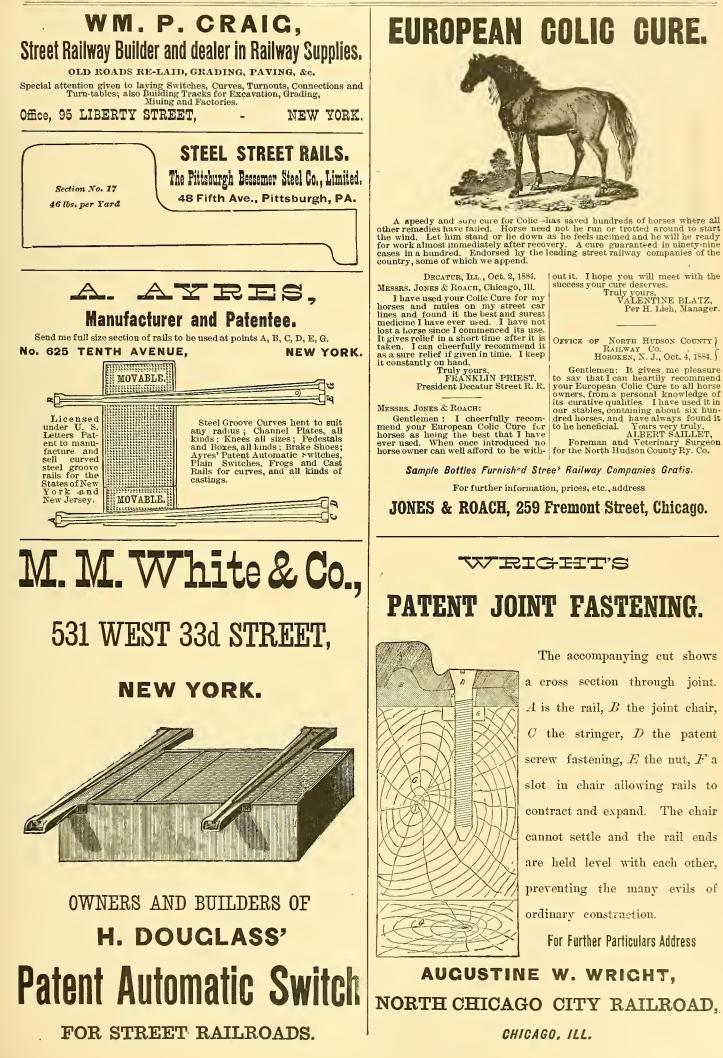
Henry Gourdier & Co.,

1584 Broadway, N. Y

Also fully prepared to furnish any kind, weight or shape of shoe desired. Estimates on cost of producing such special patterns will be furnished on receipt of model, with estimate of the probable number of kegs required.

The Rates of Freight are as Low from their Factory West and East AS THE LOWEST.

A Mild Tough Steel Shoe supplied at a small advance over Iron Shoes.



EUROPEAN COLIC GURE.



A speedy and sure cure for Colic-has saved hundreds of horses where all other remedies have failed. Horse need not he run or trotted around to start the wind. Let him stand or lie down as he feels inclined and he will he ready for work almost immediately after recovery. A cure guaranteed in ninety-nine cases in a hundred. Endorsed hy the leading street railway companies of the country, some of which we append.

JONES & ROACH, 259 Fremont Street, Chicago.



PATENT JOINT FASTENING.

The accompanying cut shows a cross section through joint. A is the rail, B the joint chair, C the stringer, D the patent screw fastening, E the nut, F a slot in chair allowing rails to contract and expand. The chair cannot settle and the rail ends are held level with each other, preventing the many evils of ordinary construction.

For Further Particulars Address

AUGUSTINE W. WRIGHT, NORTH CHICAGO CITY RAILROAD, CHICAGO. ILL.

27

THE STREET RAILWAY JOURNAL.

[NOVEMBER, 1885.



INCORPORATED 1875.

ESTABLISHED 1857.



ST. LOUIS, MO.

BUILDERS OF

Street Cars

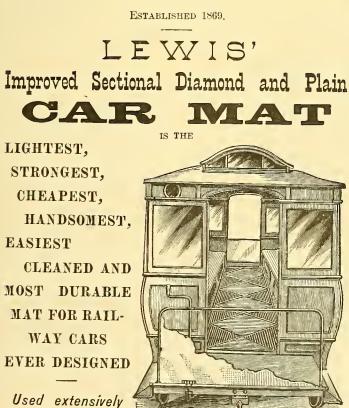
OF EVERY STYLE AND SIZE,

For Horse, Cable or Other Motive Power.

EXCLUSIVE MANUFACTURERS OF

BROWNELL'S PATENT COMBINATION CARS

FOR SUMMER AND WINTER SERVICE.



SAMUEL LEWIS, Patentee & Sole M'f'r, 12 to 18 LORIMER STREET (near Broadway), BROOKLYN, E. D., N. Y.

all over the World.

J. M. JONES' SONS,

AGENTS,

Street Railway Car Builders

WEST TROY,

NEW YORK.

PENNSYLVANIA STEEL COMPANY,

MANUFACTURERS OF

STEEL RAILS

Of **T** patterns, weighing from 16 to 76 lbs. per yard. CENTRE BEARING Street Patterns, 42 to 60 lbs. per yard, TRAM Street Patterns 45 to 47 lbs. per yard, and Street Patterns for STEAM ROADS.

> WORKS AT STEELTON, DAUPHIN CO., PENN.

NEW YORK OFFICE, Philadelphia Office, - 160 Broadway. 208 South Fourth St. THE STREET RAILWAY JOURNAL.





Four Summer Cars, good as new, built in very best manner, perforated seats bronze trimmings, etc., centre aisle, seating room for 30. The company having discontinued the use of summer cars offer the same for sale on very reasonable terms. For description and price apply to FRANKFORD & SOUTHWARK R.R. CO., 2501 Kensington Ave., Philadelphia.

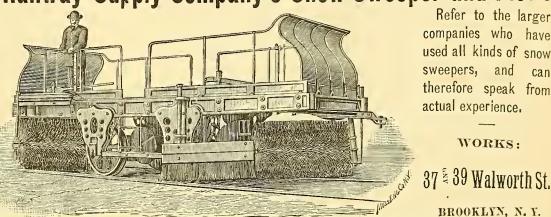
The Brooklyn Railway Supply Company's Snow Sweeper and Plo Refer to the larger

Best Materials only used in construction.

White oak frames,

Many improvements.

The famous cylinder brooms, or heavy snows, under United States Letters Patent, supersede old six wing sectional broom,



DEMOREST'S DUPLEX FARE

The Half Trip system and the perfect safety in allowing the conductor to reset his register by being required to sign his name, surpass anything of its kind ever before offered to the public.

All companies who use the Duplex Register will be indemnified.

The fare-box and register combined

is the only perfect system of check-ing the driver in neglect to register fares put in the box, and marking the registrations upon a paper dial serves as an infailible record to be filed away for future reference.

Patent Hinge Rib Pulley is acknowledged the best.

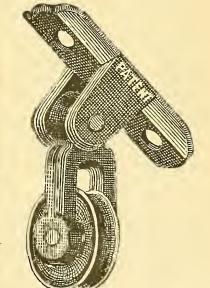
Railroad companies should be careful in ordering this line of goods. As owner of the patents we are the only ones to order from.

We will place any number of our Duplex Registers (with or without the fare box, according to the kind of car), upon trial for any time desired, at a very slight cost. Our terms of trial are quite reasonable. A trial is solicited. Address the proprietor,

JENNINGS

R. M. ROSE, Manager.

DEMOREST, 15 East 14th Street, New York City.



RECISTERS.

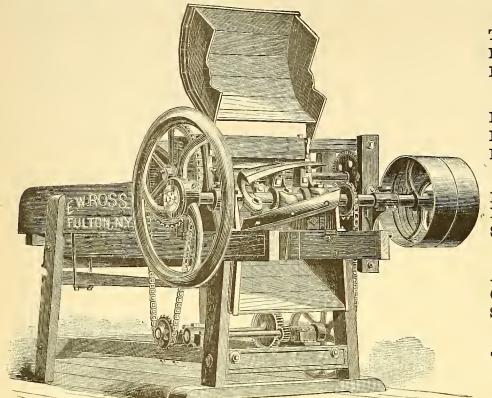
31

and

WORKS:

can

THE ROSS HAY CUTTERS.



A FULL LINE OF CUT-TERS BUILT EXPRESSLY FOR STREET RAILWAY BARNS.

THEY HAVE COM-BINED STRENGTH, DURA-BILITY AND GREAT CA-PACITY.

ARE EASILY OPERAT-ED AND CAN BE RUN TO FULL CAPACITY BY SMALL GAS ENGINE.

MACHINES SENT TO ANY PART OF THE U.S. ON APPROVAL IF DE-SIRED.

GUARANTEED TO BE THE BEST.

ILLUSTRATED CATALOGUE AND FULL PARTICULARS FURNISHED WHEN REQUESTED.

E. W. ROSS & CO., SPRINGFIELD, OHIO. The NEVERSLIP HORSESHOE



No.

My opinion of 'the Neverslip Shoe is, that it gives the most perfect satisfaction, and for a winter shoe it has no equal. For economy it saves the horse's feet from the frequent shoeing that fills them full of nail-holes. I never had our horses so free from lameness as at the present time; and should recommend them to everyone who has to get horses shod often in the winter.

> A. Q. GAGE, Supt. Manchester Horse R.R Manchester, N. H., April 28, 1885.

> > THIS CUT

FULL SIZE

Removable Steel Centering and Self-Sharpening Calks.

An ENTIRE SET can be CHANGED in a few Moments with the

Made in Two Sizes.



For applying Neverslip Calks. Is also a handy and useful tool wherever pipetongs or wrenches are required.

NEVERSLIP TAP.



For cutting threads for Neverslip Calks. The small end, A in eut, of tap indicates size of hole to be drilled in the shoe.



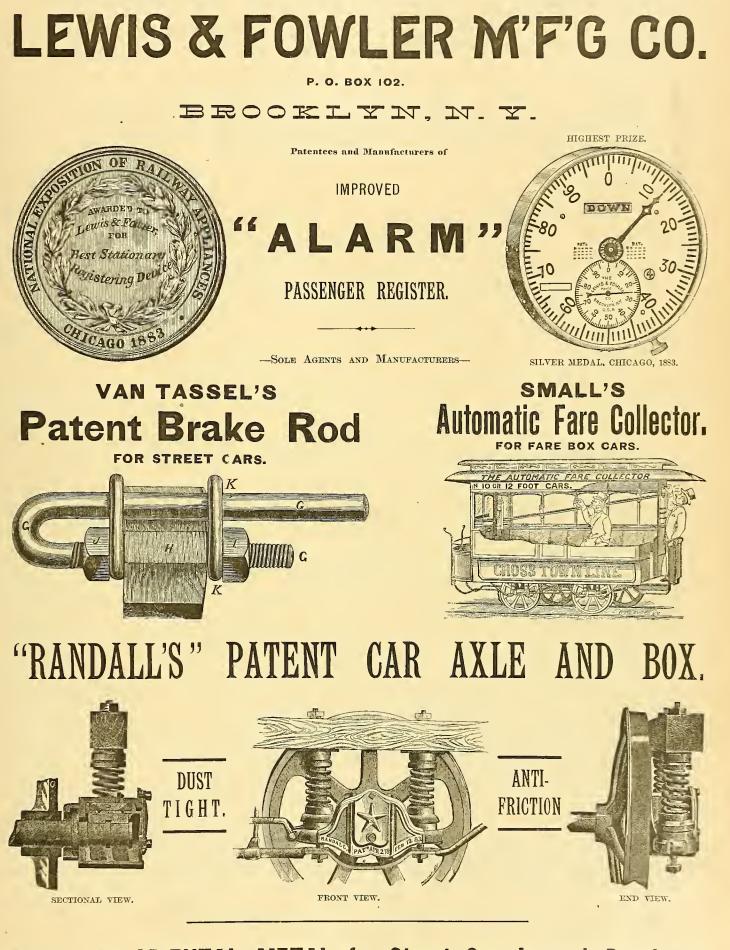
O A Pattern or Flat

t Shoe.

J. W. FOWLER, President.

THE

DAN'L F. LEWIS, Treasurer.



Agents for ORIENTAL METAL for Street Car Journal Bearings.

The Goodenough System

 \mathbf{OF}

HORSE-SHOEING.

The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the sole bars and frog of the horse's foot are never eut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

KEY-STONE OF THE ARCH.

The advantages of the Goodenough System are, first and foremost, SOUND HORSES; Secondly, CHEAP HORSE-SHOEING.

Horse railroads using the system in its entirety not only buy much less iron and pay for much less labor, but have also much more serviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides frcgs and Boston finds eolible stones."

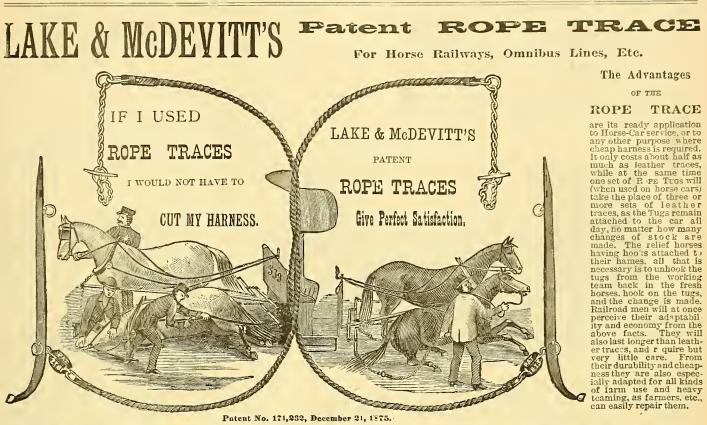
To those who desire to read further upon the subject we will send upon application free of eost our pamphlets entitled,

"HORSE-SHOEING," and "FACTS FOR HORSE-OWNERS."

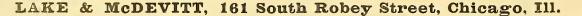
THE GOODENOUGH COMPANY,

156 and 158 East Twenty-Fifth Street,

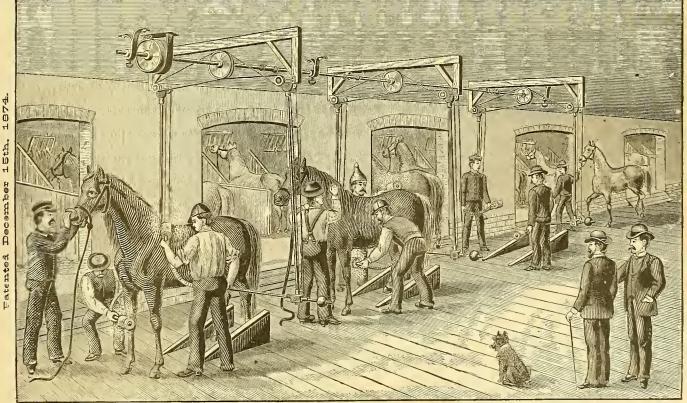




.n use on the Chicago West. Div. R'y.; Louisville City R'y Co.; Milwaukee City R'y; Transverse R'y Co., Pittsburg, Pa.; Citizens Stree', R'y Co., Pittsburg, Pa.; Pittsburg and Birmingham, Pittsburg, Pa.; Central City R'y, Peoria, III.; Grand Rapids R'y; Minneapolis St. R'y Co.; St. Paul City R'y; Houston City R'y, Texas; Superior Street R'y, Cleveland, O.; Cincinnati City R'y, Co.; Fifth Ward Street R'y, Syracus, Detroit City R'y.; Ft. Wayne and Elmwood St. R'y, Detroit, Mich.; Galveston City R'y; Springfield City R'y, Springfield, III.; Toledo St. R'y, Toledo, O.; Adams St. R'y, Toledo, O.; Atlanta Street R'y, and others, in all on about 100 street R'ys in United States and Canada, and a large number of other minent Street R'y Companies throughout the Country. Send for descriptive Circu-lar containing testimonials, prices, etc., to lar containing testimonials, prices, etc., to



CLARK'S POWER MACHINE. PATENT CROOMING SINGLE DOUBLE. OR



35

TO STREET RAILWAY COMPANIES AND OTHER STOCK OWNERS.

TO SIREET RAILWAY COMPANIES AND OTHER STOCK OWNERS. This machine for grooming may be driven by any known power, and can readily be placed for use in any stable or out-building. It can be operated by an ordinary groomsman; its work is perfect; its action simple and effective. Stock owners will readily realize the importance of the machine. The perfection and rapidity of its work, and the benefits derived by its use, commend it to those interested in the care and use of all classes of thoroughbred and work stock. The most vicious animal readily submits to its use. Machine Grooming is found to be less expensive than hand grooming, saving in food and medicines, and materially increasing the value of the animal.

The Curry Comb and Hand Process Superseded! Economy of Labor! Perfection of Work! Three Hundred Head of Stock Thoroughly Croomed with Each Machine every Ten Hours. This Grooming Machine is in daily use in some of the largest Street Railway Companies' stables, and has always given perfect satisfaction. Among those using it are the City R'y Co., Chicazo, III.; Detroit City R'y Co., Detroit, Mich.; Central City R'y, Peoria, III.; M. W. Dunham, Wayne, III; West Division Street R'y Co., Chicazo, III.; Lindell Street R'y Co., St. Louis, Mo.; Pleasant Valley R'y, Co., Pittsburg, Pa.; and a number of others who have given testimonials as to the perfect work; Ing of the machine. The Proprietes, circular and other information apply to Information Inf

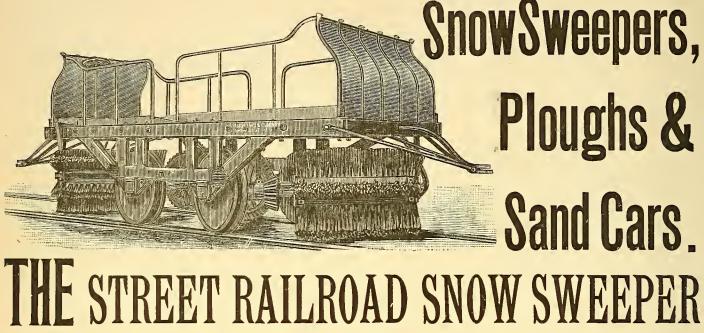
[NOVEMBER, 1885.



F. H. ANDREWS.

F. T. LERNED, Gen. Agent.

B. A. CLOONEY.



KNOWN AS THE

"White" or "New York" Sweeper.

MADE EITHER WITH SECTIONAL BROOMS, AS SHOWN IN THE ABOVE CUT, OR WITH CYLINDRICAL BROOMS Sectional brooms are provided unless otherwise ordered, owing to their superiority in *heavy snows*. In localities having only light snows a cylindrical broom answers the purpose. No patchts on *either* kind, all having expired. No difference in price.

We make two sizes: Full Size for 8 and 10 Horses; 3-4 Size for 6 and 8 Horses. Over One Hundred are in use in New York, Brooklyn and Philadelphia,

And we are now building (August, 1485) sweepers for Chicago, St. Louis, Boston, Sulen, Muss., and six additional ones for roads in New York City or Brooklyn; Philadelphia City Pass, Ry. Co. (Chestnut & Walnut St.), Second and Third St. Pass, Ry. Co., UnionPass, Ry. Co.; Phila, Traction Co., all of Philadelphia; Citizens' Ry. Co., Pittsburgh; Pittsburgh & Birmingham R. R. Co.; Pittsburgh, Alleghang & Manchester R. R. Co., Pittsburgh; Rochester & Brighton R. R. Co., Rochester, N. Y.

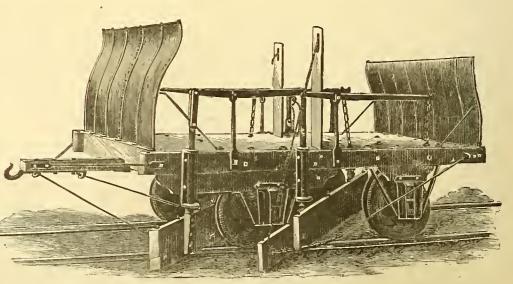
Sweepers made with Brooms propelled by Steam if required.

NGFL .--- No Patent on Broom Heads or manner of arranging the same.

Works: 535 to 551 West Thirty-third Street,

and 538 to 552 West Thirty-fourth Street.

Office: 545 West Thirty-third Street, NEW YORK.



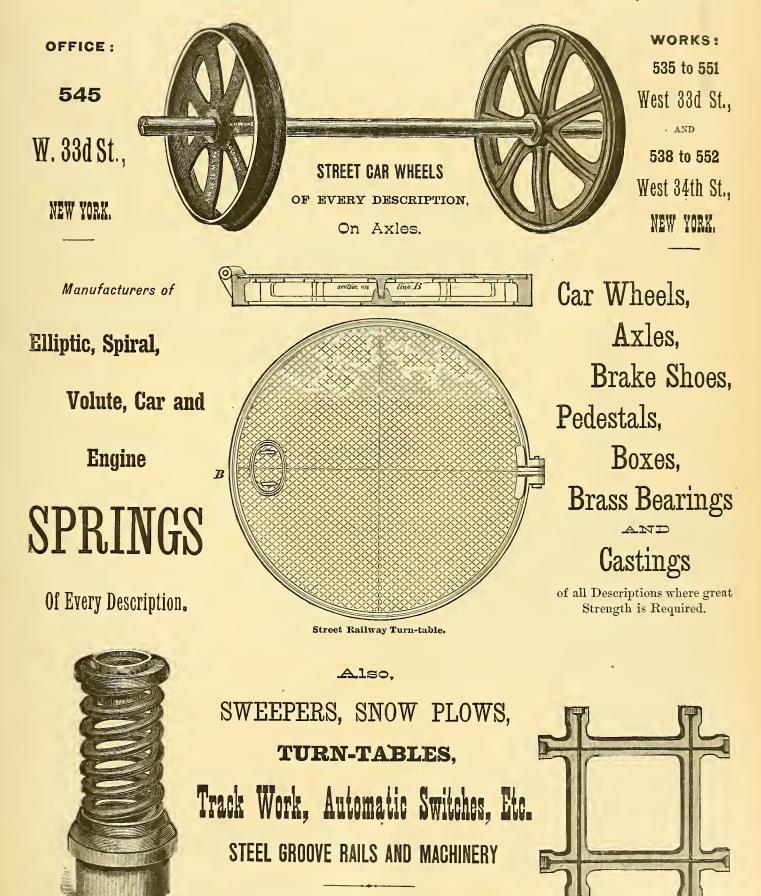
LATEST IMPROVED STREET RAILWAY SNOW PLOW.

F. H. ANDREWS.

F. T. LERNED, GEN'L AGT.

B. A. CLOONEY.

ANDREWS & CLOONEY,



SEND FOR ILLUSTRATED CATALOGUE,

Street Car Springs.

Street Railway Crossings.

NOVEMBER, 1885.

DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.

These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over three thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. To secure the largest benefit they should be attached to every car in use.

No estimate can be made of their advantage in saving of horse flesh, hand labor, salt, the making of time in stormy weather

DETROIT

Since their introduction new and valuable improvements have been made in their construction, mode of attachment, and convenience of handling. They are finished in a thorough, workmanlike manner of the best material obtainable, the design being to manufacture the best and most efficient article in preference to other considerations. Method of sale and price considerably changed.

Reference is made to a few of the many roads using these Cleaners, with respective numbers of each, viz. :

> Patented April 9, 1872; May 8, 1877. Canadian Patent Dec. 19, 1872; Dec. 18, 1876. Reissued Aug. 27, 1878. Extended Dec. 14, 1877; Dec. 1, 1881; Dec. 12, 1882. ;

> > SNOW PLOY

For Illustrated Circular and New Price List.

Fort Wayne & Elmwood Ry., Detroit, Mich......30 ps ir.

....135 "

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68 " 46 "

27 "

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21 ''

Detroit City Ry., Detroit, Mich.

Chicago City Ry., Chicago,

R. Co., Albany, N. Y. ... Elmira & Horseheads R.

Lynn & Boston R. R., Boston, Mass..... Boston Highland Ry., Bos-ton, Mass.... Lowell Horse Ry., Lowell, Mass

Grand Rapids Street Ry.

Naumkeag Street Ry., Salem, Mass. Merrimack Valley Ry.,

R., Elmira, N.Y.

Mass .

Taunton Street Ry., Taunton, Mass10 paiNew Haven & West Haven Ry., New Haven, Conn16 "Bridgeport Horse Rv., Bridgeport, Conn32 "Adams Street Ry., Toledo, Ohio.14 "Toledo Street Ry., Toledo, Ohio.13 " 10 pair.

JAY'S

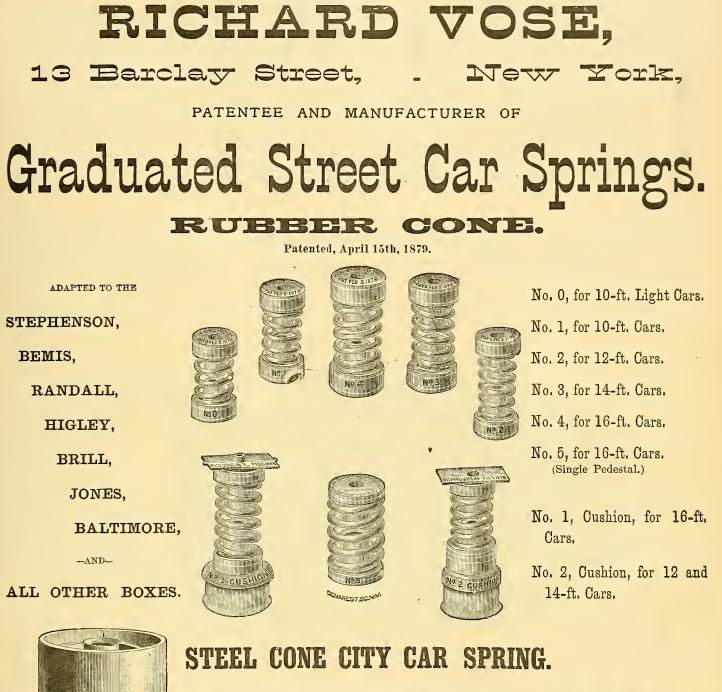
Lawrence, Mass..... 55 ··· 37 ·· Louisville City Rv., Lonisville, Ky..... Cream City Ry., Milwankee, Wis. Milwankee City Ry., Milwankee, Wis. Buffalo Street Ry. 37 40 " 40 " And many others.

AUGUSTUS DAY, Detroit, Mich., U.S.A.

76 State Street.

address

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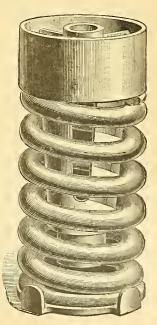
Patented April 15, 1879-August 5, 1884.

The unprecedented popularity of the

RUBBER

"VOSE GRADUATED RUBBER CONE SPRING"

for HORSE CARS has induced the inventor to bring this class of Springs as near perfection as possible, and after a series of experiments and tests now presents for favor what he claims to be the *MOST PERFECT SPRING FOR HORSE CARS* ever offered. It is exceptionally SOFT AND EASY with the EMPTY CAR or with the GREATEST LOAD. It is believed to be the MOST DURABLE, being constructed upon a principle that seems to insure that the Spring must ACTUALLY WEAR OUT. The very Finest Quality of *Crucible Cast Steel* will always be used in these Springs.



NOVEMBER, 1885.

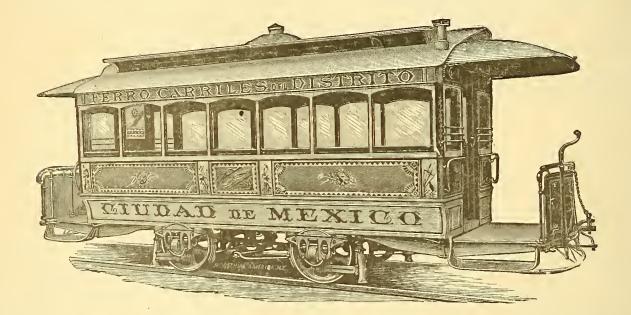
JOHN STEPHENSON COMPANY

(LIMITED),

New York.

TRAMWAY CARS

MEDAL OF FIRST CLASS, WORLD'S INDUSTRIAL COTTON EXPOSITION, NEW ORLEANS, 1885.



LIGHT ELEGANT, DURABLE.

Every Description.

Best Materials.

Minimum Prices.

ORDERS QUICKLY FILLED. CAREFUL ATTENTION TO SHIPMENTS.

All Climates Suited.





VOL. II. S2 Liberty Street.

December, 1885.

(Lakeside Building.) NO. 2

De Grange and Green's Car-Axle Box.

The object of this invention is to provide simple and effective means for excluding

dust and grit from the interior of the box, preserving thereby the oil or lubricant in a free and clear condition, so that there will be no appreciable wear of journal and the brass or bearing; to prevent the loss of oil at the front of the box where, as in ordinary boxes heretofore devised, the oil is liable to escape through the joints between the cover and the box.

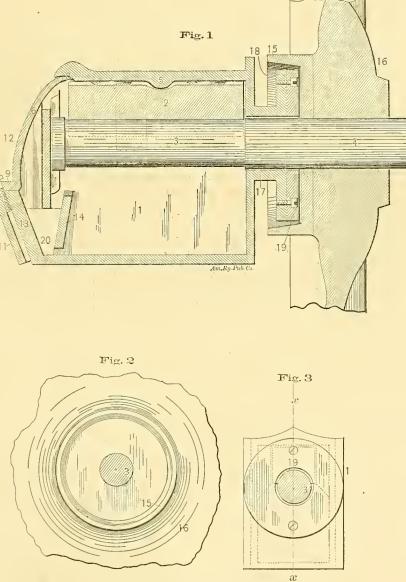
It consists in fitting a cup shaped annular flange on the axle of the wheel and providing the rear end of the axle-box with a boss carrying a collar, which fits into or is inclosed by the flange. The collar bears a packing ring upon its outer face, which rests against the bottom of the flange, thus effectually preventing the entrance of dust or grit into the oil or journal chamber.

A vertical divisiou plate 20 at the front of the oil chamber of the axle box, extending from near the floor of the chamber up to the under side of the journal, is to arrest the outward flow of the oil caused by

jolts or concussions when the car is turning curves, preventing the oil from being thrown against the axle-box cover and leaking out through the joints. The stop-plate does not extend to the bottom of the oil-

chamber, allowing the oil to flow under the plate.

Figure 1 is a longitudinal section of a car axle box embodying these improvements.



DE GRANGE AND GREEN'S CAR-AXLE BOX.

Fig. 2 is a detail view of the wheel, axle, and cup shaped flange. Fig. 3 is a rear view of the axle-box, representing the collar and packing ring applied thereto.

The reference numeral 1 is the axle-box,

made of cast iron. A bearing or box 2, of brass, phosphor bronze or other compositiou metal, fits the journal 3 of the axle 4, and is provided on its back with a trans-

verse groove to engage with a rib, 5, on the under surface of the top of the box, so as to prevent said bearing from moving in the direction of the length of the axle. In front of the box is an opening which is closed by a lid or cover, 6, that can be removed or lifted to renew the oil or lubricant and the cotton waste, tow, or other medium for holding the oil and feeding it to the journal.

The upper edge of the cover engages with a recess, 8, formed near the top of the box 1, and its lower edge has an apertured lug, 9, through which is passed a pin or screw, 10, that enters a seat or socket, 11, on the box, and holds the cover in position.

At the sides of the opening or mouth of the box are formed guideways for the reception of the detachable plate 12, which, when in position, bears against the front end of the axle journal, so to prevent the longitudinal movement thereof.

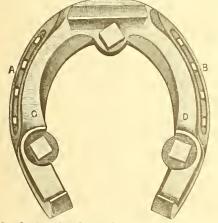
At the front of the oil chamber a transverse plate 14, rises from near the bottom. When oil is poured into the space 20, it flows under the plate 14 into the lubricating chamber. For a dirt or grit proof joint at the rear of the axle box, a cnp shaped flange and plate, 15, are fitted on the axle, so as to move therewith. On the rear face or wall of the axle-box is formed a hnb or boss 17, which has onter collar or ring plate, 18, made to fit into the cnp shaped flange and plate on the axle, bnt smaller than the seat space in the flange; so that the latter can revolve around the ring plate 18 without friction. The inner face of the ring plate or collar 18 carries an elastic packing disk, 19, which prevents access of dirt and grit to the axle.

Economy in oil consumption, perfect lubrication and cleanliness are the claims of the inventors;* these attained mean a saving in motive power and rolling stock.

• De Grange & Green, New Orleans, La.

Hawes' Adjustable Shoe.

Herewith we illustrate an "Adjustable Shoe, *"especially adapted for winter nse, or whenever the frequent removal of calks is required. It is claimed that shoes with smooth or sharpened calks may be quickly adjusted without drawing a nail, scraping a hoof, or heating an iron. The shoe is in two distinct parts. The first, a thin bnt strengthened plate, numbered in reference to size, is nailed to the hoof in the nanal manner. This forms a base-plate, to which "Adjustable Shoes," corresponding in size and number, are accurately fitted. These are screwed to the base-plate by small square-headed screws. This "adjustable" portion of the shoe is held strongly and



firmly to the base-plate. The strain is so evenly divided that the complete shoe is as rigid as though made in one piece ; while the *two parts* thus combined are no heavier than an ordinary shoe of corresponding size-number.

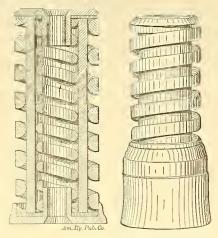
This shoe has been in constant use during the two past winters, with a view to thoronghly testing and perfecting its practical efficiency, before presenting it to the general public, and the manufacturers claim an assured success.

• Dr. A. C. Hawes, Noroton, Conn.

Andrews & Clooney's New Car Spring.

We show in cnts a new Street Car Spring,* which, after years of experimenting and experience, the makers claim to have brought to perfection, or as near it as is possible to

• Andrews & Clonney, 535 to 551 West 33d Street, and 538 to 552 West 34th Street, New York. arrive. The great aim has been to get a spring that would carry the car as well when empty as with the heaviest load, and ride equally as well under all the varying loads street cars are subjected to.



It is a combination of rubber and steel, which is thought by many railway men to be the best way to hang a car to accomplish easy riding and quiet; springs of this style and make have rnn ten years and longer.

Progress in Running Street Cars by Electricity.

The Van Depoele Electric Manufacturing Co., of Chicago, are steadily making progress in running street cars by electricity. The South Bend Railway Co., of Sonth Bend, Ind., is equipping all its cars to run by this new power. The electrical generators are run by water power, consequently the expense of running cars is nominal.

The Minneapolis, Lyndale & Minnetonka Ry. Co., of Minneapolis, Minn., is putting in the Van Depoele system; the electricity being generated at one of the large Pillsbury flour mills. It is to be running before the first of January, when it is expected that electricity will take the place of steam on that road.

An extensive plant is also being put in at Detroit, Mich.

We copy the following from South Bend Iribune of November 16th:---

"Michigan street was thronged yesterday by waiting, inquisitive, doubting, and curions folk, watching the second experiment of the South Bend Railway Company, to adapt to its uses the Van Depoele electric system. Mr. Van Depoele, the inventor of the system, and Mr. Lucins Clark, Manager of the railway, had control of this second trial, and to say that it was eminently successful is to award to the projectors and managers faint praise. We are prond of the success achieved. It is an honor to the inventor, the manager and the city alike.

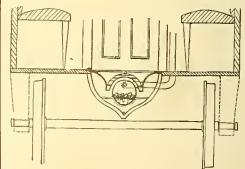
"Carrying on each trip from seventy to one hundred passengers, five trips, going and returning from Washington street to the sonthern city limits, one and one-quarter miles (single trip in each direction) the car was moved, without jar or difficulty, over an uncleaned track and with heretofore untried appliances. "Practical mechanics, who appreciate the difficulties of the adjustment and smooth funning of a new machine (and there were not a few of them present) joined in the verdict of an assured snecess. Messrs. Van Depoele and Clark deserve and receive the thanks of this community. Mr. Van Depoele for his invention, his perseverance in making it perfect, and Mr. Clark for his abiding faith in the success of the system, his fearlessness in accepting the risk of an innovation, and his energy in placing the same beyond cavil or donbt as to its utility.

"Having a pride in the achievement of that which has been deemed impossible, we invite those interested in street railways to visit our city and see for themselves what enterprise and skill can develop even in a suburban town.

"Motors are being placed on three cars for the Michigan street and Chapin place ronte, and it is expected that cars on this route will be running by electric power by the middle of next week."

Hunter's Car Heater.

This device* is intended for the nse of charcoal or coke as a fuel, and the cnt requires no special description. It is intended that in all short cars one drnm, and in long cars two drnms be nsed. Where it is desirable to use two drums in short cars, the cast frame holding the journal-boxes can be made longer, or lowered by blocks and bolts, thereby making greater space for



drums between the axle and floor. These heaters can be used on cable railways. The degree of temperature can be regnlated as desired. By the use of the kind of fnel that the device is intended for, the residents along the line are not annoyed by smoke. By slow combustion the moderate heat desired is produced. The heater is made of sheet iron, except where coke is nsed; when the drnm should be of cast iron. A wire screen covers the pipe—protecting passengers from burning in passing. Fnel can be carried nuder the seats. The device is entirely out of the way, winter and snmmer.

*F. S. Hunter, Fort Ritner, Ind.

The National Car Heater.

The heating of street or horse cars, has within a few years made rapid progress and is now becoming general. It commends itself to popular favor and is the result of agitation and earnest effort on the part of the patrons of street railways.

For a long time the people and the press

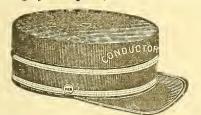
clamored for heated cars as essential to health and comfort in travel. Many roads have made the experiment of heating their cars, and have found it to result in increase of their revenue as well as the comfort of their patrons.

The National Stove Company of No. 243 Water street, New York city, are the manufacturers of a car heater that is especially adapted for warming horse or street railroad cars. It is brick lined, has rotating and dumping grate, and safety door catch. It is neat in appearance, occupies but little space, is an ornament to a car, is not costly in price nor expensive in operation. It is reported to be in successful operation on railroad lines in different cities and towns of the United States and Canada, and is said to give entire satisfaction.

This efficient heater is 3' in height, 10" in diameter and measures 14" at the base. It occupies the space usually allowed to one passenger. Three fares, at five cents, will pay the daily expense of running it.

Goldmann's Uniform Caps.

This cap* has the advantage of keeping its shape in all kinds of weather, and is thoroughly waterproof, and will stand very



rongh usage. It is claimed that they will look as new and alike after six or twelve months wear as they did when purchused, and they are in use on many if not most of the street railway companies using uniforms in the United States and Canada.

They are in use on railroads, steamboats and street companies, and by messenger



Patent Steel Frame Cap, with Adjustable Cover ready for wear.

boys, letter carriers, policemen, firemen, military, &c., and are manufactured in all different shapes and styles, with gold or silver letters, and lace trimmings.

The cap is made of full indigo blue cloth and fine gros grain silk for winter use; and of brown, white, gray, and all shades of linen, duck, or light material for summer use. The white caps are arranged

•P. Goldmann, 133 Grand Street, and 19 & 21 Crosby Street, New York. with a patent frame and have two covers, so that while one is being washed, the other can be used.

> [For the STREET RAILWAY JOURNAL.] Electric Railways.

> > BY JOHN N. BRUNS.

Within the past month science has demonstrated that nature has many things in store for us. It has shown that ere long the railroads of the present time will abandon the faithful locomotive and the slowpaced horse or mule, and accept the mysterions agent electricity.

Many experiments in electric railroading have been made, some dating back in the thirties, when Henry Pinkus produced a motor composed of magnets to be operated by electricity, and Mr. Cook of Saratoga made his interesting exhibition of an electrical magnetic machine in Barclay street, New York. This latter apparatus was of the most simple construction, consisting of two sets of magnets, one revolving in the other. The magnets were excited by the action of a galvanic battery. This machine was thirty inches in diameter and contained seventy-eight magnets, each weighing four pounds. The machine made about eighty revolutious per minute and was considered more powerful than the force of one man; bnt what work it actually did is not recorded.

In 1850, Professor Page made the memorable trip from Baltimore to Washington, a distance of fifty miles. His motor was operated by battery power. The whole apparatus was built under the direction of Co. gress.

Electricians at that time cousidered it the most important event in the history of science; they claimed that the time was near at hand when they would create a revolution in railroading.

From that time the matter has received due attention from all prominent electricians, and improvements have been brought forth by many, among whom can be mentioned Professors Jacobi, Davidson, Griel, Davenport, Little, Siemens, Daft, Gentry, Halske, and others.

The Daft Electric Light Company, of New York has, however, accomplished very fluttering results in this direction; and notwith-tunding the many obstacles encountered in experimenting and otherwise, and the expenditure of vast sums of money, this company held firm to the ship and saved her from sinking,

Less than three years ago, the writer had the extreme pleasure of riding upon one of the first electric motors ever run in this country by dynamo current. It was built by the Daft Co. Its length measured less than four feet, its width twenty-four inches and its weight about 450 pounds. It had a seating capacity for two persons. This miniature contrivance hauled such heavy loads (over two tons), and ascended such heavy gradients (2900 feet per mile), that those immediately interested saw the feasibility of applying electricity to railroads.

The experiments were made on an ex-

ceedingly crude and clnmsy track of about a quarter of a mile long, having a curve of forty-five degrees, on a gradient of eightyfive feet. The most marvellous incident connected with these experiments and one which many electricians failed to believe, was, that no duffienlty was experienced in ranning on rainy or snowy days, in fact the writer saw the rails covered with snow and slush to such a height that the flanges of the wheels made a deep imprint in the snow, yet no difficulty in running presented itself.

These facts caused financiers to come forth and give their aid to the inventor, Leo Daft, to further his experiments; and the result was that in November, 1883, a motor was produced weighing two tons, and was put on the Saratoga & Mt. McGregor Railroad, since made memorable through the death of Gen. Grant. The motor was named after a famous French electrician "Ampere", and somehow or other, it had the appearance of an electric motor; it was not by any means handsome, neither was it constructed or shaped to catch the eye; but for continuous hard solid work, it certainly took the lead; it hauled an ordinary railroad car, in which were seventy-five people, up a gradient of ninety-three feet to the mile on very sharp curves, without any difficulty whatever. No other road in the country is constructed with so many sharp curves at such short distances apart; and while it is considered the most crooked road in existence the electric motor made its way in a manner satisfactory to all. The car hauled was of the ordinary type weighing ten tons, and the people within, six tons, aggregating sixteen tons in all. The speed attained up the gradient was about eight miles an honr, and down the gradient about twenty miles an hour, while the power consumed was estimated at less than fifteen horse power. This trial demonstrated beyond cavil, that nothing could compete with electricity in the matter of speed and economy.

Not fully satisfied with this magnificent demonstration, which showed that they had secured the proper apparatus for converting electricity into power, the Daft computy began operations at once to elaborate upon this experiment. With this plan in view they secured the right of way on the Brooklyn Bridge in 1884. They went so far as to seenre a suitable situation for their stationary engine and dynamos, and had the rails for conducting the current placed aloug the structure. They made great preparations and had almost designated the day of trial when a change in the Board of Trustees of the Bridge occurred, caused by the death of President Kingsley. This change was disastrous for the time being to the Daft company. They were reluctantly compelled to remove their rails and seek another place for their experiments.

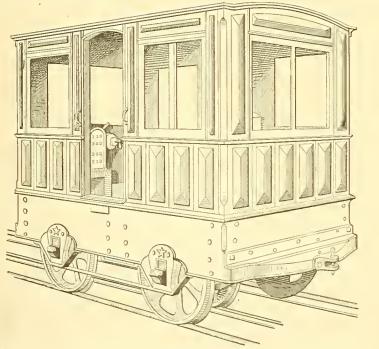
About this time the most prominent electrical companies of this country came together and suggested the uniting of their interests and creating a great monopoly in electrical railroading. Among them were Cyrus W. Field, David Dudley Field,

Stephen D. Field, Edison Electric Light Company, Siemens Electric Railway, the Knight-Bentley Electric Railway, Brush Electric Company, Col. Hain, representing the Elevated railways, and others. A number of meetings were held at the residence of Cyrus W. Field, and some discussion took place as to which was the most feasible plan of organization. They agreed that all parties who were to come into the scheme must agree to transfer to the corporation to be organized, all their patents and inventions for electrical propulsion on railways in the United States as a condition precedent to participating in the advantages of this arrangement, they to be compensated by participation in the stock reserved for patents in the proportion fixed by arbitrators. The scheme was called the American Electric Railway Company. The arbitrators, five in number, were appointed by resolution.

The Daft company declined to submit to the plan proposed, claiming that they had a complete system of their own.

The time for entering the scheme was extended several times, ostensibly for outsiders to come in but in reality in the hope of persuading the Daft company to reconsider their previous declination. Finally a To return to the advancements made by the Daft company. Their non-success on the Bridge brought forth many offers from railroad syndicates of their roads for experimenting, among them the Manhattau Elevated Railroad of New York. This latter offer was at once accepted, and the Ninth avenue branch selected. Work was immediately commenced to run a third rail in the center of the two ordinary rails. In the meantime the motor was progressing with all due speed. The third rail was laid on top of a Daft patent insulator whereby the rail was insulated absolutely from the structure proper.

It took some time to surmount the minor difficulties of laying this rail and much time was consumed in setting the engine and dynamos at the primary station. Finally, however, on the 21st of August, the motor "Benjamin Franklin," so named after the famous electrical kite flyer, was placed on the track, but owing to various delays it was not started until the twentysixth, when the first electric motor ever run in New York City—the largest ever built in the world—made its first trip from Fourteenth street to Fifty-third street, a distance of two miles, over gradients of 90', 105' and 110' to the mile. After acquiring



THE DAFT ELECTRIC MOTOR "OHM," BALTIMORE UNION PASSENGER CO.

committee was especially appointed to wait upon the Daft company but with no apparent success. Everything was done to induce the Daft company to enter except that their inventions must be forfeited.

It is a peculiar fact that while the American Electric Railway Company is yet in existence and occasionally heard from, the arbitrators have not, and probably never will meet—although twelve months have elapsed since their appointment. The announcement at that time to put an electric motor on the Elevated road in ninety days has not been fulfilled, and the claim that they had a complete system without the Daft company was simply absurd—in fact the whole scheme was based upon a series of fallacies. speed it was calculated that it reached thirty miles an hour.

On this trip the following persons were on the motor:—The inventor, Leo Daft, Henry M. Hawkesworth, James K. Wright, George W. Mansfield, John Riddell, George N. Moore, Frank B. Aspinwall, F. Holley Reed, Charles E. Barrett, Joseph Wetzler, and the writer.

The first public trial of the "Benjamin Franklin" was made a few weeks ago with the cars loaded to their utmost capacity. It went over the entire line without the least difficulty, making stops and starts with the greatest facility. Among the more prominent on the train were Sidney Dillon, Cyrus W. Field, Jay Gould, Russell Sage, Robert L. Belknap, Robert W. Hawkesworth, Col. A. D. Palmer, and a large number of railroad engineers, etc.

The "Benjamin Franklin" had the appearance of a half size railroad car, save that it was finished after the latest designs; it was 15' long and 7' wide and about 8' high, weighing nearly nine tons. It was calculated that four loaded cars could be hauled which would aggregate about seventy tons, including the motor, but this weight was more than tripled when ascending the enormous grades here mentioned.

The mauner of operation was very simple. At the primary station in West 15th street was placed a Wm. Wright engine of 150 H. P. Three dynamo electric machines were operated by this engine by means of a countershaft and belting. From these machines wires were led to the center or third rail. When the machines were in operation, generating electricity, the current was led through the wires to the track, thereby charging it. On the motor was another dynamo machine with all the necessary regulating appliances. Under the motor and resting lightly ou the third rail was a contact or pick-up wheel which conveyed the electricity from the rail to the machine on the motor. No electricity could. however, enter the machine without the attendant first turned a switch lever at the front of the car. The speed was also regulated by this switch. The reversing of the motor was accomplished by an ingenious device which controlled two sets of copper brushes resting diametrically opposite one another on the commutator of the rotating magnet called the armature. The stopping was done by an electric brake composed simply of a pair of powerful magnets having the wheels of the motor for armatures; thus, when the current was allowed to circulate through them they would attract the wheel and hold it. A mechanical brake was also on the motor in case of accident to the electric brake.

When the switch at the front of the motor was turned ou, the current was allowed to circulate through the dynamo machine on the car, thus rotating the armature, and then passing down through the wheels and the outer rails and back to the primary machines. The gearing from the armature was by means of V-shaped friction wheels on both sides of the axle and friction wheels on the armature of a balf round design, thereby preventing great loss due to the frictiou of all the parts.

When the Daft company commenced building this large motor, they received a *bona fide* commercial order to equip a twomile street railroad in Baltimore with two ten horse power electric motors, each to haul two heavy street cars filled with passengers up the marvellous gradient of 350' to the milc, at a speed of about five miles per hour.

When they began the equipment of this road last spring, mules were hauling the cars. Six mules exerted themselves to their utmost when ascending the grade with one car filled with passeugers, at the rate of about three miles per hour. When the motors were ready and everything in place, the mules were taken off, the electric motor substituted, and the road opened on schedule time. From the beginning the traffic increased two-fold, and the motors, instead of exerting ten horse power, were and are actually doing the work of fourteen, calculated according to Haswell and Molesworth.

The average speed of the motors with two cars filled with passengers is ten miles per hour, although five miles is all that was contracted for. The increased traffic is not due to the novelty only, but business men and others who utilized carriages rather than ride in cars going at such a slow rate of speed prefer the electric motor on account of its rapidity, &c.

In fact, the residents at the extreme end of the road petitioned the company to extend the track one mile, agreeing to pay all the charges of material, laying, &c., provided the company would equip the road with two more motors. This offer was accepted, the road extended and two new motors of larger capacity ordered, one of which, the "Ohm," was shipped on the 10th of November, and is running very successfnlly. A grade of 275' to the mile on a curve of 40° radius has been included in the extension. The fourth motor, the "J. L. Keck," will arrive in Baltimore the first week in December. All the motors are built like the illustration presented herewith. Mr. T. C. Robbins, Superintendent of this road, the Baltimore Union Passenger Company, informed the writer that it had cost them eighteen dollars per day to maintain the mules, and it is costing them now for coal, engineer, &c., with double the traffic, about seven dollars per day; at the same time he was not now fretting lest one of the motors should die. What better results could any syndicate of men desire?

It is to be hoped that the time is near at hand when hot cinders, dirt, noise, puffing and liability of explosion on the elevated railroads will be superseded by this noiseless, inexpensive agent.

For the benefit of those who might question the economy of electricity applied in this way, I submit herewith an estimate of the relative cost of equipping a ten-mile section of street railroad by electricity and horses.

DAFT SYSTEM.

(The assumption being that fifty cars are to be run and 150 H. P. ready for delivery on track at all times.)

for machinery to operate a line of ten miles with fifty loaded cars, which may all be moving at the same time.

Assuming a run of sixteen hours per day per car, the running expenses would be about as follows per diem:

Coal, 4 tons\$15	00
Engineers 6	00
Firemen 4	
Machine men 6	00
011, waste, etc 3	00
Depreciation 15	00
	_
Making a total per diem	00

or less than \$1.00 per car muning sixteen hours.

HORSES.

400 horses at \$125 each......\$50,000 RUNNING EXPENSES PER DAY.

Making a total per diem of......\$286 87

Something less than \$6.00 per car for the same run.

The cost of rolling stock, conductors, etc., being subject to local conditions, the foregoing comparison is simply that of electricity *versus* horse flesh as a motive power.

Mules in Northern Minnesota.

We recently asked numerons street railway managers some questions relative to the use of mules on surface roads, climates, medical treatment, etc. The following replies will be found of interest.

EDITOR STREET RAILWAY JOURNAL: — In Minneapolis and St Paul we have about 560 head of stock. They are about $14\frac{1}{2}$ hands high; weigh from 800 to 900 lbs. We have worked them for about four years. The following are the points for the mnle:

1. It does not cost any more to keep two mules than a horse, and they will do a third more work.

2. They stand the cold fully as well as the horse and do not feel the heat like the horse.

3. As yet we can not notice any breaking down, but seem to be improving on the work.

Our objections to the mule are :

1. That our business is getting too heavy and rapidly increasing. They can carry loads on a business of \$15 or \$16 per day, per car, but when they do heavier work they can not make time.

2. There is no market for the mules when they break down. As for our horses we can get about three-fourths what they cost.

So you see we think for a place that is settled and not growing like our two towns they would be all we could ask for, but not growing towns like Minneapolis and St. Paul. C. G. GOODRICH,

Sect. Minn. Street Railway Co. Minneapolis, Minn.

EDITOR STREET RAILWAY JOURNAL:— In answer to your letter of enquiry as to how we find mules to stand the climate in Northern Michigan, will say that we put onr mules on last Spring, after the snow went off; we have had a very cool snumer and they seem to stand it well so far. We are very much pleased with them in every respect, and should they prove to stand the cold winter that we expect will soon be here, we shall purchase more this coming spring. C. N. NEWELL,

Supt. Muskegon Railway Co. Muskegon, Mich.

EDITOR STREET RAILWAY JOURNAL:-In answer to your letter enquiring about medicines used for ailments of mules, I would say that we keep on hand at each stable a small stock of remedies for the most common troubles, all ready for use, viz : Colic draughts, fever mixtures, washes for greasy and cracked heels, collar and harness abrasions, liniments for sprains of muscles and joints—these are used according to directions on bottles. For injuries to the body and feet we find it necessary to give them personal attention until out of danger, as they need special or surgical treatment. ALEXANDER HARTHILL, V. S.,

Louisville City Railway Co. Louisville, Ky.

Cost of Street Railways for Small Towns.

EDITOR STREET RAILWAY JOURNAL :

Please give me the cost of construction of a street railway and the maintenance of the same for a small town. If you have a work on the subject let me know price. S. R. FERGUSON.

Bristol, Tenn.

We handed the above communication to Mr. Wm. J. Richardson, Sec. of the A. S. R. Ass., for his suggestions, thinking that he might know of some work. Following is his reply :

EDITOR STREET RAILWAY JOURNAL :

In reply to yours of 10th inst., with letter enclosed, would say that my recommendation to you is to call the attention of Mr. Ferguson to the list of street railways, as published in the STREET RAILWAY JOUR-NAL. There is enough that is descriptive regarding each road to suggest to Mr. F. what the size of the road would be in his town.

I would recommend that he write a half dozen or so letters to the managers of these different roads. They will, undoubtedly, be glad to give to him the information he seeks. I know of no publication in which the same can be found.

There are English works on "tramways," one costing \$1.50, the other \$12.00, in two large volumes, which can be purchased from Theodore Audel & Co., at 32 Liberty street, New York.

WM. J. RICHARDSON. Brooklyn, N. Y.

Will some general managers of street railways in our smaller towns send us the information Mr. Richardson refers to? There being no work containing this practical knowledge, its publication in our columns will be of great convenience to many who, like our correspondent, are just entering on street railway enterprises.

Medicine in the Stable.

Supt. Lake, of the Chicago West Division Railway, says :

I do not employ a farrier except in desperate cases; when these occur the doctor is called. I have a practical druggist and laboratory. We have many compounds and preparations that have been suggested by many years' experience. My stable foremen are entrusted to give or apply these remedies,



Weekly, \$2.00 per Year. \$1.00 for Six Months.

E. P. HARRIS, General Manager.

American Railway Publishing Co., Lakeside Building, Chicago. 32 Liberty Street, New York.

S. L. K. MONROE, Sec'y and Treas.

New York, 32 LIBERTY ST. Manager. Chicago, Lakeside Building. G. W. Paine, Man-ager. Boston, 8 Exchange Place. H. M. SWETLAND, Manager. Philadelphia, 419 WALNUT ST. G. B. HECKEL, J. H. MCGRAW, Manager Subscription Department.

Notice.

We are glad to announce the engagement of Mr. G. W. Paine as Western Manager of this paper. He assumes the daties of the office are unit here demonstrated and office at once, with headquarters at 44 Lakeside Building, Chicago.

Seats on Top.

We clip the following from a live New York daily:-

TO THE EDITOR OF THE MORNING JOURNAL: It seems to me that a Broadway car with seats on top-London style-would take. All the Angle-maniacs would ride that way. Try it, Mr. Sharp. STAR AND GARTER. Try it, Mr. Sharp.

[Seats on top are less common in London than iu Paris, where the climate is less changeable, and riding on top more pleasant. The experience of those who have tried the seats ou the "Imperial" on the Paris tram-cars, (where the fare is six cents below, inside, and three ceuts on top, outside,) is that, when the weather is pleasant, it is better worth six cents on top than three cents "regular." The French cars seat twenty-six inside and twenty-four on top, and ladies (particularly Americans) ride on top as well as inside. But for our New York severe and changeable climate we fear that the upper story would not be very largely patronized.-ED. STREET RAILWAY JOURNAL.]



Grotesques.

The grotesque is an essential part of Italian art; though it appears in the Renaissance style. It adds piquancy and character to Gothic design. Humor and satire there find in it an instrument. But in the Italian style it is more serious; more a part of the design than an addition thereto.

The grotesque in art comes in between imitation and conventionality.

We give here three examples of the gro tesque. In the first, there is no motive



the design-two monsters-merely filling a space.

The second example is from Siena; and the design is essentially floral or leafy, breaking out into creatures but uever losing



sight of the fact that the grotesque features are the accidentals, and the scroll the primary idea.

The third has neither homogeneity nor motive, being a mere inconsequent haphazard combination of creatures.

Subscribe for STREET RAILWAY JOURNAL.

Conductors' Hours in Brooklyn.

EDITOR STREET RAILWAY JOURNAL: I have had a dispute with a friend of mine from Brooklyn, N.Y., concerning the number of hours the horse car conductors of that city work daily. I say that fifteen hours is the longest; and that the night lines have different men for night work and that the couductor last on at night takes the last car out next A. M. Whereas my friend says they all have to work eighteen hours, from 6 A. M. to 11 P. M.

Will you please enlighten us if not too much trouble; also at what time the last conductor at night generally turns out next day? S. W. BUGBEE.

San Francisco.

The following from Sec. Richardson fully answers our correspondent's queries:-

EDITOR STREET RAILWAY JOURNAL: IN reply to your favor of the 9th inst., enclosing letter from S. W. Bugbee, of San Francisco, would say, first, that I neither know of, nor believe there is a Brooklyu streetrailroad company that works its conductors fifteen hours daily. Second, the men who work at night do not work in the day, unless having "swing" cars, and they work for a short period only in the day-time, having the intervening time in which to rest, before beginning to do their night work at the time of the "rnsh trips." Third, the conductor last out at night takes the same car the next day.

His "friend," to say the least, is very foolish when he says, "All Brooklyn couductors have to work eighteen hours daily, from 6 A. M. to 11 P. M." His friend is not nearly as correct as his arithmetic, and that is manifestly poor enough.

On a prominent line in Brooklyn, the conductor of the last car out at night gets through at 12.52 A. M. He goes out in the morning at 7.44, and "swings in" from 9.30 A. M. to 4.24 P. M. It will, therefore, be seen that he has the intervening time in which to rest, which, as will be seen, is about seven hours.

> WM. J. RICHARDSON, Sec. Atlantic Ave. R.R.

Brooklyn, N. Y.

The Duplex Register.

The following letters have been handed us for publication :

_____ STREET RAILROAD CO.

The letter of Mr. Reuben M. Rose to C. Densmore Wyman, Vice-President Central Park, North and East River R.R. Co., speaks for itself. All persons using the "Duplex Register" will be indemnified in W. JENNINGS DEMOREST. its use.

MY DEAR MR. WYMAN-Referring to your question about John H. Rose, of Lima, Ohio, will say : He was discharged by the manufacturer of the "Duplex Register" for appropriating parts of my invention to his own name without my consent. I am contesting his preteuded rights, and will send you a copy of my improved invention in a few days. W. Jennings Demorest is the only person whom I recognize to sell or use any of my inventions relating to registering upon a paper dial. While you are aware that the Demorest Duplex Register Co. is perfectly responsible in every way, I don't think any more can be said on the subject. R. M. ROSE.

To Dr. Mary Walker, et al.

"White pinafores and Panama straw hats form the distinguishing uniform of the street-car conductors in the Chilian towns, Women monopolized the business during the war with Peru, and they have retained it."

Here is a field ripe 'for the sickle of the "advanced" females of the United States. Go to Chili, dear, good ladies, and there, untrammelled by the degrading bondage imposed by an effete civilization, exercise your inherent rights: be women of the "coming order;" cultivate whiskers, if yon can; "wear the breeches," and guide the flying fortunes of the ambulatory "bobtail" car.

Labor-Saving Office Devices.

In offices of corporations doing an extensive business, especially in railway enterprises, where so much correspondence is necessary, it is absolutely essential that every appliance shall be had in the interest of economic and systematic management of the same. The Shannon Filing Cabinet and U. S. Document Cabinet* are claimed to be among the best. They are manufactured in a variety of styles of wood and finish, and are a handsome piece of office furniture. Says a correspondent: " 'A place for everything and everything in its place, becomes an easy and pleasant office rule, and the confusion and clutter of hunting up that 'letter of Brown's' when Brown comes in to see you about it, is entirely done away with. Papers are kept flat, clean and whole, and when needed are in perfect order."

* Schlicht & Field, Rochester, N. Y., 37 Lakeside Building, Chicago, Ill., 339 Broadway, N. Y.City.

Notes and Items.

[All our readers are particularly requested to send us, at the earliest possible moment, notes concerning actual or proposed improvements in street railways. It is by this means that the STREET RAILWAY JOUR-NAL will increase its usefulness to each one who receives it.]

Atlanta, Ga.

The Atlanta Street Railway Co. comprises seven lines, with thirteen miles of track. The Superintendent and Purchasing Agent is E. C. Peters, Esq.; office, 49 Line street. Binghamton, N. Y.

The street car line extension to the State Insane Asylum, in this city, was opened Nov. 6th. The cars are drawn up a steep bluff by a cable, and a speed of twelve miles an hour was obtained.

Birmingham, Ala.

The following changes have been made in the officers of the Birmingham Street Railway Co.: Geo. L. Morris elected President, vice B. F. Roden, resigned; W. H. Morris elected Superintendent, Secretary and Treasurer, vice J. H. McWilliams, Secretary and Treasurer, resigned. The

road now has five and one-half miles road, thirteen cars, and forty mules.

Boston, Mass.

The street railway traffic of this city is rapidly assuming immense proportions. The three companies whose business is confined within the limits of the city last year carried nearly 58,000,000 passengers, an increase of over 3,250,000 on the previous year. There are four others entering the city, the great majority of the 30,000,-000 carried by them being carried through the streets of Boston. The cars of all these seven companies made 2,254,962 round trips, and the average number of passengers carried on each trip was 40. The average gross income per round trip was \$2.03, the average expense was \$1.71, and the average net income was 32 cents. The Middlesex road made the largest net income per trip, the Cambridge road came next, the Lynn & Boston was third, the Metropolitan was fourth, the South Boston fifth, the Highland sixth, and the Charles River had the smallest net profit. The Metropolitan road carried the largest number of passengers, but it was next to the lowest in the number per round trip, the Charles River only carrying a less number. Evidently the management of the Metropolitan has realized fully the force of the motto which hangs in the office of the President: "Eternal vigilance is the price of a dividend," as is shown by the fact that its average expense per round trip is the second lowest.

The annual report of the directors of the South Boston Street Railway says:-"Since the last annual report the extensions of car houses and stables at the North Point, commenced during the last fiscal year, have been entirely completed. The route of the depot cars has been changed, and now starts from Dorchester street, South Boston, instead of from southern to northern depots as formerly, thereby doing away with a stable on Dorchester avenue, stations and starters at Beach and Brattle streets, which will afford a saving during the coming fiscal year. The Post office square line has been run regularly during the past year, but as yet is not a profitable line, although affording a very convenient route to passengers desirous of reaching that locality. A reduction of cash fare from six to five cents was made during the past year, affecting our income to some extent. The buildings, roadbed and equipment are in excellent condition, and equal to any emergency they may be required to meet."

The New England Institute Fair building was transferred at private sale to the Metropolitan Railroad Company for \$300,000, Nov. 18th. The building was erected and utilized for several years for exhibition purposes at a cost of about \$400,000. It covers about five acres of land, with about eight acres of floor space.

Barlington, Vt.

The opening of the first street-car line ever built in Vermont occurred in this city, November 12th.

Brooklyn, N. Y.

The N. Y. & Brooklyn Bridge Railway are to try half-a-dozen cars with side doors.

The Lewis & Fowler Mannfacturing Co. of Brooklyn, N. Y., has received orders from the Minneapolis and St. Paul Street Railway Companies for fare collectors, and to equip the cars of the entire lines. This is after a trial for fifteen months on seventy-five 14 and 16 feet cars, of automatic fare collectors. The company has also orders from the Monnd City, Jefferson ave., Union depot, People's and Union R. R. Companies of St. Louis. The City Railway Company of Louisville has also decided, after a trial of two years, to adopt the Lewis & Fowler antomatic fare collector, on all its money box cars. There is evidently a tendency in the West, to popularize the bob tail car. The works of the above named manufacturers are running to their fullest capacity.

The Brooklyn Railway Supply Co. is making some of its improved snow sweepers and plows for different roads, among which are the Second avenue, New York, and the Greenpoint & Lorimer street railroads. The company has also recently shipped sweepers to the N. Chicago City R. R., and N. Hudson County R. R., and is now constructing some of its specialties for the Baltimore Union R. R. Co., and Chicago Passenger R. R. Co.

This company is now constructing a sweeper of new design for the Kansas City Cable Railway Co. They have recently built a number of sweepers adapted especially for cable roads.

Chicago, Ill.

The Adams street viaduct, spanning the new Central Depot railway tracks, is almost completed, and will be formally opened to the public in a few days. The viadnet, which reaches from Canal street to the Adams street bridge, will afford the needed crossing for the horse railway, and be of great convenience to the traveling public. The viaduct consists of a through truss span of 154 feet with wronght iron snperstructure, and a deck-plate girder span of fifty-five feet. The entire width of the structure is fifty-eight feet, and it comprises two seven-feet sidewalks, and two distinct roadways each twenty feet wide. Cast-iron name-plates bearing the names of the bridge company, Mayor Harrison, Commissioner Cregier, and Civil Engineer Artingstall are placed over the roadways at either end. The contract for the iron work is understood to amount to \$27,993, while the masonry, etc., is estimated at abont \$15,000.

Superintendent Holmes, of the South-Side Railway Co., thinks that at last they have arrived at something practicable in ear beating. The chief fault with most of the patents was the lack of dne attention to ventilation. The new heating apparatus is placed under the car, and consists of a brass cylinder four inches in diameter by two and a half feet in length, within which is a piston which is drawn into the cylinder by means of a spring, the tension of which can be regulated by turning a thumb-screw at the end. This cylinder's capacity is two gallons, is filled with gasoline, one filling lasting sixteeu honrs. The piston forces the gasoline into a small copper tube connecting with the heater. There is a generator at the end of this tube by which the gasoliue is converted into gas, which, ou being lighted, gives a flame of great heat. The heater, which is of cast-iron, is partitioued into small compartments of fire-brick, and thus allows the flame to play freely over a considerable surface. Pipes leading under the car carry off the gas fumes, fresh air is introduced into the car by similar methods, and the heat is admitted into the ear through a register in the center of the floor. A car fitted with this apparatus is now ou trial, and if successful all cars will be fnrnished with the same apparatus. It is anticipated that an average temperature of at least 50° cau be kept up on the very coldest days.

Superintendent James K. Lake has completed his experiments with a new heating device for his street cars. The appliance was tried on a Madison street car, which made two trips with one charge, and it is believed that after a few improvements one charge will last the entire day and night, or as long as each car is in service during the twenty-four hours. Mr. Lake believes this is the most feasible plau yet introduced, but is going to give it a very severe test before it is placed upon any more cars.

At the corner of Van Bureu and Franklin, from the rear window of oue of the upper windows of the Van Depoele Company's establishment, two mysterious wires run to a sort of derrick on Franklin street, where they are attached to a couple of aerial cables about 500 feet long, terminating ou Market street. Midway between the terminals a third frame is erected, so that the leugth of the cables is formed of two catenary curves of about 500 feet. Upon these is suspended a small ear which contains a motor, and by means of its wheels forms contact with the generator used for running the machinery of the company, Two stops ou the cable serve as pole changers for the little car, and the astonishment of the audieuce which gathers when it moves, is complete and striking. There is a mystery about it which makes the iguorant bate their breath, as they endeavor fruitlessly to discover the motive power. To see it elimb and pass down the incline at the center of the line, stop and reverse at the end of the route, and do all this without any apparent eause, is a series of effects which, in the blue Puritanic days of Salem, would have eost the inventor his life. Yet the whole to-day is simple enough to all the better-read citizens of the world.-Exchange.

Jersey City, N. J.

The marked progress made in street railway transportation in this city in the past four years, is noted in a local paper to the length of a column and a half. We would like to republish it entire, but space will not permit. The main spirit of this improvement is Mr. Charles B. Thurston, who was elected to the Presidency of the

Jersey City & Bergen Poiut Horse Railroad Company in 1882. The improvements have been most radical, including double tracking and extending the line, laying new rails, building new stable, car houses, &c. A larger and much improved quality of stock, new cars, and in fact all that was required to make a road, very uearly run out, that in the nineteen years of its existence had uever paid a dividend to its stockholders, one of the finest and best equipped and best mauaged corporations in the country. Jerseymen owe much to the progressive meu who with Mr. Thurston's leadership have given them these excellent street railway facilities.

Jones Car Works.

Walter Jones, of the Jones Car Works, West Troy, N. Y., has returned from an extended European trip, much improved in health.

Lawrence, Kau.

The Lawrence Transportation Co. has just finished one mile of track, making four and one-half miles of track.

Lynchburg, Va.

The street railway in Lynchburg, Va., is to be extended.

Lynn, Mass.

The hearing of the remonstrants to the petitiou of the Nahant Street Railway Company for a location of its tracks to Nahant, was held in the Town Hall Nov. 19. Josiah T. Wilson, Chairman of the Selectmen, called the meeting to order. Mr. George H. Towle, counsel for the railway company, stated its plan, which was to lay a track outside of the highway along the land to the Bass Neck Road, and theu crossing private property to the road along the side of the ocean at Dnrham's Coruer. Henry Cabot Lodge vigorously opposed the road as a blow to the prosperity of the towu and tending to make the town a picuic ground. It would destroy the highway. Wm. C. Otis believed in the road; there hadn't been a terrible rise in property in Nahant by locking it up. The people were intimidated by the summer residents now. They wanted quick transit to Lynn. Mr. Towle said that it wasn't intended to destroy the highway or the streets. The highway was laid out seventy feet wide, but there was but fifty feet of the width traveled. The track would be laid ontside of this. Mr. Lodge said the idea that Nahant was locked up was nonsense. Everybody knew that his place was open to the public and always had been. He advocated a boat. Edward Johnson opposed the road on account of Sunday travel. The hearing then closed.

Macon, Ga.

The officers of the Macon City and Suburban Street Railroad Company are: President, Jno. S. Bransford; See'y and Supt., Jno. T. Voss. The company has five miles of railroad which it is extending, twelve ears and sixty horses and mules.

Maysville, Ky.

This place has a street railway three miles long. L. W. Robertson, President, and W. J. Frank, Secretary and Treasurer,

Muscatine, Ia.

The officers of the Muscatiue City Railway Company are Peter Musser, President; George W. Dillway, Vice-President; T. R. Fitzgerald, Secretary, and O. J. Chapman, Superintendent and Treasurer.

New Bedford, Mass.

The Union street extension of the Acushuet Street Railway Company, which has been idle since building, has been put in operation.

The Board of Aldermen, Nov. 18, grauted the New Bedford & Fairhaveu Street Railway Company leave to withdraw on its petition to extend its tracks in Cedar street, from Parker to Durfee street, and regranted leave the Acushuet Street Railway Company to extend its tracks through Ash, Morgan and Cedar to Durfee streets, that section on Cedar, between Parker and Durfee, to be completed in a month.

New York City.

The Twenty-third Street Railway Co. on Nov. 7, put down the new railway curves in Tryon row connecting the two tracks of the Bleecker street road. The cars on this branch of the road now make this their southern terminus instead of running to Fulton Ferry as formerly.

The following directors were elected for the Third avenue surface road: Henry Hart, William Remsen, Lewis Lyon, R. G. Remseu, M. C. Lane, W. M. Pritchard, Samuel Hall, Silvanus S. Riker, R. W. Tailer, J. B. Hobby, Robert Willets, John E. Parsons and Edward Lauterbach. President Lyons made a report on the Tenth avenue cable road, which is working so satisfactorily that it will be put ou Third avenue as soon as possible.

The officers of the Forty-second Street, Manhattauville and St. Nicholas Avenue Railway Company filed articles of extension with the Sceretary of State, Nov. 5, extending their lines eleven miles, including five routes to King's Bridge,

The Fifth Avenue Railroad Company and the Fifth Avenue Transportation Company are in full tilt now with their subscription books, A. S. Hateh and I. B. Newcombe are receiving daily additions to their list of railroad subscribers, while the Knickerbocker Trust Company is disposing of subscribers for the omnibus enterprise of Mr. Ely-Goddard. Among the subscribers for omnibns stock are Levi P. Morton, Robert and Ogden Goelet, William H. Vanderbilt, Cornelins Vanderbilt and the proprietors of the Wiudsor Hotel. Three-fourths of the property-owners in the avenue have given their consents. The railroad men are pushing their project as vigorously as ever. Numerons meetings have been held in opposition to the road and its opponents have endorsed the omnibus scheme as a means to stop the road. The Aldermen have granted the railway company a hearing though, and it is probable, will grant them a franchise.

Messrs. Andrews & Clooney have jnst completed and delivered to the new Broadway road a snow sweeper embracing many new features. The improvement is that the

extra weight which is generally carried on the top of the sweeper in the shape of old iron, is put into the wheels, increasing their weight sufficiently to accomplish traction enough to drive the brooms easily, and making less dead weight for the horses to draw, after the sweeper is started. Another improvement is a cylinder broom, made after an improved pattern, and attached to a lever in such a way that it can be instantly raised or lowered; the broom can be allowed to run on the ground, or, by means of a chain or links, it can be raised to any desired height. By this means, it is claimed that there is no danger of breaking off the cane in the brooms when it is haudled by incompetent men. They have also added to the front wheel on each side of the sweeper, a small scraper or plow attachment to scrape off the snow immediately in front of the sweeper wheels. This is attached to a lever and can be raised or lowered at will.

This firm are also shipping a car load of material, rails, boxes, turntables, &c., evcry other day to the Metallic St. Ry. Supply Co. of Albany, and have recently booked several foreign orders, among others, one for several hundred wheels for Australia. They are running to their fullest capacity in getting out turntables, switches and general track castings.

Oswego, N. Y.

The Oswego, N. Y., Street Railway commenced running cars on August 22, under very flattering prospects. They have two miles of road and are now running three cars built by J. M. Jones' Sons. The road is built and equipped with the best materials, and is under the thorough management of Mr. James O'Counor.

Portland, Oregon.

C. K. Harbaugh, Esq., Sec. and Supt. of the Portland Street Railway, kindly sends ns the following street railway statistics, which were not reported in the directory, with the comment that "the village of Portland, Oregon, has evidently been overlooked:"-Portland Street Railway Co., 14m.; 3' 6" gauge; 42 lb. rail; 9 cars and 35 horses; D. P. Thompson, Pres.; C. K. Harbangh, Supt. Transcontinental Street Railway Co., 3 miles double; 3' 6" gauge; 15 cars and 63 horses; D. W. Wakefield, Sec.; Tyler Woodward, Snpt. Multnomak Street Railway Co., $2\frac{3}{4}$ miles; 3' 6" gauge; 19 cars; 6 horses, A. V. King, Pres.; E. A. King, Sec.

San Francisco, Cal.

The Haight and McAllister Street Cable road is interested in Ocean Beach and Golden Gate Park, and provides novel and pleasing entertainment for the public in those resorts; thus largely and profitably increasing its business. This feature of street railway enterprise is by no means confined to Eastern roads.

The San Francisco Call, of the 8th, has the following under the heading: "Beating the Bell Pnnch—W. W. Dorsey Punished for Having Done It Effectively." W. W. Dorsey, the individual who for ten months prior to the 22d of last September was em-

ployed by the Market Street Railway Company "to punch the faire in the presence of the passenjaire," while giving testimony in his own behalf, when on trial before a jury in Judge Rix's Court last Friday upon a charge of having embezzled a five-cent fare collected by him, illustrated to the jury how he could manipulate a bell punch so that the sound of the bell could be made clear or dull at will, and proved himself very expert. He also admitted that when he made an application to the company for the position he set forth in his letter that he had never worked on any other road in this city, which statement was untrue. Yesterday the defendant appeared for sentence, when Judge Rix said that while the complaint charged only the embezzlement of five cents, it appeared that on the trip at the end of which the accused had been arrested he had appropriated forty cents of the company's money, and that according to the defendant's testimony he had had the bogus bell for three weeks. The judge said that the amount charged in the complaint was very small, but the crime called for severe punishment, for a man has no right to betray the trust placed in him by his employers and appropriate any collections he may make, no matter how small they may be. He then made an order that Dorsey be imprisoned in the House of Correction for six months.

This is the third couductor taken in three months, but the only one prosecuted. Springfield, Mass.

The Springfield, Mass., Car Co. has erected a new and commodious car house. The ground floor to be used for honsing cars, and the upper floors for living rooms for conductors and drivers.

Toledo, Ohio.

The Central Passenger R. R. Co., Toledo, O., F. E. Seagraves, Prest., are having built five new cars by Brownell & Wight Company, and are rebuilding the twelve cars now in use by them.

Wichita, Kas.

The Wichita City Railway Company have extended their lines one and one-half miles. They now have eleven cars, sixty head of mules and four horses. They now reach the depot of the St. L., Fort Scott & Wichita R. R., and have other extensions under consideration.

Worcester, Mass.

The stockholders of the Worcester Street Railway Company have voted to apply to the railroad commissioners for leave to increase their capital stock from \$40,000 to \$250,000. The managers of the company claim that the latter sum is not in excess of the value of their property. It will also petition the board of aldermen for leave to extend the tracks of the company through Leicester street from New Worcester to the Leicester town line.

Vicksburg, Miss.

Some four years ago a charter was obtained from the Legislature of the State for the organization of a company to run street cars on the streets of the city. During the last month the matter has been

agitated, and stock to the amount of \$11,000 subscribed, which it is desired to increase to \$25,000. The company propose to put down abont five miles of track, and put on the latest improved horse cars. It is expected to commence work not later than the first of next March.

St. Louis, Mo

The gang of dynamiters who attempted to blow up several street cars during the first week in November were arrested Nov. 5th. They are street car strikers and members of Cleveland Assembly, Knights of Labor. Alonzo Pinkerton, Master Workman of the Assembly; David Keenan, the Treasurer, and William P. Sears, the Judge-Advocate, are among the prisoners, together with four other members of the Assembly—George B. Withrow, Philip Bnrns, John Shaughnessy and M. Weathers.

A detective attended the meetings of the strikers, dogged some of them after meetings and on one occasion saw one of them place an explosive on a street car track. The detective secured the explosive. Finally one of the gang was quietly arrested. He was subjected to a rigid examination and he told the whole story. Another was gnietly taken into custody and a few questions put to him, and he too wilted. Before daybreak on the 4th of Nov. Sergt. McNamee, Sergt. Tracy, who went to New Zealaud after Maxwell, and Officer Lewis, of the Police Department, went to Uhrig Stauton's private boarding house, at No. 2119 Lucas avenue, and arrested four more, leaving but one'to be arrested on the 5th, and he was taken in the afternoon. They have all confessed, and each is trying to make his part in the conspiracy as light as possible and blaming the others for dragging him into it.

The dynamite was purchased in Louisville by Weathers, who was sent there for it. Master Workman Pinkerton signed a warrant on Treasurer Keenan for \$20 out of the lodge treasury ostensibly to buy food for the families of the striking conductors and drivers. The money was given Weathers to buy dynamite with, and he went to Louisville and bought it. The plans were formulated in one of the ante-rooms at Central Turn Hall before the strikers removed their headquarters from that hall to Lighstone Hall. One of the men rented a room at Uhrig Stanton's boarding house on Lucas ave, and would invite the others to see him. Weathers on his return from Louisville stored his dynamite and caps there and the infernal machines were fixed up there. They all swore secrecy, and to make it more binding each was to take a direct and active part-in blowing up a car. A street car line was assigned to each of the seveu, and each was to do his work alone, so that if he was caught uo one else would be implicated. He was to let his hat fall off in crossing a track, and in stooping down to pick it up, was to quickly lay the explosive ou the rail. Detection would be almost impossible. The lines selected were the Fifth street and Washington ave., Bellefontaiue, Mound City, Jeffersou ave-

nue, Cass avenue, and People's lines. Explosions occurred on four of these lives-Broadway, Washington avenue, Mound City and Jefferson avenue lines-a wheel being broken in each case, the bottom of the car torn up, and in one case the car was thrown from the track. There were ladies among the passengers aboard in every instance, the Jefferson avenue cars being crowded with women and children. Not a single passenger was seriously injured, though several were slightly bruised and two ladies fainted.

After the fourth explosion a reward of \$2,000 was offered by the Chief of Police for information leading to the conviction of the gnilty ones, and a morning paper published the same day a notice purporting to have been issued from a meeting of eighteen French Socialists, but which was merely a joke, threatening to blow up the strikers' headquarters and particularly Casper Heep, who was at that time their leader, in case another street-car explosion occurred or in case the lives of innocent women and children were in any way endangered by the strikers. The owners of Lightstone Hall, where the strikers were then meeting, to protect their property from the dynamite of the French Socialists, compelled the strikers to vacate and they removed to a negro hall across the street. The striking conspirators got frightened also and the rest of their explosion programme was not carried out. The men arrested have families. Pinkerton was a Fifth street conductor, as was also Keenan. Sears was on the Washington avenue line and Burns on the Bellefontaine line. Several letters were also found at the boarding house implicating the men. Mr. Stauton, the proprietor of the honse, is innocent and has not been arrested. None of the strikers or members of the Knights of Labor are implicated except those arrested.

----A New Letter-Copying Process.

It would seem that the possibilities of letter copying and duplicating had been exhausted long ago, but every now and then some good new device convinces us that perfection has not yet been reached. One of the neatest and handiest noveltics we have yct come across in this line is "Bushnell's Perfect Letter Copying Book,"* which we have in constant use on a certain kind of work, and which we pronounce, from experience, to work excellently.

It consists of a number of ordinary letter book sheets bound in thin, flexible cloth covers, and fastened at the back to a round billet of wood, in such a manner that the entire book can be tightly rolled around the wooden roller, in the hands. Two sheets of manilla paper and a sheet of white muslin, all cut to fit the pages of the book, complete the outfit. When it is desired to copy a letter, one of the manilla sheets is laid in the book, and over it the letter, face upwards. Over this the

page of the copying book is turned, and the cloth, after being wet and wrung dry, is laid evenly above it. The second manilla sheet is placed over the cloth, to preserve the remainder of the book from the moistnre; and then, the book being closed, it is rolled tightly in the hands, over the roller to which it is bound. The copies are clear and clean, and this book will give good impressions with ink on which the copying press ntterly fails. The book can be rolled up and carried in a satchel, and is an excellent companion for business men and others, when traveling.

Streets and Roads.

G. B. H.

In the matter of their public streets and roads the old Romans were, and the modern nations of Europe are, far ahead of us. Many of our principal streets, cobble-paved and noisy, dirty and uneven, resemble relief-maps of the Himalayas. The great trouble is, with American roads and streets, that they have no road-bed made. The road surface is laid right on the mud or whatever the top of the ground happens to be in that district. Naturally, the stones sink furthest where the ground is the softest and the weight and travel on them the greatest; and the small stones sink further than the large ones right along-side of them, The road-bed should have a certain amount of "crown" to it, to shed water; and should be solid enough to keep the road surface from sinking in; and the road "m tal" should be hard and nuiform.

OFFICIAL LIST OF THE 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.

[The following is a complete list of the Street Rall-The following is a complete list of the street rain-ways of the United States and Canad, so far as we have received the official returns from the various roads. Will those roads not reported kindly fill out the blanks sent them and mill to us without delay, so that they may be properly represented in the STREET RAILWAY JOURNAL?]

ANREVIATIONS-m, mlles; g, gauge; lh r, pounds rall to the yard; c, cars; h, horses; mu, mules. Officers; addresses are the same postoffice as the company unless otherwise specified.

AKRON, O.-Akron St. Ry. & Herdle Co. 2½ m, 60, 31 h. Pres. Ira M. Miller, V. Pres. James Christy, Treas, B. L. Dodge, Sec. F. M. Atterholt, supt. John T. Metlin

Treas, B. L. Dodge, Sec. F. M. Atterholt, supt. John T. Metlin.
ALBANY, N. Y.—Watervilet Turnpike R.R. Co. 7% m. 26-45 lb r, 27 c, 143 h. Pres. Chas. Newman, Sec. A Treas. P. Way, Supt. M. C. Foster.
The Albany Ry. 10 m, 4-5% g, 33-47 lb r, 51 c. 194 h. Pres., Supt. and Treas. John W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St.
ALLENTOWN, P.A.—Allentown Pass. R.R. Co. 3% m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Ballet, Supt. Russel A. Thayer.
ALTONN, HL.—Alton & Up. Alton Horse Ry. Co. ALTONN, HL.—Alton & Up. Alton Horse Ry. Co. ALTONN, H.L.—Alton & Up. Alton Horse Ry. Co. ALTONN, P.A.—City Pass. Ry. (o. of Altoona. 3% m, 5-3 g, 43 lh r, 17 c, 38 h. Pres. John P. Levan, Sec. & Treas. L. B. Reifsneider, Supt. John J. Buch. ANSTERDAM, N. Y.—Amsterdam St. By. Co. 56 fice 112 Front St., L. Island City, N. Y. ANINISTON, ALA.— ASHITABULA, O.—Ashtabula City Ry. Co. 4 m, 4-S& g, 40 lh r, 6 c, 60 h. Owner & Prop. Jno. N. Stewart.
ATCHISON, KAN.—Atchlson St. Ry. Co. 544

Stewart.
ATCHISON, KAN.—Atchlson St. Ry. Co. 5% m, 4-8% g, 20-30 lh r, 19 c, 60 h. Pres. & Gen. Man. J. H. Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. Gate City St. R. R. Co. 2% m, 4-8% g, 16 hb r, 7 c, 26 h. Pres. L. B. Nelson, V. Pres. L. DeGive, Sec. & Treas. John stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co.

West End & Atlantic R.R. Co. 2m, 4.8½ g, 20 lh r, 6 c, 34 mu. Pres J. D. Turner, V. Pres, T. L. Lang-ston, Sec. & Treas, B. H. Brumhead, Man. & Pur. Agt. Juo. S. Brumhead. ATLANTA, GA.-Atlanta St. Ry. Co. 13 m, 4.8½ g, 42 lh C. B. rail, 40 two h cars, 150 horses. North Atlanta Line 1 m. Decatur St. Line 1.50 m. Mari-etta 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. Office, 49 Line St. ATLANTIC, N. J.-Atlantic City Ry. Co. AUBURN, N. Y.-Auhurn & Owasco Lake R.R. Co. 1¼ m. 4.8½ g, 28-30 lh r, 3c, 12 h. Pres. D. M Oshorne, Sec. & Treas C. B. Koster, Supt. B. F. Andrews. East Genesee & Seward Are. Ry. Co. 1½ m, 4.8½ g, 30 lb r, 6 c, 25 h. Pres. David M. Oshorne, Sec. & Treas, C. B. Fosters, Supt. B. F. Andrews. AUGUSTA, GA.-Augusta & Somerville R.R. Co. AURORA, HLL.-Aurora City Ry. Co. 5m, 4.8½ g, 28 lb r, 7 c, 10 h, 30 mu. Pres. H. H. Evans, V. Pres. S. W. Thatcher, Sec. A. J. Hopkins, Treas, E. W. Truth, Supt. J. B. Chattee. BABTLON, N. Y.-Babylon Horse R.R. Co. 1½ m, -g, -lh r, 2c, 3h. Pres. W. F. Norton. BALTIMORE, HD.-Baltimore & Powhatan Ry. Co. 6 m. 544% c, 4 C. 17 h. Pres. K. Treas

BABYLON, N. Y.-Babylon Horse F.R. Co. 1½
m, -g, -lh r, 2 c, 3 h. Pres. W. F. Norton.
BALTIMORE, MD.-Baltimore & Powhatan Ry.
Co. 6 m, 5-4½ g, 4 c, 17 h. Pres. & Treas. E. D.
Freeman, Sec. R. B. Clark, Supt. I. M. Ketrick.
Baltimore Uty Pass, Ry. Co. 40 m, 5-4½ g, 46 lh r, 154 c, 1000 h. Pres. Oden Bowle, Treas. John Bolgian, Sec. S. L. Bridge.
Baltimore & Catonsville Ry. Co.
Baltimore & Catonsville Ry. Co.
Baltimore & Pimlico & Pikesville R.R. Co.
Central Ry. Co. 5½ m, 5-6 g, 40 lb r, 22 c, 180 h.
Pres. Peter Thompson, Sec. & Treas. Walter Blakistone.
Citizen's Ry. Co. 20 m, 5-4½ g, 46 lb r, 34 c, 360 h.
Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed.
Monumental City Ry. Co.
Paople's Pass, Ry. Co. 6½ m, 5-4½ g, 42-45 hr, 30 c, 200 h. Pres. R. E. Hamilton, Treas. Gustavus Oher, Sec. & Johnson St. Soon move to Druid Hill Ave. York Road R.K. Co.

York Road R. R. Co. BATTLE CREEK, MICH.—Battle Creek Ry. Co. 5 m, 3 6 g, 28 lb r, 8 c, 18 h, 3 mu. Pres, Geo. Det-J. White. V. Pres, H. H. Brown, Sec. Chas. Thomas, Supt. John A. White, Gen. Man. J. W. Hahn. BAY CITY, MICH.—Bay City St. Ry. Co. 74/ m, 4-84/ g, 18 lb r, 13 c, 35 h. Pres. James Clements, Tr.as. Win. Clements, Sec. Edgar A. Cooley. BEAVER FALLS, PA.—Beaver Valley St. Ry. Co. 3 1-10 m, 5 c, 21 h. Pres. M. L. Knlight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whitla.

BELLAIRE, 0.—Bellalre St. R.R. Co. BELLEVILLE, ONT., CAN.—Belleville St. R.R.

С 0. BEREA, 0.—Berea St. Ry. Co. 15/ m, 3-6 g, 28 lb 2 c, 2 h. Pres. C. W. D. Miller, V. Pres, T. Chinch-ard, Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bishop.

ward, Sec. & Treas, A. H. Fomeroy, Supt. A. W. Bishop.
BINGHAMTON, N. Y.-Washington Street & State Asylum R.R. Co. 4½ m 4 g, 16-25 lb r, 13 c, 23 h. Pres. B. H. Meagley, V. Pres, Geo. Whitney, Sec. C. O. Root, Treas F. E. Ross.
Binghamton Central R.R. Co. 3½ m (2½ laid), 3 g, 28 lb r, 6 c (not in operation). Pres, Geo. L. Crandall, V. Pres, Nelson Stow, Sec. & Supt. Chas. O. Root, Treas, H. J. Kneeland. Offices 63 Court St. Binghamton & Port Dickinson R.R. Co. 5 m, 4-8½ g, 20-30 lb r, -c, -h. Pres Harvey Westcort, Sec. & Treas, G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 13 State St. Main, Court & Chenango St. R.R. 5 m, 4-8g, 40 lb r, 10 c, 25 h. supt. & Lessee, N. L. Osborn. Offices 83 Washington St.
BIRMINGHIAM, ALA.-Birmingham St Ry, Co. 5½ m, 4-8g, 16 lb r, 18 c, 40 m. Pres, Geo. L. Morris, Supt. N. S. Morris.
BLOOMHYELD, N. J.-Newark & Bloomfield R. R.
BLOOMINGTON, H.L. -Eleonnington & Normal

BLOOMINGTON, ILL.-Bloomington & Normal

Horse Ry. Co. BOONE, IA.-Boone & Boonsboro St. Ry. Co. 12(m, 3g, 2) Ih r, 3c, 10 h. Pres. L. W. Reynolds Treas, J. B. Hodges, Supt. A. B. Hodges. BOONSBORO, IA.-Twin City & Des Moines River Notor St. Ry. Co. 3 m, 3.6 g, 2 motors, 3 c. Pres. & Supt. J. B. Hodges, Trcas. A. B. Hodges, Sec. S. K. Huntishnger. BOONCON MASS - Hickland St. Ry. Co. 19 m.

S. K. Huntsinger. BOSTON, MASS.—Highland St. Ry. Co. 19 m, 4-8½ g, 50 lb r, 187 c, 925 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. D. Duce.

48% g, 50 lb r, 187 c, 925 h. Pres. Moouy Merrin, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg. Lynn & Boston. 34% m, 48% g, 25-48 lb r, 114 c, 514 h. Pres. Amos F. Breed, Treas, & Sec. E. Francis Oliver, Supt. Edwin C. Foster. Metropolitan R. R. Co. 80 m, 4-8% g, 50 lb r, 700 c, 3,600 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas. Chas. Boardman. Office, 16 Kilhy St. Middlesex R.R. Co. 26 m, 4-8% g, 50 lb r, 150 c, 700 h. Pres. Chas. E. Powers, Treas. & Supt. John H. Studley. Address, 27 Tremont Row, Boston. So. Boston Ry. Co. 13 m, 4-8% g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersey, V. Pres. Jas. C. Davis, Sec. & Treas. Wn. Reed, Supt. Daniel Coolidge. BRADFORD, PA.-Bradford & Kendall R.R. Co. 1½ m, 4-8% g, 88 lb r, 3 c, 4 h. Pres. James Brodey, Sec. N. B. Parsons, Gen. Man. & Supt. Enos Parsons. BRIDGEPORT, CONN.-The Bridgeport Horse R.R. Co. 5 m, 4-8% g, 42 lb r, 14 c, 70 h. Pres. Alhert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar. BROCKTON, MASS.-Brockton St. Ry. Co. 3% m 24 c, 97 h. Pres. W. W. Cross, Treas. & Sec. Z. C. Kelth, Supt. H. B. Rogers. BROOKLYN, N. Y. -The Atlantic Avenue R. K-

BROOKLYN, N. Y. -The Atlantic Avenue R. K. CO. Of Brooklyn. 24% m. 4-8 g, 60 fb r, 244 c, 882 f-Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost. Office cor. Atlantic & Third Aves. Third Aves.

[&]quot;Alvah Bushnell, Manufacturers' Agent, 105 So. 4th street, Philadelphia, Pa

DECEMBER, 1553.] Broadway R.R. Co. 10 1-10 m, 4-S½ g, 45-50-60 lb r, 166 c, 657 h. Pres. W. H. Husted, V. Pres. Edwin Beers, Sec. & Treas, Robert Sealer, Supt. Joshua Crandall. Office 21 Broadway, E. D. Brooklyn Cross Town R.R. Co. 8 m, 4-S½ g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ezra B, Tuttle, Sec. & Treas, John R. • onnor, Supt. D. W. Sullivan. Offices 555 Manhattan Ave Bushwick H.R. Co. 20 m, 4-S½ g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, V. Pres. Wm. H. Hus-ted, Treas, & Sec. 8. D. Hallowell, supt. Wm. M. Mor-rison. Office 22 Broadway, N. Y. The Brooklyn, Bushwick & Queens County R.R. 6m 4-S½ g, 42-47 lh r, 41 c, 117 h. Pres. Richard H. Green, V. Pres. James W. Elwell, 59 -outh St. N. Y. Sec. John D, klwell, Treas, Wm. W. Greene. Brooklyn City R.R. Co. 44 m, 4-8½ g, 60 lh r, 761 c, 3(045 h. Pres. Willam H. Harzard. - Pres. William M. Thomas, Sec. & Treas. Daniel F. Lewis, Asst. Sec. Francis E. Wrieley. Office 8 & 10 Futions 8t. Brooklyn City R. Wowtown R.R. Co. 11 m, 4-8½ g, 45-60 lb r, 125 c, 419 h. Pres. Louis Flizgeraid, N. Y. City, Sec. & Tre 18. H. A. Schuz, Supt. H. W. Bush. Office cor. DeKalb & Central Ayes. Calvary Cemetery, Greenpoint & Brooklyn Ry. Co. Coney Island, Sube, William Farrell. Office cor. Smith & Huntington Sts Coney Island, Sheepshead Bay & Ocean Avenue R. R. Co. Pres. A. A. NcClemer, V. Pres. Daniel Mone, Sec. John McMa'non, Sheepshead Bay, Treas. Horace Valkulyh. Office 16 Hed Hook Lane. Crosstown Line, Hamilton Ferry to 'Flege. Grand St. & Newtown R.R. Co. 3' m, 4.8½ g, 45-50 br, 72 c, 230 h. Pres. Martin Joost, Sec. & Treas. My et Horwill, Supt. Walter G. Howe, office 129 First St. Grand Street, Prospect Park & Flatbush R.R. Co. 4½ m, 4.8½ g, 50 lb r, 75 c, 244 h. Pres. Louis Fliz-geraid, 120 Broadway, N. Y., Sec. & Treas. Duncan B.

So to 1, 22, 25 of L. Frees. Match 300-5, Sec. & Treas. Grand Street, Prospect Park & Flatbush R.R. Co. $4\frac{1}{2}$ m, $4\frac{5}{2}$ g, 50 lb r, 75 c, 244 h. Pres. Louis Fitz-gerald, 120 Broadway, N. Y., Sec, & Treas. Duncan B. Cannon, Supt. Jno. L. Heins. Offices Franklin Ave. and Prospect Place. Greenpoint & Lorimer St. Prospect Park & Coney Island R.R. Co. 4 7.10 m, 45-50 lb r, $4\frac{-5}{2}$ g, 60 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, ~upt. Robert Attlessey. Offices Ninth Ave. 19th & 20th sts. Prospect Park & Flatbush R.R. 1 $\frac{1}{2}$ m, $4\frac{-5}{2}$ g, 30 h. Pres. Loftis Wood, Sec. & Treas. Sumi Parkhill, Supt. Loftis Wood, Sec. & Treas. Sumi Parkhill, Supt. Loftis Wood, Sec. & Treas. Sumi Parkhill, Supt. Loftis Wood, South Brooklyn Central R.R. Co. 7 m ($4\frac{1}{2}$ m lald), $4\frac{5}{2}$ g, 6 lb f, 42, (192 h. rres. Wm Richardsou, Sec. Wm. J. Richardson, Treas. N. H. Frost, supt. James Ruddy. The New Williamsburgh & Flatbush R. R. Co. $6\frac{1}{2}$ m, $4\frac{-5}{2}$ g, 47.50 lb r, 74 c, 255 h. Pres. Geo. W. Van Alien. 54 Ann st., New York, Sec. W. B. Waitt, 34th St. & 9th Ave., New York, Treas. C. B. Cottrell, S Spruce st., N. Y. City, supt. Chas. E. Harris, Nost-rand Ave. & Carroll st., Brooklyn. The Union Railway Co. of the City of Brooklyn (not in operation). van Brunt St. & Erle Basin R R. Co. $1\frac{1}{2}$ m, $4\frac{-5}{2}$, 5, 41 hr, 7, c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry. BRUNSWICK, GA.-Brunswick St. R.R. Co.

BRUNSWICK, GA.-Brunswick St. R.R. Co.

BUFFALO, ILL.-See Mechanicsburg, Ill.

BUFFALO, ILL.-See Mechanicsburg, III. BUFFALO, N. Y.-Buffalo St. R.R. Co. 17% m, 4-8%g, 50 lb 1, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. P. P. Pratt, Sec. S. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Buffalo East Side St. R.R. Co. 24 4-5 m, 4-8% g, 42 lh r, 47 c, 218 h. Pres. S. S. spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Wat-son, Supt. Edward Edwards. Office 346 Main St.

churchyard, See, H. M. Watson, Treas. W. H. Watson, Supt. Edward Edwards. Office 346 Main St.
BURLINGTON, IA. - Burlington City R.R. Co.
2% m. 4-5% g, 22 lh r, 9 c, 30 h. Pres. John Patterson, Sec. & Man. C. T. Patterson.
union St. Ry. Co.
CAHRO, ILL. - Cairo St. R.R. Co.
CAMBRIDGE, MASS. -- 'ambridge R.R. Co. 43
m. 4-5% g, 50 b f. 245 c, 1410 h. Pres. Prentiss Cummings, Treas. & Clerk F. T. Stevens, Exec. Com. I. M. Simpson, P. Cummings, O. S. Brown, Clerk of Directors, O. S. Brown, Supt. Wm. A. Bancroft.
Charles River St. Ry. Co. 10 4-5 m, 2-5% g, 50 b r, 50 c, 330 h. Pres. Chas. E. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlain, Supt. John N. Akarman.
CAMDEN, N. J.-Camden & Atlantic St. Ry. Camden Horse R.R. co. 9 m, 5-1 g, 35-47 lb r, 26 c, 35 h. Pres. Thos, A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood.
CANTON, O.-Canton St. R.R. Co. (new road).
CAPE MAY, N. J.-Cape May & Schellenger Landing Horse R. R.
CARTHIAGE, MO.CEDAR RAPIDS, IA.-Cedar Rapids & Marion St. Pass. Ry. Co.
CHAMPAIGN, ILL.-Champalgn R.R. Co.
Urbana & Champalgn St. R.R. Co. (See Urbana).
CHAMPAIGN, J. L.-Champalgn R.R. Co.
Urbana & Champalgn St. R. Pres. Jon S. Riggs, Treas. Evan Edwards, Sec. Frank Wheiden, Supt. Jun. Soliten, Sec. & Treas, U. E. Hayne, Supt.
M. HARLESTON, Sec. & Treas, U. E. Hayne, Supt. T. W. Passallaigere.
CHATTANOOGA, TENN.-Chattanooga St. R.

T. W. Passallaigere. **CHATTANOOGA, TENN.**—Chattanooga St. R. R. Co. 2% m, 48% g, 16-2515 r, 8c, 50 h. Pres. J. H. Warner, Sec. C. R. Gaskill. Supt. A B. Wingfield. **CHESTER, PA.**—Chester St. Ry. Co. 5% m, 52%g, 12c, 70 h. Pres. Richard Peters, Jr., Solicitor, Geo. B. Lindsay, Treas. Sam'l A. Dyer, Sec. E. M. Cornell.

Cornell. CHICAGO, ILL.-Chicago City Ry. Co. 87 m, 4 Sy g, 45 hb r, 557 c, 1,416 h, cable doing work of 2,509 h. Pres. C. B. Holmes, Sec. H. H. Windsor, Treas. T. C Pennington. Supt C. B. Holmes. Chicago West Division Ry. Co. 40 m, 4.8% g, 40 lb r, 620 c, 3,425 h. Pres. J. R. Jones, Sec. George L. Webb, Supt. Jas. K. Lake. Chicago & Hyde Park St. - m, -g, -lb r, -c, -h. Pres. Douglas S. Clarke.

North Chicago City Ry. Co. 35 m, 4.8% g, 45 lb r, 316 c, 1,700 h. Pres, & Gen Supt. V. C. Turner, V. Pres. Jacob Rehn, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Threedy, Supt. Horse Dept. Robt. Atkins, Purch. Agt. John W. Roach, Master Mechanic J. Miller.

CHILLICOTHE, O.—Chillicothe St. R.R. Co. 1% m, 3 g, 16 hr, 7 c, 10 h. Pres, E. P. Safford, Sec. A. E. Wenls, Treas, William Polanel, Supt. Ewel McMartin.

CINCINNATI, 0.—Cincinnati Inclined Plane Ry. o. 3 m, 5 2½ g, 43 lb r, 24 c, 150 h. Pres. Geo. A. mith, Sec. & Supt. James M. Doherty, Treas. Jos. S.

Hill. Cincinnati St. Ry. Co. Pres. Jno. Kligour. V. Pres. Alhert G. Clark, Treas. R. A. Dunlap, Sec. & Audi-tor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B. F. Haughton. Cincinnati & Mount Auburn R.R. Co.

Chelmati & Mount Auburn R.R. Co. Columbia & Chelmati St. R.R. Co. 3% m, 3 g, 35 lb r, 3 c, 6 dumny ". Pres. C. H. Kligour, V. Pres. John Kligour, Treas. B. F. Brannan, Sec. A. H. Meier, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O. Mt. Adams 4 Eden Park Inclined R.R. Co. 3% m, 5-2% g, 42 lb r, 49 c, 320 h. Pres. & Treas. J. P. Ker-per, Sec. J. R. Murdock, Supt. Chas. Whitten. So. Covington & Chelmani. (See Covington, Ky.)

per, Sec. J. R. Murdock, Supt. Chas. Whitten. So. Covington & Clucinnall. (See Covington, Ky.) **CLEVELAND, 0.**—The Brooklyn St. R.R. Co. 8% m, 4.8% g, 52 lh r. 66 c, 375 h. Pres. Tom. L. Johnson, Y. Pres. A. J. Moxham, Sec. J. B. Hoefgen, Treas. John McConnell, Supt. A. L. Johnson. Broadway & Newburg St. R.R. Co. 6 m, 4.8% g, 10 c, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Sam1 Andrews, Sec. & Treas. E. Fowier. Superior St. R.R. Co. 15 m, 4.8% g, 45 lb 1, 46 c, 225 h. Pres. Frank De H. Robison, Jr. The East Cleveland R.R. Co. 20 m, 4.8% g, 35 sho lb r, 92 c, 450 h. 1 electric motor. Pres. M. S. Kobison, Jr. The East Cleveland R.R. Co. 20 m, 4.8% g, 35.49 lb r, 92 c, 450 h. 1 electric motor. Pres. M. A. Everett, Supt. E. Duty. Offices, 1154 & 1155 Fuelid Ave. Woodland twenne & West Side St. R. R. Co. 17 m, 4.8% g, 43 lb r, 100 c, 550 h. Pres. M. A. Hanna, V. Pres. C. F. Fmery, Sec. J. B. Hanna, Gen. Supt. George G. Wulhen. South Side St. Ry. Co. St. Clair Street Ry. Co.—m—g,—lbr—c,—Pres. Chas Hathaway. West Side R.R. Co.

CLINTON, IA .- Lyons & Clinton Horse R.R. Co.

(See Lyons,) 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. 4. Schnessler, Treas. N. N. Curtis, Supt. J. A. Ga-bourgh. COLUMBUS, O.—Columbus Consolidated St. R.R. COLUMBUS, O.—Columbus Consolidated St. R.R. Dist. Educ. 30 de lb n. 6 de 26 de Dist. Dist.

COLUMBUS, O. -Columbus Consolidated St. R.R. Co. 19m, 5-2 g, 30-46 lb r, 83 c, 350 h. Pres. A. Rodz-ers, V. Pres. H. T. Chittenden, Sec. & Treas. E. K. Stewart, Supt. J. H. Atcherson. Glenwood & Greenlawn St. R.R. Co. 434 m, 3-6 g, 24 lb r, 9 c, 25 c. Pres. A. D. Rodzars, V. Pres. B. S. Brown, Sec. R. S. Rockley, Treas. S. S. Rickley, Supt. Jonas Wilcox.

CONCORD, N. II.—Concord Horse R.R. Co. S m, 3 g, 30-33 lh r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.

CORTLAND, N. Y.-COTLANG & Homer Horse Ry. Co. 4 m (2½ laid), 4-8½ g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y. ec. J. M. Milne, Treas. S. E. Welch, Supt. S. E. Welch. (Leased to D. N. Miller.) Office 23 No. Mercer St.

COUNCIL BLUFFS, IA.—Council Bluffs St. R.R. COVINGTON, KY.—So. Covington & Cincinnati St. Ry. Co. 173 m, 5-2% g, 43 lb r, 46 c, 936 h. Pres. F. F. Abbot⁴, Sec. S. C. Bunton, Treas. G. M. Abbott.

DALLAS, TEX.—Dallas St. Ry. Co. 4¹/₄ m, 4.8¹/₂ 20-38 lb r, 12 c, 4 b, 72 mu. Pres, Wm. J. Keller, Sec. larry keller, Supt. C. E. Keller. Commerce & Way St. R.R. g, 20-5. Harry

DANVILLE, II.L.-Citizens' St. Ry. Co. 4 m, 4 g, 20 lb r, 7 c, 35 mu Pres. Wm. I. Cannon, V. Pres, & Gen. Man. Wm. Stewart, Sec. & Treas. Adam P.,

Samuel. DAVENPORT, IA. – Davenport Central St. R.R. 2½ m. 4-5% g, 20 lb r, 12 c, 36 h. Pres. Jam s (rant, V. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. B. Rumsey, Sec. O. S. McNell. Davenport City Ry, Co. H. Schultger, Lessee. DAYTON, KY.–Newport & Dayton St. Ry. Co. 2 m, 5-2% g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

Bean. **DAYTON, O.**—Dayton St. R.R. Co. 3% m, 4-5% g, 44 hb r, 23 c, 66 h. Pres. J. W. Stoddard, V. Pres. u. S. Williams, Sec. C. B. Clegg, Supt. A. W. Anderson. Oakwood St. Ry. Co. 3 1-3 m, 4-5% g, 38 bb r, 13 c, 60 h. Pres. Charles B. Clegg, Sec. M. P. Moore, Supt. Wm. Davis. Bit of the structure of Elitib St. P. B. Co. 21 cm 45% g, 24

Wm. Davis.
The Wayne & Flith St. R.R. Co. 3% m, 4-8% g, 34-381b r, 5 c. 30 h. Pr s. Geo. M. Shaw, sec. & Treas.
Eugene Winchet, Supt. N. Routzahu.
DECATUR, ILL.-Decatur Horse Ry. Co.
Cittzens' street R.R. Co. 2m, 4-8% g, 20 lb T r, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. Kinney.

supt. A. E. Klnney.
DEERING, ME. -See Portland.
DENISON, TEX. -Denison St. Ry. Co. 3 m
3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Waterhouse, upt. 8. A. Robinson.
DENVER, COL. -Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 5 rc, 25 nh. Pres. Geo. H. Holt, 10 Wall Mt., New York City, 25 nh. Pres. Geo. H. Holt, 10 Wall Mt., New York City, Teris. & Man. G. E. Randolph.
DES MOINES, IA. -Des Moines St. Ry. Co. 10 m, 3 g, 25-30 38-52 lb r, 18 c, 100 h. Pres. M. P. Tur-ner, Sec. M. A. Turner.
DES Moines & Sebastopol St. Ry. Co.
DETROIT, MICH. -Fort Wayne & Elmwood Ry

DETROIT, MICH. -Fort Wayne & Elmwood Ry Co. 6 m, 48% g, 45 lb r, 3) c, 18 h. Pres. H. B Brown, V. Pres. Edward Kanter, Treas. George B. Pease, sec. N. W. Goolwin, Supt. Geo. S. Hazard. Detroit City Ry. 30 m, 4-8% g, 40-43% lb r, 130 c, 700 h. Includes Jefferson Ave. line, Woodward Ave.

line, Michigan Ave, line, Gratiot 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, Mast. Mech. John Willis, Charles Control of Control of Control of Control

51

Heugh, Gen. Supt. Robert Eell, Mast. Mech. John Willis.
Grand River St. Ry. Co. 2% m, 4-5% g, 43 lb r, 13 c, 10 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. C. M. Dalley.
DOVER, N. H.-Dover Horse R.R. Co. 2.2.5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingtor, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littleffield, Treas. Harrison falley, J. A. Honherg, Sec. & Treas. E. E. Lineh In, Supt. J. J. Linehan.
DULUTH, MINN.-Duluth St. Ry. Co. 3 m, 3-6 g, 30 lb r, 6 c, 7 h, 31 mu. Pres. A. S. Chase, V. Pres. O. P. stearns, Sec. & Treas. L. Mendenhall, Supt. & Fruitvale R.R. Co.
EAST SAGINAW, MICH.-Street R. R. Co. of East Saginaw. -m, 4.8% g, 30 lb r, 14 c, 25 h. Pres. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.

EAST ST. LOUIS, ILL .- East St. Louis St. R.R. C

EAST ST. LOUIS, ILL.—East St. Louis St. R.R. Co.
EASTON, PA.—The Easton & So. Easton Passenger Ry. Co. 1% m, 5-2% g, 45 lb r, 4 c, 20 h. Pres. H. A. Sage, See & Treas. H. W. Cooley, Supt. Elisha Burwell, So. Easton.
The West End Passenger Ry. Co. 1% m, 5-2% g, 45 lb r, 6 c, 20 h. Pres. H. A. Sage, See. & Treas. H. W. Cooley, Supt. Samuel Berry.
EAU CLAIR, WIS.—Eau Clair City Ry. Co. ELGIN, HLL.—Elgin City Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne.
ELIZABETH, N. J.—Elizabeth & Newark Horse R.R. co. 14 m, 5-2%, 4.10% g, 30 lh r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. ohn F. Pritchard. ELKHARDT, IND.—Hkhardt City R.R. Co. 9 2-3 m, 4-8% g, 25-30-40 lb r, 15 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Officers, 21 E. Water. St.
EL PASO, TEX. El Paso St. Ry. Co. 2% m, 4-8% g, 20 lh r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krookauer, Treas. F. Magoffice, Sec. & Supt. I. A. Tays.
EMPORIA, KAN.—Emporta City Ry. Co. 3% m,

Tays.
EAPORIA, KAN. – Emporia City Ry. Co. 3½ m.
Fays.
EAPORIA, KAN. – Emporia City Ry. Co. 3½ m.
Fg. 20 lb r, 6 c, 23 m.
Pres. Van R. Holmes, Treas.
A. F. Crowe, Sec. & Man. J. D. Holden.
ENTERPRISE, MISS. – Enterprise St. Ry. Co.
12 m., 3 6 g, 24 lb r, 2 c, 6 h.
Pres John Kampe, V.
Pres. E. B. (aston, Sec. & Treas, Jno, Gaston.
ERIE, PA. – Erie City Passenger Hy. Co. 5 m,
4.8% g, 30-40 lb r, 17 c, 70 h.
Pres. J. C. Spencer, Sec. A. L. Lettell, Supt. Jacob

EUREKA SPRINGS, ARK .- Eureka Springs CÌ

Cly iv, Co.
EVANSVILLE, IND.-Evansville St. Ry. Co. 12
RVANSVILLE, IND.-Evansville St. Ry. Co. 12
M. 48 g. 28 lh r, 31 c, 190 mu. Pres. John Gilhert, Sec.
P. W Kaleigh, Treas. John Gilhert, Supt. W. Bahr.
FALL RIVER, MASS. -Johne St. Ry. Co. 12 m,
FALL RIVER, MASS. -Johne St. Ry. Co. 12 m,
Status and St. Sta

V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.
FORT SMITH, ARK.,—Fort Smith St. Ry. Co. 2 m, 3.6 g, 16-28 lh f, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas Geo. T. Sparks.
FORT WAYNE, IND.—Clitzens' St. R.R. Co. FORT WORTH, TEX. — Fort Worth St. Ry. Co. 7.3/ m, 4 g, 25-38 lb f, 16 c, 73 m. Pres, K. M. Vanzandt, Treas. W. A. Hoffman, Acting Sec. & Gen. Man. S. Mims.

Man. S. Mims. **FRANKFORT, N. Y.**—Frankfort & Ilion Street Ry. (0, 2% m, 5g, 4 c. Pres. A. C. McGowan, Frank-fort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Fredk. Gates, Franklort. **FREDONIA, N. Y.**—Uunkirk & Fredonia R. R. Co. 3% m, 4-10 g, 25 lb r, 5 c, 8 h. Fres Wm. M. McCIns-try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock. **GAINSULLE, FLA**. Content

třy, Sec. & Treas, M. N. Fenner, Supt. Z. Elmer, Wheelock. GAINSVILLE, FLA.-Gainsvi \sim GAINSVILLE, TEX.-Ga nsville St. Ry. Co. 2% m, 3-6 g, 17 lb r. 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris. Sec. & Treas, F. R. Sherwood. GALVESTON, TEX.-Gale-burg Horse R. R. Co. GALVESTON, TEX.-Galveston City R.R. Co. GALVESTON, TEX.-Galveston City R.R. Co. GALVESTON, TEX.-Galveston City R.R. Co. GALVESTON, St. Genu. Pres. Wm. H. Sin-clair, Sec. & Treas. F. D. Merrit, Supt. M. J. Keenan. Guif City St. Ry. & Real Estate \circ . GRAND RAPIDS, MICH.-Street Ry. Co. 01 (75 h. Pres. C. A. Otts, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. \circ eston, Grand Rapids, Asst. Sec. Jas. Plokands, Cleveland, O GREEN CASTLE, IND.-Greeu Castle City St. Ry. Co. 2 m, 4-S& g, 23 lb r, 3 c, 12 h. Pres. & supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers,

Ragers, bec. sames S. Aute, Freas. Radouple GREENVILLE, S. C.-Greenville City Ry. Co 1m, 5g, -1b r, 5c, 20 h. Proprietors, Gilreath & HAMILTON, O.-The Hamilton St. Rv. Co. 4 m, 3g, 28 lb r, 11 c, 12 h. Pres. James F. Griffin, Sec. 0. V. Parti-h. Treas. H. L. Morev, Supt. J. C. Elgelow. HANNIBAL, MO.-Hamilton St. Ry. Co. 2 m, 48% g, 16-36 lb r, 6c, 32 h. Pres. & Supt. M. Doyle, Sec. & Treas James O. Hearn. HARRISBURGH, PA.-Harrisburgh City Pas-senger Ry. Co. 2% m, 52% g, 42 47 lb r, 15c, 36 h, Pres. H. A.Keiker, V. Pres. Daniel Epply, Sec. John T. Ensminger, Treas, K. F. Keiker, Supt. S. B. Reed. HARFFORD. CONN.-Hartford & Wethersfield

IARTFORD, CONN.—Hartford & Wethersfield Horse R. R. Co. 12 m, 4.8% g, 45 lb r, 49 c, 250 h. Pres, & Treux. E. 8, Goodhich, Sec. Geo, Sexton. **HAVERHILL**, **MASS.**—Haverhill & Groveland St. Ry. Co. 4% m, 4.8% g, 30 lb r, 10 c, 19 h. Pres.

Jas. D. White, Treas. John A. Colhy, Supt. L. R.

52

Jas. D., White, Treas. John A. Colhy, Supt. L. R. Mitchell.
IBLENA, ARK. -Helena St. Ry. Co.
IBERKIMER, N. Y. -Herkimer & Mohawk St. Ry. Co. 1% m, 4-8% g, 25 lb r, 3 c. Pres. J. M. Ansmen, Sec. Joan Small, Treas. H. D. Alexander.
IHOBOKEN, N. J. -North Hudson County Ry. Co. 16% m, 4-7g, 50-60 lb r, 16 c, 630 h Pres. John H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. Nicholas Goetz, Union.
IHOY OKE, MASS. -Holyoke St. Ry. Co. 2 m, 4-8% g, 35 lh r, 8 c, 24 h. Pres. Wm. A. Chase, Treas. C. Fayette Smith, Supt. H. M. Smith.
IHOT SPRINGS, ARK. -Hot Springs R.R. Co. 3 m, 4g, 25 lh r, 11 c, 30 h. Pres. S. W. Fordyce, Sec. C. E. Maurice, Supt. J. L. Butterfield.
IHOUSTON, TEX. -Houston City St. Ry. Co. 13 m, 4g, 29 classifier, doi: 10 m. Press. Wm. H. Sinclair, Galveston, V. Pres & Gen Man. H. F. McGregor, Houston, Supt. Henry Friend, Houston, sec. & Treas. F. J. DeMeritt, Galveston.
HUTCHINSON, KAN. -Ilutchinson St. Ry. Co. HYDE PARIK, ILL. -Ewing Avenue Horse Ry. Co. 43% g. Pres. Andrew Rehm, Sec. A. Krimbill.
ILION, N. Y. -Frankford & Ilion Ry. Co. 22 m, 5 g, 20-83/40-52 lh r, 70 c, 530 h. Pres. A. W. Johnson, Indianapolis, Juditor P. Woorid, KaN. -Ilutchinson, St. Ry. Co. 10, 48% g. 20-83/40-52 lh r, 70 c, 530 h. Pres. A. W. Johnson, Indianapolis, Treas. Tom L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Auditor P. Woorid, Warthory, MICH. -Jackson Street Ry. Co. 14, 48% g, 20-83/40-52 lh r, 70 c, 530 h. Pres. A. W. Johnson, Indianapolis, Juditor P. Wooridge, Louisville, Ky.
Mathematical Stress, Treas. F. W. Backinstae.
JACKSON, MICH. -Jackson Street Ry. Co. 14, 54, 52 bl r, 40, ch. Stress, Treas. F. W. Backinstae.
JackSonville, St. Trens. -Jackson Street Ry. Co. 14, 54, 52, 30 hr, 70, c, 530 h. Pres. A. Stress, Stand, Go, Y. Pres. & Stand, Hopewell, Gen. Supt. Henry H. Smith. Trees. Samuel Hopewell, Gen. Supt. Henry H. Smith. Trees. Samuel Hopewell, P. Co. 24% m, 5 g, 25 lh r,

Co. 21 m, 210 g, 60 for, 10 S, 10 m, 17 m, 18 m, 17 m, 18 m, 19 g, 60 for, 17 m, 18 m,

JOS. G. Anderson, Sec. K. James Auderson, Treas. & Supt. W. Z. Anderson.
KINGSTON, ONT., CAN.-KIngston St. R.R. Co. 34 m, 3-6 g, 91hr, 10 c, 36 h. Pres. Robert Carson, Sec. & Treas. F. Sargent, Man. William Wilson KNOXVIILE, TENN.-Knoxville St. Ry. Co. 2 m, 4-S3g, 22 hl r, 5 c, 2 h. Acks, 30 h. Pres. W. W. Woodruff, Sec., Treas. & Supt. T. L. Beaman.
LACONIA, N. H.-Laconla & Lake Village Horse R.R. 24 m, 3 g, 34 hl r, 5 c, 16 h. Pres. A. G. Folsom, Treas. Edmund Little, Man. Bela S. Kenniston.
LA CONIA, N. H.-Laconla & Lake Village Horse R.R. 24 m, 3 g, 24 hl r, 5 c, 16 h, 3 mu. Pres. Geo. F. Gund, V. Pres. B. E. Edwards, Sec. Mills Tonctellotte, Treas. Fred Tillman, Supt. Geo. F. Smith. La Crosse St. Ry. Co. Pres. B. E. Edwards, Treas. G. Van Steenyk, Sec. Mills Tourtellotte, Supt. Preter Valler.

G. Va Valler

LAFAYETTE, IND.-LaFayette St. Ry. 21 m, 48% g, 35 lh r, 6 c, 35 h. Pres F. B. Caldwell, LaFay-ette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette.

Greet, Larayeuce, LAKE CITY, FLA.—Lake Clty St. Ry. Co. LAMPASAS SPRINGS, TEX.—Lampasas Clty Ry. Co. 3¹/₄, m, 4-8⁴/₅, 22 ftr. f c., 15 h. [Owned by Mrs. L. R. Snodgrass.] Gen. Man. Geo. M. Snodgras

LANCASTER, PA.-Lancaster & Millerville St. Ry y. Co. Lancaster Clty St. Ry. Co.

Lancaster City St. Ry. Co. LARCHMONT, N. Y.-Larchmont Manor Co. 1 m⁴ 4.8 g, 25 lh r, 2 c, 8 h. Pres. C. H. Murray, Treas. S. H. French, 88 East Fourteenth St. N. Y. City. LAWIRENCE, KAN.-Lawrence Transportation Co. 4% m, 4-1 g, 38 lb r, 7 c, 30 h. Pres. H. Tisdale, Sec. W. H. Bangs. LAWRENCE, MASS.-Merrimack Valley Horse R.R. Co. 5 4-5 m, 4-3% g, 48 lb r, 20 c, 70 h. Pres. Wm, A. Russell, V. Pres. James Walton, Methuen, Clerk & Treas, James C. Eaton, Supt. A. N. Kimball, Law-reuce.

THE STREET RAILWAY JOURNAL.
LEWISTON, ME.-Lewiston & Auburn Horse R.R. Co. 7% m, 4-8% g, 32 lb r, 16 c, 45 h. Pres. Frank W. Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auhurn, Supt. E. P. Stinch-field, Auhurn.
LEXINGTON, KY.-Lexington City Ry. Co. 5 m, 4-10g, 20 lb r, 20 c, 85 h. Free, John Cross, V. Pres. C. R. Diver, Sec. & Supt. Bert. Cross.
LEXINGTON, MO.-Lexington St. Ry. Co. LINA, O.-Lima St. Ry. Co.
LINGTON, NB.-Capital City Ry. Co. 3 m, -g. - Ub r, 5 c, -h. Pres. E. B. Durfee, Sec. & Supt. H. R. Durfee.
HTTLE ROCK, ARK.-Little Rock St. Ry. Co. Citzens' St. Ry. Co.
LOGANSPORT, IND.-Logansport Ry. Co. 2 m, 4 g, 28 lh r, 6 c, 29 mu. Pres. Frank. G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques. Office, Urhana, III. LONG ISLAND CITY, N. Y. -Stelnway & Hunter's Point R. R. Co. 2 m, 4-8% g, 30 lh r, 12 c, 30 h. Pres. V. Cronga, Sec. Jas. H. Flock, Supt. Henry Thos. Smith.
LONG ISLAND CITY, N. Y. -Stelnway & Hunter's Point R. Co. 2 6 m, 4-8% g, 40 h. Pres. Wm. Stelnway, Stelnway Hall, N. Y. City. V. Pres. Henry A. Cassebeer, Jr., Stelnway, Hunter's Point R.R. Co. 2 6 m, 4-8% g, 47 lh r, 60 c, 150 h. Pres. Wm. Stelnway Hall, N. Y. Dutch Kills & Hunter's Point R.R. - m, -g, - lb r, - c, - h. Pres. R. J. Gleason.
Long Island City & Newtown Ry. Co. 3 m, 4-8% g, 45-55 lb r, 25 c, 60 h. Pres. J. Sance Buchanan, N. Y. Dutch Kills & Hunter's Point R.R. - m, -g, - lb r, - c, - h. Pres. R. J. Gleason.
Long Island City & Newtown Ry. Co. 3 m, 4-8% g, 45-55 lb r, 25 c, 60 h. Cres. Stance Buchanan, N. Y. City, Sec. Geo. S. Crawford, Brooklyn, N. Y. Treas. Patrick J. Gleason, Supt. Michael Conway. Officers 12 Front St.
LONGVIEW, TEX.-Longview & Junction St. R. L.ONGVIEW, TEX.-Longview & Junction St. R. K. Co. 7 m, 3-6 g, 16 lb r, 13 e, - h. Pres. E. T. Sepencer, Sec. F. X. Paimer, Supt. J. A. Fairchild. City R. K. ot Los Angeles. 4% m, 4-8% g, 36 lb r, 9 c, 75 h. Pres. J. M. Hellman, V. Pres. W. J. Bro

Main St. & Agricultural Park R.R. LOUISVILLE, KY.-Kentucky St. Ry. Co. 5 m, 5-2 g, - lb r, 22 c, - h. Pres: T. J. Minary, Sec. & Treas, Thos. Donigan. Central Pass. R.R. Co. -m, -g, -lbr, -c, -h, Pres. -, V. Pres. Thos. J. Minery, Crescent Hill Ry, Co. Louisville City Ry. Co. 63 m, 5 g, - lb r, 199 c, 1300 h. Pres. Maj. Alexander Henry Davis, Syracuse, N. Y, V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. II. Littell.

LOWELL, MASS.—Lowell Horse R.R. Co. 6 m, 4-8% g, 28-47 lb r, 28 c, 100 h. Pres. Wm. E. Llving-ston, Gen. Man. J. A. Chase.

ston, Gen, Man, J. A. Chase. LYNCHBURG, VA. — Lynchburg St. R.R. Co. 2 m, 5-1g, 26 lb r, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne. LYONS, IA.—Clinton & Lyons Horse Ry, Co. 4 M, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, Y. Pres. & Man, R. N. Rand. 4-JACON, GA.—Macon & Suburban St. R.R. Co. 5 m, 4-8M g, 20 lh T r, 12 c, 60 h & mu. Pres. Jno. S. Bransford, Sec. & Supt. Juo. T. Voss. Office, 151 Second St.

econd St. MADISON, IND.—Madlson St. Ry. Co. 2%m, 4 MADISON, IND.—Madlson St. Ry. Co. 2%m, 4 St. Br, 7, c, 8, 1, 10 mu. Pres. Jacob Wendle, V. Pres. eter F. Robenlus, Supt. & Treas. Chas. F. Tuttle. MADISON, WIS.—Madlson St. Ry. Co. 2%m, 3 23 lh r, 6 c, 24 h. Pres. E W. Keyes, V. Pres. Sec. Treas. D. K. Tenney, Supt. G. W. Carse. MANCHESTER, N. H.—Manchester Horse R.R. M. M. St. St. St. St. St. St. St. Bell, reas. Frederick Smyth, Clerk J. A. Weston, Supt. Q. Guage.

A. Q. Guage.
 M.R.SHALLTOWN, IA. -3 m, 4 g, 25 lb r, 7 c, M.R.SHALLTOWN, IA. -3 m, 4 g, 25 lb r, 7 c, 20 h. Pres B. T. Frederick, Treas. T. E. Foley, Sec.
 C. Gillman, Supt. A. E. Shorthill.
 C. Gillman, Supt. A. E. Shorthill.

MARYSVILLE, CAL.-City Pass. R.R. Co. (No rei

MAYSVILLE, KY.-Maysville St. Ry. & T. Co. m, 20 lb r, 4-5% g, 6c, 32 mu. Pres. L. W. Rohertson, 3 m

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

ullenwelder. MEMPHIN, TENN, - Memphis CityR.R. Co.-m, g. -lhr.-e, -h, -Pres. R. Dudley Frayser. MERIDIAN, MISS.-Meridian St. Ry. Co. 147 14-8 g, 16 h, 7 & c, 12 h. Pres. J. J. Shannoo, V. res. J. L. Handley, Sec. R. M. Houston. MIDDLETOWN, O.-Mi^{rdel}otown & Madison St. V. Co.

MILLERSVILLE, PA.-Lancaster & Millersville

MILLERSVILLE, PA. – Lancaster & Millersville St. R.R. Co.
MILWAUKEE, WIS. – Cream City R.R. Co. 8 1-6 m, 4.8% g, 27-38 lb r. 74 c, 307 m, 2 h. Pres. Winfield smith, V. Pres. Christian Prensser, Treas. Ferdinand Knehn, Sec. Wm. Damkoehler, Supt. Henry Berg.
Milwaukee City Ry. Co. 15 m, 4-8% g, 27 lb r, 75 c, 430 h. Pres. Peter McGeoch, Sec. & Treas. Geo. O.
Wheateroft.
West Side St. Ry. Co. Owner & Manager, Wash-ington Becker, Supt. – McNaughton.
MINWAUKEAPOLIS. MIXN. – Minneapolls St. Ry. Co. 45 m, 3-6 g, 27-35-45 lb r, 146 c, 725 h and mu. Pres.
Thos. Lowry, V. Pres. C. Morrisser, Treas. W. W. Herrick, Sec. & Supt. C. Goldsmith, Supt. A. Moog. Dauphin & Lafayette St. Ry. Co. 2 m, 5-2% g, 40 hr, 9 c, 22 h. Pres. D. P. Bestor, V. Pres. G. Y. Overall, Sec. & Treas, James W. Gray, Pur. Agt. & Man, J. G. Robertson.
Mobile & Spring Hill R.R. Co. 8 m, 5-2% g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Danlei M. Neill, Sec. & Treas. C. F. Sheidon, Man, F. Ingato.

MOHAWK, N. Y.—Mohawk & Illon R.R. Co. % m, 4-8% g, 30 lb r, 4 c (contract for motive power). res. O.W. Bronson, V. Pres, John Brown, Sec. H. D. lexander, Treas. R. M. Devendorff, Supt. O. W. ronson.

DECEMBER, 1885.

MCLINE, ILL.-Mollne Central St. Ry. Co. 13/ MOLINE, ILL.-Mollne Central St. Ry. Co. 13/ m, -g, -lhr, 3 c, 11 h. Pres. S. W. Wheelock, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F.

Pres. M. Y. Cady, Sec. W. R. Moore, Heat. C. Hemenway.
Moline & Rock Island St. Ry. Co. 5 m, 4-S½ g, 20 lb
r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Butord, Treas. C. Lyons, Supt. Wm. Gamble.
MONTREAL, CAN.-Montreal City Pass. Co. 21
m, 4-S½ g, - Ih r, 76 c, 465 h. Pres. Jesse Joseph, V.
Pres. Wm. Smith, Sec. & Man. Ed. Lusher, Supt. T.
H. Robilland.
MOULTRIEVILLE, S. C.-Middle St. & Sulli-

H. Gobiland, Sect a Mail. Ed. Dishel, Super F.
 H. Robiland.
 MOULTRIEVILLE, S. C.-Middle St. & Sullivan's Landing Ry.
 MUSCATINE, IA.-Muscatine Clt7 Ry. Co. Pres.
 Peter Musser, V. Pres. Geo. W. Dillaway, Sec. T. R.
 Filtzgerald, Supt. & Treas. O. J. Chapman.
 MUSKEGON, MICH.-Muskegon Ry. Co. 4% m, 3-6g, 201b r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V.
 Pres. Chas. Merriam, Boston, Mass., Sec. Thomas Munroe, Treas. G. R. Sherman, Supt. C. H. Newell.
 NASHUAL, N. H.-Nashua St. Ry. Co.
 NASHULLE, TENN.-Nashville & Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield a Mashville St. R.R. Co., one management.
 5 m, 5 g, 16 lh r, 21 c, 100 h. Pres. Jno. P. White, Sec.
 MucGaucek & Mt. Varnon Horse P. Co.

& Treas. H. B. Stubblefield, Supt. Daingerfield Dead-erick. McGavock & Mt. Vernon Horse R.R. Co. Nashville D. & N. St. R.R. Co. 7½ m, 5g, 16-32 hr, 25 c, 140 mu. Press. Jao. P. White, V. Pres. B. F. Will-son, Sec. & Treas. H. B. Stuhblefield, Supt. D. Dead-ortob. erick

10K. South Nashville St. R.R. Co. 4½ m, 5 g, 16-20 lb r, c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt.

erick.
South Nashville St. R.R. Co. 4½ m, 5 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.
NEVADA, MO.-Nevada Street Ry. Co.
NEW ALBANY, IND.-New Alhany St. Ry. Co.
6 m, 4-11 g, 25 lb r, 15 c, 50 h. Pres. Geo. T. Vance, Sec. G. Vance, Treas. Letitia V. Vredenburgh, Supt. Wm. L. Timberlake.
NEWARK, N.J.-The Newark & Bloomfield St. R.R. Co. 7 m, 5-2½ g, 47 lb 1, 22 c, 140 h. Pres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Broad St. R.R.
NEW BEDFORD, MASS.-New Bedford & Fairhaven St. Ry. Co. 7 m, 45% g, 35-40 lh r, 38 c, 138 h. Pres. Warren Ladd, Treas. Andrew G. Plerce, Clerk Edward T. Plerce.
Acushnet St. R.R. Co., (not in operation.) Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith.
NEWBURYPORT, MASS.-Newburyport & Amesbury Horse R.R. Co. 6 1-3 m, 12 c, 54 h. Pres. W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens. Lessee, E. P. Shaw.
NEW HAVEN, CONN.-Pair Haven & Westville R.R. Co. 7 m, 4½ g, 42 lh r, 23 c, 151 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Walter A. Graham.

NEW HAVEN, CONN. — Pair Haven & Westville R.R. Co. 7 m, 4% g, 42 lh r, 23 c, 151 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Walter A. Graham. New Haven & Contreville Horse R.R. Co. 2% m, 4.5% g, 42 lh r, 4 c, 30 h. Trus tee Cornelius Pierpont. State Street Horse R.R. Co. 2% m, 4.8 g, 43 lb r, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. C. Blatchen. The Whitney Ave. Horse ity. 2% m, 4.8 g, 43 lb r, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. Blatchen. The Whitney Ave. Horse ity. 2% m, 4.8% g, 25 lh T, 3 c, 25 h. Pres. Geo. H. Watsons, Sec. George D. Watson, Treas. Ell Whitney, Jr. NEW ORLEANS, LA.—Canal & Clafborne St. R.R. Co. 13 m, 5-2% g, 37 lh r, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. John H. DeGrange. Croseent Cluy R.R. Co. 26 m, 5-2% g, 35-45 lb r, 90 c, 400 h. Pres. Frank Roder, Sec. & Treas. Jno. J. Ju-don, Supt. A. V. Smith. New Orleans & Carrollton R.R. Co. 8 m, 4.8% g, 30-45 lb r, 65 c, 200 h, 19 engines. Pres. Wm Benthuy-sen, Sec. Walter F. Crouch, Supt. C. V. Halle. New Orleans Cluy & Lake R.R. Co. 6 m, 5.2% g, 64-40 lh r, 180 c, 39 coaches, dummy engines, 1050 mu. Pres. J. A. Walker, Sec. W. E. Leverich, Supt. F. Wintz. New Orleans St. R.R. Co. Orleans R.R. Co. -m, -g, -lh r, 32 c, 140 h. A mu. Pres. & Supt. H. Larqule, Sec. & Treas. P. Cougot. Office, cor. White & Laharpe sts. st Charles St. R.R. Co. 5m, 5-2% g, g, Dr, 60 c, 36 m. Pres. & Supt. Alden McLellan, Sec. Vincent Riviere.

366 m. Pres. & Supt. Alden McLellan, Sec. Vincent Riviere.
NEWPORT, KY.—Newport St. R.R. Co.
NEW YORK, N.Y.—Ninth Ave. R.R. Co. 8 m, 48% g, 60 hr, 45 c, 380 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. Herman, B. Wilson. Offi-cer, North Ave., cor. 59th. St.
Broadway & Seventh Ave. R.R. Co. 7 m, 4-8% g, 47-60 hr, 150 c, 1,350 h. Pres. James W. Foshay, Sec. & Treas. Thos. B., 'Kerr, Supt. Henry A. Newell.
Office 761, Soventh Ave.
Central Crosstown R.R. Co. 2% m, 4-8% g, 52 lb r, 42 c, 231 h. Pres. John B. Slawson, V. Pres. A. Cam-mack, Sec. M. J. Masson, Treas. John L. Maccaulay.
Office 365 Ave. A. Central Park North & East River R.R. Co. 14 m, 4-8% g, 60 lb r, 162 c, 1,225 h. Pres. J. H. Sorhiner, V. Fres. C. D. Wyman, Sec. H. Scribner, Treas. J. L. Valentine, Supt. M. W. 'A. Harris. Office, Tenth Ave., 53d. & 54th. St.
Christopher & Tenth St. R.R. Co. 5 m, 4-8 g, 45 lh r, 47 c, 290 h. Pres. Jacoh Sharp Treas. W. T. Hatch, Sec. & Supt. George W. Lynch. Office, 168 Christo-pher St. Dry Dock, East Broadway & Battery R.R. Co. 114

Sec. & Supt. George W. Lynch. Office, 168 Christopher St. Dry Dock, East Broadway & Battery R.R. Co. 113/ m, 4-8% g, 60 lh r, 187 c, 1,132 h. Pres. William White, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Suot. Fred F. White. Offices, 605 Grand SS. Elghth Ave. R.K. Co. 10 m, 4-8% g, 60 lb r, 112 c, 155 h. Pres. W. H. Hays, Sec. & Treas. James Affieck, Supt. H. B. Wilson. Office, Elght Ave., & 50th. St. Forty-Second Street & Grand Street Ferry R.R. Co. 54 m, 8-4 g, 64 lb r, 50c, 500 h. Pres. Chas. Curtis, Sec. & Treas. E. S. Allen, Supt. John M. Calhoun. Office, 653 W. 23d St. Harlem Bridge, Morrisania & Fordham Ry. 4% m, 4-8% g, 4-60 lb r, 65 c, 233 h. Pres. Henry Sprater, V. Pres. Richard M. Hoe, Sec. & Treas, Wm. Caid-well. Office, North Third Ave, near 170 St.

Houston, West Street & Pavonia Ferry R.R. Co. 5 m, $4-8\frac{1}{3}$ g, 60 lb r, 50 c, 400 b. Pres. Richard Kelly, Sec. & Treas. Daniel B. Hasbrook. Office, 415 E. 10 St.

Sec. a Treas. Daniel B. Hasbrook. Once, 415 E. Jerome Park R.R. 1 m, 4-3½ g, 50-56 lb r. Pres. Leonard M. Jerome, Sec. Frei A. Lovecraft, Treas. Tbeodore Moss. Office, cor. 5th. Ave. & 22d St. New York City St. Ry. Co. 10 m, [not In operation]. Pres. Loomis L. Wbite, Sec. W. L. McCorkle, Treas. Wm. L. Skidmore. New York & Harlem R.R. Co. 5½ m, 4-8½ g, 56-75 lb r, 144 c. 1,408 li. Pres W. H. Vanderbilt, V. Pres, & Sec. Cornelius Vanderbilt, Treas. Ed. V. W. Rossiter, Sup t. Alfred Skitt, Pur. Agt. Chas. Reed. Sixth Ave. R.R. Co. 42 m, 4-8½ g, 60 lb r, 127 c, South Ferry Ry. Co. 32 m, 48½ g, 60 lb r, 12 c, 41 h. P.es. Hen ry Hart, Sec. Wm. N. Cohen, Treas. Albert J. Ellas, Supt. Chas H. Meeks. Office 20 Whilehall'st.

Whitehall St.
The second Ave. R.R. Co. 13 m, 4 8½ g, 60 lb r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, See. & Treas. J. B. Underhill. Office Second Ave. cor.
96th St.
The Third Ave. R.R. Co. 13½ n, 4 8½ g, 60 % 74 bl r, 318 c, 2150 b. (3½ m of cable road on 10th ave.) Pres. Lewis Lyon, 739 Madison ave., V. Pres. Henry Hart, 110 Tribune Building, Sec. Alfred Lazarus, 436 W. 61st st., Treas. John Beaver, 211 E. 112th st., Supt. John H. Robeitson, 307 E. 65th st.
Twentr-third St. R.R. Co. 7 n, 4-8½ g, 54 lh r, 102 c, 692 h. Pres. Jacob Sbarp, Sec. Thos. H. McLean, Treas. Lewis Law May, Act-Supt. George Ferry. Office 621 West 23d St.

NAGGRAFALLS, N. Y.—Niagara Falls & Suspension Bridge Ry. Co. 2% m, 4-8% g, 38-42 lb r, 8
c, 36 h. Pres. Benj. Flagler, V. Pres. Alva Chich, Sec.
W. J. Mackay, Treas. A. Schoelkopt.
NORFOLK, VA.—Nortolk & City R.R. Co. 2% m
Seg. 44 lb r, 18 c, 65 h. Pres. John B. Whitehe ad
Treas. H. C. Whitehead, Supt. E. W. Savage.

NORTHANPTON, MASS.—Northampton St. Ry. Co. 3½ m, 4-8½ g, 32 lb r, 7 c, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark. Clar

Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark. NORWALK, CONN.-Norwalk Horse R.R. Co. 2m, 410 g, --- Ib r, 7 c, 20 h. Pres. James W. Hyatt. NORWICH, CONN.--Norwich Horse R.R. Co. OAKLAND, CAL.--Alameda, Oakland & Pled-mont R.R. Broadway & Pledmont St. R.R. Co. Fourteenth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, --berkley Villa R.R. Broadway & Pledmont St. R.R. Co. Fourteenth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, --Nerse, & Supt. Waiter Blair, Sec. P. J. Van Loben. Oakland R.R. Co. GOBEN CITY, UTAH.-Ogden City Ry. Co. 3 m, 48% g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtleff, Ogden City, V. P. & Supt. O. P. Arnold, Salt Lake City, Sec. & Treas. H. S. Young, Ogden City. OLEAN, N.Y.-Olean St. Ry. Co. 11-10 m, 3-6 g, Bo lb r, 3 c, Sh. Pres. M. B. Fobes, Sec. & Treas. M. W. Barse.

OJAHA, NEB.—Omaha Horse Ry. Co. 15 m, 4-8½ g, 35 lb r, 40 c, 300 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W. A Smith Α.

A. Smith.
A. Smith.
ONEIDA VILLAGE, N. Y.—Oneida St. Ry. —
m,—g,—lb r,—c,—h. Pres. Jerome Heacock.
OSHKOSII, WIS.—Oshkosh St. R R. Co. 3½ m,
48% g, 77 lb r, 9 c, 24 h. Pres. Tom Wall, V. Pres.
F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L.
Thompson, r. Tho

Thompson. OSWEGO, N.Y.—OSWEGO St. Ry. Co. 2 m, 4-834 g, 451b r, 3 c, — h. Pres. Jas. F. Johnson, V. Pres. R. J. Ollphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor. [Not in operation

Post, Gén. Man. James O'Connor. [Not in operation yet.]
OTTAWA, ONT.—Ottawa City Passenger Ry.Co.
3 m, 4-8½ g, 34 lb r, 1 c, 40 b. Pres. Thomas C. Keef-er, V. Fres. R. Blackburn, Sec. James D. Traser.
OTTUMWA, 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, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick.
Mineral Springs St. Ry. Co. 1 m, 1 c.
PADUCAHI, KY.—Park R.R. Co.
PARIS, TEX.—Paris St. Ry. Co.
PARESON, N. J.—Paterson & Passale R.R. Co.
7 m, 4-10 g, 33 lb r, 16 c, 24 h. Pres. John N. Ter-hune, Treas. John L Brown, Sec. F. S. Brown, Man.
& Pur. Agt. Ambrose T. King, Supt. M. O. Rourke. Paterson City R.R. Co. 6½ m, 4-8½ g, 35 lb r, 12 c, 1 h. Pres. Garrett Planten, Treas. Helmas Romaine, Sec. Albert A. wilcox.
PENSACOLA, FLA.—Pensacola St. Ry. Co.
PEORIA, ILL.—Central City Horse Ry. Co. 4½ m, 4-8½ g, 40 lb r, 60 c, 135 h. Pres. H. R. Woodward, dec. M. Pheffer, Treas. Ellot Callender, Supt. John Strong.

Strong. Fort Clark Horse Ry. Co.-m,-g,-lb r,-c, Pre: J. H. Hall.

Pret. J. H. Hall. Peorla Horse Ry. Co. 7% m, 4-8% g, 40 lb r, 63 c, 140 h. Pres. H. Woodward, Sec. M. Pielffer, Treas. H. N. Wheeler, Supt. John Strong. **PETERSBURGH, VA.**—Petersburgh St. Ry. Co. 3% m, 4-8% g, 42 lb r, 9 c, 44 h. George Beadle, Pro-neteror

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PHILADELPHIA, PA.-Citizens Pass. Ry. Co. 10% m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John Mc-Carthy, Sec. & Treas. John J. Adams, Supt. Sam'l Ciline Cline.

Catady, Sec. & Treas. Joint J. Adams, Supt. Sam'r Cline.
Frankford & Southwark Phila. City Pass. R.R. Co. 18 1-10 m, 5-2 g, 47 lb r, 91 c, 8 dummy c, 580 h. Pres. Henry Gelger, Sec. & Treas. Geo. L. Gaudy, Supt. W. H. Janney.
Hestonville, Mantua & Fairmount Pass. R.R. Co. 20 m, 5-2 g, 42 lb r, 50 c, 480 h. Pres. Charles F. Laffer-ty, Sec. & Treas. W. C. Foster. Lehigh Ave, Pass. Ry. Co. Pres. John Lamon, Sec. Chas. A. Porter, Treas. John L. Hill. (Track nothaid.) Lombard & South Sts. Pass. Ry. Co. — m, 5-2g, 43 b. r, 51 c, 276 h. Pres. John B. Parsons, Sec. & Treas. Francis Hazelburst, Supt. Jno. M. Gaughen. People's Pass. Ry. Co. 44 m, 5-2g, 47 lb r, 125 c, 1,080 b. Pres. C. J. Harrab, V. Pres. C. J. Harrah, J. R., Sec. & Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiller. Philadelphia City Pass. Ry. Co. 7 m, 5-2% g, 47 lb

r, -c, -h. Pres, Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. Philadelphia Traction Co. 109 m, 5-2% g, 45-78 lb r, 555 c, 3,160 b. Pres. W. H. Kemble, V. Pres. P. A. B. Widener & W. L. Elkins, Scc. & Treas. D. W. Dick-hean

Inson. Philadelphia & Gray's Ferry Pass. R.R. Co. 10 1-3 m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-

ett. Ridge Avenuc Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 55 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lam-bert, Sec. & Treas. Wm. S. Elight, Supt. William Incles

Ridgo H. Pres. E. B. Edwards, V. Pres. John Lambert, Sec. & Treas. Wm. S. Elight, Supt. William Ingles.
Socond & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669b.
Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669b.
Pres. Alexander M. Fox, Treas. William r. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens.
Seventeenth & Nineteenth sts. Pass. Ry. Co. 7% m.
Pres. Alexander M. Fox, Treas. William r. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens.
Seventeenth & Nineteenth sts. Pass. Ry. Co. 7% m.
Pres. Alexander M. Fox, Treas. William r. Miller, Sec. Charles John B. Peddile. (Leased to Philada. Traction Co.)
Tbitreenth & Filteenth Sts. Pass. Ry. Co. 14 m, 5-2
g, 43 lb r. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas. Thos. S. Harris, Supt. Wn. B. Cooper.
Union Pass. Ry. Co. 70 m, 348 c, 1,724 h. Pres.
Wm. H. Kemhle, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty.
West Philadeiphia Pass. Ry. Co. 18½ m, 122 c, 646
h. Pres. Peter A. B. Widener, Sec. & Treas. D. W. Dickson. (Leased by the Phila. Traction Co.)
PHILLIPSBURGH, N. J. – Phillipsburgh Horse Car Ry. Co 25 m, 48 g, 35 lb r, 4 c, 13 h. Pres.
Daniel Runkle, Sec. & Treas. James W. Long.
PITTSBURGH, PA. – Central Pass R. M. Co. 3m, 16 c, 95 h. Pres. J F. Cluley, Sec. F. L. Stepnenson, Treas, E. R. Jones, Supt. R. G. He'ron.
Beaver Falls & New Brighton Ry. Co.
Cittzens' Pass, Ry. Co. 16½ m, 5-2½ g, 47 lb r, 40 c, 37 h. Pres. Jone. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner.
Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, 5-2½ g, 46-50 h. r. 20 c, 154 h. Pres. Wm. H. Creery, Treas. James Boyle, Supt. Wm. J. Crozier, Allegheny City.
People's Park Pass, Ry. Co. 2 m, 5-2½ g, -h br, 40 c, 40 c,

Areas. James Boyle, Supt. Wm. J. Crozier, Alegheny City.
People's Park Pass. Ry. Co. 2 n, 5-2½ g, -1b r, 10 c, 75 h. Pres. Wm. McCreery, Treas. James Boyle, Supt. Wm. J. Crozier, Allegheny City.
Pittsburgh, Allegheny & Manchester Pass. Ry. Co. 5 m. 5-2½ g, 46 hb r, 40 c, 275 h. Pres. Chas. Atwell, Sec. & Treas. Chas. Sethert, Supt. James C. Cotton. Manager J. P. Speer.
Pittsburgh, Okland & East Liberty Pass. Ry. Co. 11 m, 5-4½ g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T. Jordan, Sec. John G. Traggardth, Treas. D. W. C. Bidwell, Supt. H. M. Cherry.
Pittsburgh Union Pass. R.R. Co. 5 m, 5-2½ g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas. Chas. Seibert, Cash. Samle C.
Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 240 m. 5

Cotton, Sec. & Treas. Chas. Seibert, Cash. Saml. C. Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 3½ m, 5-2½ g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec.
D. F. Agnew, Treas. John G. Holmes.
Pittsburgh & West End Pass. Ry. Co. 3½ m, 5-2 g, 35 lb r, 13 c, 75 h. Pres. John C. Reilly, Sec. & Treas.
Thomas S. Bigelow, Supt. William J. Burns.
Pittsburgh & Wikinsburg St. Ry. Co.
Second Avenue Pass. Ry. Co.
South Side Pass. R.R. Co. 2½ m, 5-2½ g, 45 lh r, 12 c, 80 h. Pres. John C. Reilly, Sec. & Treas.
Transverse Pass. Ry. Co.
South Side Pass. R.R. Co. 2½ m, 5-2½ g, 45 lh r, 12 c, 80 h. Pres. J. Erickell, Sec. & Treas. W. Al-lace, Supt. W. M. Rosborough.
Transverse Pass. Ry. Co. 6½ m, 5-2 g, 52 lb r, 39 c, 243 h. Pres. C. L. Magee, V. Pres. C. F. Klopfer, Sec.
& Treas. Wm. R. Ford, Supt. Miller Elliot.
PITTSTON, PA.-Pittston jSt. R.R. Co. 1½ m, 3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris, Sec. William Allen.
PORT HURON, MICH.—Port Huron St. Ry. Co.
6½ m, 4-8½ g, 7 c, 22 h. Pres. Jno. P. Sanborn, V. Fres. Frank A. Beard, Sec. Treas. & Man. J. R. Was-tell.
PORTLAND, ME.—Ocean St. R.R. Co.

PTES. FTANK A. BEARD, SEC. TREAS. & MAN. J. R. WAS-tell.
PORTLAND, ME. -Ocean St. R.R. Co.
PORTLAND, ME. -Ocean St. R.R. Co.
PORTLAND, Co. 7½ m, 4-8½ g, 30-33-45 lb r, 34 c, 154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A.
Newman, Supt. Geo. W. Soule.
PORTLAND, ORE. -Portland St. Ry. Co. 1½ m 3-6 g, 42 lb r, 9 c, 35 h. Pres. D. P. Thompson, Sec. & Supt. C. K. Harhaugh.
Multhomah St. Ry. Co. 2½ m, 3-6 g, 30 lb r, 19 c, 65 h. Pres. A. N. King, Sec. E. A. King.
Transcontinental St. R. R. Co. 3 m. double, 3-6 g, 15 c, 63 h. D. W. Wakefield Sec., Tyler Woodward, Supt.
PORTSMOUTH, O. -Portsmouth St. R. R. Co. 3m, 3-6 g, 18 lb r, 4 c, 10 h. Pres. James Skelton, Treas. Sec. & Supt. Enas Reed.
PORTSVILLE, PA. -People's Ry. Co. 9½ m, 16 c, 56 h.

16 c, 56 h. POUGHIKEEPSIE, N. Y.--Clty R.R. of Pough-keepsle. 3 m, 4.8½ g, 35 lb r, 11 c, 38 h. Pres. Aaron Innis, V. Pres. G. B. Adriance, Sec. A. B. Smith, Treas. Hudson Taylor, Supt. C. M. Davls. Office 491

Main St.
PROVIDENCE, R. I.—Union R.R. Co. 50 m, 4
St. g, 24-54 lb r, 240 c, 1,200 h. Prcs. Jesse Metcalf,
V. Pres. & Gen. Man. D. F. Longstreet, Sec. and
Treas, C. A. Babcock, And. B. A. Jackson.
QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-837
g, 45 lb r, 9 c, 40 h. Pres. Chas. St. Michel, Quebec,
V. Pres. G. Renfrew, Quebec, Sec., Treas. & Supt.
Samuel Moore, Book-keeper, Francis Boomer.
Quebec R. R. Co.
St. John St. R.R.

Quebec R.R. Co. St. John St. R.R. QUINCY, ILL.—Quincy Horse Ry. & Carrying o. 6 m, 5 g, 71 h r, 21 c, 118 mu. Pres. Lorenzo Bull, ec. C. H. Bull, Supt. E. K. Stone. RACINE, WIS.—Belle City St. Ry. Co.—m—g.— pr,—c—h.Pres. — Sec. —— Treas. Chas. Hatha-by fb

WAY,
READING, P.A.,—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. Dourlass, Sec. & Treas. II. A. Muhlenberg, Supt. J. A. Riggs
Perkolmen Ave. Pass. Co. 21-5 m, 5-2½ g, 45 lh r,
14 c, 36 h. Pres, Chas. Brenelser, Sec. & Treas. Isaac
Illester, Supt. John B. Houp.
RED OAK, IA.,—Red Oak St. R.R. Co. 1½ m,
4-2½ g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V.
Pres, Geo, West, Sec. F. M. Byriket, Treas. & Supt.
F. O. Judkins.

RICHMOND, IND,-Richmond City Ry. Co. 3 m,

3 g, 25 fb r, 9 c, 20 h. Pres. J. Y. Miller, V. Pres. Joseph Ratliff, Treas. H. L. Miller, Supt. F. M. Fran-

53

800. RICHMOND, ILL.—Richmond St. R.R. Co. RICHMOND, VA.—Richmond City Ry. Co. 7 m, 8% g, 60-40 lb r, 49 c, 180 h. Pres. J. H. Schoolcraft, 9c & Trees. F. D. Mellen, Man. C. M. Baeton, Supt. barles Sleders

Sec. a Tress. F. D. Menel, Man. C. M. Bacton, Supt.
ROCHESTER, N. Y.-Kochester City & Brighton R.R. Co. 22 in, 48% g, 45 lb r, 120 c, 500 h. Pres.
Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodworth, Supt. Thomas J. Brower.
Citizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas. J. E. Picricont, Supt. S. A. Green.
ROCKFORD, H.L. -Rockford St. Ry. Co. 6 2-5 m, 45% g, 30 lb r, 13 c, 52 h, 16 m. Pres. Antbony Halnes, V. Pres, L. Rbodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Halnes.
ROCK ISLAND, ILL. -Rock Island & Milan St. Ry. Co. 7 m, 4-8% g, 20-30-42 lb r, 10 c, 7 h. Pres. & Supt. Bally Davenport, Sec. E. H. Gayer, Treas. John Preety.

RONDOUT, N. Y.—Kingston City R.R. Co. 24-5 m, 4.8% g, 40 lb r, 10 c, 40 h. Pres. James G. Linds-tey, V. Pres. S. 1). Coykendoll, Sec. & Treas. John C. Romeyee, Supt. Wm. H. DeGarmo.

SACRAMENTO, CAL.—Sacramento Clty St.R.R.
 Co.
 SAGINAW, MICH.—Saginaw St. R. R. Co. 2½
 m, 4-8½ g, 42 lb r, 10 c, 50 h. Pres. David H. Jerome,
 V. Pres. Geo. F. Williams, Sec. & Treas. Geo. L. Burrows, Supt. Fred G. Benjamine.

Fows, Supt. Fred G. Benjamme.
SALEM, MASS.—Salem & Danvers St. Ry. Co.
6 m, 4-8½ g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Russell, Sec. G. A. Vickery, Treas. Geo. W. Williams,
Supt. W. B. Furguraon, Asst. Supt. David N. Cook.
Naumkeag St. Ry, Co. — m. 4-8½ g, 30-35-45 lb r, 50
c, 140 h. Pres. Chas. Odell, Clerk Joseph F. Hickey,
Treas. Henry Wheatland, Supt. Williard B. Ferguson.
Control Mathematical Control Contr

SALT LAKE CITY, UTAH.—Salt Lake City R.R Co. 13 m, 4-5% g, 20 lb r, 20 c, 115 mu. Pres. John Taylor, Sec. David McKenzie, Treas. James Jack, Supt. orson P. Arnold.

Antonió V. Pres. F. W. Pickard, N. Y. City, Treas. I. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb. Prospect HII St. Ry. Co. **SANDUSKY, O.**—Sandusky St. Ry. Co. 2 m, — g. — Ib r, — c, — h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude. **SAN FRANCISCO, CAL.**—California St. R.R. Co. Central R. R. Co. 6 m, 4-8 g, 45 lb r, 31 c, 290 h. Pres. Chas. Main, V. Pres. Jos. Roseberg, Treas. A. J. Gunnison, Sec. C. G. LeBreten, Supt. J. F. Clark. Clay St. Hill R.R. Co. 1 m, 3-6 g, 301b r, 11 c, 12 duminy cars. Pres. Joseph Britton, V. Pres. James Mofit, Treas. Henry L. Davis, Sec. Chas. P. Camp-bell, Supt. Joseph Britton, V. Pres. James Mofit, Treas. Henry L. Davis, Sec. Chas. P. Camp-bell, Supt. Joseph Britton, Clay St. Park & Ocean R.R. Co. Market St. Cable Ry. Co. 10 9-10 m, 4-8½ lb r, 137 c, 2 motors. 73 h. Pres. Leland Stanford, V. Pres. Chas. F. Crocker, Treas. N. T. Smitb, Sec. J. L. Willcutt North Beach & Mission R.R. Co. 8½ m, 5 g, 46 c, 400 h. Pres. Jos. Rosenberg, Sec. H. W. Hathorne, Treas, Carl Ahfel, Supt. M. Skelly. Omnibus R.R. & Cable Co. 8½ m, 5 g, 35-45 lb r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Ruegg, Supt. M. M. Martin. Portrero & Bay Vlew R.R. Co. 1½ m, 5 g, 35 lb r, 20 c, 64 h. Pres. Leland Stanford, V. Pres. Chas. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt. Sutter St. R.R. Co. 5½ m, 4-11 g, 35-45 lb r, 30 c, 125 h. Pres. R. P. Morrow, Sec. A. K. Stevens, Treas. M. Schmitt, Supt. James McCord. Telegraph Hill St. Ry. Co. 1,707 ft, 4-11 g, 36 lb r, 3 c, — h. Pres. Gustav Sutro, V. Pres. E. O. Dem-leke, Sec. & Treas. C. J. Werner. The City R.R. Co. 5½ m, 5g, 48 lb r, 73 c, 285 h. Pres. R. B. Woodward, V. Pres. Geo. E. Raum, Sec. M. E. Wills, Treas. J. H. Goodman, Supt. William Woodward. SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co.

SAN JOSE, CAL.-San Jose & Santa Clara R.R.

Co. First St. & San Pedro St. Depot R.R. Co. Market St. & Willow Glen R.R. Co. North Side R.R. Co. People's R.R. Co. SANTA BARBARA, CAL.—Santa Barbara St. R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPhail. SAUGATUCK, CONN.—Westport & Saugatuck Horse R

SAUGATUCK, CONN.-Westport & Saugatuck Horse R.R.
SAVANAH, GA.-City & Suburban Ry. Co. 18½ m, 5g, 16-30 lb r, 49 c, 110 h, 3 engines. Pres. J. H. Johnsou, Asst. J. W. Alley, Treas. E. Schmidt. Coast Line R.R. Co. 7 m. 5g, 30 lb r, 17 c, 37 h. Pres. Geo. Parsons, New York, Sec. Treas. & Gen. Man. R. E. Cobh, Savannah.
SAYRE, PA.-Sayre St. Ry. Co. Pres. Howard Elmer (organization not completed).
SCR ANTON, PA.-People's St. Ry. Co. 9½ m, 4-8½ g, 20 lb r, 19 c, 70 h. Pres. Wun. Matthews, sec. & Treas. J. C. Platt.
SEARCY, ARK.-Searcy & West Point R.R. Co, 8 m, 48½ g, 20 lb r, 7 c, 6 mu. Pres. A. W. Yarnell. Sec. W. II. Lightle, Treas. Jasper Hicks.
SEATTLE, W. T.-Seattle St. Ry. Co. 3½ m, 4-8½ g, 35 lb r, 5 c, 20 h. Pres. F. H. Osgood Sec. Geo. Kinnear.

Geo. Kinnear. SEDALIA, MO.—Sedalia St. Ry. Co. 25 m, 4-10 g, 54 lb r 6 c 31 h. Pres. Joseph D. Slcher, V. Pres. Louis Deutsch. Treas, F. H. Guenther, Sec. & Supt. Chas. S. Conrad. SEDALA A.—Selma St. R. P. 25 m, 18 lb r. 5

Chas, S. Conrad.
SELMA, ALA.—Selma St. R.R. 2½ m, 18 lb r, 5
C. Sh. Pres, E. Gilman, Sec. & Treas, J. H. Hollis,
Supt. W. Bohlia.
SENECA FAILIS, N. Y.—Seneca Fails St. RJ. Co.
SHERMAN, TEX.—Shermau City R.R. Co.
SHREVEPORT, LA.—Shrveport City R.R. Co.
1½ m, 44 g, 46 lb r, 6 c. 14 h. Pres. Peter Youree.
SHAVER CLIFF, COL.—Silver Cliff St. R.R. Co.

SIOUN CITY, IA.—Sloux City St. Ry. Co. 5 nl, $-g_{,} - r, 6 c, 8 h, 4 mu.$ Pres. Fred. T. Evans, V. Pres, D. A. Magee, Sec, & Treas, F. T. Evans,

SOUTH CHICAGO, ILL.—Chlcago Horse & Dummy R.R. 5 m, 4-8½ g, — 1b r, — c, — h. Pres. D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bilss. [Not In operation.] SOUTH PUEBLO, COL.—Pueblo St. R.R. Co. SPRINGFIELD, ILL.—Citizens' St. R.R. Co. 9½ m, 3 6 g, 90-36 lb r, 23 c, 100 h. Pres. J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman. Springfield City Ry. Co. SPRINGFIELD, MASS.—Springfield St. Ry. Co. 4524 g, 33-40 lb r, 93 c, 115 h. Pres. John Olmstead, Auditor L. E. Ladd, Clerk Gldeon Wells, Treas. A. E. Smith, Supt. F. E. King. SPRINGFIELD, MO.—The People's Ry. Co. of Springfield, wo. 3½ m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Sepringfield, wo. 3½ m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Springfield, R.R. Co. 2 m, 30 40 lb r, 4-8½ g, 7 c, 19 h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. Arreas. E. F. Hobart, Supt. J. A. Stoughton, No. Springfield. SPRINGFIELD, O.—Clitzens' St. R.R. Co. 10m, 4 g, 29 c, 185 h. Pres. D. W. Strond V. Pres. A. S.

SPRINGFIELD, O.—Cltizens' St. R.R. Co. 10m, 4 g, 29 c. 135 h. Pres. D. W. Stroud, V. Pres. A. S. Bushnell, Treas. Hose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hanford.

STATEN ISLAND, N. Y .- Staten Island Shore Rv. Co.

ST. CATHARINE'S, ONT.—St. Catharine's, Mer-rliton & Thorold St. Ry. Co. 5% m, 4.8% g, 30 lb r, 7 c, 30 h. Pres. E. A. Smythe, Sec. S. R. Smythe, Supt. E. A. Smythe.

ST. JOSEPH, MO.-Cltizens' St. R.R. Co. 3 m, 4-8% g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F. Mer lam

Fog. 5. 20 Ph. Fe, 50 Har Herkpatrick, Supt. John F. Mer Iam.
Frederick Ave. Ry. Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thomas E. Tootle, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas. Thomas W. Evins, Supt. S. Rowen.
St. Joseph & Lake St. R.K. Co. Union Ry. Co.
ST. LOUIS, MO. Baden & St. Louis R.R. Co. 3% m, 4-log, -lb r, 7 c, 21 h. Pres. George S. Case, V. Pres. William Z. Coleman, Supt. J. H. Archer. Benton & Bellefontaine Ry. Co. 7% m. 4 log, 45 lb r, 37 c, 29 th. Pres. V. Pres. Chas. Parsons. Sec. Robert McCulloch. Cass Avenue & Fair Grounds Ry. Co. 8 m, 4-lo g, 38 lb r, 37 c, 29 th. Pres. V. R. Allen V. Pres. Geo. W. Allen, Sec., Treas. & Supt. G. G. Gibson, Cashier O. H. Williams.
Citizen's Ry. Co. -m, -g, -lb r, -c, -h. Pres. Julius S. Walsh. Jefferson Ave. Ry. Co.
Lindell Ry. Co. 13½ m, -g, -r, 65 c, 475 h. Pres. John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Lleweilyn. Missouri R.R. Co. Northern Central

P. C. Maffit, Mound City R.R. Co.
Northern Central, Springfield Ry, Co. 2 m, 4.8% g, 25-40 lb r, 7 c, 40
h. Pres, C. W. Rogers, St. Louis, Sec. & Treas B. F.
Hobart, Springfield, Supt. J. A. Stoughton, No. Springfield, Asst. Supt. Frank B. Smith, No. Spring-field fleId.

Springheid, Asst. Supt. Frank B. Smith, No. Spring-field.
Southern Ry. Co. 7 4-5 m, 4-10 g, 35-52 lb r, 49 c, 250 h. 4res. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson.
St. Louis R.R. Co. and the People's R.R. One management. 11 m. 4-10 g, 38-44 lb r, 58 c, 375 h. Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt. Patrick Shea.
Tower Grove & Lafette R.R. Union Depot R.R. Co. -m, -g, -lb r, -c, -h. Pres. John Sculin.
Union B.R. Co.
STONEHAM, MASS.—Stoneham St. R.R. Co. 2% m. 48% g, 33 lb r, 10 c, 28 h. Pres. A. V. Lynde, Neirose, Treas. & Clerk Lyman Dyke, Supt. Jobn HIII

Hill.
ST. PAUL, MINN.-St. Paul City Ry. Co. 25 m, 4.8% g, 80 c, 150 h, 294 mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. J. H. Randall, Treas. Clint-on Morrison, Supt. A. L. Scott.
STILLWATER, N. Y.-Stillwater & Mechanics ville St. Hy. Co. 4% m, 4-8% g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H. O. Balley, Mechanicsville, Treas. E. N. Smith.
STRULDEBEUCCH PA. Strondsburgh Paccare

Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H. O. Balley, Mechanlosville, Treas. E. N. Smith.
STROUDSBURGH, PA.—Stroudsburgh Passenger R.R. Co. 14.5 m, 4 Sy g, 28 30 lb r, 3 c, 9 h. Pres. & Treas. J. Lantz, Scc. Jacob Houser.
SYRACUSE, N. Y.—Syracuse & Onondaga R.R. Co. 23 5 m, 4-8 g, 28 47 lb r, 9 c, 18 h. Pres. Peter Burns. Sec. & Treas. Lyman C. Smith, Supt. Henry Thompson.
Central City Ry. Co. 24 m, 4-8% g, 40 lb r, 12 c, 37 h. Pres. George N. Kennedy, V. Pres. Daniel Pratt, Sec. & Treas. James Barnes, Supt. George Crampton.
Central City Ry. Co. 24 m, 4-8% g, 35-56 lb r, 8 c, 30 h. Pres. Paters Barnes, Supt. George Crampton Sci. & Treas. James Barnes, Supt. George Crampton, C. Soh. Pres. P. B. Brayton, Sec. & Treas. O. C. Potter, Supt. Hugh Purnell. Office W. Wasblagton St. Genesce & Water St. R.N. Co. and Fourth Ward R.R. Co. 4 m, 4-8% g, 135-56 lb r, 8 c, 16 35 lb 1, 2 c, 4 h. 1 dummy. Pres. Matblas Britton, Sec. T. W. Meacham, Treas. J. H. Anderson.
Syracuse & Geddes Ry. Co. 2 m, 4-8% g, 35-45 lb r, 10 c, 32 h. Pres. Robt, 2 c, 4 h. 1 dummy. Pres. Matblas Britton, Sec. T. W. Meacham, Treas. J. H. Anderson, Syracuse & Geddes Ry. Co. 2 m, 4-8% g, 35-45 lb r, 9 c, 32 h. Pres. Robt, 2 c, 4 h. 1 dummy. Pres. Matsblas Britton, Sept. W. M. J. Hart.
TAUNTON, MASS.—Taunton St. Ry. Co. 4½ m, 4-8% g, 12 db r, 16 c, 48 h. Pres. T. C. Buntin, 4-88 g, 12 db r, 16 c, 48 b. Pres. T. C. Buntin, V. Pres. Josephus Collett, Sec. John R. Hagen, Supt. John T. Shriver.

TEXARKANA, ARK .- Texarkana St. Ry. Co. **TOLEDO, OHIO.**—Toledo Consolidated St. Ry. Co. Co. 17 m, 4-8 g, 42 lbr, 37 c, 180 h. Pres. John E. Balley, Sec. A. E. Lang. Adams Street Ry. Co.

Adams Street Ry. Co. Metropolitan St. Ry. Co. 8% m, 3 g, 29 c, 88 h.

Pres. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Cen. Man. T. F. Shipherd, Supt. Jno. A. Wat-on.
Monroe Street R.R.
The Central Passenger R.R. Co. of Toledo, O. 8 m. 3 g, 27 lb r, 17 c, 70 h. Pres. F. E. Seagrave, V. Pres. & Treas. James Pazneer, Sec. Chas. F. Parkis, Supt. A. R. Seagrave. R.R. Co.
TOPEKA, KAN - Toneka Club Pa. Co. A strength of the second street R.R. Co.

TOPEKA, KAN.—Topeka City Rv. Co. 9 m, 4 g. 25 48 lb r, 25 c, 90 h. Pres. Joab Mulvane, V. Pres. D. W. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse

w. stormont, sec. & Treas. E. Wildes, Supt. Jesse Shaw. **TORONTO, CAN.**—Toronto St. Ry. Co. 18 m, 4-104 g, 30lb r, 136 c, 670 h. Pres. Frank Smith, Sec. Jarnes Green, Supt. John J. Franklin. **TRENTON, N. J.**—Trenton Horse R.R. Co. 1½ m.5 2 g, 43 47 lb r, 10 c, 31 h. Pres Gen. Lewis Perrine, Sec & Treas. Lewis Perrine, Jr, Supt.Thomas Sillorris. City Ry. Co. 3 m, 5-2 g, 45 lb r, 15 c, 69 h. Pres. Adam Extoir, V. Pres. W. H. Skinn, Sec. H. B. Howell, Treas. & Wang. Director Chas. J. Bramford. **TROY, N.Y.**—Cortland & Homer Horse R.R. Co. 4 m, 4-8½ g, 25 30 lb r, 2 c. —h. Pres. C. H. Garri-son, Troy, V. Pres. E. A. Filsh, Cortland, N.Y., Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Albla Street RY. Co. 3½ m, 4 g, 35-45 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Troy & Lansingburch R.R. Co. 20½ m, 4-8½ g, 47 lb r, 91 c, 466 h. Pres. Willam Kemp, V. Pres Charles Cleminshaw, Sec, & Treas. Joseph J. Hagen, supt. Leander C. Brown. 295 River St. **URBANA, ILL.**—Urbana R.R. Urbana & Chomalor, Sup. W. C. Shu, 46, 500 fb, 500 fb,

URBANA, ILL.-Urbana R.R. Urbana & Champaign St. Ry. Co. 2 m, 4-834 g, 33 Ib r, 4 c, 20h. Pres. Wm. Park, Sec. & Treas. Frank G. Jaques, Supt. W. Park.

UTICA, N.Y.—Utica, Clinton & Binghamton St. R.R. 7% m, 4-8% g, 43-56 lb r, 17 c, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt.

Roger Rock. Tbe Utlca & Mohawk R.R. Co. 2½ m, 4-8½ g, 25-40 Ib r, 9 c, 5 h. Pres. Chas. W. Hutchinson, V. Pres. Nathan X. Haynes, Sec. Geo. M. Weaver, Treas Joshua W. Church.

Oshua W, Church, N. J.-Newark, So. Orange, 'erry St. & Hamburg Place R.R. Co. VALEJO, CAL.-Valejo St. Ry. Co. VICKSBURG, MISS.-Vicksburg St. Ry. Co. VICKSBURG, MISS.-Vicksburg St. Ry. Co. Ferr

WACO, TEX.-Waco St. Ry. Co. 5 m, 4-8 g, 14 18 lb r, 9 c, 44 h. Pres, E Rotan, Sec. & Treas, W. R. Kellum, Supt. J. W. Sedbury. WALTHAM, MASS.-Waltham & Newton St. Ry. Co. 3½ m, 4-3½ g, 30 lb r, 6 c, 14 h. Pres, R. E. Robbins, Sec. & Treas, Henry Bond. WASHINGTON, D.C.-Canital, No. O. St. & So.

WASHINGTON, D.C.-Capital, No. O. St. & So. Washington R.R.

WASHINGTON, D.C.—Capital, No. O. St. & So. Washington R.R.
Anacostia & Potomac River Ry, Co. 3 m, 4-8 g, 37
Ibr, 9 c, 24 h. Pres. H. A. Griswold, Sec. Edward Temple, Treas. T. E. Smithson.
Columbia R. R. Co. of the District of Columbia, 2%
m. —g. —Ibr, 19 c, 56 h. Pres. H. A. Willard, Sec
& Treas. Wm. H Clayette, Supt Thos. E. Benson.
Metropolitan R.R. Co. 21% m, 4 S g, 38 lb r, 80 c, 400
h. Pres. George W. Pearson, V. Pres. A. A. Willson, scc. & Treas. William M. Morse, Supt. L. W. Emmart Washington & Ceorgetown R.R. Co. 10 m 4 8% g, 42 lb r, 167 c. 750 h. Pres. II. Hurt, Sec. & Treas. C. M. Koones, Gen. Supt. C. C. Saller.

WATERFORD, N. Y.—Waterford & Cohoes R.R. Co. 2 m, 4 8½ g, 451b r. Pres, Thos. Breslin, Sec. & Treas. C B. Ormsby. (Leased by the Troy & Lan-singburgh R R. Co.)

WEST HURON, CONN.-New Haven & West Haven R.R. Co. WESTPORT, CONN.-Westport & Saugatuck

Horse R.R.

WHEELING, W. VA.-Citizens Ry. Co. Wheeling & Eim Grove R.R. 7 m, 4-8% g, 30 lb r, 12 4 Baldwin Motors. Pres. J. D. DuBois, Sec. E. J.

WICHITA, KAN.-Wichlta City Ry. Co. 7% m, 11 c, 60 mu, 4 h. Pres. J. W. Ground, Sec. & Mangr. E. R. Powell.

WILKESBARRE, PA.-Wilkesbarre & Kingston Pass, R.R. Wilkesbarre & Ashley Passenger R.R. Co.

Coalville Passenger R.R. 2½ m, 4-8½ g, 20-34 lb r, 4 c. 10 h Pres. Chas. A. Miner, Sec. & Treas. George Loveland, Supt. Albert G. Orr.

WILLIAMSPORT, PA.-Williamsport St. R.R.

WILMINGTON, DEL.-Front & Union St. Pass-

enger Ry. Co. Wilmington City Ry. Co. 4½ m, 5-2½ g, 45 lb r, 20 c, 82 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett.

WINDSOR, CAN. -Sandwich & Windsor Passen-ger R.R. Co.

WINNIPEG, MANITOBA, CAN.—The Winnipeg St. Ry. Co. 5 m, 4 8½ g, 85 lb r, 13 c, 75 b. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Ceo. A. Young.

Supt. Ceo. A. Young.
WINONA, JHINN. – Winona City Ry. Co. 4 m, ?-6 (2, ?? lb r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.
WOBURN. MASS. – No. Woburn Horse R. R. 2% m, 48 g, 4c, 4 h. Pres. & Treas. John Carter, Sec. J G. Maculie, Supt. Dexter Carter.
WORCESTER, MASS. – Worcester St. Ry. Co 5% m, 4-3% g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas & Supt. Harry S. Searls, Worcester St. R.R. Co. ZANESVILLE, O. – Bellatre, Chillicothe & Canton.

Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend, Treas. T. B. Townsend.

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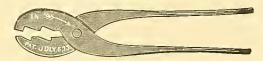
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the present time; and should recommend them to everyone who has to

get horses shod often

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[December, 1885.



THE STREET RAILWAY JOURNAL. DECEMBER, 1885.] "PAY HERE." JAY-EYE SEE Curry Comb. OUR NEW FARE BOX NO. 3. Best in the World. The following are some points of superiority in this box over others: Can't Scratch or Hurt the horse. Cleans off SIMPLICITY OF CONSTRUCTION, QUICKNESS AND CONVENIENCE OF CLEANING, SECURI-TY OF MONEY DRAWER, BEAUTY OF FINISH, and MUCH CHEAPED in DRIVE. mnd and sweat with We have just added to this box a very valuable improvement, viz, a small mirror placed back of first slide or rest, which presents to driver's view the back side of nere as well as front, when resting on first rest. He can by the pulckly detect any purfous or mutilated coin or ticket that may be split and put in box. It often happens in *dll Fare Bores*, to the annoyance of driver as e.e. ergers, when several fares are resting on first slide, one or more coins are itable to be beind at ticket, and the driver cannot see them, and quite often a passenger is "rung", "when his arrangement gives driver view of both sides of fare. ease and rapidity. Most Durable and Lightest Comb made. Give it a trial. Needed in all Car Stables. MUNCIE NOVELTY CO., Muncie, Ind. O. S. CHAMBERLAIN, MALTBY, CURTISS & CO., NO. 20 WARREN ST., New York, 55 DEARBORN ST., Chicago, Eastern, Southern & Export Agents. Gen. Western Agent. X FIVE CENTS N. J. Car Spring and Kubber Cor. WAYNE and BRUNSWICK STS.. JERSEY CITY, N. J., MANUFACTURERS OF CHANGE RUBBER CAR SPRINCS RECEPTACLE OF EVERY STYLE AND SHAPE, The only satisfactory ar-rangement in use for making change with the driver. CUSHIONS, BRAKE PADS, RUBBER MATTING Descriptive and illustrated circular on application. Box No. 3. and STEP PLATES, HOSE, DOOR STOPS, &c. Box No. 3. Get our prices before buying. Front or Passengers' Being one of the oldest manufacturers in the business, we have a MOST View. COMPLETE assortment of moulds. WALES MFG. CO., 76 & 78 E. Water St., Syracuse, N.Y. WRITE FOR PRICES. Gourdier's Steel, Rubber Cushioned THE BRYDEN HORSE SHOE FORGED BAR HORSE SHOE. Catasauqua, Lehigh County, Penn., For Street Railway Are making a plain, narrow-webbed shoe, with beveled surfaces for Horse Railroad work. It is "FORGED" from the very best A POSITIVE CURE FOR LAMENESS. Iron, and is tougher and harder than any shoe heretofore made, and will be sold to consumers at a small advance on the prices charged for ordinary mill shoes. They also make a Calked Shoe It saves Horseflesh. Its use Guarantees with a Square Toe, just the same as hand made, and the company Soundness. warrants them to wear as long as the very best hand work. Among others who are using this Shee, are the Third Avenue Railroad Co., New York. Eighth Avenue Railroad Co., New York. Twenty-third Street Railroad Co., New York. Christopher Street Railroad Co., New York. Brooklyn City and Newtown Railroad.

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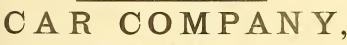
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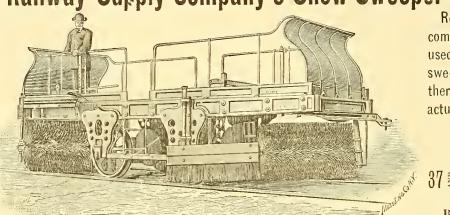
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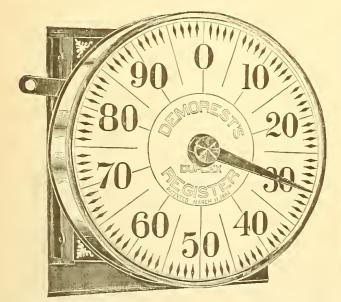
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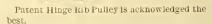
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DELAOREST, 15 East 14th Street, New York City.



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A FULL LINE OF CUT-TERS BUILT EXPRESSLY FOR STREET RAILWAY BARNS.

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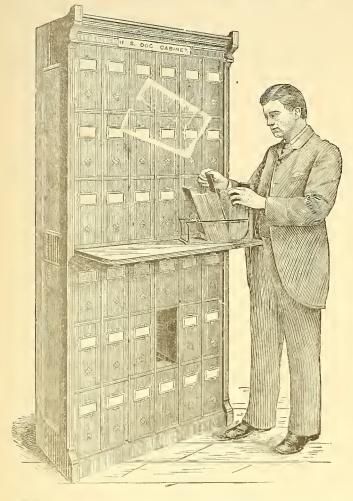
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THE STREET RAILWAY JOURNAL.

[December, 1885.

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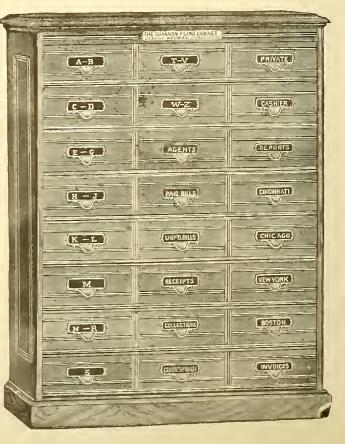
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We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

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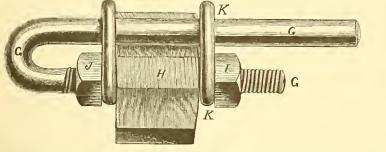
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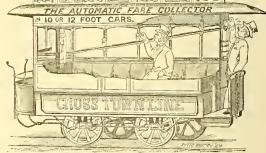
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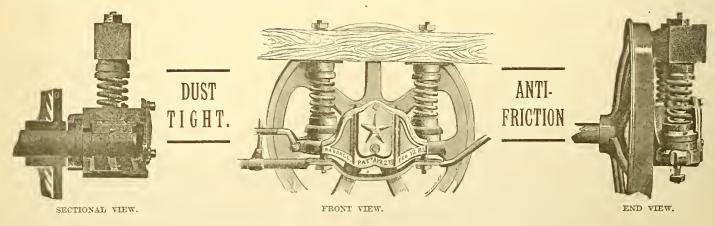




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Agents for ORIENTAL METAL for Street Car Journal Bearings.

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OF

HORSE-SHOEING.

The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the sole bars and frog of the horse's foot are never cut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

KEY-STONE OF THE ARCH.

The advantages of the Goodenough System are, first and foremost, SOUND HORSES; Secondly, CHEAP HORSE-SHOEING.

Horse railroads using the system in its entirety not only buy much less iron and pay for much less labor, but have also much more serviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides frogs and Boston finds cobble stones."

To those who desire to read further upon the subject we will send upon application free of cost our pamphlets entitled,

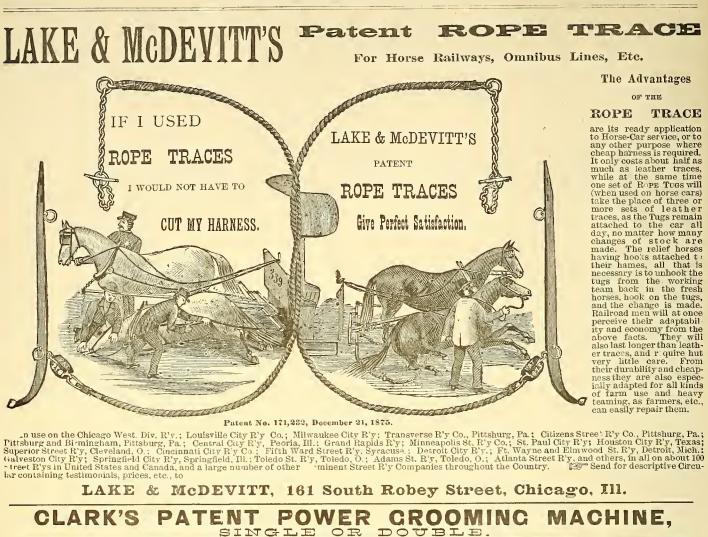
"HORSE-SHOEING," and "FACTS FOR HORSE-OWNERS."

THE GOODENOUGH COMPANY,

156 and 158 East Twenty-Fifth Street,



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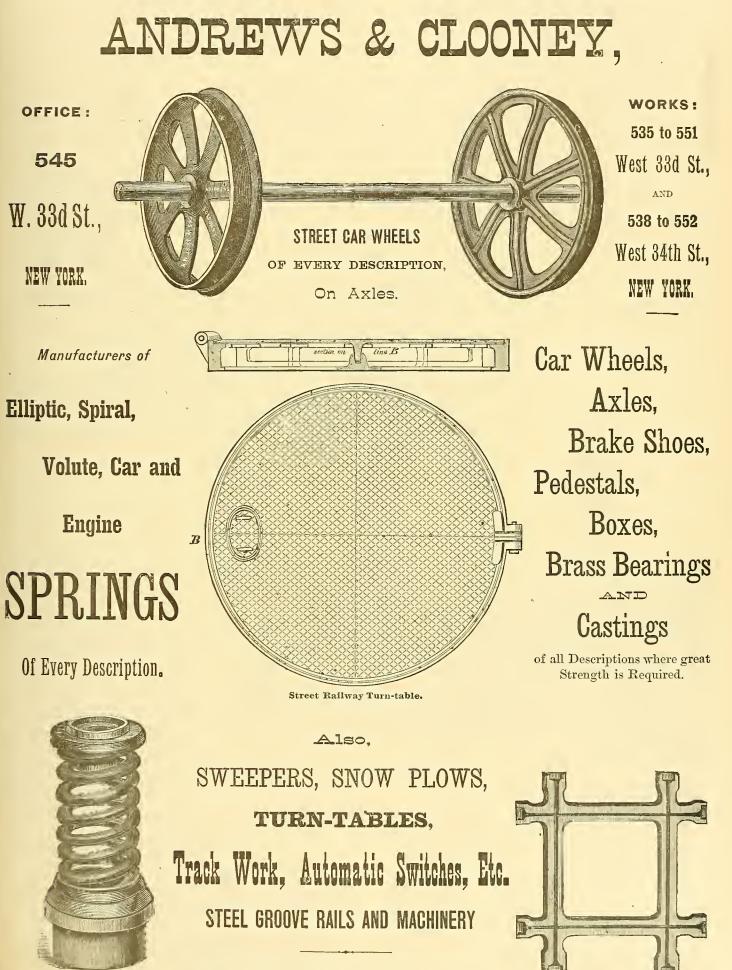
This machine for grooming may be driven by any known power, and can readily be placed for use in any stable or out-building. It can be operated by an ordinary groomsman; its work is perfect; it action simple and effective. Stock owners will readily realize the importance of the machine. The perfection and rapidity of its work, and the benefits derived by i suse, commend it to those interested in the care and nse of all classes of thoroughbred and work stock. The most vicious animal readily submits to its use. Mi while Grooming is found to be less expensive than hand grooming, saving in food and medicines, and materially increasing the value of the animal.

e of the animal. The Curry Comb and Hand Process Superseded! Economy of Labor! Perfection of Work! Inree Hundred Head of Stock Thoroughly Croomed with Each Machine every Ten Hours. Grooming Machine is in daily use in some of the largest Street Railway Companies' stables, and has always given perfect satisfaction. Among those using o City R'y Co., Chicago, ILI.; Detroit City R'y Co., Detroit, Mich.; Central City R'y, Peoria, ILI.; M. W. Dunham, Wayne, III; West Division Street Ry Co., Allegheny City, Pa.; Marshall, Field & Co., Chicago, ILI.; Lercy Payn, Chicago, III.; City R'y, Saginaw, Mich.; Pittsburg and Birmingham R'y Co., Pittsburg, Pa.; and a number of others who have given testimonials as to the perfect work; te machine. The Port vrices, circular and other information apply to I GI SOUTH ROBEY STREET, CHICAGO, ILL. This Grooming Machine is in a it are the City R'y Co., Chicago, I Chicago, III.; Lindell Street R'y C Saginaw City R'y, Saginaw, Mich. ing of the machine.

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Street Car Springs.

SEND FOR ILLUSTRATED CATALOGUE.

Street Railway Crossings

DECEMBER, 1885.

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These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over three thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. To secure the largest benefit they should be attached to every car in use.

No estimate can be made of their advantage in saving of horse flesh, hand labor, salt, the making of time in stormy weather

DETROIT

Since their introduction new and valuable improvements have been made in their construction, mode of attachment, and convenience of handling. They are finished in a thorough, workmanlike manner of the best material obtainable, the design being to manufacture the best and most efficient article in preference to other considerations. Method of sale and price considerably changed.

Reference is made to a few of the many roads using these Cleaners, with respective numbers of each, viz.:

> Patented April 9, 1872; May 8, 1877. Canadian Patent Dec. 19, 1872; Dec. 18, 1876. Reissued Aug. 27, 1878. Extended Dec. 14, 1877; Dec. 1, 1881; Dec. 12, 1882.

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(Single Pedestal.)

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Graduated Street Car Springs.

RUBBER CONE. Patented, April 15th, 1879.

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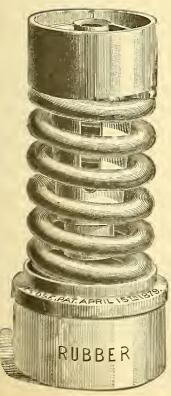
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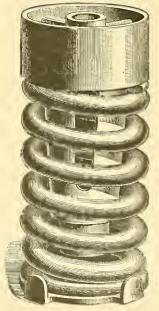
EMAREBI SC.N.S.

Patented April 15, 1879-August 5, 1884.

The unprecedented popularity of the

"VOSE GRADUATED RUBBER CONE SPRING"

for HORSE CARS has induced the inventor to bring this class of Springs as near perfection as possible, and after a series of experiments and tests now presents for favor what he claims to be the MOST PERFECT SPRING FOR HORSE CARS ever offered. It is exceptionally SOFT AND EASY with the EMPTY CAR or with the GREATEST LOAD. It is believed to be the MOST DURABLE, being constructed upon a principle that seems to insure that the Spring must ACTUALLY WEAR OUT. The very Finest Quality of Crucible Cast Steel will always be used in these Springs.





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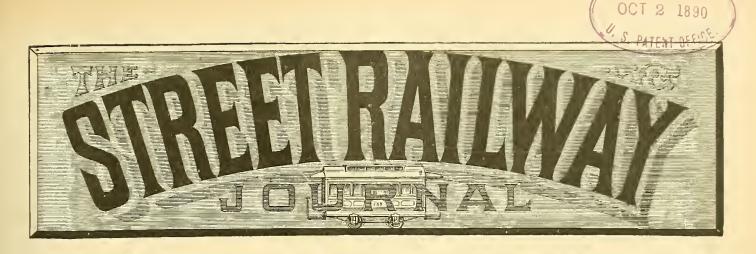
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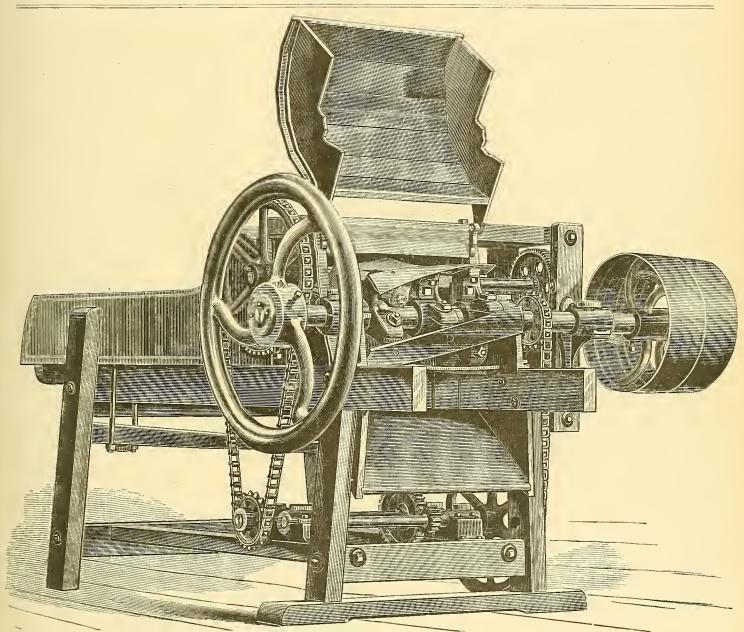
All Climates Suited.



VOL. II. {NEW YORK: 32 Liberty Street.}

JANUARY, 1886.

{ CHICAGO: {Lakeside Building.} NO. 3.



The Ross "Giant" and "Little Giant" Cutters.

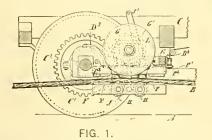
In street railway stables, where a large quantity of feed has to be prepared, the most perfect and satisfactory working appliances are a necessity. The Ross Giant and Little Giant Cutters* owing to their $\overline{\cdot E}$. W. Ross & Co., Springfield, O.

THE ROSS "GIANT" FEED CUTTER.

great strength and immense capacities are claimed to be particularly suited to these requirements. One of the leading features of these machines is the npward cnt, which has many advantages. It places the pressure and strain on the bottom instead of the top of the boxes, prevents jarring and pounding, and is a decided advantage in setting the knives and keeping thom sharp. The non-clogging, self-adjusting rollers, together with the extensible joint and round faced gears, give these machines, the manufacturers claim, great advantages over other machines. The rollers by the aid of this joint, &c., so adjust themselves that the hay will feed in large quantities on one end and small on the other end of rollers, which makes the machine feed continuously, without clog or choking. The machines are simple in construction, and require very little power. They can be run to full capacity by small gas engines. They are arranged to cut $\frac{1}{8}''$ long to 4'' long. The "Giant" machines will cut the layers of baled hay, as they come from the bale, saving the labor of shaking out, which is a large item. The main claims of the manufacturers for the machines are capacity, weight, strength, ease of running, and superiority of construction. The machines are built to stand crowding, without risks of breakage, all power machines having safety fly-wheels which can be adjusted so as to prevent breakage. Following are the sizes, weight, power required and capacity of the "Giants:"

size.	Weight.	Power required.	Capacity per hour.
		1 horse. 2 " 2 to 3 horses. 4 " 5 " eng. 6 " 8 " "	

These machines will cut from $\frac{1}{5}$ to 3" and can be arranged to cut longer. The 1" length is given because most stables use this length. The capacities are under rated and the amount of power given is claimed to be ample. The No. 17 cutter is used very extensively by street railway



eompauies, and also the 14a. Mr. James A. Lake, Superintendent of the Chicago West Division Railway, has fourteen of the 14a cutters and one or the 18a in use.

A New Cable Grip.

We recently examined at the works of W. H. H. Sisum, Brooklyn, N. Y., a working model of a uew cable grip for which letters patent were granted in February last. This grip has been thoroughly examined by some prominent engineers who speak favorably of it, and as it is likely to be adopted by some cable roads, we deem it of sufficient merit and importance for a description in our columns. In doing this we quote statements and explanations as made verbally to us by the inventor *in persona*.

The accompanying cuts will serve to elucidate the verbal descriptiou.

Fig. 1 is a longitudinal section of a portion of the car-truck, showing a side view of the mechanism of the grip.

Fig. 2 is a transverse partial section of the truck, showing the relative position of the grip mechanism with the wheels and axle.

Fig. 3 is a sectional view of a portion of the mechanism.

One of the peculiar features of the grip which seems to be entirely novel is that it transmits the power imparted by the moving cable direct to the axle of the car, rolling the axle, and not attempting to move the load by a direct pull. "This is done by two clutches keyed upon the axle of the car, between which is a gear with a long hub projecting out on each side ; upon this hub are two corresponding clutches so attached to the gear that they revolve withit, but are free to move eudwise in either direction, so as to engage with the fixed clutchesupon the axle-one pair of clutches driving in one direction, and the other in an opposite direction; when the clutches are central the axle is free to revolve in either direction, and the gear remains at rest.

"These clutches are operated from the platforms of the cars by small treadles, placed one upou each platform. Pressure upon either treadle locks the clutch in such way as to cause the ear when attached to the cable to move in the direction of the treadle pressed upon, and in the direction of the travel of the cable.

"The gear is driven by a pinion one-half the diameter of the gear; upon the side of this pinion are friction plates preferably of leather, clamped between iron discs; the discs are fastened to the shaft and revolve with it; the pinion is loose upon the shaft.

friction plates pressing upon the sides of the piuion cause it to revolve, at first slowly. As the car attains momentum the slip between the friction plates and the pinion grows less, and soon they are revolving together; this, however, but for one instant, for when the pinion is revolving with the shaft and friction plates, the car has reached the speed of the eable, the clutch is then automatically thrown out, and the gear ceases to act.

"The difference between the speed of the cable and the speed of the car, until the car has attained the speed of the cable, is taken up by the friction plates. The throwing out of the clutch is signaled to the brakeman upon the platform of the car by the striking of a small gong bell, and by the rising at his feet of the small treadle with which he locked the clutch. He then gives a slight turn to his brakestaff, locking the cable in the solid dies.

"The sheave pinion and gear are used to multiply the power taken from the cable and as the diameter of the sheave wheel is double the diameter of the pinion, and the gear wheel also double the diameter of the pinion, one pound of tractive force applied by the cable to the periphery of the sheave wheel yields four pounds upon the axle of the car, and this force is applied to roll the axle of the car.

"As a certain amount of tractive force is

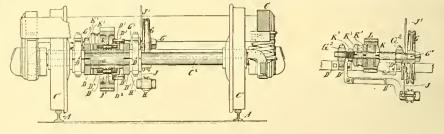


FIG. 2.

A lateral pressure upon the disc brings a friction upon the sides of the pinion, causing it to revolve. Upon the shaft is keyed a sheave wheel twice the diameter of the pinion. The revolution of this sheave wheel causes the shaft to revolve. This sheave wheel is driven by the cable, the cable is made to press npon this wheel by two rollers set in a frame which may be raised or lowered by means of a lever; this lever is operated from the platform of the car. When this lever is released the frame carrying the two rollers is drawn down by the weight of the cable, which then runs upou these rollers as upon idlers.

"On each side of the periphery of these rollers and upon each side of the periphery of the sheave wheel and attached to the frame which carries these idlers are solid steel dies with which to grasp the cable after the car has attained the speed of the cable.

"To start a car equipped with this grip, the brakeman presses his foot npon a small treadle upon the platform of the car. This locks the clutch, the lever actuating the frame carrying the idlers is lifted, bringing the cable in contact with the sheave wheel, the periphery of the sheave wheel immediately revolves at the speed of the cable; the FIG. 3.

required to move any given load, by the use of my grip but one-fourth of the traetive force is required to be taken from the cable, thus prolonging the life of both cable and grip and saving largely in fuel.

"With this grip the cable can be taken at either end of the Bridge, no matter how great the speed of the cable or of the car when it runs on the cable; the car can be stopped at any point on the Bridge, no matter how heavy the grade, and start and go on again without injury to either the grip or the cable.

"Having taken the cable with the grip, if the car is stopped the cable continues to be carried upon the rollers or idlers of the grip, and a turn of the brake staff lifts the eable into contact with the sheave wheel and starts the car. Should it ever become necessary to stop the car suddenly it may be done by throwing in the reverse clutch, when all the power derived from the moving cable will be applied to stop the car, stopping it in less than fifty feet."

THE STREET RAILWAY JOURNAL is the only paper in this country devoted to the street railway interests. Subscribe for it and know what is going on in the street railway world. Only \$1 a year.

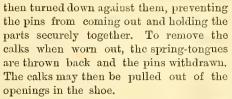
A Horse-Shoe With Movable Calks,

This invention* has had a thorough trial on several of the Philadelphia street railway lines, where it is said to have given very satisfactory results, one pair of shoes having traveled on a horse's fore-feet over 1,100 miles, outwearing four pairs of the company's regular shoes with which the hind-feet of the horse were shod; and the same shoes, with fresh calks, are still perfectly serviceable.

The bar portion of the shoe is forged independent of the calks, with mortises or slots to admit the tenon or shank of the calk. The projecting shanks of the latter are provided with holes running transverse-

SHOE .

HEEL PIECE FOR WINTER. TOE PIECE FOR WINTER. MCGUIRE'S HORSE SHOE.



The principal advantages claimed by the inventor for his device are, first, the ease and quickness with which the calks on a horse's foot may be changed from smooth to "sharp" in cases of sudden cold "snaps." Second, the possibility of changing calks, or renewing them when worn down, without disturbing the shoe on the horse's foot; there is no doubt that the frequent nailing and drawing of nails, and the paring

Swinging Hose Rack.

The cut represents an article that may be found useful for service in the barns and depots of horse railroads in connection with hose which they may have for fire protection. The manufacturer* claims that with this rack in use, the hose may be kept in a neat, compact form, protected from wear, breaks and leakages, and by its use the hose may be attached to the stand pipe ready for instant service. In case of fire, the moment the nozzle is grasped it will swing to the necessary angle required, and the hose will run off rapidly and regular, without kinks or twists. About 1,000 are already in service in hotels, public build-



ly through them, and when placed in position these holes correspond with similar holes in the sides of the mortise in the shoe. Through the entire shoe and calk a pin is passed, and this is in turn secured by a pivoted tongue, held open or closed by a spring at its back.

To insert the calks, their shanks are first passed into the mortise-openings in the shoe, and the pins inserted through the openings therein. The spring-tongues are $\overline{}^{*}$ John A. Maguire, 205 North 5th street, Philadelphia, Pa.

to which the hoof is submitted at every shoeing by the ordinary method, is injurious to the foot. Third, economy; as the bar portion of the shoe in this device should last indefinitely, and the extra calks, made by drop forging, will be but a small item of expense; the dispensing with the services of the smith in cases where mere renewal of calks is required, will also figure as an item of saving, while the quickness of the operation, not reqiring the loss of a trip, can also be figured on the eame side of the expense account.

Testimonials are furnished by several Philadelphia stable superintendents and veterinary surgeons.

LEWIS'S REVERSIBLE HAME.

The ar

ings, factories, etc. The board of underwriters of New York, Boston and other cities recommend its adoption as being one of the best devices in use.

• Jno. C. N. Guibert, 13 Barclay street, New York.

Lewis' Reversible Hame.

The advantage of reversible hames over the ordinary right and left hame, all other points being equal, is obvions. One-half of the hames in use break, when they do break, on either the right or left hand hame, and usually it is the left hand one. We venture the assertion that in almost any street railway stable where a hundred horses

are used, from ten to thirty pair are disabled in one or the other hame. They are entirely useless, unless the broken hame is replaced by a new one, costing more than half the original price of the pair. The chances are that the new hame will outwear its old mate, necessitating the same expensive repair again. All this is needless were hames made, as they ought to be made, reversible. The two whole hames of two broken pairs would then make a pair, and the cost of the two single right or left hand hames would more than pay for the new pair. The cut herewith illustrates a reversible hame* which is claimed to effect an economy of fifty per eent. in the large stables using many horses. At a proper distance from the ends of the hames is a swivel trace or tug attachment, which eonsists of a staple provided with a swivel plate attached to a bolt and held thereon so as to turn freely. The outer edge of the hame is provided with a metallic band. It will be seen from the construction of the hames as shown that they may be interchangeably used upon either the right or left sides of the collar, and by means of the swivel trace or tug attachment the trace will always be

that water and sand are kept out from between the plate and the tie; and that after four or five years' wear on one side the plate ean be turned over and used like a new one.

Plates of this description are in use on the N. Y. & Harlem Street Railroad, and on the Main Street R. R., Oneida, Madison Co., N. Y. The manufacturer* supplies them to any railroad company on trial, and so far has every reason to believe that they prove entirely satisfactory wherever they have been placed.

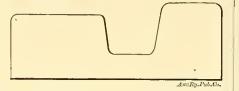


Fig. 2 shows a cross section of a steel grooved rail, 60 lbs. per yard for curves. It is made 5" wide so as to fit the channel plates. The increasing demand for these plates and rails proves that they answer admirably the purpose for which they were designed. They are suitable for all street rails.

*A. Ayres, 625 Tenth avenue, New York.

side of the box and project into it sufficiently to carry the cable. The box is made in vertical halves which can be separated at any time for the purpose of introducing another cable, &c.

Both ties and stringers are so notched or fitted as to enable a strong joint to be made without the necessity for bolts. The chairs are preferably shaped in such a way that they lock upon the ties without the use of bolts. The track becomes practically continuous by this method of construction.

As shown in the cut the resistance in spreading is very great, the ties coming up almost to a line with the under side of the rails. While particulars are not at hand in regard to the cost per mile, it would seem that the cost cannot be excessive. The increased durability is considered, it is claimed, will overbalance any increase of expense.

The Brayton Girder Rail.

We take pleasure in referring to this rail, which was illustrated in our issue of February, 1885. The rail has now been in use some fifteen mouths in Providence, R. I., and Philadelphia, Pa. It has been found



New Form of Street Railway Track. . The accompanying isometric drawing*

in proper relation to the hames. The hames are made of wood, properly curved to conform to the configuration of a horse collar, and their front and rear sides are shaped alike, so that they may be applied interchangeably to the right or left sides of the collar.

*Lewis Lewis, Galveston, Texas.

Improvements in Channel Plates and Rails.

The accompanying cut represents ou a reduced scale a form of channel plate especially adapted for street railways.

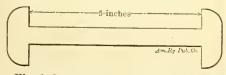


Fig. 1 shows a cross section of a wrought iron continuous double lip joint plate for a 5" base center bearing rail.

The advantages claimed for this form are,

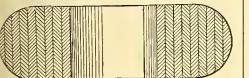
shows a new form of continuous railway track which has several peculiar and valuable features. The track is supported and held in position by cast iron posts set at intervals of 12' in the center of the road bed below the freezing point. These posts have a broad base, narrow top and are so webbed and flauged as to present great resisting power. The tops are so formed as to hold firmly both the central stringer and the cross tie. The posts are connected at the tops by a central stringer which carries the ties. The ties, which are locked upou the stringer, are spaced 3' centers. The material for both posts and stringer is cast iron, while the ties are of steel. When the system is used for a cable road, a box to hold the cable is carried along on top of the stringer and rests on the central supports. This box is secured to the ties by knee braces. The friction wheels are placed out-'Shobe & Edgar, Jerseyville, Ills.

to be desirable to lay it on a rubble foundation, and pave close to the rail. In this manner a very durable, permanent way is secured, and there is not the slightest obstruction to the passage of the ordinary street vehicles, regardless of the angle at which they may strike the rail. The city authorities speak in terms of the highest praise of its durability and convenieuee, and regard the fact that no timber whatever is used in its construction, as being essentially in its favor.

Freese's Automatic Car Motor.

By a provoking error in our October issue, the articleon the Freese Automatic Car Motor, combined with an Electric Lighting arrangement, was headed Freese Electric Motor; and the lettering in the engraving did not properly correspond with that in the description. The Freese Co.* has two devices—a steam car motor and a system of lighting the car by a small dynamo driven by the motor.

Freese Automatic Car Motor and Electric Lighting Co., P. O. Box 449, Philadelphia, Pa. This link is made in a machine which rolls a bar of iron into a band about $\frac{3}{16}$ " thick, then coils it on a split roll as a ribbon on a spool, the whole operation being done at a welding heat and with great velocity, insuring a continuous weld throughout the coil. It is then dropped off, and shaped to the link form, the outer surface being rounded and the inner remaining flat as shown in the accompanying cu⁴. They



are made from refined iron having a tensile strength of about 55,000 lbs. per square iuch.

The advantages claimed are:—By rolling the iron down thin, additional fibrous and tensile strength is seenred. By the continnous welding all parts have equal strength and the chances for flaws and crystallization are reduced to a minimum. The flut inside surface gives increased life to both the link and the pin.

These links can be made of any size and weight that may be desired.

* Edward Corning, 15 Cortlandt street, New York city.

Wooden Street Pavements.

According to a paper read before the Engineers' Club of St. Louis by Messrs. T. J. Caldwall and T. D. Miller, the qualities of a perfect street pavement are about as follows: 1, cheapness of first cost; 2, dnrabity; 3, firmness of foot-hold to horses; 4, smoothness; 5, noiselessness; 6, elasticity; 7, cleanliness; 8, imperviousness to water; 9, agreeableness of color.

We do not think cheapness by any means the first item in point of importance nor that the last named need have much practical influence, in choosing among a number of kinds of pavements. The anthors of this paper say that a pavement of wooden blocks possesses every quality of the perfect pavement, with two exceptions. It absorbs moisture to a considerable degree, and after a few years deteriorates very rapidly from decay. During this process of decay it offers less and less resistance to the wear of traffic, and finally reaches a condition in which it is unfit for travel, and dangerons to the public health.

Messrs. Caldwall and Miller think that if this decay could be prevented the objection from moisture would not be serious and the wooden pavement would be preferable to almost any other pavement and for almost every kind of traffic.

There have been used for wood preserving, among other substances, compounds of zinc, lead, copper, iron, arsenic, lime and creosote oil.

"The action of the aqueous solution of the metal salts is to coagulate the albumen of the sap, besides its action as an antiseptic. The action of crossotc oil is the same, while it fills the pores of the wood with a bituminous asphaltic substance which gives a water proof coating to the fiber, preventing the absorption of moisture." The paper details recent experiments on a practical scale in this line, and may be found in the *Journal of the Engineer*-

found in the Journal of the Engineering Society.

The Bessbrook Electrical Tramway.

The Bessbrook and Newry electrical tramway has been constructed to form a link between the mills and granite quarries of the Bessbrook Spinning Company and the railway at Newry, the distance between the two places being three miles, and the annual traffic, which has hitherto been carried in carts, being abont 28,000 tons. The tramway differs from others in that the vehicles are equally well adapted to run on the rails and the ordinary roads, this facility being required by the difficulty which was found in connecting the line to the railway at one end, and to every department of the works at the other. They are carried on four wheels $2\frac{1}{3}$ wide and without flanges; the first pair are on a bogie which can be fixed to form a rigid wheel base, or have shafts fitted to it, and allowed to swivel after the manner of the leading axle of a coach. These wagons carry two tons each, and can be drawn by a horse up moderate hills. On the outside of the ordinary tramway rail, second rails have been laid, to which the ordinary rails act as gnards. The flangeless wheels rnn upon these outside rails. The maximum gross load of a train is twenty-six tons, consisting of six wagons which carry about two tons each, and the electrical locomotive weighing eight tous, which also forms the passenger carriage and is capable of accommodating thirtyfour passengers. This load can be drawn up inclines averaging one in eighty-five at a speed of seven miles an honr, and up the stiffest incline of one in fifty at a speed of six miles an honr. The train can be started at any point of the line without difficulty. The motive power is electricity furnished by dynamos situated about two miles from Newry, at Millvale, and driven by a turbine constructed by Messrs. MacAdam Brothers, of Belfast, capable of developing sixtyfive horse power. The conductor consists of an inverted steel channel carried on insulators and fixed midway between the ordinary rails. Both the generators and motors are of the Edison-Hopkinson type, constructed by Messrs. Mather and Platt, of Salford, and are capable of developing twenty-five H. P. The engine is geared to run at a maximum speed of fifteen miles per hour, and this speed is easily attained when there are no trucks attached. The cars are 35' long over all, and are carried on bogies at each end, so that they pass readily round curves of 55' radius. At Millvale there is a country road, which the tramway crosses at an angle, making a level crossing of over fifty yards in length. The conductor could not here be laid between the rails, and is supported overhead. It consists of two copper wires carried at a height of 15',

and so situated that a collector on the top of the car runs nuder and in contact with the wire at the crossing. The wires hang quite freely and only rest on the collecting bar during its passage beneath them. The electrical work was carried ont by Dr. Edward Hopkinson, of Manchester, and the permanent way by Mr. J. L. D. Meares, of Newry.—Engineer.

Corrugated Nails.

A patent has been issued to J. C. Kearns of Maitland, Pennsylvania, for an improvement in nails, applicable alike to cut and horse nails, and for which very considerable advantages are claimed. The chief of these are a saving in metal without diminution of strength, and largely increased holding surface. The improvement consists in forming the nail with longitudinal grooves. The number of these grooves may be made to vary, and they may extend partially from the head to the point at the will of the maker, each groove of conrse increasing the holding surface. The claim for increased strength in proportion to weight is based upon the asserted principle that a hollow piece of iron is stronger than the same amount of iron in a solid bar of the same length. The principal strain in horsenails in the hoof is backward and forward, The hoof closes tightly into the corrngations, thus making the nail less liable to split the hoof, as well as increasing the holding snrfaces as stated. The grooves in the head will, it is claimed, cause it to adjust readily with equal bearing on all parts of the nail-hole in the shoe.

Master Car Painters' Association in Toronto.

Mr. Charles E. Copp, Master Painter of the Boston & Maine R. R., recently read a paper before this association on the following question:—"Is a car body color composed of one durable pigment more durable than a color composed of two or more pigments?"

There are many of our readers who can furnish the STREET RAILWAY JOURNAL with some interesting information on this subject, and also in regard to another question, whether dark or light colors for car bodies have been found the best.

Cane Car Seats.

EDS. STREET RAILWAY JOURNAL:---If you will kindly favor us with the names of the principal manufacturers or plaited cane car seats we shall esteem it a great favor.

W. H. Crossman & Bro. New York.

[Hale & Kilburn, Philadelphia, Pa., are among the largest manufacturers in this line.

Subscribe for STREET RAILWAY JOURNAL. This is the only paper devoted wholly to street railway interests. \$1.00 a year.

A new cash-box for street railways, the invention, we believe, of a German, is thus described. It strikes us it does too much: "The box generally resembles in external appearance an ordinary railway farebox, but differs from it materially in its workings. It not only serves as a depository for fares paid, but also makes change. There are two openings in the top-oue for the fares and the other for making change. This money-changing apparatus is an interesting novelty. For instauce, if the passenger should offer a silver dollar to be changed he would drop it into the box through an opening marked 'change.' The dollar would go into some inner recess, but, at the same moment, the exact change would appear in a smill basin in reach of the passenger. If a quarter of a doll r were offered the change would come out in the form of two dimes and a nickel. A dime put in for change would bring forth two nickels. If, by mistake, a nickel should be dropped into the change-hopper it would not disturb the interior arrangements, but would pass through into the basin and be returned to the passenger.

"Of course, this automatic mechanism would not give change for bank notes, as the principles of its operations depend on the weight and sizes of the coins which, on ontering the box, pass through holes proportioned to their respective sizes, and then press upon levers which open other orifices and set free the other coins which aro to come ont in change.

"There are also on the side of the box, under glass, four dial plates fitted with hands or indices, which mark the amounts of money in the change department. One dial-plate shows the number of half-dollar pieces, another gives the quarters, a third shows the dimes, and a fourth the nickels. When a car starts out the change-box must be furnished with a proportion of coins of the denominations mentioned, and as chango is made, and as these are successively dropped ont, others must be put in their places. These dial-plates show what is on hand, and obviate the necessity of examining the interior of tho mechanism.

"The apparatus is exceedingly ingenious, and appears to operate with entire accuracy and satisfactory readiness."

Electric Engine for Tram Cars.

A new electric tram engine was shown Dec. 14 at the station of the North Metropolitan Tramway Company, Stratford, Eng. This is a center at which fair trials have always been readily accorded to any new motor, and it is understood that in the event of the new inventor and the tramway company agreeing upon terms a practical experiment of no small importance will be made in electric tramway working upon the new line to Ilford. The electrical engineers in this case are the Electric Locomotive and Power Company (Limited), who claim to have solved the problem of economical working by combining the electrical power with the mechanical aid of the

lever principle. The electro-motor is connected by pinions horizontally with a large stationary rack and vertically with the When the electrical eugine is wheels. started the pinion of the horizontal armature gears into the stationary rack, and so causes the motor itself to revolve. The motor then becomes, by the action of its fixed vertical shaft, the driving axle and communicates its motion to the wheels of the car. By means of clutches a backward or forward motion can be seenred without reversing the direction in which the electromotor is revolving. The electricity is supplied by fifty cells of, say, a total of 280 ampères. It is claimed that the average discharge is from 40 to 45 ampères per hour, and that an engine consuming only two tons of coal per week will charge batteries sufficient to do the work of four cars requiring at present 44 horses per week. The engine appears to be coutrolled with perfect ease, and though at present it is fitted up separately from the car itself so as to take the place of horses and utilize existing cars, the company claim that it can in future easily be constructed as a part of the passenger car.

Width of Carriage Tracks.

The following information, as to width of carriage track and street car gauge in this country and Europe will be of interest to our readers.

New York State—Generally 4 feet 8 inches out to out; Albany, 4 feet 9 inches out to out; central New York State, 4 feet 10 inches out to out.

The street railway tracks in New York city are 4 feet $8\frac{1}{2}$ inches, but pleasure carriages are built to suit best the construction, and specially so for front track.

Pennsylvania—In Philadelphia and Pittsburg the carriages and wagons are generally built to suit the railway track, which is 5 feet $2\frac{1}{2}$ inches between flanges, and the track for carriages and wagons is made 5 feet $1\frac{1}{2}$ inches from out to out. The ar tracks in these eitics were originally built to suit the carriage tracks.

In some portions of central Pennsylvania the carriage track varies from 4 feet 6 inches to 4 feet 10 inches.

Ohio—Cincinnati is greatly governed by the street car tracks, and carriages and wagons are built 5 feet centers or 5 feet $1\frac{1}{2}$ inches from out to out. Cleveland car tracks on East side, 4 feet $8\frac{1}{2}$ inches; West side, 5 feet 2 inches; Dayton, 4 feet 9 inches. The State wagon track is 4 feet 10 inches, but in the northern part 4 feet 8 inches is in general use, and in some southern counties 5 feet center to center.

Coach track, Cleveland, 5 feet 2 inches center to center.

New Hampshire—Light work, 4 feet 8 inches center to center, and heavy work, 5 feet $4\frac{1}{2}$ inches from center to center.

Vermont—4 feet 8 inches center to center to 5 feet out to out.

Indiana—1 feet 8 inches ont to ont. In some sonthern counties, 5 feet center to ceuter. Illinois—Chicago 4 feet 8 inches, to suit the railway tracks.

Connecticut—The State track for wagons is 4 feet 10 inches out to out, but in general through the State the carriages are made 4 feet 6 inches; northern part, 4 feet 4½ inches and 4 feet 6 inches; eastern part, 5 feet 5 inches, all out to out.

Massachusetts—Boston, uo regular width of track. Carriages are built to suit the style of carriage—light carriages, 4 feet $6\frac{1}{2}$ inches to 4 feet 8 inches; heavy work, 4 feet 10 inches to 5 feet. On the Cape and sontheru part of the State, New Bedford, etc., the track is 5 feet $4\frac{1}{2}$ inches.

Rhode Island—5 feet 5 inches out to out. Maine—No regular track. Made to suit the wagons and carriages, 4 feet 8 inches for light work, out to out. Heavy carriages and wagons to suit the width of the body.

New Jersey—The State track is 5 feet center to center, or 5 feet 2 inches out to out. Jersey City, 4 feet 11 inches; Newark, 5 feet 2 inches.

Michigan-4 feet 8 inches. Detroit railway track is 4 feet 8 inches between flanges.

Iowa-4 feet 8 inches out to out.

Minnesota—4 feet 8 inches out to out. Wisconsin—4 feet 8 inches out to out.

Kansas—4 feet 8 inches out to out.

Colorado—The general track is 4 feet 8 inches to 5 feet center to center.

Oregon—No State track. East of the mountains, 5 feet center to center. West of the mountains, 4 feet 8 inches out to out.

Nevada—Northeru part of the State, 4 feet 8 inches out to out. Southern part, 5 feet center to center.

California—Stage track, 5 feet 2 inches center to center, or 5 feet 4 inches cut to out. Light work is generally built 4 feet 8 inches out to out. Street railway track in San Francisco is 4 feet $8\frac{1}{2}$ inches and 5 feet between flanges. Sacramento—4 feet $11\frac{1}{2}$ inches.

Maryland—Tracks made of all widths. Street railway track in Baltimore, 5 feet 4¹/₂ inches. Track, generally, 5 feet out to out. Delaware—Tho track generally is 5 feet

Delaware—Tho track generally is 5 feet $\frac{1}{2}$ inch center to center.

Missouri—5 feet center to center. Width of street railway track in St. Louis, 4 feet 10 inches between flanges.

District of Columbia—5 feet out to out, in general. The street railway tracks in Washington are 4 feet 8½ inches.

Kentucky—Tracks from 4 feet 6 inches to 5 feet 6 inches; street railway track, 5 feet.

Louisiana—Tracks from 4 feet to 5 feet 6 inches, but heavy carriages, which are mostly made in the Eastern or Western cities, have either 4 feet 8 inches, 5 feet, or 5 feet 2 inches, all from out to out. Street railway tracks, 5 feet $2\frac{1}{2}$ inches.

Texas—Dallas, the track is 4 feet 8 inches, in general the tracks arc made to suit the widths of the wagons.

Virginia, West Virginia, North Carolina, South Carolina, Mississippi, Florida, Georgia, Alabama, Tennessee—The track is generally 5 feet from center to center, but in some localities they measure 5 feet out to out, and 5 feet 1 inch out to out.

Washingtou Territory, Oregon-The track is 5 feet from center to center.

Montana Territory-The track is 5 feet from center to center.

England-No regular standard track. The width of track is regulated to suit the construction of the carriage, ranging from 3 feet to 5 feet. The standard street railway and steam railway tracks are 4 feet S1 inches.

France-No standard track. Width of track is regulated as in England, to suit the construction of the carriage, excepting heavy omnibuses, for which the law prescribes 1 metre 65 ceutimetres for hind wheels, and 1 metre 55 centimetres for front wheels.

Austria-4 feet 4 inches center to center, Vienna measurement.

Germany, Prussia-4 feet 4 inches center to center.

Bavaria-3 feet 7 inches center to center. Rhenish Bavaria-3 feet 11 inches out to out.

Saxony—3 feet $7\frac{1}{2}$ inches in to in.

Wurtemburg-3 feet 8 inches in to in.

Hesse—4 feet 1 inch in to in.

Baden-3 feet 8 inches in to in.

Holstein-4 feet 4 inches out to out.

Brunswick-4 feet 7 iuches out to out.

Hamburg-4 feet 6 inches out to out.

The German tracks are given by Rhenish measurements. The street railway tracks in England, France, Germany, Holland and other countries are 4 feet 81 inches.

Australia-No standard track. Carriages aud wagons, as in Englaud, are made to suit their construction.

Mexico-From 4 feet 6 inches to 5 feet 6 inches ont to out.

Chili—From 4 feet 6 inches to 5 feet.

Peru-From 4 feet 6 inches to 5 feet.

Brazil—From 4 feet to 5 feet.

Railway tracks and street car tracks in Australia, South America and Mexico have the same width as in England, 4 feet $8\frac{1}{2}$ inches.

Technical Training.

Prof. R. H. Thurston recently delivered a thoughtful lecture on the above subject before the Board of Trade of Scranton, Pa., from which we make the following extracts:

It is intelligence, not brute force, that governs the universe and conquers fate. It is the humming spindles, the puffing engines, the rumbling iron-devouring mills, each directed by active brains, and guided by a few skillful hands, that do the work of the world; animal power, whether human or brute, accomplishes but a very insignificant part of the work of this busy world of ours. The 3,000,000,000 bushels of grain, annually grown in this country, is transported to the millions fed by it, over our 125,000 miles of railway, and over the 3,000 miles of ocean, not by man, but by the inanimate forces commanded by his intelligence; not by human, or even by brute muscle, but by Nature's power, directed by the mind of insignificant man, defying Nature's wildest nntrained forces.

He thus summarizes the requirements in this direction :---

(1). A common school system of general education, which shall give all young children tuition iu the three studies which are the foundation of all education, and which shall be administered under compulsory law, as now generally adopted by the best educated nations and States on both sides the Atlantic.

(2). A system of special adaptation of this primary instruction to the needs of children who are to become skilled artisans, or who are to become unskilled laborers, in departments which offer opportunities for their advancement, when their intelligence and skill prove their fitness for such promotion, to the position of skilled artisans. Such a system would lead to the adoption of reading, writing and spelling books, in which the terms peculiar to the trades, the methods of operation and the technics of the industrial arts should be given prominence, to the exclusion, if necessary, of words, phrases and reading matter of less essential importance to them.

(3). A system of trade schools, in which general and special instructiou should be given to pupils preparing to enter the several leading industries, and in which the principles underlying each industry, as well as the actual and essential manipulations, should be illustrated and taught by practical exercises until the pupil is given a good knowledge of them and more skill in conducting them. This series should include schools of carpentry, stoue-cutting, blacksmithing, etc., etc., weaving schools, schools of bleaching and dyeiug, schools of agriculture, etc., etc.

(4). At least one polytechnic school, in which the sciences should be taught and their applications in the arts indicated and illustrated by laboratory work. In this school, the aim should be to give a certain number of students a thoroughly scientific education and training, preparing them to make use of all new discoveries and inveutions iu science and art, and thus to keep themselves in the front rank.

(5). A system of direct encouragement of existing established industries by every legal and proper means, as by the eucouragement of improvement in our system of transportation, the relief of important undeveloped industries from State and municipal taxes, and evcu, in exceptional cases, by subsidy. It is evident that such methods of encouragement must be adopted very circumspectly and with exceedingly great caution, lest serious abuses arise.

Such a complete scheme has, as yet, never beeu fully carried out; and yet it is easy to see that we are gradually working out itselements, here and there, piccemeal, and that the future, the near future, we may hope, will certainly see the whole system in full.

Men are now placed at each anchorage of the bridge, and have the entire truss within their view, and are enabled to communicate by signals to train dispatchers when any traiu stops beyond the dispatcher's line of vision.

Subscribe for Street Railway Journal,

Notes and Items.

[All our readers are particularly requested to send us, at the earliest possible moment, notes concerning actual or proposed improvements in street railways. It is by this means that the STREET RAILWAY JOUE-NAL will increase its usefulness to each one who receives it.1

We desire to thank unknown friends for sending us marked copies of local papers containing street railway items. This is of great value to us. It is impossible for us to have access to all the local papers of the country and information of this character is of value to us.

Albany, N. Y.

Contracts have been booked by Messrs. Humphreys & Sayce, contracting agents, and representatives of the Metallic Street Railway Supply Company, to construct five miles of the Albany & Greenbush R. R., and three miles of the Albany Street R. R. The metallic system has been described in this journal. Binghamton, N. Y.

The new cable road running to the asylum possesses some new and interesting features, as it is a radical departure from the ordinary cable road.

The new features of the system are that it dispenses with "grips" altogether. Two cables are used, one driven in the ordinary manner by a stationary engine. The other a small cable resting upon the first and travelling with it over the same pulleys is made to complete its endless circuit free from counection with the prime motor or engine. It is, however, made to move in unison with the main cable and to receive a positive motion therefrom by passing around the same horizontal pulleys at the end of the road, and also by being led at . suitable intervals between the sides of vertical conical rollers arranged in pairs. This secondary cable is led continuously over a loose drum or pulley fixed under the car. When this dram on the car is left free to rotate the cable will run freely over it and the car will remain stationary.

If, however, the pulley or drum be retarded in its revolution by a brake so that it may no longer turn, the car will be carried forward with the cable. To stop the car the brake is lifted. There is no jar or unpleasant motion in starting or stopping the car, aud any number of cars can be run on the same line wholly independent of each other.

There is no switching at the ends of the road, as the track is laid in a circle and the cars cau make the curve and continne on the return trip without stopping.

The slack of the secondary cable is taken up and its tension adjusted by meaus of tension rollers under the car. This system will require only a shallow snb-way below the surface of the track as the secondary cable-the small one that imparts the motiou to the car-comes up through the slot as the car passes and drops back below the surface. With this system the cars can be ruu ou single or double track and can make the curves and switches as readily as a horse car.

Boston, Mass.

H. H. Hutchins has filed a petition to the Legislature for a certificate of incorporation of the Boston and Somerville Elevated Railroad Company, with power to bnild and run elevated railroads operated by electricity from Scollay Sqnare, Boston, through Charlestown and Somerville to Medford Sqnare in Medford.

Brooklyn, N. Y.

Deaeon William Richardson, as President of the Atlantic Avenue Railroad Company, has leased the Vanderbilt avenue horse car line, which extends from the station of the Prospect Park & Coney Island Railroad to the Fnlton Ferry, Brooklyn. The rental is \$21,000 a year, with the privilege of taking absolute possession on Jan. 1, 1895, on payment of \$420,000 cash. Dec. 21 the Common Council granted this road permission to extend its tracks from Broadway and Park avenue through Locnst, Beaver and Belvidere streets, Bushwick avenne, Jefferson street and Central avenue to the city line.

Work has commenced npon the Kings County Elevated Ruilroad, and will be vigorously pushed for early completion. The fare on all the Brooklyn elevated railroads within the city limits will be five cents at all honrs. The Broadway extension gives an elevated road to the whole of that thoroughfare between East New York and the river.

The gross carnings of the Atlantic Avenne Company were \$448,681.50; net earnings, \$70,053.60; gross income, \$120,909.10; net income, \$62,329.84. These figures are for the year ending Sept. 30, 1885.

The new Williamsbnrg and Flatbnsh Railroad Company: Gross earnings, \$174,-864.88; net earnings, \$42,829.89; gross in eome, \$42,647.89; net income \$14,273.18.

The horse cars that formerly ran through Hoyt and Sackett streets to Hamilton ferry now run through Bergen street, Boerum place and Atlantic avenue to South ferry. The new eross-town cars of the Atlantic Avenue Company have also commenced to run between Hamilton ferry and the bridge, and by transfer to Catharine and Fulton ferries.

The sixteen new cars on the new crosstown line are from the John Stephenson Company's shops, and are equipped with the latest improvements, including the Josephine D. Smith center lamp.

The Prospect Park & Concy Island Railroad Co. have been granted permission to extend their horse car tracks from Park avenue and Broadway to Central avenue, and along Central avenue to the city line.

Every day it is made manifest how much Brooklyn and its submrbs need rapid transit. The sconer the elevated railroads are built, the better for the vast throng of business men in both New York and Brooklyn. But it is remarkable with what obstinaey some parties oppose rapid transit schemes. Mr. M. H. Hagerty, one of the Rapid Transit Commissioners appointed to lay out a trunk hine between the City Hall and the Bridge and Fulton Ferry, has been one of the most strenuous opponents of the occupation of lower Fulton Street by a trunk line.

The City Railroad will place open cars on its Flushing avenue line the coming season. No open cars have ever been run over this line, because the old depot lacked room for their storage in the Winter season, and its condition during the rainy period did not warrant any increased expenditure for improvements. Now that the shed has been drained and raised and a new depot begun, with ample accommodations for rolling stock the cars have been ordered, ten to be built by the John Stephenson Company of this city and ten by J. M. Jones' Sons of West Troy, N. Y.

Brooklyn Bridge Railroad.

There are now several models of cable grips at the superintendent's and engineer's offices. These are to receive a thorough examination by two experienced engineers, who are said to be experts in matters of this kind. If any contrivance presented seems worthy of trial, no objections will be raised to such trial. On the contrary, every facility will be afforded for a thorough test.

The Brooklyn Bridge Company have ordered six cars for the bridge railroad. They will have the Eames vacuum brake and the usnal equipment of bridge cars. These will have two side doors in addition to the end ones. The object is to afford better facilities for entering and leaving the cars.

The bridge receipts for the week ending Dec. 19 were the largest in the history of the structure, being an average of \$2,057 per day.

Charleston, S. C.

The Middle Street Sullivan Island Railway Co. is on an island four miles from Charleston, a summer resort. Its officers are: President, B. Callaghan; Secretary and Treasurer, Frank F. Whidden; Superintendent, B. Buckley. They have two miles of track, six cars and twelve mules. Chicago.

The Adams and Harrison Street Railway Company is trying the Honigman Fireless motor. The advocates elaim for it a suring of one-half the expense of horse-power. It is the invention of Moritz Honigman, of Rhenish Prussia, and is in use in Europe on several tramways. It is a soda engine.

Cleveland, Ohio.

An exchange says, that Dec. 20, Tom L. Johnson was lying at the point of death in Louisville. He went hunting on Lake Washington, Mississippi, and was accidentally shot in the left hand by the premature discharge of a gun in the hands of his niece, who was hunting with him. Mr. Johnson is a millionaire and owes his wealth to his fighting qualities. Cleveland owes its present excellent street railway system to him.

About five years ago Cleveland had the poorest street railways in America. Mr. Johnson, who is a son-in-law of ex-Gov.

English of Indiana, came to Cleveland and purchased a wretched line known as the Brooklyn road, running to a suburb of Cleveland. He applied to the city for the right to run his ears into the heart of the city over the rich bnt poorly managed West Side Street Railway. A bitter fight, often resulting in personal encounters, resnlted in a victory for Johnson. Then the West Side road, spurred on by opposition, put on splendid cars and rnn them fast enough to compete with Johnson. He paved whole streets in order to get the right to extend his line, and built it from the easterly limits of the city to Brooklyn. He carried passengers ten miles for one fare, and the Woodland Avenue and West Side railways were forced to consolidate to meet his opposition.

In the fierce rivalry that ensued Johnson resorted to many means to build up bnsiness. He constructed a mammoth snow plough and drew it over his lines with ten spans of prancing white steeds whenever snow obstructed the road. The public fell in love with him, and his cars were crowdcd. He purchased a base ball park on his line and had elubs play there to make street car travel. Snllivan, the prize fighter, was hired to pitch one game in Johnson's park. He has acquired two street railways in Cleveland, and is abont to purchase another. He also owns a line in Indianapolis. He is only 35 years of age. We trust that the serions aspect of his case has changed since the 20th, but have seen no advices since. Mr. Johnson is a man the street railway interests can ill afford to lose.

Denver, Col.

The first successful attempt at trial trips of the new cable car was made Dec. 19th, over a portion of the track of the Denver Electric and Cable Railroad Company on Fifteenth street. The car ran a considerable distance, and at the satisfactory rate of eight miles an honr. A dynamo of twenty horse power furnishes the motive power for the car. Quite a large number of prominent citizens took rides on the car. Prof. S. H. Short, of the Denver University, has worked very hard to make his invention a success, and his efforts seem to be already reaping their reward. The company have hoped to get their cars running in six weeks or a month. The car which is now being used in making trial trips, is shaped and fitted np very much like an ordinary street car, and is fully as handsome in its style and appointments as any street car in Denver. It was made by Woeber Brothers, of West Denver. The dynamo and other machinery, which is located in a building near the corner of Fifteenth and Tremont streets, and which is used to propel the car, was made by F. M. Davis, of Denver, and all the plant and material used by the company will be of Denver manufacture. Ex-Governor John Evans, W. N. Byers, Rodney Curtis and other well known Denver gentlemen are among the the officers and directors of the new company.

JANUARY, 1886.]

Elgin, Ill.

A company has been formed for the purpose of constructing a series of street railways in the city, to be operated by electricity. The report has been made that the road can be built and equipped for \$5,000 per mile. The length of track projected is five miles. No estimate is given of what the cost of operating by electricity will be.

Geneva, N. Y.

The petition of one Sweet, representing New York parties who ask for the right to construct a street railroad here, was considered by the Board of Trustees, December 1, and the desired permission was refused. Trustees Willard, Moore and President Chase voted against it, Webster for it, and Nicholas, Alcock and Nester were absent. It is understood that more thau two-thirds of the property-owners along the proposed ronte were in favor of the project.

Kansas City.

The Cable Railway are having twelve grip cars built by the Brownell & Wight Company, of St. Lonis, Mo., so constructed that the grip is not raised or lowered with the varying load ou the car. The grip gear has no springs under it but supports the springs on which the body of the car rests. This also obviates the swaying of the car from side to side, and renders the body easily removable in case either it or the grip portion gets ont of repair, it only being necessary to remove half a dozen nnts from the bolts passing through the springs.

Mount Vernon, N. Y.

Work was commenced Dec. 21 on the new surface railroad to connect Monut Vernon with East Chester. A gang of sixty Italians, nnder Col. C. A. Bonton, is employed.

New York City, N. Y.

The Tenth Avenue Cable Railroad has remodeled its grip cars, making the grip independent of the body of the car, so as to be unaffected by the load.

The injunction which the Cable Railway Company seenred recently, restraining the Chambers Street and Grand Street Ferry Railroad Company from constructing its railroad in Chambers and other streets, was dissolved Dec. 17, by Judge Donohne, who gave an opinion that the motion to continue the injunction should be denied.

In a suit against the Belt line for \$5,000 damages, the accident being the death of a boy, run over in September, the jury brought in a verdict for \$1,200 for the boy's father. The boy was stealing a ride on a trnck and was jolted off under the car.

The Railroad Committee of the Board of Aldermen presented reports Dec. 2 in favor of granting franchises to the following street railroad companies:—St. Nicholas Avenue and Crosstown Railway Company; Houston, West Street and Pavonia Ferry Railway Company; Madison Avenue and Eighty-sixth Street Railroad Compauy. Th. franchises were granted.

The Board of Aldermen are talking of obliging car drivers to obtain liceuses; fee \$1.00.

Work ou the cross-town road of the Chambers and Grand Street Ferry Railroad Company has been rapidly pushed since the injunction obtained by the New York Cable Road restraining the company from laying its tracks was dissolved by Judge Donohue last Thursday. The tracks are now laid in Chambers street, James slip, and West street, with the exceptions of the crossings, and Dec. 21 a large force of workmen was engaged in completing the work in Duaue street.

The Aldermeu's Committee on Railroads listened to argnments for and against the granting of a franchise to the Pcople's Surface Railroad to run through South, Cliff, Cherry, Madison aud other streets. W. A. Fowler spoke for the company. A. B. Miller, representing property in Pearl street, opposed building the road. William E. Dodge objected to carrying the route through Cliff street, on the ground that the street was too narrow and it would interfere materially with business, as well as depreciate greatly the value of property.

The Railroad Committee of the Board of Aldermen report adversely on the Fifth aveune scheme.

Fifty cars are now being ruu by the Broadway and Seventh Aveune Railroad over the old University place route between 7 A. M. and 7 P. M. The secretary of the company said yesterday: "It was always our intentiou to continue this route, but np till now we have had neither enough cars nor sufficient stabling accommodations. The heavy traffic and over crowdirg on the Broadway cars will now be greatly relieved, as men having business down town west of Broadway will find the University place cars more convenient. We should run these cars during longer hours, but the traffic does not yet warrant it."

Work was begun Dec. 8 in James slip ou the Chambers Street and Grand Street Cross-Town Road, which is to run through Chambers, Dnane, and New Chambers streets, with branches through Madison, Grand, Jackson, and Cherry streets. The men are employed by Contractor Wharton, of Philadelphia, under whose supervision the Broadway Railroad was constructed. The franchise for this road was granted on Dec. 30 of last year, the resolutions being passed over the Mayor's veto by the same vote by which the grant was made to the Broadway Railway Company.

Articles of incorporation were filed Dec. 2 at Albany by the Liberty Street and Wall Street Ferry Railroad Company, which is to build from the junction of Liberty and West streets in New York, through Liberty to Washington street to Rector to Broadway, across Broadway to the Wall Street Ferry. The cupital of the company is \$500,000, and the directors named are Thomas Rigney, William D. Hatch, James A. Ostrom and E. D. Murphy, Jr., of New York, and William B. Kendall, of New

Rochelle, and L. C. Mightman, of Brooklyn,

The Aldermen, December 22, refused to pass over the Mayor's veto the resolutions granting a franchise to the Houston, West street and Pavonia Ferry Railroad Company. Similar action was taken regarding the franchises asked for by the Madison avenue and Eighty-sixth street Railroad Company and the St. Nicholas avenue Cross-town Railroad Company.

The Ayres Patent Switch, four of which are in use on the Fourth Avenue Street Railway in front of the Grand Central R.R. depot, are highly spoken of, and deservedly so, being very stroug, durable and easily operated.

New Bedford, Mass.

This new road, which commenced runuing last Juue, has six miles of track, twenty-nine cars and 103 horses.

Philadelphia, Pa.

The electric railway ou Ridge Avenne, Philadelphia, was tried Saturday, Dec. 5, and is said to be a success. The car was run over the entire road several times, at a rate of speed equal to seven miles an hour, aud from beginning to end of the public test, all worked well and smoothly.

Pittsburg, Pa.

Benjamin Lanth, the inventor of the process of making nail plate out of old steel rails, has sold the right of his patent to a syudicate of five Eastern firms.

St. Louis, Mo.

Fourty-four cars are building by the Brownell & Wight Company for the St. Lonis Cable Railway.

Springfield, 0.

E. W. Ross & Co., Springfield, Ohio, have recently sold oue of their large feed-cutting machines to J. H. Hall, president of the Fort Clark Street Railroad Line, Peoria. Ill.; also one of the large 26 A cutters to the Cass Avenue Line, St. Lonis. These machines seem to be giving excellent satisfaction in street railway barns. Presideut H. M. Watsou, of the Buffalo City Road, recently said of them to a representative of the STREET RAILWAT JOURNAL, "We have one in each of our stables, and I consider them the best machines ever made for this purpose."

A street car stops to allow two ladies to alight. They leave in the car three lady friends, and this was the conversation after the car stops:—"Goodby: let me hear from yon as soon as yon get home." "Yes; goodby." "Goodby." "Goodby." "Goodby." "Goodby." "Don't forget, the four o'clock train; goodby." "No: goodby." "Goodby." "Goodby." "No: goodby." "Goodby." "Goodby." "Oh, Martha, don't forget what I told you; he, he; goodby." "Goodby." there the conductor jerked the bell rather savagely and the car moved on, leaving the two departing ladies in the midst of their goodbys.

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Cable Grips.

The recent accident to the cars upon the cable road of the New York and Brooklyn Bridge has incited a great many inventors to ask for an examination of their devices for cable grips. The business office of the Brooklyn Bridge now contains numerous models for which much is claimed by their respective inventors. The question is constantly put whether among the numerous patented grips there is not one which could he positive in action, economical in durability and wear, and perfectly safe and reliable in operation?

At first sight, it would appear uot a very difficult matter for engineers to devise a contrivance to fully answer the purpose. But what are the circumstances and difficulties to ho met in the case of the Bridge eahle road? There the cable travels at the rate of ten miles per hour; there is a grade at one end of 176 feet to the mile; to meet the requirements of travel, the cars have to be dispatched at short intervals; the cars arrive every minute and a half at either end when travel is greatest, and have to be switched by locomotives from oue track to the other; a delay of even three or four minutes will cause a crowd of husiness men, for the most part, always in a hurry to get to and return from their husiness; the demand for accommodation is urgent and at certain hours of the day, incessant. Moderate · speed, reliability, punctuality and safety have to he provided for.

The mechanical contrivance for moving the cars must he, therefore, one which can take the cable at either end of the Bridge automatically, at any speed, pick it up anywhere upon the hridge, or that having ouce taken the cable, cau disengage it at auy part of the bridge, and re-eugage it hy a simple turu of a hrake or movement of a lever on the car. If not disengaged at the end of the rope it must be able to move past the pulleys and drop the rope without doing itself or the pulleys any injury. It must be able to start the car if stopped at any point ou the bridge, there must he no running backward, aud all this must he doue without injury to either the cable or the grip.

Again, it will not do to use a grip that

will wear out a cahle so quickly as to require frequent renewals. The cost of a new cable for the bridge would he about \$7,000, and the delay of travel while laying and splicing would be at least twenty-four hours, possibly, might he much more. The preseut cable is getting worn, and as wear increases the present arrangement hecomes less effective. Neither will a complicated grip answer-one with numerous levers, arms, pulleys, rods, etc., however ingenious in arrangement; for the reason that in every mechanical device, the more parts, the more liability to hreakage, disarrangement and friction. The coming grip must be strong, simple, positive in action, easily operated and durable. Wear will take place on the cable as it runs over the supporting pulleys, but that wear must be compensated by the mechanism of the grip.

Right or Left Hand Tracks.

It is a curious commentary on the fact that Americans "keep to the right as the law directs," to trace out how this national custom happened to differ so radically from the English practice. In England, the rule of the road is, keep to the left and turn out to the right when passing in the same direction; in this country we keep to the right aud turn to the left, if we wish to pass in the same direction, and our railroad managers, without looking iuto the why or the wherefore, have very generally adopted the plan of running on the right hand side, making the irou horse follow the national rule of the road.

The practice of turning to the right is derived from old colonial times. The oxteam was the almost universal vehicle, and the driver, of necessity, stood on the lefthand side of his team, which he guided with a goad in the right hand. This method of driving gave rise to the expres-sions, the "near" and "off" side of a team. Being on the left-hand side, it became necessary, in passing, for the drivers to he next each other, consequently the tcams had to go to the right in order that they might see that the wagons cleared each other. In narrow roads this would be impossible with the drivers on the outside. The rule of the road for the ox-team being of necessity a turn-out to the right, the general rule of the road followed this precedent.

The English system of turning to the left is logically derived from the fact that the driver must sit in such a position as to leave his whip hand free aud is, in consequence, on the left hand side of his vehicle. Thus situated, he must turn out to the left in order to have a clear view of the wheels and teams as they pass.

A mau and woman entered a Third ave. car the other day with a hoy who looked as if he were six or seven years old, but the father said was not yet four. Soon afterward a seat became vacant, the mother motioned for the child to take it. "No," he said with a grieved expression, "if you won't pay for me, I've uo right to sit down."

A New Departure in Laying of Traeks.

A recent issue of a Boston daily paper contained the following, relative to President Richards' new T rail, and the improvements proposed by him iu street railway "permanent way:"-During the last teu or twelve years, the various street railway companies of this city have seemed to vie with each other in providing comfortable and elegant cars for the use of their patrons, and to-day no city in the country begins to compare with Boston in the way of luxurious street cars. But in another direction none of the street railways seem to have made any advance. The method of track construction remains as it was in the begiuning. If the various street railway officials were asked what they regard as the most important point to be sought in the construction of their tracks, they would unhesitatingly declare "permanency." But the present manner of laying a street railway is far from meeting that requirement. The expense of keeping the tracks in repair is something enormous, and this expense is forced upon the companies, not by wearing out of the rails, but by the rotting of the stringers and other timber work which supports the rail. As now used, the rail is a flat one, wide, but of comparatively no depth, and the lack of vertical stiffness and strength renders imperative the use of wooden stringers upon which the rail is spiked. These woodeu stringers necessitate the use of crossties or sleepers under them at comparatively short intervals, and thus is huilt up a perishable superstructure of wood where, of all places, permanency is most needed. As is well known, the first part of the road to give way is the stringer. Placed as it is, exposed to a constant succession of wet and dry conditions, its life would of necessity be brief. But there are other influences at work to hasten its decay. The form of the rail itself teuds to this result. The weakest part of a rail is always at the ends, or where two rails meet and form a joint. At this point a flat plate is laid under the joint; this decreases, hut does not remove the evil. The small space between the ends of the rails, the spike holes, always close to the ends, and the very presence of the joint plate let into the timber, all contribute to hold the moisture aud destroy the stringer, There is always a tendeucy to more or less motion at the joints, and they quickly hecome loosened. The result is that the ends of every rail are exposed to heavy blows from the wheels of the passing cars. These blows react upon the joint plate, and the wearing away of both the stringer and the rail is inevitable. As above indicated, the common form of rail necessitates the use of wooden stringers, but by altering the shape of the rail, the necessity of using the stringers is done away with.

Some months ago President Richards of the Metropolitan railroad patented a new rail and during the past few weeks it has been laid in Devonshire, State, Congress, and Franklin streets. This new rail $\frac{1}{2}$ a great advance on the old style, but in lay-

83

ing it the use of wooden stringers has been continued, though they have been laid much deeper, the T form of the new rail necessitating it. During his recent trip to the West to the St. Louis Convention, President Richards was met by parties interested in the Johnson Steel Rail Company, and the result was that he and his rail were absorbed by the company, and hereafter the "girder" style of laying rails will be adopted by the Metropolitan Company. Briefly stated, the "girder" system may be described as an adaptation to street railways of the method of laying tracks on steam railroads. The stringers, upon which the rails are now laid, are entirely done away with, and the rails are laid upon the ties. Of course, the ties are not placed upon the top of the ground as in a steam railroad, but are sunk beneath it until the top of the T rail is even with the street.

Where the street is paved, it is necessary to secure still greater depth for the ties, and, in order to accomplish that object, chairs are used. Being spiked firmly to the ties, the rails rest upon them solidly, and, as the rails are fastened together with fish plates, a continuous track of the most permanent character is secured. The rails to be used on the Metropolitan tracks are those patented by President Richards, having a broad tread for the wheels and a narrow flange just wide enough to admit the flange of the car wheels, but too narrow for the wheels of heavy wagons or even the light carriages to run in. Thus the danger of injury to common vehicles in turning out of the track is done away with entirely.

The ties are placed beneath the paving of the street, and hence are not subject to that change of atmosphere which is so destructive in stringers. The paving material is laid close to the rail and the ballast or gravel is well tamped into the pockets of the rail, thus aiding to make the track solid and immovable.

Although the "girder" system of track laying is new in this city, it is in use in nearly every city outside of New England where street cars are run, and President Richards declares that there will be no more laying of tracks on stringers. One would naturally think that the first cost of laying a track by the new system would be heavier than by the old, but the company controlling the various patents is prepared to prove that it is much less, and that the tracks when laid will last five times as long. In the matter of repairing or relaying the tracks, there will also be a great saving, as there will be no necessity of tearing up the entire roadbed, as at present, but only the transverse portion over each tie, and of course, a large amount of time will be saved, and the traffic of the street will be much less interrupted. In the above description the use of wooden ties is contemplated, but experiments are making in the use of iron or steel ties, and many advantages are claimed for them, not the least of which is durability, though the first cost is greater than for wood.

Reckenzaun's Electric Tramcar.

Mr. A. Reckenzaun, of No. 50, Queen Victoria street, London, has for a long timo been engaged in the application of electricity, derived from secondary batteries, to the propulsion of boats and carriages. The car is a double bogie, carried on four wheels at each end. Each wheel carriage is provided with an electric motor, which is geared to the axle by worm gearing, the worm and wheel being of very steep pitch in order that the armature may readily rotate when the car is moved by gravity or by some external force. The wheel runs in au oil bath, and thus perfect lubrication is secured.

Within the body of the car, and stowed under the seats, are sixty cells of the Electric Power Storage Company's accumulators, weighing in all in the actual car, 2400 lb. The conductors from the cells and from the dynamos are led to a switch on the driver's platform, by which the two motors can be arranged parallel or in series. In the former case the resistance in the external circuit is, for a given speed, only one quarter of what it is in the latter case, and consequently the belting gives off its power far more rapidly, the amount being 30 and 100 ampères in the two cases respectively. At starting, the full power is developed, and also upon inclines, while during a steady run the motors are arranged in series. The weight of the actual car and machinery is $4\frac{1}{2}$ tons, made up as follows: Car, $2\frac{1}{4}$ tons; accumulators, $1\frac{1}{4}$ tons; motors and gear, ½ ton. The working expenses for traction, including interest and depreciation, are estimated at 34d. per mile. Reversing is effected by the device of using two sets of brushes, pivotted in such a way that one set can be turned back, and the second set brought into contact with the armature simultaneously.

The motor invented by Mr. Reckenzaun has for its special features lightness, and strength of the maguetic field. The armature is of the Gramme type, the coils being wound upon a core that is built up of links like a pitch chain. These links are held together by long pins, which pass through end discs of non-magnetic material keyed on the central axis. Each set of links can have its bobbin wound separately, and can be removed without disturbing the rest of the armature. The principal novelty is in the use of an internal field magnet hung upon the central shaft, and kept from rotating by a heavy weight at the lower This magnet consists of two side. end pieces, two cores, and pole-pieces. Its weight is carried on antifriction rollers. The current is led to the internal coils through brushes and collector rings.

These machines are very light for their power, and at the same time they are strong, durable, and efficient. A number of them of various sizes have been working for a considerable time, it is claimed, without giving the least trouble, and whatever speed they run at, there is no appreciable sparking, without adjusting the commutator brushes. Engineering.

The Brooklyn Bridge Management.

One of the New York morning papersrecently stated rather emphatically, "that the present management of the Bridge (Brooklyn) are incapable of taking care of the structure, because they do not put side doors in the cars and adopt a new grip at once."

Now be it known unto all, especially those who keep croaking about matters of which they have little information and knowledge, that the Bridge Trustees have ordered six new cars, with side as well as end doors. And further be it known, that two expert mechanical engineers are now giving their attention to grip matters. And if any grip is presented having all the requirements for a reliable cable grip on the Bridge railroad, and possessing features superior to those in the Paine grip now in use, it will be thoroughly tested and if fully up to requirements will be adopted. There is not a dollar in the Paine grip for any one connected with the Bridge. Public demands and pressure of travel will be met with the application of the best appliances and ample accommodations as soon as practicable.

A ROPE RAILWAY IN AUSTRIA to connect the upper and lower parts of the town of Biella, Austria, has received the sanction of the Minister of Public Works. The line, which will consist of a double track, will be 180 metres (590') in length, with a difference of level between the two extremes of 60 metres (196' 8"), corresponding to a gradient of 1 in 333. The gauge proposed is one metre and the rails, which are to be of steel and of the Vignoles pattern, will weigh 36 kilogrammes per metre (72 lb. per yard); they will be fixed on strong oak longitudinal sleepers, connected at distances of four metres apart (13') by iron tie rods, and the whole permanent way will be supported by brick pillars. The carriages (one for each line) will be capable of holding twelve passengers, and will be attached to the ends of a wire rope, passing over a horizontal pulley at the top of the line, so that one car descends whilst the other ascends. Below the floor of the carriage will be a tank, divided into three compartments, two of them being of the capacity of one cubic metre whilst the other will hold 11 cubic metres of water, or in all 31 tons in weight. The tanks of the car being filled with water at the top of the line it descends by gravity, hauling up the other, the tank of which is empty. The speed will be regulated by a friction brake connected with the horizontal pulley passes, but the carriages will also be provided with powerful brakes, sufficient to bring them to a standstill on the incline in case the rope should break. The rope will be of steel, consisting of six strands of eight wires each, its diameter twenty-three millimetres $\left(\frac{7}{8}''\right)$, —Industrial World.

This is the only paper in the country devoted entirely to the interests of street railways. Only \$1.00 a year.

Cubic Space of Air in Stables.

Authorities ou ventilation observe that a man makes twenty inspirations of air every minute, each inspiration being of a volume equal to forty cubic inches, so that he requires 800 cubic inches per miuute of fresh air to supply him with the necessary healthgiving pabulum for his lungs. Each expiration unfits for breathing twice the bulk of fresh air, that is the 800 cubic inches expired per minute contaminates 1,600 cubic inches of fresh air, or uearly a cubic foot. Hence, in round numbers, a man requires a cnbic foot of fresh air per minute or sixty cubic feet per hour. Thus, to give this amount of air space in au apartment it requires a room of 600 cubic feet per individual.

A horse or cow is said to have six times the breathing capacity of a man, so that it will require 360 cnbic feet per hour, or 3,600 cubical feet of space. If every animal requires 1,000 cubic feet per hour, it follows that the dimensions of a stable with stalls 6' 6" wide, 9' long, with a passage behind of 6', and having a height of 10', will afford this amount of space to each horse.

The mode of ventilating a stable has loug been a vexed questiou, though there is a very simple means at the disposal of the bnilder. The open roof is acknowledged ou all hands as the most desirable; it admits of a ridge louvre or ventilator extending the whole length of roof. The ridge veutilator system was strongly recommended by the Commissioners on barrack and hospital improvements, who specially reported on cavalry stables.

They also recommended air bricks, 9'' by 9", introduced in the walls along the caves with their apertures arranged that the curreuts of air will flow in the direction of the ridge. A window to each stall on the swing principle, and with a series of inlets below, about 6" above the floor, one to each stall, give all that is required to produce a healthful stable.

Street Railways in Chili.

In Chili young women figure as car conductors. The experiment was first tried during the recent war with Pern, when all the able bodied men were sent to the army, aud provod so successful that the practice of their employment has become permanent, to the advantage, it is said, of the companies, the women and the public. It is very odd to see a woman with a bell puuch taking up fares, and the first impression is not favorable; but a stranger becomes accustomed to this, as to all other novelties, aud concludes that it is not such a bad idea after all,

The conductors, or conductoresses, are usually young and sometimes very pretty, and commonly of the mixed race-of Indiau and Spanish blood. They wear a neat uniform of blue flannel, with a jaunty Panama hat, and a many pocketed white pinafore reaching from the breast to the aukles, and trimmed with dainty frills. In these pockets they carry small change and tickets,

while hanging to a strap over 'their shoulders is a little portmanteau or shopping bag, in which is a lunch, a pocket handkerchief and surplus money and tickets.

On paying his fare each passenger reccives a yellow paper ticket, numbered, which he is expected to destroy. The girls are charged with so many tickets, and when they return to headquarters are expected to return money for all that are missing, any deficit being deducted from their wages, which are \$25 a month. As an additional check upon dishouesty, spotters are stationed along the line, who hop on the car as it passes, count the passengers, write the number down in a memorandum book aud jump off. A few blocks further ou auother spotter repeats the job, and these books are compared by the chief inspectors to see that the returns of the conductress correspond.

OFFICIAL LIST OF THE

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.

[The following is a complete list of the Street Rail ways of the United States and Canada, so far as we have received the official returns from the various roads. Will those roads not reported kindly fill out the blanks sent them and mall to us without delay, so that they may be properly represented in the STREET RAILWAY JOURNAL?]

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

AKRON, O.-Akron St. Ry. & Herdle Co. 21/ m² c, 31 h. Pres. Ira M. Miller, V. Pres. James Christy, reas. B. L. Dodge, Sec. F. M. Atterholt, supt. John Metlin Treas. B. T. Metlin.

T. Mettin.
ALBANY, N. Y. – Watervliet Turnpike R.R. Co. 7½ m, 26-45 lb r, 27 c, 143 h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster. The Albany Ry. 10 m, 4-8½ g, 33-47 lb r, 51 c. 194 h. Pres., Supt. and Treas. John W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St. ALLENTOWN, PA. – Allentown Pass. R.R. Co. 3½ m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Ballet, Supt. Russel A. Thayer.
ALTON, ILL. – Alton & Up. Alton Horse Ry. Co. ALTONA. PA. – Clty. Pass. Ry. Co. of Altonant

ALTOONA, PA.—City Pass. Ry. Co. of Altoona. 8½ m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John P. Levan, Sec. & Treas. L. B. Relfsneider, Supt. John J. Buch.

AMSTERDAM, N. Y.-Amsterdam St. Ry. Co. 1% ni, 4-8 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. President's office 112 Front St., L. Island City, N. Y.

ANNISTON, ALA .-

ASHTABULA, O.—Ashtabula Clty Ry. Co. 4 m, 4-8% g, 40 lb r, 6 c, 60 h. Owner & Prop. Jno. N. Stewart.

Stewart.
ATCHISON, KAN.—Atchison St. Ry. Co. 5% m, 4-8% g, 20-30 lb r, 19 c, 60 h. Pres. & Gen. Man. J. H. Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. Gate City St. R.R. Co. 2% m, 4-8% g, 16 lb r, 7 c, 26 h. Pres. L. B. Nelson, V. Pres. L. DeGlve, Sec. & Treas. John Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co. West End & Atlantic R.R. Co. Metropolitan St. R.R. Co. H. Brumhead, Man. & Pur. Agt. Jno. S. Brumhead.

Agt. Jno. S. Brumhead. ATLANTA, GA.—Atlanta St. Ry. Co. 13 m, $4-8\frac{14}{9}$ g, 42 lb C. B. rail, 40 two h cars, 150 horses. North Atlanta Line 1 m. Decatur St. Line 1.50 m. Marl-etta St. Line 2.50 m. McDonongh St. Line 1.50m. Peachtree St. Line 2.50 m. West End Line 2.50 m. Whitehall St. Line 1.60 m. Pres. Richard Peters, Sec. & Treas. J. W. Cuipepper, Supt. & Purch. Agt. E. C. Peters. Office, 49 Line St.

ATLANTIC, N. J.-Atlantic City Ry. Co.

AUBURN, N. Y. — Auburn & Owasco Lake R. R. Co. 1¼ m, 4.8½ g, 28-30 lb r, 3c, 12 h. Pres. D. M. Osborne, Sec. & Treas. C. B. Koster, Supt. B. F. Andrews. East Genesee & Seward Ave. Ry. Co. 1½ m, 4-8½ g, 30 lb r, 6 c, 25 h. Pres. David M. Osborne, Sec. & Treas. C. B. Fosters, Supt. B. F. Andrews. AUGUSTA, GA.—Augusta & Somerville R.R. Co.

AURORA, ILL.—Aurora City Ry. Co. 5 m, 4-83 g, 28 lb r, 7 c, 10 h, 30 mu. Pres. H. H. Evans, V. Pres. S. W. Thatcher, Sec. A. J. Hopkins, Treas. E. W. Truth, Supt. J. B. Chattee.

BABYLON, N. Y.-Babylon Horse R.R. Co. $1\frac{1}{4}$ h, -g, -lb r, 2 c, 3 h. Pres. W. F. Norton. m.

BALTINORE, MD.-Baltimore & Powhatan Ry. Co. 6 m, 5-4% g, 4 c, 17 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Clark, Supt. I. M. Ketrick. Baltimore City Pass. Ry. Co. 40 m, 5-4% g, 46 lb r, 154 c, 1000 h. Pres. Oden Bowle, Treas. John Bolglan, Sec. S. L. Bridge.

Baltimore Union Pass. Ry. Co. Supt. T. C. Robbins. Baltimore & Catonsville Ry. Co. Baltimore & Halls Spring R.R. Co.

Baltimore & Pimlico & Pikesville R.R. Co.

Central Ry. Co. 5½ m, 5-6 g, 40 lb r, 22 c, 180 h. Pres. Peter Thompson, Sec. & Treas. Walter Blakl-stone.

Citizen's Ry. Co. 20 m, 5-4½ g, 46 lb r, 34 c, 360 h. Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed.

Monumental Clty Ry. Co.

North Baltimore Passenger Ry. Co.

People's Pass. Ry. Co. $6\frac{1}{2}$ m, $5.4\frac{1}{3}$ g, 42.45 lb r, 30 c, 200 h. Pres. R. E. Hamilton, Treas. Gustavus Ober, Sec., Supt. & Pur. Agt. Wm. A. House, jr. Office, Fort Ave. & Johnson St. Soon move to Druid Hill Ave. York Road R.R. Co.

BATTLE CREEK, MICH.—Battle Creek Ry. Co. 5 m, 3-6 g, 28 lb r, 8 c, 18 h, 3 mu. Pres. Geo. Det-J. White, V. Pres. H. H. Brown, Sec. Chas. Thomas, Supt. John A. White, Gen. Man. J. W. Haha.

BAY CITY, **MICH.**—Bay City St. Ry. Co. 74 m, 48% g, 18 lb r, 13 c, 35 h. Pres. James Clements, Treas. Wm. Clements, Sec. Edgar A.Cooley.

BEAVER FALLS, PA.—Beaver Valley St. Ry. Co. 3 1-10 m, 5 c, 21 h. Pres. M. L. Knight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whitla.

BELLAIRE, O.-Bellaire St. R.R. Co.

BELLEVILLE, ONT., CAN.-Believille St. R.R. Co.

BEREA, 0.—Berea St. Ry. Co. 15 m, 3-6 g, 28 lb 2 c, 2 h. Pres. C. W. D. Miller, V. Pres, T. Chinch-ard, Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bishop.

Bishop.
BINGHAMITON, N. Y.--Washington Street & State Asylum R.R. Co. 4½ m. 4 g, 16-25 lb r, 13 c, 23 h. Pres. B. H. Meagley, V. Pres. Geo. Whitney, Scc. C. O. Root, Treas. F. E. Ross.
Binghamton Central R.R. Co. 3½ m (2½ laid), 3 g, 28 lb r, 6 c (not in operation). Pres. Geo. L. Crand-all, V. Pres. Neison Stow, Sec. & Supt. Chas. O. Root, Treas. H. J. Kneeland. Offices 63 Court St.

Binghamton & Port Dickinson R.R. Co. 5 m, 4-83 g, 20-30 lb r, -c, -h. Pres. Harvey Westcott, Sec. & Treas, G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 State St. Main, Court & Chenango St. R.R. 5 m, 4-8 g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St.

BHRMINGHAM, ALA.—Birmingham St. Ry. Co. 5% m, 4-8 g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris, Supt., Sec. & Treas. W. H. Morris.

BLOOMFIELD, N. J.-Newark & Bloomfield R. R.

BLOOMINGTON, ILL.-Bloomington & Normal Horse R

BOONE, IA.—Boone & Boonsboro St. Ry. Co.
13 m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds Treas. J. B. Hodges, Supt. A. B. Hodges,
BOONSBORO, IA.—Twin City & Des Moines River Motor St. Ry. Co. 3 m, 3-6 g, 2 motors, 3 c.
Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec.
S. K. Huntsinger.

BOSTON, MASS.—Highland St. Ry. Co. 19 m, 4-8½ g, 50 lb r, 187 c, 925 h. Pres. Moody Merrill, Clerk R. B. Falrbairn, Trcas. Samuel Little, Supt. J. E. Rugg.

Lynn & Boston. 34% m, 4-8% g, 25-48 lb r, 114 c, 514 h. Pres. Amos F. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.

Metropolltan R. R. Co. 80 m, 4-8 g, 50 lb r, 700 c, 3,600 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas, Chas. Boardman. Office, 16 Kllby St.

Middlesex R.R. Co. 26 m, 4-8½ g, 50 lb r, 150 c, 700 h. Pres, Chas. E. Powers, Treas, & Supt. John H. Studley. Address, 27 Tremont Row, Boston.

So. Eoston Ry. Co. 13 m, 4-3½ g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersey, V. Pres. Jas. C. Davis, Sec. & Treas. Wm. Reed, Supt. Daniel Coolidge.

BRADFORD, PA.-Bradford & Kendall R.R. Co. M. m. 4-8% g, 38 lb r, 3 c, 4 h. Pres. James Brodcy, c. N. B. Parsons, Gen. Man. & Supt. Enos Parsons. BRIDGEPORT, CONN.-The Bridgeport Horse R.R. Co. 5 m, 4-8% g, 42 lb r, 14 c, 70 h. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar.

BROCKTON, MASS. – Brockton St. Ry. Co. 3%
m, 24 c, 97 h. Pres. W. W. Cross, Treas. & Sec. Z. C. Kelth, Supt. H. B. Rogers.
BROOKLYN, N. Y. – The Atlantic Avenue R. R. Co. of Brooklyn. 24% m, 4-8 g, 60 lb r, 244 c, 8*2 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost. Office cor. Atlantic & Third Aves.

JANUARY, 1930.]
Broadway R.R. Co. 10 1-10 m, 4-S½ g, 45-50-60 lb r, 166 c, 65 h. Pres. W. H. Husted, V. Pres. Edwin Beers, Sec. & Treas, Robert Sealer, Supt. Joshua Crandall. Office 21 Broadway, E. D.
Brooklyn Cross Town R.R. Co. 8 m, 4-S½ g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ezra B. Tuttle, Sec. & Treas, John R. Connor, Supt. D. W. Sullivan. Offices 585 Manhattan Ave.
Bushwick R.R. Co. 20 m, 4-S½ g, 45-50-60 lb r, 172 c, 600 b. Pres. Frank Cromwell, V. Pres. Wm. H. Husted, Treas. & Sec. 8. D. Hallowell, supt. Wm. M. Morrison. Office 22 Broadway, N. Y.
The Brooklyn. Bushwick & Queens County R.R. 6 m, 4-S½ g, 42-47 lb r, 41 c, 117 h. Pres. Richard H. Green, V. Pres. James W. Elwell, 59 South St. N.Y. Sec. John D. Elwell, Treas. Wall. Wm. W. Greene.
Brooklyn City R.R. Co. 44 m, 4-S½ g, 60 lb r, 761 c, 3045 h. Pres. William H. Harzard, Y. Pres. William M. Thomas, Sec. & Treas. Daulel F. Lewis, Asst. Sec. Francis E. Wrigley. Offices 8 & 10 Futton St. Brooklyn City & Newtown R.R. Co. 11 m, 4-S½ g, 45-60 lb r, 128 c, 419 b. Pres. Louis Fitzgerald, N. Y. City, Sec. & Treas. H. A. Schuz, Supt. H. W. Bush. Office cor. DeKalb & Central Aves.
Calvary Cemetery, Greenpoint & Brooklyn Ry. Co. Coney Island and Brooklyn R.R. Co. 11 2-5 m, 45 lb r, 4-S½ g, 03 c, 316 h. Pres. James Jourdan, Sec. Ed. F. Drayton, Supt. William Farrell. Office cor. Smith & Huntington Sts.
Coney Island, Sbeepshead Bay & Ocean Avenue R. K. Co. Pres. A. A. McClemer, V. Pres. Daulel Mone, Sec. John McMahon, Sbeepshead Bay, Treas. Horace Valkulyh. Office 16 Red Hook Lane.
Crostown Line, Hamilton Ferry to Bridge.
Grand St. & Newtown R.R. Co. Sith, 4-84 g, 4.5-50 lb r, 72 c, 250 h. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First St.

Crosstown Line, Hamilton Ferry to Bruge. Grand St. & Newtown R.R. Co. 5½, m, 45% g, 45-50 lb 7, 2 c, 230 h. Pres. Martin Joost, Sec. & Treas. Wm E. Horwill, Supt. Walter G. Howey. Office 129 First St. Grand street, Prospect Park & Flatbush R.R. Co. 4½ m, 4.5% g, 50 lb 7, 75 c, 244 b. Pres. Louis Fltz-gerald, 120 Broadway, N.Y., Sec, & Treas. Duncan B. Cannon, Supt. Jno. L. Heins. Offices Franklin Ave. and Prospect Place. Greenpoint & Lorimer St. Prospect Park & Coney Island R.R. Co. 4 7-10 m, 45-50 lb 1, 4-5% g, 69 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, Supt. Robert Attlesey. Offices Nintb Ave. 196 b & 20th Sts. Prospect Park & Flatbush R.R. 1½ m, 4-8% g, 34 lb r. 70 c, 330 h. Pres. Lottls Wood, Sec. & Treas. Sam1 Parkhill, Supt. Lottls Wood, Sec. & Treas. South Brooklyn Central R.R. Co. 7 m (4½ m laid), 48% g 60 lb r, 74 c, 195 b & 20th Sts. The New Williamsburgh & Flatbush R. R. Co. 6½ m, 4.5% g, 47-50 lb 7, 74 c, 255 h. Pres. Geo. W. Van Alien, 54 Ann St. New York, Sec. W. B. Waitt, 34th St. & 9th Ave., New York, Treas. C. B. Cottrell, 8 Spruce St., N. 7 (1ty, Supt. Chas. E. Harris, Nost-rand Ave, & Carroll st., Brooklyn. The Union Railway Co. of the City of Brooklyn mot in operation. Yan Brunt St. & Erfe Basin R.R. Co. 1½ m, 4-8½ f, 45 lb 7, 6, 24 h. Pres. John Cuningham, Sec. X Treas. Edmund Terry. BUTSWICK, GA. Brunswick St. R.R. Co. BUFFALO, HL. - See Mechanicsburg, II. BUFFALO, N. 4. - Burlington St. R.R. Co. 2% m, 4-8½ g, 50 lb r, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. P. P. Pratt, Sec. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Buffalo East Side St. R.R. Co. 2% m, 4-8½ g, 50 lb r, 96 c, 510 h. Pres. John Patterson, Sec. & Mah. C. T. Patterson. Union St. RY, Co. 2% m, 4-8½ g, 50 lb r, 96 c, 510 h. Pres. John Patterson, Sec. & Mah. C. T. Patterson. Union St. RY, Co. 20 m, 4-8½ g, 50 lb r, 94 c, 1,410 h. Pres. John Patterson, Sec. & Mah. C. T. Patterson. Union St. RY, Co. 20 m, 4-8½ g, 50 lb r, 94 c, 1,410 h. Pres. P

N. Akarman. CAMDEN, N. J.—Camden & Atlantic St. Ry. Camden Horse R.R. Co. 9 m, 5-1 g, 35-47 lb r, 26 c, 85 h. Pres. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood. CANTON, O.—Canton St. R.R. Co. (new road.) CAPE MAY, N. J.—Cape May & Schellenger Landing Horse R. R. CARTHAGE, MO.— CEDAR RAPIDS, LA.—Cedar Rapids & Marion St. Pass. Ry. Co.

St . Pass. Ry. Co. CHAMPAIGN, ILL.—Champaign R.R. Co

CHAMPAIGN, ILL.—Champaign R.R. Co. Urbana & Champaign St. R.R. Co. (See Urbana.)
CHARLESTON, S. C.—Charleston Cliy Ry.
Co. 8 ½m, 4-8½ g, 23-42 lb r, 22 c, 84 h. Pres. Jno. S.
Riggs, Treas. Evan Edwards, Sec. Frank Whelden,
Supt. Jno. Mohlenhoff.
Enterprise R.R. Co. 12 m, 5 g, 42 lb r, 14 c, 51 h.
Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt.
T. W. Passallaigere.
Middle Street Sullivan Island Ry. Co. 2 m, 6 c, 12 mu.
Pres. B. Callaghan, Sec. & Treas. Frank F. Whidden, Supt. B. Buckley.
CHATTANOOGA, TENN.—Chattanooga St. R.
R. Co. 2½ m, 4-8½ g, 16-25 lb r, 8 c, 50 h. Pres. J.
H. Warner, Sec. C. R. Gaskill, Supt. A. B. Wingfield.
CHESTER, PA..—Cbester St. Ry. Co. 5½ m, 5-2½

CHESTER, PA.-Coster St. Ry. Co. 54 m, 5-29 g, 12 c, 70 h. Pres. Richard Peters, Jr., Solicitor, Geo. B. Lindsay, Treas. Sam'l A. Dyer, Sec. E. M. Cornell. Cornell.

Cornell. **CHICAGO, HLL.**—Chlcago Clty Ry. Co. 87 m, 4-8½ g, 45 lb r, 567 c, 1,416 h, cable doing work of 2,500 h. Prest C. B. Holmes, Sec. H. H. Windsor, Treas. T. C Pennington, Snpt. C. B. Holmes. Chlcago West Division Ry, Co. 40 m, 4-8½ g, 40 lb r, 620 c, 345 h. Pres. J. R. Jones, Sec. George L. Webb, Supt. Jas. K. Lake.

Cblcago & Hyde Park St. -m, -g, -br, -c, -b. Pres. Douglas S. Clarke. North Chicago City Ry. Co. 35 m, 4-8% g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. O. Turner, V. Pres. Jacob Rehn, Sec. & Treas. Illram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Tbreedy, Supt. Horse Dept. Robt. Atkins, Pureb. Agt. Jobn W. Roach, Master Mechanic J. Miller.

CHULLCOTHE, O.—Chillicothe St. R.R. Co. 1% m, 3 g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewei McMartin.

CINCINNATI, O.—Cincinnatl Inclined Plane Ry. Co. 3 m, 5-2½ g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith. Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill

Shiffel, Sec. & Supe. States M. Doneity, Frees. Jos. S.
Hill.
Cincinnati St. Ky. Co. Pres. Jno. Kilgour, V. Pres.
Albert G. Clark, Treas. R. A. Dunlap, Sec. & Auditor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B.
F. Haugbton.
Cincinnati & Mount Auburn R.R. Co.
Columbia & Cincinnati St. R.R. Co. 3½ m, 3 g, 35
Ib r, 3 c, 6 dummy c. Pres. C. H. Kilgour, V. Pres.
John Kilgour, Treas. B. F. Braman, Sec. A. H.
Lookout, O.
Mt. Lookout, O. Supt. J. J. Henderson, Mt.
Lookout, O.
Mt. Adams & Eden Park Inclined R.R. Co. 3½ m, 5-2½ g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdock, Supt. Chas, Whitten.
So. Covington & Clincinati. (See Covington, Ky.)
CLEVELAND, O.—The Brooklyn St. R.R. Co. 8½

be, 59.c. 5. 1. Multicle, Supi. Charls, Whiteh.
So. Covington & Clucinnati. (See Covington, Ky.)
CLEVELAND, O.—The Brooklyn St. R.R. Co. 8% m, 4-8% g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, Y. Pres, A. J. Moxham, Sec. J. B. Hoefgen, Treas. John McConnell, Supt. A. L. Johnson.
Broadway & Newburg St. R.K. Co. 6 m, 4-8% g, 10
c, 160 h. Pres. & Supt, Joseph Stanley, V. Pres. Superior St. R.R. Co. 15 m, 4-8% g, 45 lb r, 46 c, 225 h. Pres. Frank De H. Robison, Jr. The East Cleveland R.R. Co. 20 m, 4-8% g, 35-40 lb
r, 92 c, 450 h, 1 electric motor. Pres. A. Everett, V. Pres. Chas. Wason, Sec. & Treas. H. A. Everett, Supt.
E. Duty. Offices, 1154 & 1158 Euclid Ave. Woodland Avenue & West Side St. R.R. Co. 17 m, 4-8% g, 43 lb r, 100 c, 550 h. Pres. M. A. Hanna, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mulhen.
South Side St. Ry. Co.
st. Clair Street Ry. Co.—m—g,—lbr—c,—Pres. Chas Hatbaway.

West Side R.R. Co. CLINTON, IA.-Lyons & Clinton Horse R.R. Co.

(See Lyons.) COLUMBUS, GA.—Columbus St. R.R. Co. 3 m, 48% g, 16 lb r, 6 c, 25 b. Pres. Cliff B, Grimes, Sec. L. G, Schnessier, Treas. N. N. Curtis, Supt. J. A. Ga-bourgh.

bourgh.
COLUMBUS, O. —Columbus Consolidated St. R.R.
COLUMBUS, O. —Columbus Consolidated St. R.R.
Co. 19 m, 5-2 g, 30-46 lb r, 83 c, 350 h. Pres. A. Rodgers, V. Pres. H. T. Cbittenden, Sec. & Treas. E. K.
Stewart, Supt. J. H. Atcherson.
Glenwood & Greenlawn St. R.R. Co. 446 m, 3-6 g, 24 lb r, 9 c, 25 c. Pres. A. D. Rodgars, V. Pres. B. S.
Prown, Sec. R. S. Rockley, Treas. S. S. Rickley, Supt. Jonas Wilcox.
CONCORD. N. H.—Concord Horse B. R. Co. 8 m.

Brown, Séc. R. S. Rockley, Treas. S. S. Rickley, Supt. Jonas Wilcox.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.
CORTLAND, N. Y.—Cortland & Homer Horse Ry. Co. 4 m (2½ laid), 4-8½ g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y. Sec. J. M. Milne, Treas. S. E. Welch, Supt. S. E. Welch. (Leased to D. N. Miller.) Office 23 No. Mercer St.
COUNCHL BLUFFS, IA.—Council Bluffs St. R.R. COVINGTON, KY.—So. Covington & Cincinnati St. Ry. Co. 17½ m, 5-2½ g, 43 lb r, 46 c, 296 h. Pres. E, F. Abbott, Sec. S. C. Bunton, Treas. G. M. Abbott.
DALLAS, TEX.—Dallas St. Ry. Co. 4½ m, 4-8½ g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec. Harry Keller, Supt. C. E. Keller.
Commerce & Way St. R.R.
DANVILLE, ILL.—Clitzens' St. Ry. Co. 4 m, 4 g, 20 lb r, 7 c, 35 mu. Pres. Wm. I. Cannon, V. Pres. aneul.
DAVENPORT. IA.—Dayenport. Central St. R. R.

Samue

Samuel. DAVENPORT, IA.—Davenport Central St. R.R. 2½ m, 4-8½ g, 20 lb r, 12 c, 36 h. Pres. James Grant, V. Pres. W. L. Allen, Treas. J. B. Fldier, Supt. B. Rumsey, Sec. O. S. McNeil. Davenport City Ry, Co. H. Schultger, Lessee. DAYTON, KY.—Newport & Dayton St. Ry. Co. 2 m, 5-2½ g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

Bean.
DAVTON, O.—Dayton St. R. R. Co. 3% m, 4-8% g, 44 lb r, 32 c, 66 h. Pres. J. W. Stoddard, V. Pres. H. S. Williams, Sec. C. B. Clegg, Supt. A. W. Anderson. Oakwood St. Ry. Co. 3 - 5 m, 4-8% g, 58 lb r, 13 c, 60 h. Pres. Charles B. Clegg, Sec. M. P. Moore, Supt. Wm. Davis.
The Wayne & Flfth St. R.R. Co. 3% m, 4-8% g, 34-38 lb r, 5 c, 30 h. Pres. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. Noutzahn.
DECATUR, ILL.—Decatur Horse Ry. Co. Citizens' Street R. R. Co. 2 m, 4-8% g, 20 lb T r, 7 c, 47 h & mu. Pres. D. S. Sheliabarger, Sec., Treas. & Supt. A. E. KInney.
DEERING. ME.—See Portland.

Supt. A. E. Kinney.
DEERING, ME.—See Portland.
DENISON, TEX.—Denison St. Ry. Co. 3 m
3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Waterhouse,
Supt. S. A. Robinson.
DENVER, COL.—Denver City Ry. Co. 16 m, 3-6
g, 16 lb r, 50 c, 250 h. Pres. Geo. H. Holt, 10 Wall St.,
New York City, See, G. D.L'huiller, 10 Wall St., New
York City, Treas. & Man. G. E. Randolph.
DES MOINES, IA.—Des Moines St. Ry. Co. 10
m, 3g, 25-30-38-52 lb r, 18 c, 100 h. Pres. M. P. Turner, see, M. A. Turner.
Des Moines & Sebastopol St. Ry. Co.
DETROIT, MICH.—Fort Wayne & Elmwood Ry

DETROIT, MICH.—FORT Wayne & Elmwood Ry Co. 6 m, 4-8½ g, 45 lb r, 30 c, 180 h. Pres. H. B Brown, V. Pres, Edward Kanter, Treas. George B. Pease, Sec. N. W. Goodwin, Supt. Geo. S. Hazard. Detroit City Ry. 30 m, 4-8½ g, 40-43½ lb r, 130 c, 700 h. Includes Jefferson Ave. line, Woodward Ave.

llne, Michigan Ave. line, Gratiot 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, Mast. Mech. John Willis.

85

Heugh, Gen. Supt. Robert Bell, Mast. Mech. John Willis.
Grand River St. Ry. Co. 2% m, 48% g, 43 lb r, 13 c, 10 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. C. M. Dalley.
DOVER, N. H.-Dover Horse R.R. Co. 2.2-5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingfor, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Harrison Haley, I. A. Bonoherg, Sec. & Treas. B. E. Linchan, Supt. J. A. Roonberg, Sec. & Treas. B. E. Linchan, Supt. J. A. Roonberg, Sec. & Treas. B. E. Linchan, Supt. J. A. Roonberg, Sec. & Treas. B. E. Linchan, Supt. J. A. Rhonherg, Sec. & Treas. B. E. Linchan, Supt. J. J. Linchan.
DULUTI, MINN.-Duluth St. Ry. Co. 3 m, 3-6 g, 30 lb r, 6 c, 7 h, 31 mu. Pres. A. S. Chase, V. Pres. O. P. Stearns, Sec. & Treas. L. Mendenhall, Supt. & Pur. Agt. W. T. Hoopes.
EAST OAKLAND, CAL.-Oakland, Brooklyn & Fruitvale R.R. Co.
EAST SAGINAW, MICH.-Street R. R. Co. of East Saginaw. - m, 48% g, 30 lb r, 4 c, 35 h. Pres. & Supt. W. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.
Co.

EAST ST. LOUIS, ILL.-East St. Louis St. R.R. Cć

EAST ST. LOUIS, ILL. — East St. Louis St. R.R. Co. EASTON, PA. — The Easton & So. Easton Passen-ger Ry. Co. $1\frac{1}{2}$ m, $5\cdot2\frac{1}{2}$ g, $4\cdot$ Ur. $4\cdot$, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Elisha Burwell, So. Easton. The West End Passenger Ry. Co. $1\frac{1}{2}$ m, $5\cdot2\frac{1}{2}$ g, 45br., 6 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Samuel Berry. EAU CLAIR, WIS. — Eau Clair City Ry. Co. ELGIN, HLL. — Elgin City Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne. ELIZABETH, N. J. — Elizabeth & Newark Horse R.H. Co. 14 m, $5\cdot2\frac{1}{2}$, $4\cdot10\frac{1}{2}$, 30 br. $7\cdot$ c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard. ELKHARDT, IND. — Elkhardt City R.R. Co. ELCHIRA, N. Y. — The Elmira & Horseheads Ry. Co. $9\cdot2\cdot3$ m, $4\cdot3\frac{1}{2}$ g, $2\cdot3\cdot0-40$ lb r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Offi-cers, 212 E. Watter. St. EL PASO, TEX. — El Paso St. Ry. Co. $2\frac{1}{2}$ m, $4\cdot3\frac{1}{2}$ g, 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magoffice, Sec. & Supt. I. A. Tays. ENPORIA, KAN. — Emporta City Ry. Co. $3\frac{1}{2}$ m, $4\cdot3\frac{1}{2}$ S.

Tays. Tays. **BNPORIA, KAN.**—Emporia City Ry. Co. $3\frac{1}{2}$ m, **S**, 20 lb r, 6 c, 23 m. Pres. Van R. Holmes, Treas. A. F. Crowe, Sec. & Man. J. D. Holden. **ENTERPRISE, MISS.**—Enterprise St. Ry. Co. $1\frac{1}{2}$ m, 3-6 g, 24 lb r, 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. Jno. Gaston. **ERIE**, **PA.**—Erte City Passenger Ry. Co. 5 m, $4\frac{8\frac{1}{2}}{9}$ g, 30-40 lb r, 17 c, 70 h. Pres. Wm. W. Reld, Treas. J. C. Spencer, Sec. A. L. Lettell, Supt. Jacob Berst. Berst

EUREKA SPRINGS, ARK .- Eureka Springs

EUREKA SPRINGS, AKK.-Europa Spring-Clty Ry. Co. EVANSVILLE, IND.-Evansville St. Ry. Co. 12 m, 4-8 g, 28 lb r, 31 c, 190 mu. Pres. John Gilbert, Sec. P. W. Raleigh, Treas. John Gilbert, Supt. W. Bahr. FALL RIVER, MASS.-Globe St. Ry. Co. 12 m, 4-8½ g, 40-46-47 lb r, 40 c, 160 h. Pres. Frank S. Stev-ens, Treas. F. W. Brightman, Sec. M. G. E. Swift, Supt. John H. Bowker, jr. FORT SCOTT, KAN.-Bourbon County St. Ry. Co. 1 m, 4 g, 22 lb r, 2 c, 4 m. Pres. Isaac stadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.

Randolph.
FORT SMITH, ARK.-Fort Smith St. Ry. Co.
2m, 3-6 g, 16-28 lb r, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks.
FORT WAYNE, IND.-Clitzens' St. R.R. Co.
FORT WORTH, TEX.-Fort Worth St. Ry. Co.
7% m, 4 g, 25-38 lb r, 16 c, 73 m. Pres, K. M. Vanzandt, Treas. W. A. Hoffman, Acting Sec. & Gen.
Man. S. Mins.
FRAME FORT N. V. -Frankfort & Ilion Streat

Man. S. Mims. FRANKFORT, N. Y.-Frankfort & Ilion Street Ry. Co. 2% m, 5g, 4c. Pres, A. C. McGowan, Frank-fort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Freak, Gates, Frankfort, FREDONIA, N. Y.-Dunkirk & Fredonia R.R.Co. 3% m, 4-10 g, 25 lb r, 5c, 8 h. Pres. Wm. M. McClns-try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock. GAINSVILLE, ELA. Converting to the second

try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.
GAINSVILLE, FLA.—Gainsville St. Ry. Co. 2% GAINSVILLE, TEX.—Gaunsville St. Ry. Co. 2% M. 3-6 g. 17 lb r, 4c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Sec. & Treas. F. R. Sherwood.
GALESBURG, ILL.—Galesburg Horse R.R. Co.
GALESBURG, SLL.—Galveston City R.R. Co.
Is m. 4-8% g. 30 lb r, 68 c. 169 mu. Pres. Wm. H. Sin-clair, Sec. & Treas. F. D. Merrit, Supt. M. J. Keenan. Guld City St. Ry. & Real Estate Co.
GLOUCESTER, MASS.—Gloucester City R.R. GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 13 m, 4-8% g. 30-35 lb r, 21 c, 175 h. Pres. C. A. Otis, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. Weston, Grand Rapids, Asst. Sec. Jas. Pickands, Cleveland, O.
GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8% g. 20 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.
GREENVILLE, S. C.—Greenville City Ry. Co.

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

Harris, J. J. B., V. G., Z. E. Proprieters, Chickler G.
HAMILTON, O.—The Hamilton St. Ry. Co. 4 m, 3g, 28 th r, 11 c, 12 h. Pres. James F. Griffin, Sec. O.
V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow.
HANNIP AL, MO.—Hamibal St. Ry. Co. 2 m, 4-83g g, 164 elb r, 6 c. 22 h. Pres. & Supt. M. Doyle, Sec. & Treas, James O. Hearn.
HARRISBURGH, PA.—Harrisburgh City Pas-senger Ry. Co. 22, m, 5-23g, fg, 42-47 lb r, 15 c, \$6 h, Pres. H. A.Kelker, V. Pres, Dantel Epply, Sec. Jobn T. Ensminger, Treas. R. F. Kelker, Supt. S. B. Reed.
HARTEORD. CONN.—Hartford & Wethersfield

HARTFORD, CONN.-HARTford & Wethersfield Horse R.R. Co. 12 m, 4.8% g, 45 lb r, 49 c, 250 h. Pres. & Treas, E. S. Goodrich, Sec. Geo. Sexton. HAVERHILL, MASS.-Haverhill & Groveland St. Ry. Co. 4% m, 4.8% g, 30 lb r, 10 c, 19 h. Pres.

86

Base State Stat

Boc. 10 million In Johnston, Johnstown, Glovers-Pavonia Ferry Ry. Co. JOHNSTOWN, N. Y.—The Johnstown, Giovers-ville & Kingsboro Horse R.R. Co. 5% m, 4-8% g, 26 b r, 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fan-cher, Sec. & Treas, I. M. Law. JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 6% m, 5-3 g, 41-43 lb r, 13 c, 56 h. Pres. James McMii-len, Sec. B. L. Yeagley, Treas. W. H. Rosensleet, Jr. JOLIET, ILL.—Jollet City R.R. Co. 3% m, 4-8% g, 40 lb r, 16 c, 30 h. & mu. Owner, J. A. Henry, A. Bischman, Cash. J. E. Henry. JOPLIN, MO.— KALAMAZOO, MICH.—Kalamazoo St. Ry. Co.

g. 4010 T, 16 C, 30 h & mul. Owner, J. A. Henry, A. Bischman, Cash J. E. Henry.
JOPLIN, MO.KALAMAZOO, MICH.-Kalamazoo St. Ry. Co. 10 m, 4-8% g, 35 lb r, 28 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P. H. Brown.
KANSAS CITY, MO.-Kansas City Cable Ry. Co. 2\u03c0 m, 4-8\u03c6 g, 55 lb r, 10 pass. cars, 10 dummy cars. Pres. Wm. J. Smith, Sec. W. H. Lucas, Eng. Robert Gilham. Supt. Edward J. Lawless.
Corrigan Consolidated St. Ry. Co. 20 m, 4-1 g, 80 br 7, 80 c, 350 h. Pres. Brenard Corrigan, Gen. Man. Thos. Corrigan, Sec. Jas. T. Kelley. Jaokson County Horse R. R. Co.
Kansas City & Rosedalc St. Ry. Co. 4 m, 4-5\u03c0 g, 27 lb r, 10 c, 42 h. Pres. Jas. H. Anderson, V. Pres. Jos. G. Anderson, Sec. R. James Anderson, V. Pres. Jos. G. Anderson, Sec. R. James Anderson, Trcas. & Supt. W. Z. Anderson.
KINGSTON, ONT., CAN.-Kingston St. R. R. Co. K. W. S. 21 br, 5 c, 2 hacks, 30 h. Pres. W. W. Woodruf, Sec., Trcas. & Supt. T. L. Beaman.
LACONIA, N. H.-Laconia & Lake Village Horse R. 24 m, 49 g, 34 lb r, 5 c, 17 h. Pres. A. G. Folsom, Trcas. Edmund Little, Man. Bela S. Kenniston.
LA CROSSE, WIS.-City Ry. Co. of La Crosse. 24 m, 49 g, 24 lb r, 5 c, 16 h. 3 mul. Pres. Go. F. Guad, V. Pres. B. E. Edwards, Sec. Mills Tonctellotte, Treas. Fred Tillman, Supt. Geo. F. Smith. La Crosse St. Ry. Co. Pres. W. B. Corrigan, Sec. Mills Tourtellotte, Supt. Y. La Fayette St. Ry. 24 m, 40 g, 24 br, 5 c, 60 h. 3 mul. Pres. Go. Freducted Theorem Kandrik, Ster. Co. Julia Tonctellotte, Treas. Fred Tillman, Supt. Geo. F. Smith. Jack St. Co. St. Pres. M. S. Co. Jackson, St. R. Pres. Red Constan, N. H. -Laconia & Lake Village Horse R. R. 29 m, 49 g, 24 br, 5 c, 17 h. Pres. A. G. Folsom, Treas. Edwards, Sec. Mills Tonctellotte, Treas. Fred Tillman, Supt. Geo. F. Smith. Jac Tosse St. Ry. Co. Pres. B. E. Edwards, Sec. Mills Tonctellotte, Treas. Fred Tillman, Supt. Geo. F. Smith. Jac Cosse St. Ry. Co. Pres. B. E. Edwards, Sec. Mills Tonctellotte, Supt. Sec. Mi

LAFAYETTE, IND.-LaFayette St. Ry. 2% m, 48% g, 35 lb r, 6 c, 38 h. Pres. F. B. Caldwell, LaFay-ette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette.

Greer, Larayette, LAIRE CITY, FLA.—Lake City St. Ry. Co. LANDANAS SPRINGS, TEX.—Lampasas City Ry. Co. 34 m, 4-53 g, 22 lb r, 6 c, 15 h. [Owned by Mrs. L. R. Snodgrass.] Gen. Man. Geo. M. Snod-

LANCASTER, PA.-Lancaster & Millerville St. R Lancaster City St. Ry. Co.

Lancaster Chy St. Ky. Co. LARC HUONT, N. Y.—Larchmont Manor Co. 1 m⁴4-8 g, 25 lb r, 2 c, 8 h. Pres, C. H. Murray, Treas. S. H. French, 88 East Fourteenth St., N. Y. City. LAWRENCE, KAN.—Lawrence Transportation Co. 4% m, 4-1 g, 38 lb r, 7 c, 30 h. Pres. H. Tisdale, Sec. W. H. Bangs. LAWRENCE, MASS.—Merrimack Valley Horse R. K. Co. 5 4-5 m, 4-5% g, 48 lb r, 20 c, 70 h. Pres. Wm. A. Russell, V. Pres. James Walton, Methuen, Cierk & Treas, James C. Eaton, Supt. A. N. Kimball, Law-rence. rence.

LEWISTON, ME.-Lewiston & Auburn Horse R. Co. 7% m, 4-8% g, 32 lb r, 16 c, 45 h. Pres.Frank V. Dana, Lewiston, Clerk, H. C. Little, Lewiston, reas. H. C. Packard, Auburn, Supt. E. P. Stinch-old Auburn reas. H. C. eld. Auburn field

field, Auburn. LEXINGTON, KY.—Lexington City Ry. Co. 5 m, 4-10 g, 20 lb r, 20 c, 35 h. Pres. John Cross, V. Pres. C. R. Diver, Sec. & Supt. Bert. Cross. LEXINGTON, MO.—Lexington St. Ry. Co. LINA, O.—Lima St. Ry. Co. LINCOLN, NEB.—Capital City Ry. Co. 3 m,— g, — lb r, 5 c, — h. Pres. E. B. Durfee, Sec. & Supt. H. B. Durfee.

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g, ----br, for b, Pres, E. B. Durfee, Sec. & Supt. H. B. Durfee, LITTLE ROCK, ARK.--Little Rock St. Ry, Co. Citizens' St. Ry, Co. 4% m, 410 g, 20 lb r, 22 c, 80 h. Pres, John Cross, Sec. and Treas. F. C. Reed, Supt. C. R. Diver. Hot Springs St. Ry, Co. LOGANSPORT, IND.--Logansport Ry, Co. 2 m, 4 g, 28 lb r, 6 c, 29 mu. Pres. Frank, G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques, Office, Urbana, Ill. LONDON, CAN.--London St. R.R. Co. 3 m, 48% g, 30 lb r, 12 c, 30 h. Pres, V. Cronga, Sec. Jas, H. Flock, Supt. Wm. P. Jaques, Office, Urbana, Ill. LONG ISLAND CITY, N. Y. - Stelnway & Hunter's Point R.R. Co. 26% m, 48% g, 47 lb r, 60 c, 150 h. Pres, Wm. Steinway, Stelinway Hall, N. Y. City. V. Pres, Henry A. Cassebeer, Jr., Steinway. Campbell. Officers Steinaway Hall, N. Y. Dutch Kills & Hunter's Point R.R. - m, -g, - lb r, - c, -h. Pres, R. J. Gleason. Long Island City & New Yoon, 3 m, 48% g, 45-55 lb r, 25 c, 60 h. Pres. Isaac Buchannan, N. Y. City, Sc. Geo. S. Crawford, Brooklyn, N. Y. Treas. Patrick J. Gleason, Supt. Michael Conway. Officers 112 Front St.

Patrick J. Gleason, Supt. Inclust conway. Checks 112 Front St.
LONGVIEW, TEX.—Longview & Junction St. Ry. 34m, 3-6 g, 2 c, 4 h. Pres. F. T. Rembert, Sec. R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth. LOS ANGELES, CAL.—Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Fernando St. R.R. Co. 7 m, 3-6 g, 16 lb r, 13 c, —h. Pres. E. T. Spencer, Sec. F. X. Palmer, Supt. J. A. Fairchild. City R.R. of Los Angeles. 424 m, 4-845 g, 36 lb r, 9 c, 75 h. Pres. I. M. Heilman, V. Pres. W. J. Brod-rich, Sec. John O. Wheeler, Supt. W. H. Hawks, Los Angeles & Aliso Ave. St. R.R. Co. Main St. & Agricultural Park R.R. LOUISVILLE, KY.—Kentucky St. Ry, Co. 5 m.

LOUISVILLE, KY.-Kentucky St. Ry. Co. 5 m, 5-2 g, -- lb r, 22 c, -- h. Pres. T. J. Minary, Sec. & Treas, Thos. Donigan.

Treas. Thos. Donlgan. Central Pass. R.R. Co. —m, —g, —lbr, —c, —h, Pres. —, V. Pres. Thos. J. Minery, Crescent Hill Ry. Co. Louisville City Ry. Co. 63 m, 5 g, — ib r, 199 c, 1300 h. Pres. Mal. Alexander Henry Davis, Syracuse, N. Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell.

LOWELL, MASS.—Lowcli Horse R.R. Co. 6 m, 4-8% g, 28-47 lb r, 28 c, 100 h. Prcs. Wm. E. Living-ston, Gen. Man. J. A. Chase.

Ston, Gen, Man. J. A. Chase. LYNCHBURG, VA. — Lynchburg St. R.R. Co. 2 m. 5-1 g, 26 lb r, 6 c, 31 h. Pres. Stephen Adams, Trens. John L. Adams, Supt. William M. Payne. LYONS, IA. — Clinton & Lyons Horse Ry, Co. 4 m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Rand. 1)MACON, GA. — Macon & Suburban St. R.R. Co. 5 m, 4-8 g, 20 lb T r, 12 c, 60 h & mu.. Pres. Jno. S. Bransford, Sec. & Supt. Jno. T. Voss. Office, 151 Second St.

Second St. MADISON, IND.—Madison St. Ry. Co. 2½ m, 4 g, 15 lb, 7, c, 8 h, 10 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenlius, Supt. & Treas. Chas. F. Tuttle, MADISON, WIS.—Madison St. Ry. Co. 2½ m, 3 g, 23 lb, f c, 24 h. Pres. E. W. Keyes, V. Pres. Sec. & Treas. D. K. Tenney, Supt. G. W. Carse. MANCHESTER, N. H.—Manchester Horse R.R. 4½ m, 3-½ g, 27-34 lb, 12 c, 41 h. Pres. S. N. Beil, Treas. Frederick Smyth, Clerk J. A. Weston, Supt. A. Q. Guage.

 A. G. Gaage.
 MARSHALLTOWN, IA.-3 m, 4 g, 25 lb r, 7 c, MARSHALLTOWN, IA.-3 m, 4 g, 25 lb r, 7 c, I. Pres. B. T. Frederick, Treas, T. E. Folcy, Sec.
 C. Ghiman, Supt. A. E. Shorthili.
 MARYSVILLE, CAL.-City Pass. R.R. Co. (No A.

20 h. Pres. L. C. Giliman

MAYSVILLE, KY.—Maysville St. Ry. & T. Co. m, 20 lb r, 4-S% g, 6c, 32 mu. Pres. L. W. Robertson, & Treas. W. S. Frank 3 m,

Sec. & Treas. W. S. Frank. **MECHANICSBURG**, **ILL.** — Mechanicsburg & Buffalo Ry. Co. 3% m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. J. N. Fullenwelder, Treas. A. T. Thompson, Sec. J. T. Fullenwelder.

MEMPHINS, TENN.—M: mphis CityR.R. Co.—m,
 -g, -lbr, -c, -h, -Pres. R. Dudley Frayser.
 MERIDIAN, MISS.—Meridian St. Ry. Co. 14/ M. 4-8 g, 161b r, 3 c, 12 h. Pres. J. J. Shannon, V.
 Pres. J. L. Handley, Sec. R. M. HOUSTON.
 MIDDLETOWN, O.—Mi^{*}dletown & Madison St.

Ry. Co. MILLERSVILLE, PA.-Lancaster & Millersville

MILLERSVILLE, PA. —Lancaster & Millersville
St. R.R. Co.
MILLWAUKEE, WIS. —Cream City R.R. Co. 8 1-6
m, 4-8% g, 27-38 lb r, 74 c, 307 m, 2 h. Pres. Winfield
Smith, V. Pres. Christian Preusser, Treas. Ferdinand
Knehn, Sec. Wm. Damkoehler, Supt. H. J. C. Berg.
Milwaukee City Ry. Co. 15 m, 4-8% g, 27 lb r, 75 c, 430 h. Pres. Peter McGeoch, Sec. & Treas. Geo. O.
Wheatcroft.
West Side St. Ry. Co. Owner & Manager, Washington Becker, Supt. — McNaughton.
MINNEAPOLIS, MINN. —Minneapolis St. Ry. Co.
45 m, 3-6 g, 27-35-45 lb r, 146 c, 125 h and mu. Pres.
Thos. Lowry, V. Pres. C. Morrissey, Treas. W. W.
Herrick, Sec. & Supt. C. G. Goodrich.
MOBILE, ALA. —City R.R. Co. 17% m, 5-2 g, 35

Herrick, Sec. & Supt. C. G. Goodrich.
MOBHLE, ALA.—City R.R. Co. 17½ m, 5-2 g, 35
Ib T-r, 68 c, 240 h. Pres. Jno. Maguire, Sec. I.
Stausse, Treas. Myer I. Goldsmith, Supt. A. Moog.
Dauphin & Lafayette St. Ry. Co. 2 m, 5-2½ g, 40
Ib r, 9 c, 22 h. Pres. D. P. Bestor, Y. Pres. G. Y.
Overall, Sec. & Treas. James W. Gray, Pur. Agt. &
Man. J. G. Robertson.
Mobile & Spring Hill R.R. Co. 8 m, 5-2½ g, 35 lb r,
15 c, 35 h, 1 dummy. Pres. Daniel M. Ncili, Sec. & Treas. C. F. Sheldon, Man. F. Ingato.

MOHAWK, N. Y.-Mohawk & Illon R.R. Co. 13 m, 4-5% g, 30 lb r, 4 c (contract for motive power). Pres. O.W. Bronson, V. Pres. John Brown, Sec. H. Ib. Alexander, Treas. R. M. Devendorff, Supt. O. W. Bronson

[JANUARY, 1886.

MOLINE, ILL.-Moline Central St. Ry. Co. 1% m, -g, -10 r, 3 c, 11 h. Pres. S. W. Wheelock, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F.

Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway. Moline & Rock Island St. Ry. Co. 5 m, 4-8½ g, 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Butord, Treas. C. Lyons, Supt. Wm. Gamble. **MONTREAL**, CAN.-Montreal City Pass. Co. 21 m, 4-8½ g, -- lb r, 76 c, 465 h. Pres. Jesse Joseph, V. Pres. Wm. Smith, Sec. & Man. Ed. Lusher, Supt. T. H. Robilland. H. Robilland.

MOULTRIEVILLE, S. C .- Middle St. & Sullivan's Landing Ry.

MUSCATINE, IA.—Muscatine City Ry. Co. Pres. Peter Musser, V. Pres. Geo. W. Dillaway, Sec. T. R. Fitzgerald, Supt. & Treas. O. J. Chapman.

MUSKEGON, MICH.—Muskegon Ry. Co. 4% m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V. Pres. Chas. Merriam, Boston, Mass., Sec. Thomas Munroe, Treas. G. R. Sherman, Supt. C. H. Newell.

Mainto, HUA, N. H. –Nashual St. Ry. Co. NASHVILLE, TENN.–Nashville & Edgefield R.R. Co. Fatheriand Street Railway Co. North Edge-field and Nashville St. R.R. Co., one management. 5 m, 5 g, 16 lb r, 21 c, 100 lb. Pres. Jno. P. White, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Dead-erick

erick. McGavock & Mt. Vernon Horse R.R. Co. Nashville D. & N. St. R.R. Co. 7% m, 5 g, 16-32 lb r, 25 c, 140 mu. Pres. Jno. P. White, V. Pres. B. F. Wil-son, Sec. & Treas. H. B. Stubblefield, Supt. D. Dead-erick.

South Nashville St. R.R. Co. 4% m, 6 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.
NEVADA, MO.-Nevada Street Ry. Co.
NEW ALBANY, IND.-New Albany St. Ry. Co.
6 m, 4-11 g, 25 lb r, 15 c, 50 h. Pres. Geo. T. Vance, Sec. G. Vance, Treas. Letitla V. Vredenburgh, Supt. Wm. L. Timberlake.
NEWARK, N.J.-The Newark & Bloomfield St. R.R. Co. 7 m, 5-2% g, 47 lb r, 22 c, 140 h. Pres. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten.
Broad St. R.R.
NEW BEDFORD, MASS.-New Bedford & Fair-

NEW BEDFORD, MASS.—New Bedford & Fair-aven St. Ry. Co. 7% m, 4.8% g, 35-40 lb r, 38 c, 138 . Pres. Warren Ladd, Treas. Andrew G. Pierce, hert Edward T. Blanca.

New BEDFORD, MASS. – New Bedford & Fair-haven St. Ry. Co. 7% m, 4-8% g, 35-40 lb r, 38 c, 138 h. Pres. Warren Ladd, Treas. Andrew G. Pierce, Clerk Edward T. Pierce. Acushnet St. R. Co., 6 m, 4-8% g, 38 lb r, 29 c, 103 h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith. NEW BURYPORT, MASS. – Newburyport & Acushnet St. R.R. Co., 6 1-3 m, 12 c, 64 h. Pres. W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens. Lessee, E. P. Shaw. NEW HAVEN, CONN. – Fair Haven & Westville R.R. Co. 7 m, 4% g, 42 lb r, 23 c, 161 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Walter A. Graham. New Haven & Centreville Horse R.R. Co. 2% m, 4-3% g, 42 lb r, 4 c, 30 h. Trus tee Cornelius Pierpont. State Street Horse R.R. Co. 2½ m, 4-85 g, 43 lb r, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. C. Biatchen. The Whitney Are. Horse C.Y. 2% m, 4-85 g, 45 lb r, 4 c, 25 h. Pres. Geo. H. Watsons, Sec. George D. Watson, Treas. Eil Whitney, Jr. NeW ORLEANS, LA. – Canal & Claborne St. R.R. Co. 13 m, 5-2% g, 37 lb r, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. John H. DeGrange. Crescent City R.R. Co. 26 m, 5-2% g, 35-45 lb r, 90 c, 40 lb, Pres, Cartolton R.R. Co. 64 m, 6-3% g, 30 t5 lb r, 65 c, 200 h, 19 engines. Pres. Wm. Benthury-sen, Sec. Walter F. Crouch, Supt. C. V. Halle. New Orleans & Carrolton R.R. Co. 64 m, 6-2% g, 36 -64 lb r, 180 c, 39 coaches, dummy engines, 1050 mu. Pres. J. A. Walker, Sec. W. E. Leverich, Supt. F. Wintz. New Orleans St. R.R. Co. Orleans R.R. Co. – m, – g, – lb r, 32 c, 140 h.

Wintz.
New Orleans St. R. R. Co.
Orleans R. R. Co. — m. — g. — lb r, 32 c, 140 h, & mu. Pres. & Supt. H. Larquie, Sec. & Treas. P.
Cougot. Office, cor. White & Laharpe Sts.
St Charles St. R. R. Co. 15 m, 6-2% g, 2 lb r, 60 c, 366 m. Pres. & Supt. Alden McLellan, Sec. Vincent Riviere,
NEWPORT. K.Y. — Newport St. R. B. Co.

366 m. Pres. & Supt. Alden McLellan, Sec. Vincent Riviere.
NEWTORT, KY.-Newport St. R.R. Co.
NEW YORK, N.Y.-Ninth Ave. R.R. Co. 8 m, 4-83 g, 60 br, 45 c, 380 h. Pres. W. H. Hays, sec. & Treas. James Affleck, Supt. Herman B. Wilson. Offi-cer, North Ave., cor. 59th. St. Broadway & Seventh Ave. R.R. Co. 7 m, 4-8½ g, 47-60 br, 150 c, 1,350 h. Pres. James W. Foshay, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell. Office 761, Seventh Ave.
Central Crosstown R.R. Co. 2½ m, 4-8½ g, 52 lb r, 42 c, 231 h. Pres. John B. Slawson, V. Pres. A. Cam-mack, Sec. M. J. Masson, Treas. John L. Macaulay. Office 365 Ave. A
Central Park North & East River R.R. Co. 14 m, 4-5½ g, 60 lb r, 162 c, 1,225 h. Pres. J. H. Scröiner, V. Pres. C. D. Wyman, Sec. H. Scribner, Treas. J. L. Valentine, Supt. M. W. A. Harris. Office, Tenth Avc., 53d. & 54th. St. Christopher & Tenth St. R.R. Co. 6 m, 4-8 r, 45 lb r, 47 c, 290 h. Pres. Jacob Sharp Treas. W. T. Hatch, Sec. & Supt. George W. Lynch. Office, 168 Christo-pher St. Dry Dock, East Broadway & Battery R.R. Co. 11½

F, 4' C, 230 ft. Pres. Sacco Sharp Press. Office, 168 Christopher St. Dry Dock, East Broadway & Battery R.R. Co. 11½ m, 48% g, 60 lb r, 187 c, 1,182 h. Pres. William White, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred F. White, Offices, 605 Grand SS. Eighth Ave. R.R. Co. 10 m, 48% g, 60 lb r, 112 c, 1155 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. H. B. Wilson. Office, Eight Ave., & 50th. St. Forty-Second Street & Grand Street Ferry R.R. Co. 637 m, 8-4 g, 64 lb r, 50c, 500 h. Pres. Chas. Curils, Sec. & Treas. E. S. Allen, Supt. John M. Calhoun. Office, 653 W. 23d. St. Harlen Bridge, Morrisania & Fordham Ry. 4% m, 4-8% g, 45-60 lb r, 65 c, 233 h. Pres. Henry Spratley, V. Pres. Richard M. Hoe, Sec. & Treas. Wm. Caid-well. Office, North Third Ave, near 170 St.

Houston, West Street & Pavonia Ferry R.R. Co. 5 m, 4-Shi g, 60 fb r, 50 c, 400 h. Pres. Richard Kelly, Sec. & Treas. Daniel B. Hasbrook. Office, 415 E. 10 St.

sec. & Treas. Daniel E. Hasbrook. Office, 415 E. 10 St. Jerome Park R.R. I m, 4-8½ g, 50-56 lb r. Pres. Leonard M. Jerome, Sec. Fred A. Lovecraft, Treas. Theodore Moss. Office, cor. 5th. Ave. & 22d St. New York City St. Ry, Co. 10 m, Inot in operation]. Pres. Loomis L. White, Sec. W. L. McCorkle, Treas. Wm, L. Skidmore. New York & Harlem R.R. Co. 5½ m, 4-8½ g, 56-75 lb r, 144 c. 1,408 h. Pres. W. H. Vanderhilt, V. Pres. & Sec. Cornellus Vanderbilt, Treas. Ed. N. W. Rossiter, Sup t. Alfred Skitt, Pur. Agt. Chas. Reed. Sixth A ve. R.R. Co. 4m, 4-8½ g, 60 lb r, 127 c, 1296 h. Office, 756 Sixth Ave.
South Ferry Ry. Co. -3½ m, 4-8½ g, 60 lb r, 127 c, 14 h. Pres. Hen ry Hart, Sec. Wm. N. Cohen, Treas Albert J. Ellas, Supt. Chas H. Meeks. Office 20 Whitehall St. The Second Ave. R.R. Co. 13m, 4-8½ g, 60 lb r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & The St. Cond Ave. R.R. Co. 13m, 4-8½ g, 60 k 74 h.

Sec. & Treas. J. B. Underhill. Office Second Ave. cor-96th St. The Third Ave. R.R. Co. 13% m, 4-8% g, 60 & 74 bi r, 318 c, 2150 h. (3% m of cable road on 10th ave.) Pres. Lewis Lyon, 739 Madison ave., V. Pres. Henry Hart, 110 Tribune Bullding, Sec. Affred Lazarus, 436 W. Gist st., Treas. Join Beaver, 211 E. 112th st., Supt. John H. Roheitson, 307 E. 65th st. Twentr-third St. R.R. Co. 7 m, 4-8% g, 54 ibr, 102 c, 692 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Treas. Lewis May, Act-Supt. George Ferry. Office 621 West 23d St.

621 West 23d St. NLAGARA FALLS, N. Y.-Niagara Falis & Sus-pension Bridge Ry. Co. 2% m, 4-8% g, 38-42 ib r, 8 c, 36 h. Pres. Benj. Flagler, V. Pres. Alva Chich, Sec. W. J. Mackay, Treas. A. Schoellkopt. NORFOLK, VA.-Norfolk & City R.R. Co. 3 % m 5-2 g, 44 lb r, 18 c, 65 h. Pres. John B. Whitehe ad Treas. H. C. Whitehead, Supt. E. W. Savage. NORTHAMPTON, MASS.-Northampton St. Ry. Co. 3% m, 4-8% g, 32 lb r, 7 e, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark.

Edwards, Sec. M. H. Spatiding, Treas, & Sup. E. C. Clark.
NORWALK, CONN.—Norwalk Horse R.R. Co. 2 m, 4-10 g, —10 r, 7 c, 20 h. Pres. James W. Hyatt, V. Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt, NORWICH, CONN.—Norwich Horse R.R. Co. OAKLAND, CAL.—Alameda, Oakland & Pledmont R.R.
Berkley Villa R.R.
Berkley Villa R.R.
Broadway & Pledmont St. R.R. Co.
Fourteenth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, —
Pres. & Supt. Waiter Blair, Sec. P. J. Van Loben. Oakland R.R. Co.
OGDEN CITY, UTAH.—Ogden City Ry. Co. 3 m, 4-5½ g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtleff, Ogden City, V. P. & Supt. O. P. Arnoid, Salt Lake City, Sec. & Treas. H. S. Young, Ogden City.
OLEAN, N.Y.—Olean St. Ry. Co. 1 1-10 m, 3-6 g, 25 lh r, 3 c, Sh. Pres. M. B. Fobes, Sec. & Treas. M. W. Barse.

1001AHA, NEB.—Omaha Horse Ry. Co. 15 m, 48% g, 35 fb r, 40 c, 300 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W. A Smith A. Smith

A. Smith. ONEIDA VILLAGE, N. Y.—Oneida St. Ry. — m,—g,—fbr,—c,—h. Pres. Jerome Heacock. OSHKOSH, WIS.—Oshkosh St. R.R. Co. 3½ m, 4-8½ g, 27 fb r, 9 c, 24 h. Pres. Tom Wall, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson

F. Zentner, Sec. & Treas. J. Y. Hun, Sup. F. L. Thompson. OSWEGO, N.Y.—Oswego St. Ry. Co. 2 m, 4-8½ g, 451b r, 3c, — h. Pres. Jas. F. Johnson, V. Pres. R. J. Oliphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor. [Not in operation

Post, Geh. Man. James O'Connor. [Not in operation yet.]
OTTAWA, ONT.—Ottawa City Passenger Ry.Co.
3 m, 48% 5, 34 lb r, 1 c, 40 h. Pres. Thomas C. Keef-er, V. Pres. R. Blackburn, Sec. James D. Traser.
OTTUMWA, 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. & Trass. H. L. Hedrick, Supt. C. M. Hedrick. Mineral Springs St. Ry. Co. 1 m, 1 c.
PADUCAH, KY.—Park R.R. Co.
PARIS, TEX.—Paris St. Ry. Co.
PATERSON, N. J.—Paterson & Passalc R.R. Co.
7 m, 4-10 g, 33 lb r, 16 c, 24 h. Pres. John N. Terhune, Treas. John N. Terhune, Treas. John N. Ber, Sc. E. S. Brown, Man. L. Brown, Sec. E. S. Brown, Manne, Paterson City R.R. Co. 6½ m, 4-8½ g, 35 lb r, 12 c, 24 h. Pres. Garrett Planten, Treas. Heimas Romaine, Bec. Alhert A. Wilcox.
PENSACOLA, FLA.—Pensacola St. Ry. Co.
PEORIA, ILL.—Central City Horse Ry. Co. 4½ m, 4-8½ g, 40 lb r, 60 c, 135 h. Pres. H. R. Woodward, M. Pheffer, Treas. Ellot Callender, Supt. John Strong.
Fort Clark Horse Ry. Co.—m.—g.—lb r.—c.—h.—

Strong, Fort Clark Horse Ry. Co.-m,-g,-ib r,-c,-h.-Pres. J. H. Hall.

Frees, J. H. Hall. Peorla Horse Ry. Co. $7 \times m$, $4.8 \times g$, 40 fb r, 63 c, 140 h. Pres. H. Woodward, Sec. M. Pietffer, Treas. H. N. Wheeler, Supt. John Strong. **PETERSBURGH**, **VA.**—Petersburgh St. Ry. Co. $3 \times m$, $4.8 \times g$, 42 fb r, 9 c, 44 h. George Beadie, Pro-prietor.

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prietor. PHILADELPHIA, PA.-Citizens Pass. Ry. Co. 10½ m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John Mc-Carthy, Sec. & Treas. John J. Adams, Supt. Sam'l Cline.

Frankford & Southwark Phila. City Pass, R.R. Co. 18 1-10 m, 5-2 g, 47 lb r, 91 c, 8 dummy c, 580 h. Pres. Henry Gelger, Sec. & Treas. Geo. L. Gaudy, Supt. W.

Henry Gelger, Sec. & Treas. Geo. L. Gaudy, Supt. W.
H. Janney.
Hestonville, Mantua & Fairmount Pass. R.R. Co. 20
m, 5-2 g, 43 lb r, 50 c, 480 h. Pres. Charles F. Lafferty, Sec. & Treas. W. C. Foster.
Lehigh Ave. Pass. Ry. Co. Pres. John Lamon, Sec.
Chas. A. Porter, Treas. John L. Hill. [Track not iaid.]
Lombard & South Sts. Pass. Ry. Co. — m, 5-2g, 43
lb, r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas.
Francis Hazelhurst, Supt. Jno. M. Gaughen.
People's Pass. Ry. Co. 44 m, 5-2g, 47 lb r, 125 c, 1,080
h. Pres. C. J. Harrah, V. Pres. C. J. Harrah, Jr., Sec.
& Treas. Jno. C. Dessalet, Supt. Wm. Hagenswifer.
Philadeiphia City Pass. Ry. Co. 7 m, 5-2% g, 47 lb

r, — c, — h. Pres, Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. Philadelphia Traction Co. 109 m, 5-2½ g, 45-78 ib r, 595 c, 3,160 h. Pres. W. H. Kemble, V. Pres. P. A. E. Widener & W. L. Eikins, Sec. & Treas. D. W. Dick-inson. in

Inson.
Philadciphia & Gray's Ferry Pass, R.R. Co. 101-3
m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-ott.

Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 ih r, 55 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lambert, Sec. & Treas. Wm. S. Blight, Supt. William Ingles.

C, 332 h. Pres. E. B. Edwards, V. Pres. John Lam-bert, Sec. & Treas. Wm. S. Blight, Supt. William Ingles. Second & Third Sts. Pass. Ry. Co. 37 m, H6 c, 669h. Pres. Alexander M. Fox, Treas. William r. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens. Seventeenth & Nineteenth sts. Pass. Ry. Co. 7% m. Pres. Matthew S. Quay, Sec. & Treas. John E. Ped-die. [Leased to Philada. Traction Co.] Thirteenth & Fifteenth Sts. Pass. Ry. Co. 7% m. Pres. Matthew S. Quay, Sec. & Treas. John E. Ped-die. [Leased to Philada. Traction Co.] Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 4 31 hr. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas, Thos. S. Harris, Supt. Wm. B. Cooper. Union Pass. Ry. Co. 70 m, 348 c, 1,724 h. Pres. Wm. H. Kemble, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. West Philadelpbia Pass. Ry. Co. 18½ m, 122 c, 646 h. Pres. Peter A. B. Widener, Sec. & Treas. D. W. Dickson. (Leased by the Phila. Traction Co.) PH1L1.IPSBURGH, PA.-Central Pass R.K. Co. 3 m, Treas, E. R. Jones, Supt. R. G. Heiron. Beaver Falls & New Brighton Ry. Co. Citizens' Pass. Ry. Co. 16½ m, 5-2½ g, 47 ib r, 40 c, 337 h. Pres. Jao. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner. Federai St. & Pieasant Valley Pass. Ry. Co. 26 mM, res. Pass. Pars. Jac. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner.

Jerges, James Boyle, Supt. Wm. J. Crozler, Allegheny City.
People's Park Pass. Ry. Co. 2 m, 5-2½ g, - 1b r, 10 c, 75 h. Pres. Wm. McCreery, Treas, James Boyle, Supt. Wm. J. Crozler, Allegheny City.
Pittshurgh, Allegheny City.
Pittshurgh, Allegheny, City.
Sec. & Treas, Chas. Seibert, Supt. James C. Cotton, Manager J. P. Speer.
Pittsburgh, Oakland & East Liberty Pass. Ry. Co.
Bidweil, Supt. H. M. Cherry.
Pittsburgh Union Pass. R.R. Co. 5 m, 5-2½ g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C.

r. 29 c, 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas. Chas. Seibert, Cash. Sami. C. Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 3½ m, 5-2½ g, 48 h r, 20 c, 170 h. Pres. W. W. Patrick, Sec. D. F. Agnew, Treas. John G. Holmes.
Pittsburgh & West End Pass. Ry. Co. 3½ m, 5-2 g, 35 lb r, 13 c, 75 h. Pres. John C. Relly, Sec. & Treas. Thomas S. Bigelow, Supt. William J. Burns.
Pittsburgh & Wikinsburg St. Ry. Co. Second Avenue Pass. Ry. Co. Second Avenue Pass. Ry. Co. South Side Pass. R.R. Co. 2½ m, 5-23 g, 45 lb r, 12 c, 90 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Waliace, Supt. W. M. Rosborough.
Transverse Pass. Ry. Co. 6½ m, 5-2 g, 52 lb r, 39 c, 243 h. Pres. C. L. Magee, V. Pres. C. F. Kiopter, Sec. & Treas. Will. Miller Elliot.
PITTSTON, PA.-Pittston St. R.R. Co. 1½ m, 3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morrls, Sec. William Atlen.
PORT HURON, MICH.-Port Huron St. Ry. Co. 6½ m, 4-8½ g, 7 c, 22 h. Pres. Jone. P. Sanborn, V. Pres. Frank A. Beard, Sec. Treas. & Man. J. R. Wastell.
PORTLAND, ME.-Ocean St. R.R. Co.

PICES, FFAIR A, Beard, SEC, Treas, & Mair, J. R. Wasteli.
PORTLAND, ME.—Ocean St. R.R. Co.
Portland R.R. Co. 7½ m, 45% g, 30-33-45 fb r, 34 c, 154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A.
Newman, Supt. Geo. W. Soule.
PORTLAND, ORE.—Portland St. Ry. Co. 1½ m
3-6 g, 42 fb r, 9 c, 35 h. Pres. D. P. Thompson, Sec. & Supt. C. K. Harhaugh.
Multnomah St. Ry. Co. 2½ m, 3-6 g, 30 ib r, 19 c, 65 h. Pres. A. N. King, Sec. E. A. King.
Transcontineutal St. R. R. Co. 3 m. double, 3-6 g, 15 c, 65 h. D. W. Wakefield Sec., Tyler Woodward, Supt.
PORTSMOUTH, O.—Portsmouth St. R. R. Co. 2 m, 3-6 g, 18 lb r, 4 c, 10 h. Pres. James Skeiton, Treas, Sec. & Supt. Enas Reed.
PORTSVILLE, PA.—People's Ry. Co. 9½ m, 16 c, 56 h.

16 c, 56 h. POUGHKEEPSIE, N. Y.—City R.R. of Pough-keepsle. 3 m, 4.8½ g, 35 lb r, 11 c, 38 h. Pres. Aaron Innis, V. Pres. G. B. Adriance, Sec. A. B. Smith, Treas. Hudson Taylor, Supt. C. M. Davis. Office 491 Main St.

Treas. Induson Taylor, Supt. C. M. Davis. Once 491
Main St.
PROVIDENCE, R. I.—Union R.R. Co. 50 m, 4-3% cg, 24-54 HD r, 240 c, 1,200 h. Pros. Jesse Metcaif, V. Fres. & Gen. Man. D. F. Longstreet, Sec. and Treas. C. A. Bahcock, Aud. B. A. Jackson. QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-83/ g, 45 Hb r, 9 c, 40 h. Pres. Chas. St. Michel, Quebec, V. Pres. G. Renfrew, Quebec, Sec., Treas. & Supt. Samuel Moore, Book-Keeper, Francis Boomer. Quebec R.R. Co. St. John St. R.R. QUINCY, ILL.—Quincy Horse Ry. & Carrying Co. 6 m, 5g, 71 Hb r, 21 c, 18 mu. Pres. Lorenzo Buil, Sec. C. H. Buil, Supt. E. K. Stone. RACINE, WIS.—Beile City St. Ry. Co.—m.g.— Br., Co. h. Pres. — Sec. — Treas. Chas. Hatha-way. READING. PA — Reading. City. Pass. By. Co.

Way,
READING, PA.—Reading City Pass. Ry. Co.
21-5 m, 5-24 g, 45 lb 1, 19 c, 44 h. Press. B. F. Owen,
V. Pres, Jas. L. Dourlass, Sec. & Treas. H. A. Muhlenberg, Supt. J. A. Riggs.
Perklomen Ave. Pass. Co. 21-5 m, 5-2½ g, 45 lh r,
14 c, 36 h. Pres. Chas. Breneiser, Sec. & Treas. Isaac
Illester, Supt. John B. Houp.
RED OAK, IA.—Red Oak St. R.R. Co. 1½ m,
4-2½ g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V.
Pres. Geo. West, Sec. F. M. Byriket, Treas. & Supt.
F, O. Judkins.
HICHMOND. IND.—Richmond City Ry. Co. 3 m. 32/g flat f, 2 c, 2 n, 2 mit. Fres. J. W. Judkins, Y. Tres. Geo. West, Sec. F. M. Byriket, Treas. & Supt. SIOUX CITY, IA.-Sloux City St. Ry. Co. 5 m, -g, -r, 6 c, 8 h, 4 mu. Pres. Fred. T. Evans, V. Pres. RICHMOND, IND.-Richmond City Ry. Co. 3 m, D. A. Magee, Sec. & Treas. F. T. Evans.

3 g, 25 ib r, 9 c, 20 h. Pres. J. Y. Miller, V. Pres. Joseph Ratliff, Treas. H. L Miller, Supt. F. M. Fran-

87

Noson Rathin, Freas. R. F. Miller, Supt. F. M. Frahecisco.
RICHMOND, H.L., -Richmond St. R.R. Co.
RICHMOND, VA, --Richmond Ctty Ry. Co. 7 m, 4-8% g, 60-40 ib r, 40 c, 180 h. Pres. J. H. Schooleratt, Sec. & Treas. F. D. Mellen, Man. C. M. Baeton, Supt. Charles Stelers,
ROCHESTER, N. Y. -Rochester City & Brighton
R.R. Co. 92 m, 4-8% g, 45 lb r, 120 c, 500 h. Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. B.
Woodworth, Supt. Thomas J. Brower.
Cittzens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas, J. E. Pierpont, Supt. S. A. Green,
ROCK FORD, H.L., -Rockford St. Ry. Co. 6 2-5 m, 4-8% g, 30 lb r, 13 c, 52 h, 16 m. Pres. Anthony Haines, V. Pres, L. Rhodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Haines.
ROCK ISLAND, HLL., -Rock Island & Milan St.

ROCK ISLAND, ILL.-Rock Island & Milan St. Ry. Co. 7 m, 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres. & Supt. Bally Davenport, Sec. E. H. Gayer, Treas. John

RONDOUT, N. Y.-Kingston City R.R. Co. 24-5 m, 4.8% g, 40 lb r, 10 c, 40 h. Pres, James G. Linds-ley, V. Pres, S. D. Coykendoil, Sec. & Treas. John C. Romeyee, Supt. Wm. H. DeGarmo.

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SAN ANTONIO, TEX.—San Antonio St. Ry. Co. 15 m, 4 g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas. I. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb.

John Robb. Prospect Hill St. Ry. Co. SANDUSKY, O.—Sandusky St. Ry. Co. 2 m, — g_{-} – fb r_{-} – c_{+} – h. Pres. Chas. B. Ods, Sec. & Treas, A. C. Morse, Supt. Clark Rude.

SANDUSK Y, O. -Sandussy St. Ry, Co. 2 Inj.
g. - fb Y, - C, - h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude.
SAN FRANCISCO, CAL. -California St. R. R. Co. Central R. R. Co. 6 In, 48 g, 45 lb r, 31 c, 290 h
Pres. Chas. Main, V. Pres. Jos. Roseberg, Treas. A J. Gunnison, Sec. C. G. LeBreten, Supt. J. F. Clark Clay St. Hill R.R. Co. 1 In, 3-6 g, 30 lb r, 11 c, 1
dummy cars. Pres. Joseph Britton, V. Pres. Jame Mofili, Treas. Henry L. Davis, Sec. Chas. F. Camp bell, Supt. Joseph Britton.
Clay St. Hill R.R. Co. 10 9-10 In, 4-83/4 fb r, 187 c, 2
motors, 73 h. Pres. Joseph Britton, V. Pres. Chas. F. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt North Beach & Mission R.R. Co. 8 In, 5 g, 46 c, 400 h. Pres. Jos. Rosenberg, Sec. H. W. Hathorne, Treas. Carl Antiel, Supt. M. Skelly.
Omnibus R.R. & Cole Co. 8/m, 5 g, 35-45 lb r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Ruegg, Supt. M. M. Martin.
Portrero & Bay View R.R. Co. 1/2 In, 35-45 lb r, 30 c, 125 h. Pres. R. F. Morrow, Sec. A. K. Stevens, Treas.
M. Schmitt, Supt. James McCord.
Telegraph Hill St. Ry, Co. 1, 707 ft, 4-11 g, 36-45 lb r, 30 c, 400 k. Schmitt, Supt. James McCord.
The City R.R. Co. 5/2 In, 5 g, 45 lb r, 30 c, 125 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. M. Schmitt, Supt. James McCord.
Telegraph Hill St. Ry, Co. 1, 707 ft, 4-11 g, 36 lb r, 3 c, 25 h. Pres. R. B. Woodward, V. Pres. Geo. E. Raum, Sec. M. E. William Woodward.
SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co.
Hrst St. & San Pedro St. Depot R.R. Co.
Horst St. & San Pedro St. Depot R.R. Co.

SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co. First St. & San Pedro St. Depot R.R. Co. Market St. & Willow Glen R.R. Co. North Side R.R. Co. People's R.R. Co. SANTA BARBARA, CAL.—Santa Barbara St. R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPhail. SAUGATUCK, CONN.—Westport & Saugatuck Horse R.R.

SAUG ATHUCK, CONN.-Westport & Saugatuck Horse R.R.
SAVANAH, GA.-City & Suburban Ry, Co. 18% m, 5g, 16-30 lb r, 49 c, 110 h, 3 engines. Pres. J. H. Johnson, Asst. J. W. Alley, Treas E. Schmidt. Coast Line R.R. Co. 7 m, 5g, 30 lb r, 17 c, 37 h. Pres. Geo. Parsons, New York, Sec., Treas. & Gen. Man. R. E. Cobb, Savannah.
SAYRE, PA.-Sayre St, Ry, Co. Pres. Howard Elmer (organization not completed).
SCRANTON, PA.-People's St, Ry, Co. 9% m, 4-8% g, 25-52 lb r, 19 c, 70 h. Pres. Wum. Matthews, Sec. & Treas. J. C. Platt.
SEARCY, ARK.-Searcy & West Point R.R. Co, a m, 45% g, 20 lb r, 7 c, 6 nu. Pres. A. W. Yarnell. Sec. W. H. Lightle, Treas, Jasper Hicks.
SEARCY, ARK.-Searcy & West Point R.R. Co, a m, 45% g, 20 lb r, 5 c, 20 h. Pres. F. H. Osgood Sec. Geo. Kinnear.
SEDALIA, MO.-Sedalia St, Ry, Co. 2% m, 4-10 g, 54 lb r 6 c 31 h. Pres. Joseph D. Sicher, V. Pres. Louis Deutsch, Treas, F. H. Guenther, Sec. & Supt. Chas, S. Conrad.
SEMARA, ALA.-Selma St, R.R. 2% m, 15 lb r, 5 c, 8h. Pres, E. Gilman, Sec. & Treas, J. H. Hollis, Supt. W. Bohia.
SENFECA FALLS, N. Y.-Seneca Falls St, Ry. Co. SHIERMAN, TEX.-Sherman City R.R. Co. SHIERMAN, TEX.-Sherman City R.R. Co. SHIERMAN, TEX.-Sherman City R.R. Co. SHUERPORT, LA.-Sherveport City R.R. Co. SHUERPORT, LA.-Sherveport City R.R. Co.

SILVER CLIFF, COL.-Silver Cliff St. R.R. Co.

SOUTH CHICAGO, ILL.—Chicago Horse & Dunmy R.R. 5 m, 4-8% g, — lb r, — c, — h. Pres. D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bilss. [Not in operation.]

SOUTH PUEBLO, COL.—Pueblo St. R.R. Co. SPRINGFIELD, ILL.—Cltizens' St. R.R. Co. 9% m, 3-6 g, 20-36 lh r, 23 c, 100 h. Pres.J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman. Springfield City Ry. Co.

SPRINGFIELD, MASS.—Springfield St. Ry. Co. 4-8% g, 33-40 lh r, 28 c, 115 h. Pres. John Olmstead, Auditor I. E. Ladd, Clerk Gideon Wells, Treas. A. E. Smith, Supt. F. E. King.

E. SIMUL, SUPL. F. E. KING.
SPRINGFHELD, MO.-The People's Ry. Co. of Springfield, Mo. 3% m, 410 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Springfield R.R. Co. 2 m, 30-40 lb r, 4-8½ g, 7 c, 19 h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hohart, Supt. J. A. Stoughton, No. Springfield SPRINGEIELD O. CHIZINGTON, D. Springfield

SPRINGFIELD, 0.—Citizens'St. R.R. Co. 10 m, 4 g, 29 c. 135 h. Pres. D. W. Stroud, V. Pres. A. S. Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hanford.

STATEN ISLAND, N. Y .-- Staten Island Shore Ry. Co.

ST. CATHARINE'S, ONT.—St. Catharine's, Mer-rllton & Thorold St. Ry. Co. 5½ m, 4-8½ g, 30 lh r, 7 c, 30 h. Pres. E. A. Smythe, Sec. S. R. Smythe, Supt. E. A. Smythe.

ST. JOSEPH, MO.-Cltizens' St. R.R. Co. 3 m, 48% g, 28 lh r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F.

Sec. & Treas. Arthur Kirkpatrick, Super Contract Merriam. Frederick Ave. Ry. Co. 1% m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thomas E. Tootle, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas. Thomas W. Evins, Supt.

Sec. W. D. B. Motter, Treas. Thomas W. Evins, Supt. S. Joseph & Lake St. R.K. Co. Union Ry. Co.
ST. Logsph & Lake St. R.K. Co. Union Ry. Co.
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M. 410 g. - lb r, 7 c, 21 h. Pres. George S. Case, V. Pres. William Z. Coleman, Supt. J. H. Archer. Benron & Bellefontaine Ry. Co. 7% m, 4-10 g, 45 lb r, 29 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas. Parsons, Sec. Robert McCulloch.
Cass Avenue & Fair Grounds Ry. Co. 8 m, 4-10 g, 38 lb r, 37 c, 290 h. Pres. W. R. Allen, V. Pres. Geo. W. Allen, Sec., Treas. & Supt. G. G. Gibson, Cashier O. H. Williams.
Citizen's Ry. Co. -m, -g, -lb r, -c, -h. Pres.

H. Williams. Citizen's Ry. Co. -m, -g, -lb r, -c, -h. Pres. Julius S. Walsh. Jefferson Ave. Ry. Co. Lindell Ry. Co. 13% m, -g, -r, 65 c, 475 h. Pres. John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Liewellyn. Missouri R.R. Co. -m, -g, -lb r, -c, -h. Pres. P. C. Maffit.

Treas, Geo. W. Baumnon, Supt. Jos. C. Llewenyn. Missouri R.R. Co. —m, —g, —lb r, —c, —h. Pres. P. C. Maffit.
Mound City R.R. Co.
Northern Central.
Springfield Ry. Co. 2 m, 4-8½ g, 25-40 lb r, 7 c, 40
h. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart, Springfield, Supt. J. A. Stoughton, No. Springfield, Asst. Supt. Frank B. Smith, No. Springfield, Southern Ry, Co. 7 4-5 m, 4-10 g, 35-52 lb r, 49 c, 250
h. Pres, E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson.
St. Louis R.R. Co. and the People's R.R. One management. 11 m, 4-10 g, 38-44 lb r, 53 c, 375 h. Pres, Chas. Green, Sec. & Treas. John Mahoney, Supt. Patrick Shea.
Tower Grove & Lafette R.R. Union Depot R.R. Co. —m, -g, —lb r, —c, —h. Pres, John Scullin.
Union R.R. Co.
STONEHAM, MASS.—Stoneham St. R.R. Co. 2% m, 4-8% g, 33 lb r, 10 c, 23 h. Pres, A. V. Lynde, Meirose, Treas. & Clerk Lyman Dyke, Supt. John Hill.
ST. PAUL, MINN.—St. Paul City Ry. Co. 25 m, 4 est cr. 80 c, 150 h. 294 mu. Pres. Thos. Lowry, V.

2% m. 4.8% g, 30 b r, 10 c, 25 h. Pres. A. V. Lynde, Metrose, Treas. & Clerk Lyman Dyke, Supt. John Hill.
ST. PAUL, MINN.-St. Paul Clty Ry. Co. 25 m, 48% g, 50 c, 150 h g, 294 mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. J. H. Randall, Treas. Clint-on Mortison, Supt. A. L. Scott.
STHLLWATER, N. Y.-Stillwater & Mechanics-ville St. Ry. Co. 4% m, 4-5% g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H. O. Balley, Mechanicsville, Treas. E. N. Smith.
STROUDSBURGH, PA.-Stroudsburgh Passon-ger R.R. Co. 14-5 m, 4-3% g, 28-30 lb r, 3 c, 9 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H, O. Balley, Mechanicsville, Treas. E. N. Smith.
STROUDSBURGH, PA.-Stroudsburgh Passon-ger R.R. Co. 14-5 m, 4-3% g, 28-30 lb r, 3 c, 9 h. Pres. & Treas. J. Lantz, Sec. Jacob Houser.
SYRACUSE, N.Y.-Syracuse & Onondaga R.R. Co. 23-5 m, 4-8 g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. Henry Thompson.
Central Clty Ry. Co. 2% m, 4-8% g, 40 lb r, 12 c, 37 h. Pres. George N. Kennedy, V. Pres. Danlel Pratt, Sec. & Treas. James Barnes, Supt. George Crampton. 4 Syracuse Savings Bank Building.
Fifth Ward R.R. Co. 2% m, 4-8% g, 35-56 lb r, 8 c, Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-8% g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardiner, Supt. W. J. Hart. Onondaga Savings Bank Building. New Brighton & Onondaga Savings Bank Building. New Brighton & Onondaga Savings Bank Building. New Brighton & Onondaga Valley R.R. Co. 1% m, 4-8 g, 16-35 lb r, 2 c, 4 h. 1 dummy. Pres. Matthias Britton, Sec. T. W. Meacham, Treas. J. H. Anderson, Supt. J. H. Anderson. Syracuse & Geddes Ry. Co. 2 m, 4-8% g, 35-45 lb r, 10 c, 32 h. Pres, R. Nelson Gere, Sec. & Treas, Rasse-ias A. Bonta, Supt. Wm. J. Hart.
TEKNE HAUTE, IND.--Terre Haute St. Ry. Co. 4% m, 4-8% g, 25 lb r, 16 c, 48 h. Pres. T. C. Buntin, Y. Pres. Josephus Collett, Sec. John R. Hagen, Supt. John T. Shriver.

TEXARKANA, ARK .- Texarkana St. Ry. Co. TOLEDO, OHIO.-TOledo Consolidated St. Ry. Co. 17 m, 4-S g, 42 hr, 37 c, 180 h. Pres. John E. Balley, Sec. A. E. Lang. Adams Street Ry. Co.

Adams Street Ry. Co. Metropolltan St. Ry. Co. 8½ m, 3 g, 29 c, 88 h.

Pres. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F. Shipherd, Supt. Jno. A. Watson.
Monroe Street R. R. The Central Passenger R.R. Co. of Toledo, O. 8 m. 3 g. 27 h r, 17 c, 70 h. Pres. F. E. Seagrave, V. Pres. & Treas. James Pazneer, Sec. Chas. F. Parkis, Supt. A. R. Seagrave.
TOPEK A. K AN __Topka Cluv Pr. Co. and Co. 10 for the second street R.R. Co.

TOPEKA, KAN.—Topeka City Ry. Co. 9 m, 4 g, 5-48 lb r, 25 c, 90 h. Pres. Joab Mulvane, V. Pres. D. V. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse Shaw.

TORONTO, CAN.—Toronto St. Ry. Co. 18 m, 4-10¾ g, 301b r, 136 c, 670 h. Pres. Frank Smith, Sec. James Green, Supt. John J. Franklin.

TRENTON, N. J.-Trenton Horse R.R. Co. 14/ m, 5-2 g, 43-47 lh r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr., Supt. Thomas Sillorris.

m, 5-2 g, 43-47 in r, 10 c, 31 n. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, 1r, Supt. Thomas Sillorris. City Ry. Co. 3 m, 5-2 g, 45 lb r, 15 c, 69 h. Pres. Adam Extoir, V. Pres. W. H. Skinn, Sec. H. B. Howell, Treas. & Mang. Director Chas. J. Bramford. **TROY, N.Y.**—Cortland & Homer Horse R. R. Co. 4 m, 4-8½ g, 25-30 lb r, 2 c, —h. Pres. C. H. Garri-son, Troy, V. Pres. E. A. Fish, Cortland, N.Y., Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Albla Street Ry. Co. 3½ m, 4 g, 35-48 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Hastehurst, Supt. W. R. Bean. Troy & Lansingburgh R.R. Co. 20½ m, 4-8½ g, 47 lb r, 91 c, 466 h. Pres. William Kemp, V. Pres. Charles Cleminshaw, Sec, & Treas. Joseph J. Hagen, Supt. Leander C. Brown. 205 River St. URBANA, **1LL**.—Urbana R.R. Urhana & Champaign St. Ry. Co. 2 m, 4-8½ g, 33 lb r, 4 c, 20 h. Pres. W. Park, G. Jaques, Supt. W. Park, **UTICA, N.Y.**—Utica, Clinton & Binghamton St. R.R. 7½ m, 4-8½ g, 43-56 lb r, 17 c, 82 h. Pres. Isaac Maynard, Sec, & Treas. Nulliams, Supt. Roger Rock. The Uthca & Mohawk R.R. Co. 2½ m, 4-8½ g, 25-40

Roger Rock. The Utlea & Mohawk R.R. Co. 2% m, 48% g, 25-40 lbr, 9 c, 5 h. Pres. Chas. W. Hutchinson, V. Pres. Nathan S. Haynes, Sec. Geo. M. Weaver, Treas. Joshua W. Church.

VAILSBURGH, N. J.-Newark, So. Orange, erry St. & Hamhurg Place R.R. Co. VALEJO, CAL.-Valejo St. Ry. Co. VICKSBURG, MISS.-Vicksburg St. Ry. Co. VINCENNES, IND.-Vincennes St. Ry. Co.

WACO, TEX.-Waco St. Ry. Co. 5 m, 4-8 g, 14-18 lh r, 9 c, 44 h. Pres. E. Rotan, Sec. & Treas. W. R. Kellum, Supt. J. W. Sedbury.

WALTHAM, MASS.-Waltham & Newton St. Ry. Co. 3% m, 4-3% g, 30 lb r, 6 c, 14 h. Pres. R. E. Robbins, Sec. & Treas. Henry Bond.

WEST HURON, CONN.-New Haven & West aven R.R. Co. Πa

WESTPORT, CONN.-Westport & Saugatuck Horse R.R.

WHEELING, W. VA.-Citizens Ry. Co. Wheeling & Elm Grove R.R. 7 m, 4-8% g, 30 lb r, 12 4 Baldwin Motors. Pres. J. D. DuBols, Sec. E. J. c, 4 Rut

utter. WICHITA, KAN.-Wichita City Ry.Co. 7½ n c. 60 mu, 4 h. Pres.J. W. Ground, Sec. & Mang 11 c, 60 mu, 4 E. R. Powell

WILKESBARRE, PA .- Wilkesbarre & Kingston Pass. R.R. Wilkesbarre & Ashley Passenger R.R. Co.

Coalville Passenger R.R. 2% m, 4-8% g, 20-34 lb r, 4 c. 10 h. Pres. Chas. A. Miner, Sec. & Treas. George Loveland, Supt. Albert G. Orr.

WILLIAMSPORT, PA .- Williamsport St. R.R. Co

WILMINGTON, DEL.-Front & Union St. Pass-

Wilmington City Ry. Co. 4¼ m, 5-24 g, 45 lb r, 20 c, 82 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett.

WINDSOR, CAN.-Sandwich & Windsor Passen-

WINNIPEG, MANITOBA, CAN.-The Winnipeg St. Ry. Co. 5 m, 48% g, 35 lb r, 13 c, 75 h. Pres-Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young.

WINONA, MINN.-Winona City Ry. Co. 4 m, 3-6 g, 27 lh r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.

B. H. Langley, Sec. & Treas, C. H. Porter.
WOBURN, MASS.-No. Woburn Horse R. R
2% m, 48 g, 4c, 4 h. Pres. & Treas, John Carter, See
J. G. Maguire, Supt. Dexter Carter.
WORCESTER, MASS.-Worcester St. Ry. Co
5% m, 4-8% g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley
N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas
& Supt. Harry S. Searls, Worcester.
YOUNGSTOWN, O.-Yonngstown St. R.R. Co.
ZANESVILLE, O.-Bellaire, Chillicothe & Canton.

Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend, Treas. T. B. Townsend.

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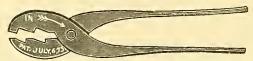
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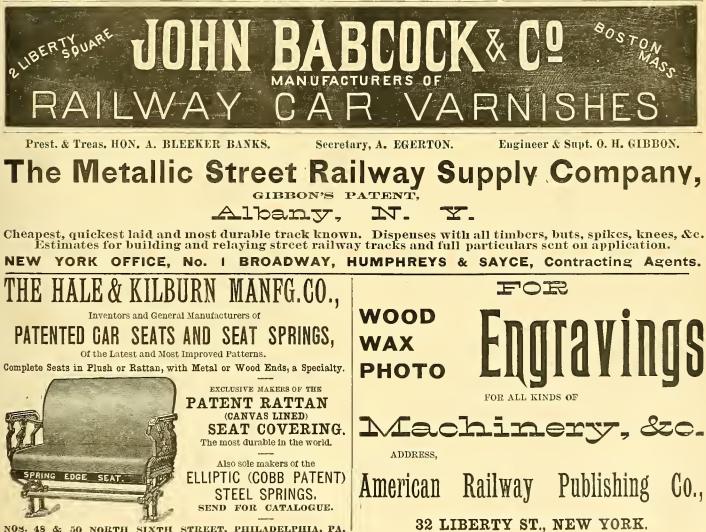


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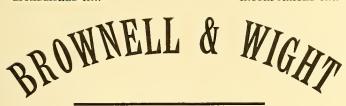


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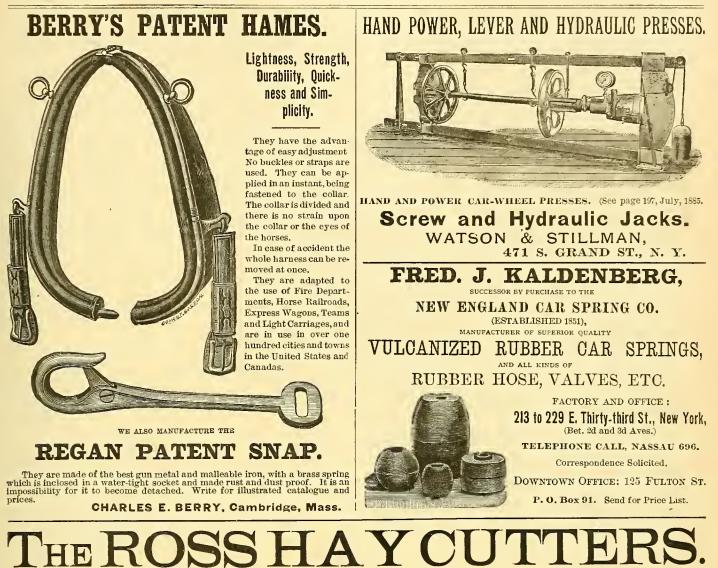
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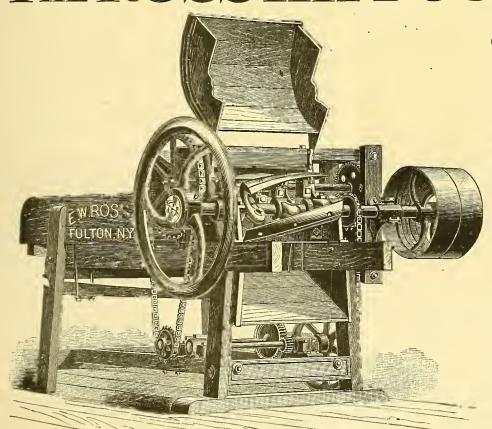
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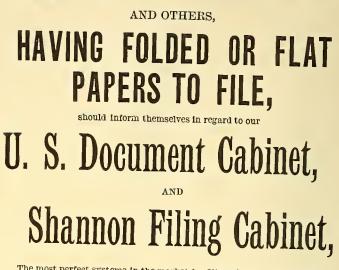
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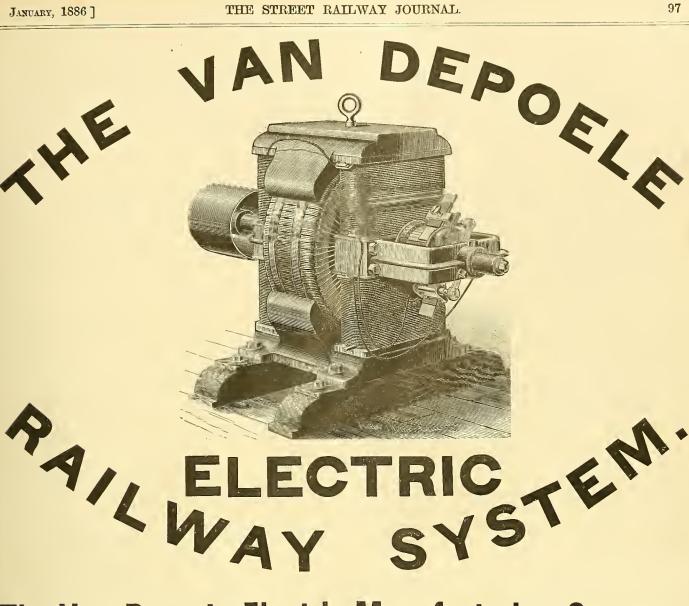
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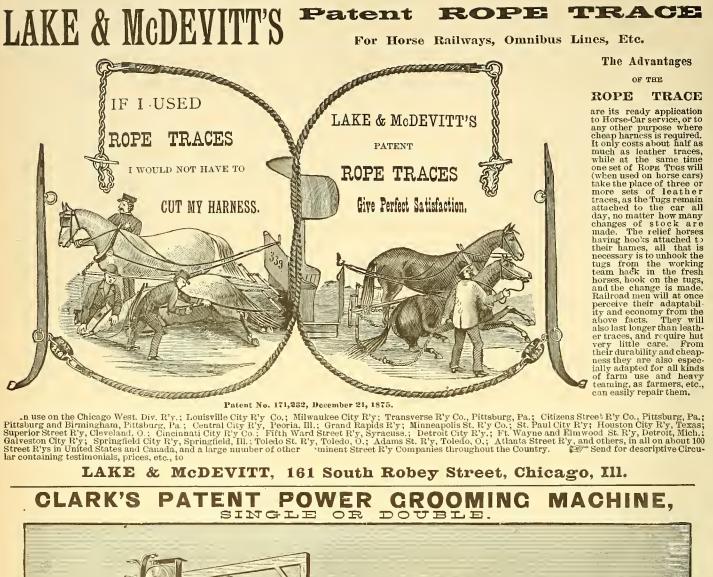


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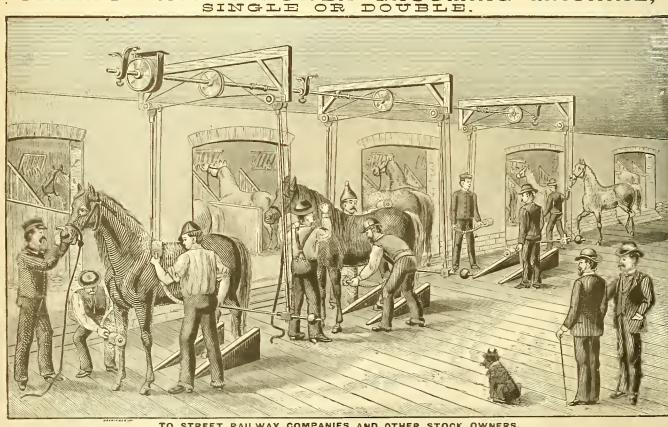
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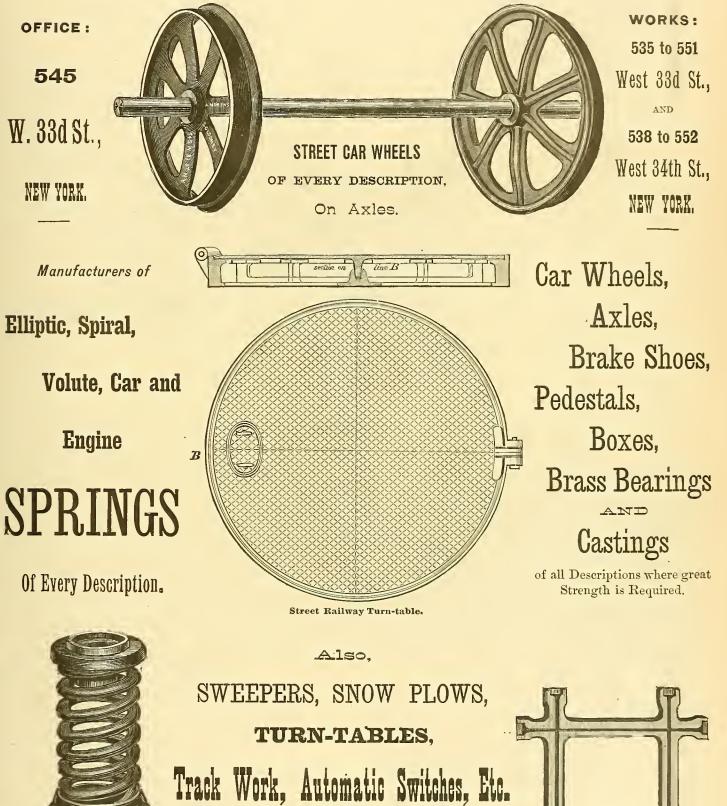
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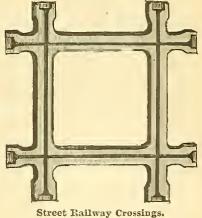
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DAY'S IMPROVED STREET RAILWAY **TRACK CLEANERS.**

These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over three thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. To secure the largest benefit they should be attached to every car in use.

DETROIT

No estimate can be made of their advantage in saving of horse flesh, hand labor, salt, the making of time in stormy weather

Since their introduction new and valuable improvements have been made in their construction, mode of attachment, and convenience of handling. They are finished in a thorough, workmanlike manner of the best material obtainable, the design being to manufacture the best and most efficient article in preference to other considerations. Method of sale and price considerably changed.

Reference is made to a few of the many roads using these Cleaners, with respective numbers of each, viz.:

> Patented April 9, 1872; May 8, 1877. Canadian Patent Dec. 19, 1872; Dec. 18, 1876. Reissued Aug. 27, 1878. Extended Dec. 14, 1877; Dec. 1, 1881; Dec. 12, 1882.

Taunton Street Ry., Taunton, Mass.10New Haven & West Haven Ry., New Haven, Coun.16Bridgeport Horse Ry., Bridgeport, Conn.32Adams Street Ry., Toledo, Ohio.14Toledo Street Ry., Toledo, Ohio.13 10 pair. 32 " 14 "

AY

Ry., Lawrence, Mass..... 21 " 55 " 66 40 ... Buffalo Street Ry.... 40 And many others.

Mass.

Fort Wayne & Elmwood Ry., Detroit, Mich,......30 pair. Detroit City Ry., Detroit, Mich......135 "

46 " 27 "

....40 "

ton, Mass..... Lowell Horse Ry., Lowell,

Naumkeag Street Ry., Salem, Mass..... Merrimack Valley

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SNOW

AUGUSTUS DAY, Detroit, Mich., U.S.A.

76 State Street.

RICHARD VOSE, New York. 13 Barclay Street,

PATENTEE AND MANUFACTURER OF

Graduated Street Car Springs.

Patented, April 15th, 1879.

ADAPTED TO THE

STEPHENSON,

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BRILL,

JONES.

BALTIMORE,

VOLK AND

ALL OTHER BOXES.



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AT FEB SIBTB



CONE



MON LS_

MIDDLESEX RAILROAD CO., BOSTON, MASS. RICHARN VOSE. Dear Sir, — We have had in constant use upon this road for several years the "Vose Grad-uated Spring," and they have given very general satisfaction. So much so that we shall continue to order them. Very truly, CHAS. E. POWERS, Prest.

NO. CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear Sir,—This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-tainly all that we desire. Yours Respectfully, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARN VOSE. Dear Sir, --We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respliy. J. W. FOSHAY, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN, N. Y.

RICHARD VOSE, ESQ. Dear Sir, —Yours of May 37 to Mr. Hazzard, Prest, has been referred to me for reply. And would say that we have now in use about 600 sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly, A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARN VOSE, ESQ. Dear Sir,-Replying to your favor of a recent date I beg to say that we have been

using your Graduated Car Springs since 1881 and have increased the number, notil at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt.

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

CoL. RICHARN VOSE. Dear Sir, — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARN VOSE. Dear Sir,—Send us 6 more sets of your new pattern Car Spring, same as the lot we ordered of you last Sept. in every way. This is the best answer we can make to your question of "How we like them." Yours truly, J. M. DOUERTY, Supt.

LYNN & BOSTON R.R. CO., CHELSEA, MASS.

RICHARN VOSE, ESQ. Dear Sir,—Afl I can say in favor of the Vose Spring is that we continue to apply them, to most of our new cars. Have about 60 cars equipped and think very well of them. If they could be produced for less money should think better of them. Very Respectfully Yours, E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentlemen,—Yours of May 28 at hand, with re-gard to your Car Springs. We find they are the best in use. They come a little higher than the Barrei Spring, but hey are much the better springs. Yours truly, H. J. C. BERG, Supt.

LOWELL HORSE R.R. CO., LOWELL, MASS.

TO WHOM IT MAY CONCERN: We have used the Rich To whom IT MAX CONCERN: We have used the first and Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwil-ting to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

DAYTON STREET R.R., DAYTON, O.

MR. RICHARD VOSE. Sir,—We have eighteen care equipped with your Patent Graduated Sprinz, ans will use your springs to replace all other kinds ad fast as repairs are needed. Your springs give the best satisfaction to our company and patrons of any that we have ever tried. that we have ever tried. Yours Respectfully, A. W. ANDERSON, Supt.

FT. WAYNE & ELMWOOD RY. CO., DETROIT, MICH.

RICHARN VOSE, ESQ. Dear Sir,—For the past four years we have been using your Graduated Springs on all of our cars (30). Our Superintendent sars that none of them have ever had to be repaired and that they are the best springs we ever used. Yours truly, N. W. GOONWIN, Secy.

DETROIT CITY RY., DETROIT, MICH.

RICHARD VOSE, ESQ. Dear Sir,—I have your favor of the 20th ultimo. We have about 70 cars equipped with your springs. Our experience is that they wear well and give general satisfaction. Yours truly, GEO. HENDRIE, Treas.

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.

JOHN STEPHENSON COMPANY

(LIMITED),

New York.

TRAMWAY CARS

MEDAL OF FIRST CLASS, WORLD'S INDUSTRIAL COTTON EXPOSITION, NEW ORLEANS, 1885.



LIGHT ELEGANT, DURABLE.

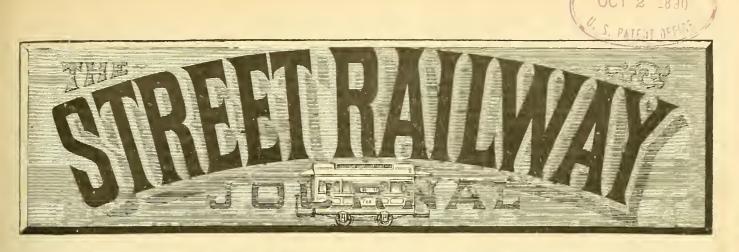
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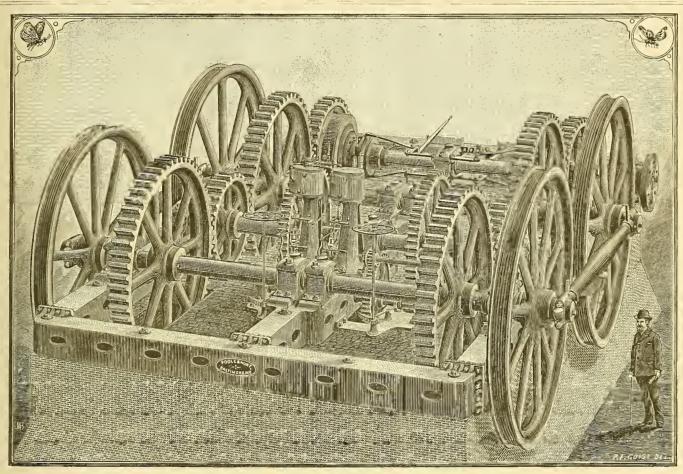
All Climates Suited.



VOL. II. { NEW YORK: 32 Liberty Street. }

FEBRUARY, 1886.

(Lakeside Building.) NO. 4.



MOTIVE POWER OF THE TENTH AVENUE CABLE ROAD.

Motive Power of the Tenth Avenue Cable Road.

The Tenth avenue cable road of this sity has now been in operation five months. The first cars were started over the line at 5 P. M., August 29, 1885, and the road was open to the public at 6 A. M., on the 31st, thirty-six hours after making the experimental trip. At first the road was operated from 6 A. M. to 9 P. M., and the number of hours gradually increased. Inside of three weeks from its inauguration it was running 22 hours of the 24, continuing at that rate to date.

No trial of the road or appurtenances was made prior to the formal opening, and at that time it was discovered that the attachments of grip to cars were not heavy enough for the work, but, as the company had provided only ten (10) cars, nnder the impression that traffic would be very light (which soon proved to be a mistaken idea), the carrying capacity was altogether too limited to allow the removal of a number of cars at any time for repairs to grip attachment without greatly inconveniencing the public. The motive power has not cansed a single detention—in fact, the only trouble experienced was as above stated, with the original attachments of grips to the car, and even this difficulty could have been obviated if less haste had been made in starting and sufficient time allowed for testing the different parts.

There are sixteen large sheaves of from four to twelve feet in diameter, and nineteen hundred (1,900) carrying pulleys. As the entire system is in duplicate, but one-half the wheels are in constant usc. Only two (2) men arc employed to lubricate and examine these wheels, making cost for labor \$3.50 per day.

The building containing the motive power is located on Tenth avenue, at 128th and 129th streets, and the interior is finished in a style resembling a banking institution rather than a railway depot. On entering and passing through the vestibule, then descending a stairway at the right, the first or tension floor (which is ten feet below the main floor of building) is reached, and from this point a complete view of the massive machinery and engines is obtained. As the floor of the machinery room is six feet below the tension floor above mentioned, or sixteen feet below the main floor, the whole presents a magnificent appearance from this entrance. The room containing the engines and machinery is about 50x115 ft., and a space about 40x100 ft. is required for the machinery and engines, the weight of which exceeds 300 tons. The company are well pleased with the quality of the work, and do not fail to give the machinery builders, Messrs. Poole & Hunt, of Baltimore, well-deserved credit.

The accompanying cnt illustrates one section of the driving machinery. This is duplicated on the opposite side of engines. The main shaft is 100 ft. long, divided into five (5) sections, each coupling being about three (3) ft. in diameter and joined with cross-keys.

The principal improvements in the machinery are—

(1.) Driving drums are iudepeudent.

(2.) Auxiliary power.

(3.) Varying diameter of grooves ou the periphery of the drums.

The friction clutches (four in number, oue for each train of gears) have sixteen wronghtiron and steel discs three-eighths of an inch thick by about four feet in diameter. Every alternate disc being secured to the gear wheel, and the others fastened to the shaft, causes the lateral power applied through the clutch to be multiplied by sixteen in affecting the gear.

Owing to the multiplicity of square inches in friction surfaces in this clutch, the power required to operate the six miles of cable with cars is not sufficient to force the oil from between the surfaces.

It is necessary to frequeutly inspect the cables, more especially if considerably worn. The ends of strands tucked in at splices oc. casionally work loose, and, if discovered before they are entirely out of the rope, ean be quickly repaired. During this inspection the cable must be moved very slowly-about two miles per hour-and this machinery is provided with auxiliary enginos for the purpose. They cau also be used for removing old ropes and replacing with new, and in case of serious accident to the main gcars, the anxiliary power cau be utilized to operate the eutire road, which can be done up to a speed of four miles per hour, and the service of this power is almost inestimable where necessary to keep a road running uniuterrnptcdly.

The driving drnms are overhanging placed outside of the girder frames. They are arranged in this manner to allow the cables, if needing repairs, to be entirely detached from the machinery; and in this the principle is the same as in Chicago, where the feature was first introduced, and has proved of great assistance when handling the ropes.

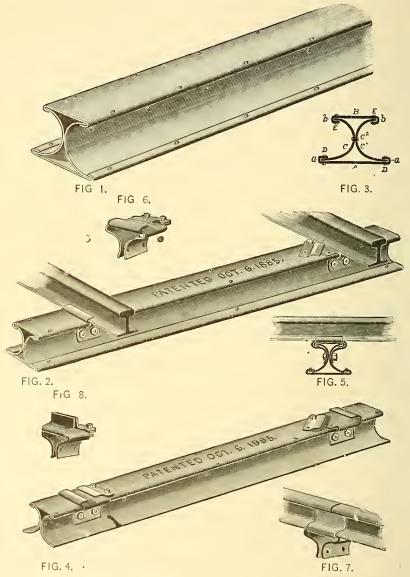
The rope used ou cable railways has a hempen ceuter, around which the wire strands are wound, and a section under strain of five or six tons is longer than wheu subjected to a strain of but one ton. As the incoming rope has all the stress of operating the road, and the outgoing cable has only that produced by the tension weights, varying from 1,000 to 1,500 lbs, the grooves in the periphery of the drums are made to meet the contraction which takes place in the ropo as it is relieved of the stress.

In this system of driving, the first grooves in the drums are largest in diameter; the second smaller than the first, and so on, each groove gradually diminishing in regular order to allow the rope to return to its normal structure as the successive wraps are made.

The Whipple Metal Railway Tie.

That metallic ties must eventually take the place of wood is an opiniou which is gradually gaining ground among railway men. The rapid destruction of ties by their natural decay, as well as by fire and wearing out, makes them expensive in spite of their comparatively low first cost.

The experiments made with various forms of metallic ties and stringers have not beeu altogether promising. Rigidity, first cost, and, in many instances, a complete alteration of the method of track support, have Fig. 3 is a cross-section. The tie, it will be seen, is formed of two flat strips of metal A B, connected by two concave side pieces c c in Fig. 3. The lips on the top and bottom pieces are turned over and clasp the edges of the two concave sides a a, b b. To increase the strength, a line of rivets is put through the side-pieces at their centers c^2 . This construction forms a box which is composed practically of two triangnlar beams united at the apex. Elasticity, however, is secured by making the side plates concave instead of straight. The weight of



THE WHIPPLE METALLIC RAILWAY TIE.

been among the objections which have been presented. Abroad experiments have been tried on an extensive scale. A variety of systems have been used, but the experimental stage can hardly be considered passed with the most complete systems.

The Whipple metallic tie,* of which we present illustrations, is an attempt to combine in metal all the good features of wood, while retaining the useful qualities of metal.

Fig. 1 shows the method of constructing the tie itself.

Fig. 2 shows the tie under a pair of rails with the fastenings in place.

"The Whipple Elastic Tie and Patented Rail Fastening. L. E. Whipple, United States Hotel, Hartford, Conn.

the plates, degree of compression with which the lips are turued upon the sides, number of rivets, etc., are determined by the strength and size of tie required. Where the greatest elasticity, lightest possible weight, and a cheaper method of fastening are required, the form shown in Fig. 4 is adopted. In this the base plate, it will be seen, is omitted, which, of course, cousiderably increases the elasticity of the tie. The method of fastening the rails upon the tic is shown in Figs. 2, 4, 5 and 6. Fig. 5 is an end view of the fastening as attached to the tie, and Fig. 6 a perspective view of the same. The metallic chair has one removable side, allowing the rail to be slipped in place and fastened by spring of two

bolts on the inner side. Figs. 7 and 8 show another form of chair which also forms a fish plate.

This form of track support, it is claimed, cau receive any degree of elasticity, gives an exceedingly firm anchorage, as the bottom of the tie cau be spread to an unlimited extent, affords great facilities in laying track, and determines the gauge with absolute accuracy, the bolt holes being punched beforehand in such a way that no variation in the distance between the rails is possible except where it is determined in advance.

The support given by the two ends of the tie, if the clamping is well done, evidently must be the same. It is intended in sending these out that in track laying or putting in a tie, it would be necessary to handle only one bolt at each end. This form of tie is equally applicable to street or steam roads, and can be adapted to the lightest or heaviest rails in use.

Where it is desired to make the tie showu in Fig. 4, this is effected by placing a strap on the bottom of the tie directly under the point where the rail bears. This strap or foot is similar in section to the base plate shown in Fig. 2, but does not extend the full length of the tie. This construction adds very little to the weight but immensely to the strength of the tie, concentrating the metal at the point where it is most needed. These ties, made of 3-16 Bessemer steel, all complete, fastenings, bolts, nuts and rivets, ready to lay, weigh in the form showu in Fig. 1, 120 pounds, and iu Fig. 4, 90 pounds, the ti es being 6' long. Tie for street rail ways, $5\frac{1}{2}$ long, top 3" wide, bottom $4\frac{1}{2}$ " wide, with two rail fastenings all ready to lay, made of 3-16 metal throughout, 52 lbs.; with resupporting plates, 4" wide under each rail, 55 lbs. Same tie with base plate the entire length of it, 75 lbs.; additional length, 91 lbs. per foot. Fig. 4, with the reinforcing base-plate, weighs 65 lbs. The heavier ties can be made of any length, and weigh $17\frac{1}{2}$ lbs. for each additional foot of length required.

When wanting Street Railway Supplies, consult our Directory.

Electric and Pneumatic Subway and Railway.

The annexed engraving represents very clearly an arrangement which allows a combination of an electric and pneumatic subway and railway. Reference being made to the cut it will be seen that the plan is a simple one and consists principally of a continuous row of iron boxes ou the top of which are the rails for a car track. The first operation in construction is the laying of wooden cross ties or foundations for holding the conduits in place. Upon these are placed two or four rows of hollow cast iron boxes with longitudinal openings at the top; the boxes are joined and held together by bolts, and are coated with asphaltum. Covers are placed over these longitudinal openings. On the left box or couduit (see

* Julius M. Jagel, 55 Gold Street, New York.

engraving) the cover is in its place and the rail is bolted to the sleeper. On the right hand side is seen a section of the cover taken off, showing how easily repairs can be made, and here is also seen a packing between the cover and boxes making it waterproof. Spaces are allowed for water to run into the sewer.

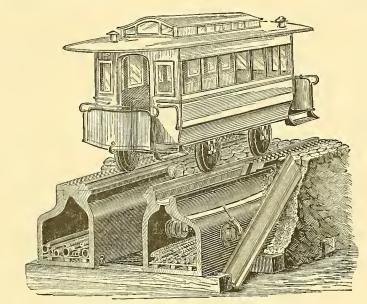
Inside the conduits are pulleys for an endless cable to draw and lay the wires through the conduits at stated distances.

An outlet is provided by which connections can be made between stations and houses. In the left conduit are pneumatic tubes and electric light wires; and in the right conduit are shown telephone, telegraph wires and cable. This description of conduit forms a solid and noiseless sleeper as it occupies that part of the street uow occupied by the cars. The conduit also makes President. We quote entire the circular issued by the management regarding the duties of the division masters:

"It shall be their duty to devote their whole time to the interests of the Company, under the direction of the President; to conform to all the rules and regulations now in force, and such as may from time to time be made by the President, and see that all employees under their charge faithfully execute and obey all orders given them.

They shall have charge of all the stables, cars, horses, harness, tools, and all other property belonging to or controlled by the Company in their division, and see that every thing is kept in good condition, and ready, at all times, for use.

It shall be their special duty to visit each stable in their division at least once a day,



JAGEL'S ELECTRIC AND PNEUMATIC SUBWAY.

a good drive way on the street where no cars run,

The inventor^{*} claims to have a new improved system for railways in cities, to form conduits for electric light wire and pneumatic tubes in one, and telephone and telegraph wires and cables in the other, with opening on top to admit laying and connecting the same with houses and stations ou a plan similar to that of water or gas.

Subscribe for Street RAILWAY JOURNAL. Ouly \$1.00 a year.

Metropolitan Street Railway of Boston.

Through the courtesy of Mr. C. A. Richards, President of the Company, we are enabled to present to our readers a synopsis of the methods employed in the mauagement of the road.

The Presideut is the controlling center of the whole, and by him all orders for changes or special arrangements are issued. The company operate lines of cars in Boston, Dorchester, and in East Boston and Chelsea. The former are divided into four divisions, and all of the latter are embraced in one. These divisious are under the immediate superintendence of division masters who are personally responsible to the and as much oftener as occasion may require, to know from personal observation that it is kept in a neat and healthy condition; that the horses are properly fed, cleaned, shod, and otherwise properly cared for; that the cars are cleaned and kept neat and tidy, harness cleaned and kept neat and tidy, harness cleaned and in good order; that each employee under their charge is faithfully performing the duty assigned him; visit the shoeing shops, and see that everything therein is properly conducted, and be prepared, at all times, to give the President such information, relating to their divisions, as he may require.

They shall approve the account of all labor performed in their divisions, and render a true and just account of the same at the close of each week.

All articles needed in the various departments of their divisious shall be reported to them by the foremen, and it shall be their duty to ascertain if they are actually ueeded; should such be the case, they shall make a requisitiou for the same, (all requisitions for articles in the store-house shall be made in duplicate), which, being approved by the President, an order will be drawn for the same, and the articles seut to the station for which they were ordered. Upon receipt of such articles, they shall see that the proper voncher, or receipt, for the same is promptly sent to the office, endorsed by them in writing, and stating the quality of the articles received. They shall cause all articles received for their divisions to be delivered to the persons requiring them, and see that they are used with strict economy, and allow nothing to be wasted in any of the departments of their divisions.

The Foremen of Stations, Horse Shoers, Wood Workers, Harness Cleaners, Car Cleaners, Starters, Shifters, Feeders, Watchmen, Helpers, Tow Boys, Hostlers, and all other employees in their division are under their charge, and they will be held responsible for their efficiency and good conduct, and to that eud they shall have the power to appoint and discharge, with the approval of the President. In making appointments, the person applying for the situation shall fill out the blank provided for that purpose; if it is satisfactory

and faithful in the performance of their several duties in every respect.

They are to see that the track, curves, switches, and all pertaining thereto, are iu good condition; should they find any repairs needed, they will at once send notice of the same to the Roadmaster's office, and not lose sight of all repairs needed, till such repairs are made.

They are to be on the streets through which their several lines run, all the time that can possibly be spared from their other duties; see that passengers are properly accommodated, where trips are ueeded, where they can be dispensed with, and notify the President of any changes which they may deem to be advantageous to the company or its patrons; they are to see that the requisite number of cars are furnished at the different places of amusement; that the cars are ready and properly started for the accommodation of those who Tow Boys to be under the charge of the Division Master in whose division they are employed.

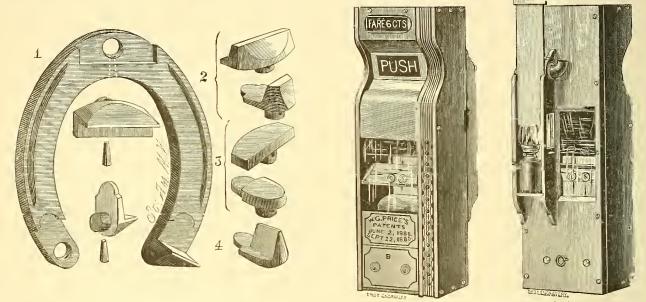
Division Masters will see that uo more help is employed in any department of their division, than is actually needed.

The President only has authority to regulate the pay of employees.

No foreman or any other employee is allowed to borrow any articles or supplies from any other division, except in case of emergency, and then they must report to their Division Master at his first visit the articles borrowed, and the circumstauces which required it, and he shallsee that such articles are promptly returned to the station from which they were borrowed.

Division Masters are not allowed to sell or otherwise dispose of any property of the Company, except with the consent or order of the President.

In case of accident upon their division,



THE STEVENS HORSE SHOE.

to the Division Master, he shall approve it and present it the President for his approval; if granted, they may be appointed at once. In making discharges, the Division Master shall furnish the President with a written copy of the charges preferred; if approved by him they shall be discharged at once.

They shall report in person to the President at his office whenever required, and make written reports at such times as he may direct.

They shall be at their headquarters daily at such hours as the President may direct.

They may, with the consent and approval of the President, make such rules and regulations for the employees under their charge as may be deemed requisite, for promoting the best interests of the company.

It shall be their duty to superintend the running of the cars on all the lines of their divisions; make all time tables required, submitting them to the President for his approval, which being obtained, they shall see that the cars are punctually started by the table so approved, and that the trips are regularly performed; that the conductors and drivers are prompt, careful

muy wish to take them at the close of such places.

Should any Division Master become cognizaut of any violation of the rules, negligence, or improper conduct on the part of any employee, of any other divisiou than its own, it shall be his duty to promptly report the same to the Division Master having charge of such employee.

Employees are not to be changed from one division to another, without the consent of both Division Masters, except by order of the President.

All orders for special cars are to be sent to the Division Master of the route over which they are to be run; they are to receive the pay for the same, (unless it is otherwise provided for) and pay the same into the Receiver's office.

They shall have authority to let special cars (when it can consistently be done) but not for less than five (5) dollars each, without orders from the President.

Should vacancies among employees occur in any department of the divisions, they are to be filled as far as possible by promotion; competency, faithfulness and good conduct, to be the standard for such promotiou.

PRICE'S IMPROVED FARE BOX.

they will see that a written report of the same, with all attendant circumstances, uames and residences of witnesses, is sent to the Secretary with all possible dispatch."

The stable foremen have charge of the stables and make their reports regarding supplies and other incidentals to the Division Masters. They have the superintendence of the hostlers, harness cleaners, and other employees whose duties require them to be at the stables, but have uo authority to employ or discharge.

Stationed at various points along the lines there are men known as "Aids." Their duty is to see that the cars are run in their proper places and at the proper time and speed. To look out for and prevent blockades as far as possible, and to have a general oversight and see that the conductors and drivers are acting in accordance with their instructions. They are not in charge of any men, but have authority to issue street orders for the movement of cars.

This embraces the entire system of the car manipulation with the exception of the duties of the conductor and driver. It will be seen that it is exceedingly simplified, and to any one who is familiar with the intricacies of the street railway tracks in Boston, and the smoothness and harmony with which the cars are handled and the courtesy and accommodation of passengers, the efficacy of the system is at once apparent.

The Stevens Horse Shoc.

The shoe that is illustrated in this issue is one for which it is claimed that a great saving of time and expense is gained over the use of the ordinary solid shoe. It is of course apparent to any one who has to deal with horses that are used upon stone pavements or in slippery places where it is an absolute necessity that the ealks shall at all times be sharp, that a shoe that can be resharpened without being torn from the hoof will lessen expense and preserve the strength and vigor of the horse's foot.

This shoe seems to be exceedingly simple in construction. The calks are slipped into the recesses that are left for them at the heel and toe. A dowel pin fits into the hole that is shown at these points and through this in turn there is driven a hard taper steel pin. The pin holds the calk in place and is in turn prevented from slipping out by forming a slight burr over the beveled he id by striking the softer metal of the shoe proper, a light blow with a hammer. This, however, does not prevent the easy removal of the pin by the use of a commou rouud nail set at the other end, yet the calks are said to be so securely held in position that it is impossible for them to spring, but that they remain firm and rigid until they are worn down.

It is also claimed for this shoe that it can be fitted to the horse's hoof without injuring its construction; that it can be put into the fire and widened or narrowed, drawn in or out, and fitted the same as a hand made shoe, without affecting its strength or the perfect fitting of the calks.

The saving in time and trouble to those who are obliged to be npon the road most of the time, in enabling them to avoid the necessity of going to a blacksmith shop every time it is necessary to sharpen the calks, is at once apparent, and a further advantage is claimed in the fact that side and flat calks can be readily substituted for the sharp in the stable, thus preventing the horse from spiking himself in the stall.

Improved Fare Box.

We present the front and rear views of an improved fare box, for which it is claimed that it renders "knocking down" by either passenger or driver impossible, and that in consequence more than the average number of fares are collected, and that no fare register is required on a car where it is used.

The box has a light push block which covers the opening into which the fares are dropped, the weight of which causes a gong to strike whenever it falls back and meets with a fare as an obstruction. The weight of the fare has nothing to do with the ringing of the gong. It is accomplished in the following way:--

The push block consists of a bronze casting which is suspended from the top, and is of such shape that it extends down and under the plate through which the fares are dropped. The lower part of this push block is sawed into a comb, the teeth of which play back and forth through the teeth of another double V shaped comb which is directly under the opening for fares, and which is suspended on an axis so it can be tipped or turned over, and has a counter-balance which will cause it to return to its normal position. The glass exhibition plate turns on an axis and is attached to the V shaped comb by a link so it will turn over also. The hammer is keyed and soldered to the axis of the exhibition plate so it moves at the same time.

The action is as follows:-

The push block is pressed back and a fare or fares are dropped into the double V shaped comb. The push block then comes forward by its own weight, but the teeth of its comb can not pass through or between the teeth of the other comb, owing to the fare being an obstruction. The weight of the push block then turns the double V shaped comb over, the fare falls down and the double comb returns to its normal position. The glass exhibition plate and hammer move only when the double comb moves. When the exhibition plate tips over it dumps what is on it and returns to its normal position in time to catch the fare just put in; and as it returns to this position the hammer which is attached to it strikes the bell or gong. The works are very simple, being all made of solid bronze castings, which it would seem could never wear out.

The push block is not heavy, as it has only to raise the hammer which in falling strikes the gong. The gong rings as loud for a ticket or three cent piece as it will for a silver dollar. The push block is cushioned with rnbber, so it makes no noise when moved.

The ent of back of box shows the lantern box open. This box* projects only $2\frac{1}{2}$ " as it is partly enclosed in the main box. The light from the lantern shines directly on the money or fares, and is also reflected on them by a mirror so that they can be seen by all the passengers and the driver. The glass slide which directs the fares to the exhibition plate consists of two mirrors, which are fastened together back to back, and they assist considerably in lighting up the box.

Thus everything that is put in the box is in full view of both passengers and driver, and the lamp gives an excellent light for the latter to see to make change by. The woodwork is cherry and the metal hard bronze nickel-plated, and there are no springs or other delicate parts to get ont of order.

*W. G. Price, 514 Fulton street, Troy, N. Y.

A well-known firm renewing its contract for advertising another year in the STREET RAILWAX JOURNAL says: "We feel that your paper has been of great benefit to us, and many orders that we filled, and applications we are receiving daily, we can trace to onr advertisement in your paper." "A word to the wise "etc.

The Transmission of Power by Electricity.

On this subject the Boston Journal of Commerce disconrises as follows:

Few people are aware how successfully this has been accomplished by the Massachusetts Electric Power Company using the Daft electric motors. At 197 Congress street, Boston, it has in use two Daft dynamos of twenty-five horse power each that arc run by being belted direct to a fifty horse power Armington & Sims engine. The steam is generated in a steel tubular boiler set with Jarvis Furnace, and coal screenings are used for fuel. This power is transmitted all over the city, and is used in running all kinds of machinery, including sewing machines, ventilator fans, printing presses, elevators and other work. The demand for power far exceeds the supply, as the company have let all the capacity of their engine, and have applications for 300 horse power more. It is the intention of this company to start a station to be run exclusively to let power. The present plant has been in operation over eighteen months, and the only interruption has been three hours, when other parties cut their wires by mistake. In many cases these motors have supplanted small steam engines and hired power. Customers claim that the power is more regular than they have ever used before even when coming from the adjoining buildings. The future of this system is filled with possibilities. It will eventually become the motive power of all the present horse railroads. In a very few years elevated electric railroads will be as plenty as steam railroads are now and in time it will supersede the present system of running locomotives on all railroads,-and why not? It is simply a question of cost of making power. It is acknowledged by every practical engineer that the present system of making steam in locomotive boilers is expensive as well as wasteful. The evaporation of pounds of water to each pound of coal consumed to make steam in locomotive boilers does not average over 31 pounds of water, using the best grades of bituminous coal, while with stationary boilers set with the Jarvis Patent Boiler Setting, using coal screenings for fuel, an evaporation of nine pounds of water to one pound of fuel is made, and the reduction in cost of fuel is from one-third to one-half. It is only a question of time when all the different electric lighting stations in this country will use their engines in the day time to make power to be sold for manufacturing purposes, the same as they sell it in the form of electric lights now. They can also furnish power to run electric railways, elevated or surface. The economy of this system over the cost of running horses, as used now, will be over fifty per cent. Any parties interested in this system and who wish to see it in opera, tion running machinery, can do so by visiting the places iu Boston where it has been in use the past twelve months.

When wanting Street Railway Supplies, consult our Directory.

[FEBRUARY, 1886.

Street Railway Development.

The average fare per passenger in the United Kingdom over the six years ending in 1883, was 3.74c., the maximum having been 3.8c, in 1879, and the minimum 3.6c. in 1883. This comes very near to the average of the street railways in the Department of the Seine, which, for the latter year, appears to have been 3.3c. per passenger; but it is nearly $1\frac{1}{2}c$. nnder the average of the New York street railways, which was 5.60c. for the same period. It is obvious that if the New York strect railways carried au equal number of passengers per mile of line open, if the distances were of the same average length, and if their working expenses and all other factors of cost were much similar, the higher rates per passenger received in New York should represent something like a correspondingly higher rate of profit. There is not, however, a sufficient amount of uniformity in the system of keeping the accounts to allow of a strictly parallel comparison being made. Neither the French nor the United States street railway returns exhibit the average length of the journey made by each passenger, and in the absence of this showing, the average fares per passenger do not point to any data of real value.

One of the most essential features of cconomical street railway working is, of course, that of getting the highest possible duty out of the horses and vehicles employed. It is impossible to state comparatively the average number of miles rnn per horse and per vehicle over the conrse of a year, because that information is only given for the United Kingdom; but it is possible to express the result for both the United Kingdom and the United States, in reference to the number of passengers carried per horse and per vehicle employed. Before proceeding to deal with this latter phase of the subject, it may be noted that in 1883 the duty of the horses employed on our home street railways was as follows for each of the three kingdoms:

		Number of Miles Run.	Average Miles per Horse,
England. Scotland. Ireland. United Kingdom	$15,702 \\ 3,054 \\ 1,366 \\ 20,122$	33,587,940 5,431,000 3,166,500 42,185,700	$2139 \\ 1778 \\ 2318 \\ 2096$

If in street railway working, as in other corporeal affairs, it is true that "the merciful man is merciful to his beast," the foregoing figures would appear to indicate that Scotland has attained this merit in a considerably higher degree than either of the other two divisions of the country.

As between English and American street railways, there is a very remarkable difference in the results obtained in relation to both the horses and the vehicles employed. If we take the twelve leading lines of New York, we find that to carry $186\frac{1}{2}$ millions of passengers, 2759 cars and 13,443 horses were operated, being an average of 67,000 passengers per car and 14,000 passengers per horse. In the United Kingdom, how ever, 2819 cars were employed in 1883 to carry 295,721,000 passengers, showing an average of 104,903 passengers per car, or

about fifth-seven per cent. more than the average of the United States. When, again, the comparison is extended to the power employed to obtain a given result, it comes out that the two cases are very much on all fours, the average of the twelve selected New York lines being 14,000 passengers per horse, as compared with an average of 14,-700 for the United Kingdom as a whole. It will be noted that in New York the number of cars employed relatively to the horses at work is much higher than in this country, the ratio of the selected lines already referred to being 2759 cars to 13,443 horses in the former case, as compared with 2819 cars to 20,122 horses in the latter. In considering this matter, the higher amount of mechanical traction employed in this country must not be overlooked. When this circnmstance is taken into account, the difference of ratio to which attention has just been called, becomes all the more marked.

In the following tabular statement the number of cars employed, of passengers carried, and of passengers per car in the United Kingdom, are shown for each of the five years ending with 1883:

Year.	Number of	Number of Passen-	Number of Pas-
	Cars.	gers.	sengers per car
1878 1879 1880 1881 1882 1883	$1124 \\ 1382 \\ 1610 \\ 1945 \\ 2352 \\ 2819$	$\begin{array}{c} 146,001,000\\ 150,881,000\\ 173,067,000\\ 205,623,000\\ 257,760,000\\ 295,721,000 \end{array}$	129,894 109,176 107,495 105,719 109,592 104,903

It is not without interest to note that while in the United Kingdom there are seven horses for each car employed, the corresponding average for the New York street railways is only 4.9 horses. In the latter city the number of passengers annually carried per car, varies from a minimum of 25,761 on the Central Park line, to a maximum of 145,872 on the Broadway and Seventh Avenue line. There are, however, no such wide variations in the ratio of passengers to horses employed, the minimum being 10,713 and the maximum 16,764.

There is no better method of cstimating the productivity of either railways or street railways than that of calculating the traffic and the receipts per mile of line open, assuming that the conditions of comparison are in other respects strictly relevant and parallel to each other. So far as street railways are concerned, however, this latter condition can hardly be said to be met. The calculation is liable to be disturbed and the results vitiated by the proportions of single and double or treble line, and by other matters that are liable to obvions variation as between one country and another and even as between different districts in the same country. Thus we find, for cxample, that there were 406 miles of street railways open in France at the end of 1884, but although we are told that of that aggregate, 351 miles were worked by horses, forty-seven miles by mechanical motors of different sorts, and abont eight miles by the two systems of traction, there is no distinction made between single and double lines. How vital this distinction is, in its bearing on the gross revenue of a line, may be estimated by the fact that in the case of many of the New York lines the length of track, calculated on the mileage of single line, is more than double the length of the line, as ordinarily expressed. Thus the Atlantic Avenue line, although only twenty four miles in actual length, has more than forty-eight miles of track, the Brooklyn City line is double throughout, and so with many others.

Subject to the limitations just stated, it appears that the average gross receipts derived from the street railway traffic of the United Kingdom over the six years ending 1883, was \$7,653,384, being at the rate of \$17,548 per mile. The highest average over this period was \$20,717 per mile in 1878; the lowest \$15,718 per mile in 1880. In the former year, therefore, the average was thirty-two per cent. higher than in the latter. In France, the average receipts per mile open have taken a much higher range, reaching as high as \$41,496, over the whole of the street railways in Paris and its neighborhood, in 1883. This latter average is made up of a great mauy extremes, the average receipts per kilometrc falling as low as \$1217 on the Boulogne-Billancourt line, and as high as \$62,532 on the Montronge-Gare de l'Est. The range between the two extremes is made up of all kinds of intermediate figures.

In New York the street railways appear to yield as remarkable variations in gross mileage receipts as those of Paris. The aggregate mileage of the thirteen principal street railways of the former city amounts to 364 miles, resolved into single track. This mileage yielded in 1884 over \$9,700,-000 of gross receipts, being an average of \$26,645 per mile, or nearly fifty per cent. over the average of the street railways of the United Kingdom, but about thirtyseven per cent. under the average of the lines in the Department of the Seine. The following tabular statement shows the very singular variations as between one line and another, even in a city so full of life and traffic as that of New York. The table gives the mileage in single track of principal street railway lines in New York in 1884 with gross earnings of each in that year and average earnings per mile.

Name of Line.	Miles.	Gross Earnings.	Average per Mile.		
Atlantic Avenue Broadway Brooklyn City. Buffalo & East Side. Bushwick. Central Park Dry Dock	48 21 88 26 23 26 23	\$408,019 365,200 2,011,00 109,629 366,278 759,300 8\$1,000	\$8,500 17,380 22,850 4,216 15,925 29,227 34,352		
Eighth Avenue New York & Harlem Second Avenue Sixth "' Third " Rochester City	21 13 18 8 21 28	712,900702,000 $895,000825,0001,489,000248,000$	33,947 54,000 49,722 103,125 70,809 8,857		
Totals and gen. av	364	\$9,772,326	\$26,847		

The higher range of receipts per mile of hinc in operation in Paris is borne ont by the proportions of passenger traffic to mileage in the three cases just quoted. In Paris and its environs there were seventytwo miles of street railway open in 1883 and the total number of passengers carried 88,441,000, giving an average of over 1,200,-000 passengers per mile of line. This is

a very much higher average than that of either this country or the United States. In the latter case, the principal New York lines above named had, in 1884, an average of S21,760 passengers per mile, the maximnm being 2,064,500 in the case of the Sixth Avenue, and the minimum 352,381 in the case of the Broadway line. On the six principal street railway lines of Massachusetts-the Cambridge, Highland, Metropolitan, Middlesex, South Boston, and Worcester-embracing unitedly 161 miles of road, and carrying a total of 71,769,000 passengers, the average number of passengers carried per mile was 445,700, or not much over one-third the average carried on the Seine street railways. In the case of one line-the Cambridge-the average fell as low as 282,348 passengers; in the case of another-the South Boston-it rose to When we come to 775.446. analyze the returns for the United Kingdom, we find that the average ratio of passengers to mileage is approximately the same as that we have just found for the chief lines in Massachusetts. The figures showing number of passengers carried and rates of passengers to mileage open in the United Kingdom for the last six years are appended.

Year.	Miles of line open.	Total Passengers Carried.	Av. Passengers per Mile of Road.
1878	269	146,000,000	542,751
1879 1880	321 368	150,881,000 173,067,000	470,000 470,000
1881 1882	488 564	205,623,000	421,359
1883	671	257,760,000 295,721,000	457,027 440,717

It would appear alike from the above table, and from the returns of gross receipts per, mile, that the street railway traffic of England is not increasingly remunerative, but rather the reverse. In 1878 the number of passengers carried per mile open was twenty-three per cent. higher than in 1883, while the gross receipts per mile were thirty per cent more in the former year than in the latter. In this respect street railways are only following the behests of a well known law of development. In all undertakings of the kind, the best and most remunerative lines are first laid down, and the results which they yield are seldom borne ont by the experience of lines less favorably situated as regards population and other conditions of success. Notwithstanding these facts, however, there is apparently no cessation of activity in street railway enterprise either in onr own or in other countries, and it is abundantly manifest that their importance as a means of passenger transport is increasing, and likely to increase.

In the majority of new applications, powers are sought to nse mechanical power, including in some cases a system of working by means of wire ropes placed nnder ground and propelled by stationary engines. In only fourteen cases had locomotive engines been applied to street railway working in England np to 1884.

It is a moot point among engineers whether horse or locomotive traction is, nnder ordinary conditions of working, the most economical. In America horse traction

is the most generally employed, engines being indeed scarcely used at all. On the Nord street railways at Paris, engine traction, in 1881, amounted to as much as \$15.74 per engine per day. In consequence of this high cost engine traction was given up, and horses were again resorted to, when the expenses of traction fell to \$7.17 per mile, being about the rate of Glasgow and several of our large English towns. In other towns the cost of engine traction has been considerably under that just stated, without any very obvious reason. On the Rouen street railways for example, where engines have been employed since 1878, the average cost of steam traction over the three years 1881-3 amounted to 22c. per mile. On the Valenciennes-Anzin street railways again the cost of steam traction has been reduced to 19c. per mile. On the Lille street railways steam traction has been brought as low as 11c. per mile.-[Engineering.

Boston Conductors.

EDITOR STREET RAILWAY JOURNAL :---I wish it to be distinctly nuderstood before I begin that I am not a Bostonian and am somewhat disposed to smile at the pretentions claims that are made by the worthy citizens of the Hub regarding their physical, moral and intellectual excellencies. Yet I try to be honest and when I do see a feature that has merit, I consider it worth copying. So while riding abont in the street cars in the City of the East Wind I have found that in some ways the conductors make it far more agreeable for passengers than has been done elsewhere.

In the first place in the mere matter of stopping, they are far more accommodating, and the slightest indication from the street or the car is sufficient to bring the car to a standstill whether the signaler be old or young, decrepit or strong. And when a passenger enters a car, the conductor will see to it that a seat is provided if there is one vacant. Every one knows that the ordinary passenger is more intent npon his or her personal comfort than upon the cultivation of a gracions manner. So we have all seen the ladies spread ont their gowns, and the gentlemen extend their elbows, until the car was filled from end to end, before the regulation eleven npon a side was complete.

But Boston does away with this, and when such things do occur, which is rare, the conductor is on hand with his "Move up a little, please," and the passenger has the seat that he has paid for.

Then comes the interest that the conductor seems to take in the welfare of his freight. You ask a question and you always get a civil answer, as has been known to be the case at rare intervals at home. But if you are a stranger it is no trouble to step to the street corner to point out the way, or help a lady with her parcels or her children. There is an air of interest that the men seem to take in what they have to do, that strongly marks the employees on the cars.

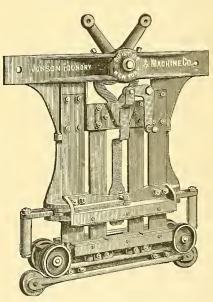
These things you say are matters that the disposition can effect, and in a place like

Boston where men may know their neighbors a social spirit is more apt to pervade the very air. But here in the hurry to and fro the conressies are brushed aside and no one can keep the standard up by rule or order. The companies, however, can direct that the streets shall be announced as they are passed, and this alone will save many a twisting of the ueck, and be a little aid to strangers that they, at least, are not apt to overlook. And this, kind sir, is also done in Boston. New YORKER.

The Jonson Grip.

This grip is especially designed for use in connection with the dnplex system of cable, and has dies npon each side for gripping the cable. For use it is put in position at the end of the ronte by means of a well, and bolted to the car in the nsual way. The cable is then lifted into position upon the two wheels at each end of the grip and can run freely until it is desired to start the car.

To do this the levers at the top are drawn together, and these by a simple arrangement raise the entire lower jaw and cable tightly against the upper jaw. Prompt release is provided by the fact that the weighs of the lower jaw and the cable, together with the downward strain that is produced by the tension, all tend to throw it out of



THE JONSON CABLE GRIP.

gear the moment the strain npon the levers at the top is relieved.

If at any time it becomes necessary to throw the cable off the grip entirely, it may be accomplished by means of a rod that is attached to the bell crank shown npon the face. This through an arrangement of levers that may be seen by an inspection of the ent gives the vertical rollers that are at either end of the grip, a side movement and guides the cable off the wheels.

When wanting Street Railway Supplies, consult our Directory.

^{*} Jonson Foundry & Machine Co., M'frs, 11sth St. & Harlem River, New York.

Street Rail Joint.

The joint* of which we give a perspective and sectional view is intended for use in connection with what is known as the centerbearing street rail. It binds the two ends of the rails firmly together and thus prevents their pounding from the passage of the car wheels, and the consequent sagging or depression at the ends.

The rail is spiked to the stringers in the usual manner, and the ends of the rail are clamped to a plate of wreught iron or steel by flanges that hook over the outside bead that is rolled upon the rail. These flanges are drawn tightly against them by an iron $\frac{3}{2}$ inches \times 5 inches driven under the bottom of the rail ends, where there is a depression left in the chair or plate for that purpose.

This wedge bears against the whole bottom of the rail giving a firm and solid support, not allowing it to sag nnless the whole joint is pressed into the stringer. There are oblong slots in the chair to permit of expansion and contraction and the wedge is held in place by a spike driven through its edges. The flanges at the sides of the chair not only hold the rails down but also keep them in line, yet do not project over the rail flange far enough to interfere with the flanges of the wheels.

* A. J. Hutchinson, Patentee, 95 Liberty St., N. Y., & So. Norwalk, Conn.

varnish alone will answer. Accepting as an axiom the proposition that wood when subjected to alternate wetting and drying decays with great rapidity, we reach the conclusion that the important function of varnish or paint is to exclude moisture from the frame, etc. It follows, therefore, that as long as dampness is kept out, the car is safe to run without danger of permanent injury. When this cannot be done and moisture begins to penetrate behind the panels, the car is liable to rapid decay.

In inspecting the painting and varnishing of a car for the purpose of deciding whether it must go to the shop, the general appearance may, in cases of emergency, almost always be neglected. The first points to be examined are the window-sills and their junctions with the panels and mouldings, and next the points where the battens touch the panels. If the varnish has cracked here and the paint has opened so that the continuity of the protecting surface is destroyed, order the car to the shop. If at those points paint and varnish are still continuous and keep out the water aud beating of rain, the car may safely rnn, because the frame is protected.

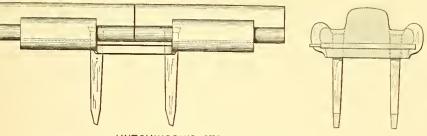
In case of pressing need of rollingstock it is by no means necessary to put a car into the the shop for entire repainting or even for revarnishing. The cracks can be stopped in a short time and the car made fit to stand a considerable length of service. protected from the weather, and its bolts, nuts and truss-rods looked after, will last in first-class condition for twenty years or more. Yet the strength of the same frame may be destroyed in five years if moisture find access to it.

By a few inexpensive but very necessary repairs at the right time cars can be kept sound even when the panels appear to be laughing through paint whose original eolor cannot be distinguished. Such cars can usually be stripped inside and out, and at a small expense converted into neat and serviceable stock, good for many years' wear. Similarly cars, if neglected, will be found too badly rotten in the frame to be worth new panels when only teu or eleven years old.

Bearing these facts in mind, rolling-stock in time of need may be subjected to long and severe usage with repairs occupying but little time and of insignificant expense. —American Railroad Journal.

Street Car Seats.

We illustrate a section of a street car seat,* made of three-ply veneer that is well-known for its properties of retaining its form under all conditions of climate and temperature. Claims are made that these



HUTCHINSON'S STREET RAIL JOINT.

When Should a Car go to the Paint Shop?

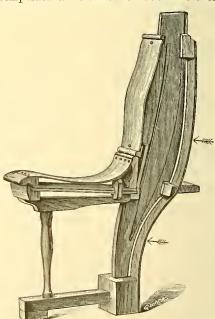
The railway manager frequently has to decide this question independently of the advice of the car builder or car painter, and too frequently trusts to lnck for a correct answer. Commonly the car is made to run the regulation number of months before it is allowed to go in for painting. No distinction is made between those cars painted by the company and those finished at contract shops. All must stand a like amount of wear. The only exception is when a car begins to look particularly dingy and disreputable.

When traffic is brisk and rolling-stock scarce, a good excuse is found for prolonged service, aud ignorance in regard to a few fundamental facts concerning painting frequently causes much loss to the company. Long and severe usage may, in some cases, do a car little or no harm. In other cases a short exposure may do great damage to a car and shorten its lifetime.

One of the most important uses of paint or varnish is to prevent moisture from reaching the vital portions of the ear. If the wood is properly filled as a foundation, It is often a matter of economy not to paint a car even when the varnish is gone and the paint itself is getting in bad condition. A few days expended in making the cracks tight will frequently put a car in condition to run for months. The expense of this is small.

It sometimes happens that a car not six months from the shop shows these cracks while the varnish is still bright and the color unfaded. In such a case send it to the shop. Order it to be made tight. This can be done in a short time. New cars, from the shrinkage of the wood and a general settling down to their bearings, are especially hable to the cracking of the paint and varnish. When the car goes to the shop ample time will be given for "taking up slack," tightening of truss-rods, nuts, braces, etc. Neglect of these precautions is likely to result in a rapid deterioration of the frame. It will "work," and by its very motion grind itself out at certain vital points and, at the same time, from the entrance of moisture around the windows, will decay quickly.

A passenger-car frame when well made, if | quarter of a mile from the starting station.



veneers are stronger, less liable to split and will hold their shape better than any elass of solid work. The veneers are **cut** about three sixty-fourths of an inch thick and laid cross grained three-ply, so that there is no possibility of checking.

"Gardner & Co., M'fr's, 183 Canal street, New York.

We learn from a foreign exchange that the recent trial of the Reckenzaun electric tram car system in Berlin was highly satisfactory. Th \cdot public trial was the first, as no private trial was allowed, and the circumstances were very unfavorable to the company. The car was stopped, started and speed varied on grades and curves at the pleasure of the inspectors. The accumulators used in the cars are charged from the central electric light station by a "Victoria" dynamo, at a distance of one quarter of a mile from the starting station.

Corporations and Employees.

Mordern journalism, or rather the daily newspaper, in its struggle for popularity, has developed a school of writers whose chief aim is to make the relations between corporations and their employees as strained and unpleasant as possible. Any difference as to wages, hours, duties, discipline or penalties, most of which might be arranged easily, quietly, and satisfactorily to all concerned, is enlarged upon and treated in such an exaggerated way that a public sentiment has actually been created that the corporation must, as a matter of course, be always in the wrong.

During the past three weeks the columns of the New York daily press have been loaded with an insufferable amount of gush, the burden of which has been the duty of the street railway companies to their drivers in the way of hours of labor and remuneration. In all the columns of matter printed upon the subject we have failed to see ouc line that indicated a particle of interest in the companies' side of the question. Decidedly, as far as the newspapers are concerned, the corporations are, in this matter, "the under dog in the fight." Now the facts in the matter are, that in every instance the roads, after a gentlemanly representation of the employees' grievances, without any strikes, force or pressure whatever except fair argument, have granted all that was asked for, and some roads voluntarily reduced time and increased wages, notably, the Fourth avenue (Vanderbilt) line.

This flurry of the newspapers and the easy and pleasant manner in which the interested parties have arranged their relations, leads us to ask, What are the factors to decide the question of remuneration of employees? Some three years ago a difference arose between President C. A. Richards of the Metropolitan Railroad of Boston, and the conductors and drivers of his company. It was more the work of a meddling (weekly) paper than of any dissatisfaction among the men, but by much journalistic fanning quite a flame was created and the statement of President Richards that he bought men's services as he bought hay and grain-according to quality and the state of the market-was treated as the most shocking doctrine. It seems to us that the only element that enters into the question, quality being equal, is supply and demand. A government official who pays more than the market price for labor is considered derelict in his duty to his stockholders-the people. Why not equally so the corporation superintendent? If he can get good and efficient conductors and drivers for say thirty-five cents a trip, why should he pay fifty cents? If he can buy good hay for eleven dollars why pay fifteen? If he can get good corn for sixty cents, why pay seventy-five? What is the difference in the three transactions? Why do we always say get labor and buy hay and grain?

The supply of labor can never be so large that it can be bought by the road for loss money than it will command elsewhere. It is the good fortuue of the grain dealer or farmer if the demand for his commodity is greater than the supply. It is not the fault of the consumer if the opposite is the case. So too with the mau who has labor to sell. If the demand is great he profits by it in high wages, (and he never fails to exact them), and if the demand is light he suffers in consequence. The company never blames a man for the high wages a short market obliges them to pay; why should it be blamed for the low wages an overstocked labor market enables it to obtain servants for?

It seems to us that it is time for the press to turn around and acknowledge that it is the duty of corporation officers to mauage their affairs on the same economic business principles that all private enterprises are conducted upon, viz: to obtain its labor, its appliances, and its supplies in the most favorable market, and at the lowest prices commensurate with good value and utility. The law of supply and demand will always regulate remuneration, as it always has.

Cost of Street Railways for Small Towns.

H. A. S.

MESSRS. EDITORS:—In your December issue of STREET RAILWAY JOURNAL is an inquiry signed S. R. Ferguson on the above subject. I would say that I will build him a mile of street railway, composed of nothing but metal, viz., metal longitudinal stringers, wrought iron tie rods (which act as true track gauge) and wrought iron wedge key, with a 42 lb. steel girder rail, for the sum of \$7000, and will guarantee to keep it in thorough repair for 60% of what it cost to keep the timber system in first class repairs for the term of twenty-five years.

I do this knowing that in a few years the timber system requires great expense in repairs, and within twenty years a reuewal, while in my system, when once laid little repairs are needed, and won't require renewal in his or my lifetime, if we live to be 100 years old. No one now living can tell the life of a metal.

THOS. H. GIBBON, Eng. and Supt. 37 State street, Albany, N. Y.

State street, monty, n. 1.

Dead Weight.

EDITOR STREET RAILWAY JOURNAL :-

If a street car rnns 100 miles in a day and 300 days in a year, then 10 lbs. of unnecessary weight is equal to carrying 1,000 lbs. one mile each day, and 300,000 lbs. one mile each year, with all the stops and starts incident to a mile of travel. Multiply this by 100 cars and look at the figures. It costs money to move this weight by horse-power, and yet probably there is not a street car in this country that could not readily have removed more than 10 lbs. of useless weight, and some of them might dispense with 100 lbs. Some attachments that may be good in themselves, are yet not of sufficient advantage to warrant the cost of car-W. L. E. rying.

New Haven, Conn.

R. G. MATTHE tive of the firm will hereafter mak Lakeside Building,

E. C. WHITE, Nev manufacturing a new ing of the Davis meu some excellent service

WE regret to learn t of Andrews & Clooney, 1 to seek the Florida climat It is understood he will rei all winter.

JAMES K. LAKE, ESq., Wei street railway men as the Sup. the Chicago West Division St Company, has been superse. DeWitt C. Cregier. Mr. Lake the active Manager of this com, its early beginnings and the com splendidly equipped property, not ed probably in extent, thorough cc tion, elegant appointments and rese by any street railway property in the v is the highest compliment that ca paid to his ability and enterprise. 1 sudden change in the management of u road, when so many improvements and ne enterprises of Mr. Lake's inception are un der way or about to be begun, will cause much surprise in street railway circles. He will take a much needed rest and devote some time to his private business interests.

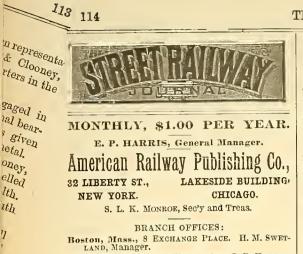
Our Directory of Street Railways.

If your company is not fully and correctly represented in our Directory, we shall esteem it a great favor if you will give us the necessary information to make it so. We wish to give length of track, gauge, weight of rail, number of cars, number of horses, and names of officers.

We mentioned in our January issue, a proposed trial of the Honigman motor, a Prussian invention. A test of the motor was made, January 18th. They are similar in appearance to ordinary street cars, except that they have no platforms. They are 11' long 7' wide, and motive power is derived from a supply of caustic soda, which is heated in boilers at the terminus of the line, and forced into the boiler of the motor. Power is thus obtained without any fire, steam, or uoise. The motor can be stopped within its own length when running about uineteeu miles an hour. The preseut motor cost \$2,000 to \$2,500, and will draw two loaded street cars. The test was successful enough to satisfy the company.

A correspondent asks about what k^{*} rail is used in the Kansas City Cab^{*} also desires information about The rail is a side-bearing, fla⁺ on $5'' \times 7''$ stringers, what is c delphia tram. The syste^{*} the same as that used^{*} New York, a descrip^{+*} found elsewhere in

When wanti[.] consult our ⁷



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Philadelphia, Pa., 419 WALNUT ST. G. B. HECKEL, Manager. J. H. McGBAW, Manager Subscription Department.

Employer and Employee.

We print elsewhere a communication entitled " Corporations and Employees," containing some thoughtful suggestions that will well repay reading. The writer asserts truly, that the wages and relations of employer and employee have been and will be governed by supply and demand. We see no reason why the sale of the commodity, labor, should be and cau be goverued by other law. But, while the employer buys labor of the employee as he buys cloth of the merchant, he also sustains the relation of fellowman to the laborer as well as to the merchant. This, however, is not a faetor in the purchase but exists as one of the permanent relations of life. The mutual obligations of this relation are frequently ignored by employers and employees, resultjug in a discord which has been confused with the labor question itself, of which properly it is not a part. That Mr Richards was wholly right in saying that he bought labor as he bought hay, as he could buy it to the best advantage, we have not the slightest doubt, but we venture to say that Mr. Richards would also assert that the same courtesy and consideration are due from his company to his employee as his patron, and we think it is on account of a lack of these that a great many disturbanees between eapit d and labor exist. While the relation of employer and employee imposes no additional responsibility in this direction, the intimate contact renders the ignoring of this relation very conspieuous and, wo think, very poor business policy.

The main point to be emphasized, however, is that the relation of employer and employee is two-fold, or rather we should s y, two distinct relations, viz., that of ouver and seller and that of man and man, neither one of which hinges in the slightest degree upon the other, nor is dependent upon it. The employer has no more responsibility for the comfort of men of whom he buys services, than of him of whom he buys hay. The purchase of his labor is a purely business transaction, imposing no o digation other than that each fills his contract; but the universal obligation already exists on every man to treat every other man as if he were a fellow being, should not in justice and eannot with profit be ignored.

Street Railway Employees' Duties.

A recent issue of the Telegram of this eity contained a column and a half interview with State Commissioner of Labor Peck, on the hardships of conductors and drivers on the street railways of New York and Brooklyn. As the systems of most roads in our large cities are similar, the same hardships are, presumably, endured all over our broad laud. Among those enumerated were long honrs, exposure to the weather, severe rnles as to being on time and starting, punishments for misdemeanors, etc. Of the thousands of employees it is no doubt an easy matter to find a few hundred discontented ones, and some individnaleases of real hardsbip. But we emphatically insist that the 75,000 or more street railway employees are as well paid, well eared for, and well satisfied, as a whole, as are the same class or grade of men in any other business.

In the matter of wages they rank among the highest grade of unskilled labor. No class of laborers outside the trades obtain as high wages.

The interview above mentioned was particnlarly severe ou the hardship of long hours. Street railway men do have to get to work early in the moruing and work till late at night. It is an emphatically all-day-long business. The very condition on which it receives its birthright from the government is that it shall accommodate the people in transportation. This necessitates early and late hours on the road, neither of which are run at a profit to the company. We have uo doubt that every street railway in the country would gladly start its first car as late as 6 o'eloek A. M., and run its last ear into tho stable as early as 10 P. M., with a half service after S P. M., if its profit and loss account only were consulted, for most roads that have a profitable business outside these hours run all-night cars.

Now, then, the fact being that street railways must rnu early and late, do their employces suffer special hardship thereby? On many roads the actual time ocenpied on the cars is less than nine and a-half hours, and, iucluding "swings," the day's work is less thau eleven and one-half hours. There are some roads, and some cars on many roads, where the hours are longer; perhaps, in extreme eases, fonrteen aud a-half or fifteen hours, but such exceptional long days are usually accompanied with an extra compensation. As a class, the average time of the whole street railway force in this country is probably not five minntes from eleven hours, one way or the other, and many men in the field of skilled labor serve longer; as druggists, 12 to 16 hours; barbers, 14 hours; cooks and restaurant help, 12 to 16 hours; bakers, hotel employees, and many others, who, in addition to their long hours, have the additional hardship of confinement indoors. The street railway employee gets-say four dollars a week more than his unskilled fellow-laborer in other fields, and does seven hours more work for it.

The question of discipline, of penalties

for violation of rules, etc., is a very broad one. The necessity of the most strict and perfect discipline on roads employing many servants is aeknowledged, and the only means of obtaining it is by fair and wholesome rules enforced by penalties severe enough to be respected. The driver or conductor who is late for his trip, or eareless in driving, so as to cause accident to life or property, or through im-pudent and ungentlemanly demeanor, eauses prejudice against the company in its patrons' minds, or a hundred other things, must be made to understand in some way that he has to live up to the rules ; and different roads have different systems. It seems hard to lay a man (who needs work) off for two days for being five minutes late, but on a road employing 700 to 1,500 men, the neglect to pnnish would be equally disastrous. There may be that man with the special genius necessary to keep a proper discipline among 600 or 800 men, who are out of his sight most of the time, without penalties. He is a jewel that his employers or associates want to take excellent care of, for such men are very rare

The fact that no other employment is so persistently sought by men who know its hard side, and that men thrown out of employment by one company invariably seek work in another, rather than in any of the, presumably, more desirable fields, is a standing argument in favor of the fair treatment, satisfactory remuneration and desirability of street railroading as a poor man's livelihood.

Our Directory of Street Railway Appliances.

As the advertising pages of the STREET RAILWAY JOURNAL are very constantly consulted in buying supplies, in order to render them still more useful, we shall print hereafter a Directory of articles advertised in the paper. The completeness of this Directory, and the character of the honses advertising, is very gratifying, and, with the additions to be made to it, will be found very convenient to onr subscribers. If parties requiring any article not mentioned in the Directory will address us, we will endeavor to place them in communication with satisfactory producers of or dealers in the goods wanted.

Wo desire to eall attention to our department of "Special Notices." Companies or parties having cars, horses, or street railway property of any sort to dispose of, or those in want of any of these things, or parties in want of help, or in want of a situation, will do well to use this column. The prices, it will be noticed, are very low, and we are personally aware that excellent results havo been realized by those who have thus far used the department. The STREET RAILWAY JOURNAL reaches street railroads in all parts of the world where English is spoken.

When wanting Street Railway Supplies, eonsult our Directory.

Repainting Cars.

We reprint on another page, an article entitled "When Should a Passenger Car go into the Shop?" The author, a gentleman of large experience, treats almost entirely of the car from the painters' standpoint. He brings out very forcibly the fact that by taking the minor repairs in hand before they have time to cause damage, a car can be run for a longer season without serious injury and without in any way impairing its durability, and he might have extended his observations and pointed out that many repairs of details, if attended to when their need is discovered, render expensive repairs unnecessary. It is well said that if a new car receives prompt and frequent attention during the time when the wood is taking its first set and the frame is getting down to its bearings, the life of the car will be prolonged almost indefinitely. For roads where the supply of rolling-stock is scanty, it is fortunate that this very essential repairing is of a character to take the cars out of service but a short time. While for the sake of appearances the varnishing should be frequently renewed and the whole of the passenger rolling-stock go into the shop much more frequently than is nenally considered necessary, this frequent painting and varnishing is necessary bnt not absolutely essential, and the loug delay caused by giving a car a thorough overhauling can be in many cases exchanged for a three or four days' trip into the paint and repair shop.

In the past year we have seen cars in several of the Chicago shops whose records showed a service far beyond that which is considered a long life. These cars had received treatment not unlike that described in the article we have mentioued. When first put in service they were subjected to close and constant inspection—nuts were never allowed to become slack, and bracerods and braces were carefully inspected; moisture was rigidly excluded from the interior of the woodwork by keeping the exterior free from cracks.

In the life of cars, choice of color for the exterior has a very important bearing. While the color does not in any way shorten or prolong the life of the timber directly, it makes a vast difference with the time which the varnish will endure in a perfect condition. Varnish upon dark colors cracks more quickly and lasts a shorter length of time than upon the light colors; heuce, the frame has less protection, and the surface of the wood being heated to a higher degree in the sun's rays than with a light color, there is more shrinkage, and hence the car frame is more exposed to the entrance of moisture through cracks. This may seem a triffing matter, but it has sufficient influence upon the wearing qualities of the varnish alone to make a difference of several months in the time which a car can run without revarnishing.

When wanting Street Railway Supplies, consult our Directory.

Notes and Items.

[All our readers are particularly requested to send us, at the earliest possible moment, notes concerning actual or proposed improvements in street railways. It is by this means that the STREET RAILWAY JOUR-NAL will increase its usefulness to each one who recetves it.]

Baltimore, Md.

THE CENTRAL PASSENGER RAILWAY is 5' $4\frac{1}{2}''$ gauge instead of 5' 6" as priuted heretofore in our directory.

THE BALTIMORE & CATONSVILLE RAILWAY Co. will be found reported in our directory, this issue, thanks to the Superintendent and Purchasing Agent, Geo. W. Appleby, Esq.

Birmingham, Ala.

Now surveys are in progress for the old project of connecting Birmingham and Elyton by street railroad.

Bismarck, Dakota.

A street railway company has been incorporated in this city with \$100,000 capital stock.

Boston, Mass.

THE HIGHLAND STREET RAILWAY Co. petitioned the Legislature, January 26th, for leave to lease or purchase the frauchise and property of any and all other street railway compauies in Boston, making one consolidated company, with authority to make such underground or snrface alteration of the streets as may be uecessary, to establish and maintain a cable system of motive power, and also that it may increase its capital stock as may be necessary to carry out the above plans. The Highland Company claim that by this scheme they can run a less uumber of cars, give better service and prevent street blockades.

THE NEVERSLIP HORSE SHOE Co. say, "that their business has been so large this season that it has been almost impossible to fill their orders, which have exceeded the capacity of their works, and they have been obliged to have work done by outside parties. In the month of November, they found it impossible to handle their business from the Boston office alone, and were obliged to open a Western branch office and store at 73 Jacksou Street, Chicago, Ill., and have been favored with a business there far exceeding their expectations. A great many street railways in the west, (at Decatur, Ill., Des Moines, Iowa, Hannibal, Mo., Quincy, Ill., &c.,) are using their goods."

Repert says, "The system of operating street railways by cable is soon to be applied in this city on a large scale if consent can be obtained of the Board of Aldermen. Several well known Boston men have become Directors in the Boston Cable Street Railway Company, and they have associated with them two or three Philadelphia gentlemen. Within a few weeks application will be made to the Aldermeu to grant a location. The plan now in view is to run from the center of the city to the adjoining town of Brookline, wheuce hundreds of business men come every day to their warehouses, offices and stores in this city. From Brookline it is proposed to run the cable cars to

the city of Cambridge, which has 50,000 inhabitants or more. From Cambridge the proposed cable line will run back to Boston. The cable system to be employed is similar to that which has been in use on the Market street line in Philadelphia for the past two years." We cannot vouch for the truth of this, but will advise our readers later.

Brenham, Texas.

THE BRENHAM STREET R.R. Co. is a new road, two miles in length, of 4' gauge, laid with twenty pound steel rail, running three cars and twenty-two mules. President, T. J. Pampell; Secretary, John A. Bandle; Treasurer, D. C. Giddings.

Brockton, Mass.

PERRY'S IRON FOUNDRY, Brockton, is to be converted into a horse-car factory, a capital of \$50,000 being raised for the purpose of refitting and starting.

Brooklyn, N. Y.

BROOKLYN CITY RAILROAD. It is understood that this company will lay a trial sectiou of Tom L. Johnson's cable road on Flatbush Avenue.

THE BROOKLYN CITY RAILROAD COMPANY held its annual election, Jan. 11th. The following gentlemen were elected directors: Seymour L. Husted, James How, George N. Cnrtis, Alexander Studwell, William H. Husted, Crowell Hadden, William M. Thomas, William H. Hazzard, George W. Bergen, John C. Barron, D. F. Lewis, Edwin Packard and Frank Lyman. A. B. Baylis, Jr., retires to make room for Mr. Lyman.

THE LEWIS & FOWLER MANUFACTURING COMPANY have decided to furnish, in addition to the articles which they manufacture, a general line of street railway supplies. This will be heard with satisfaction among those who appreciate dealing with so live and enterprising a house.

THE BROOKLYN CITY RAILROAD COMPANY, whose hotel, the Mansion House at Fort Hamilton, was destroyed by fire in January, will soon have plans perfected for a very much enlarged structure, and will erect a hotel that will be entirely suitable for the patronage of that line.

THE BROOKLYN CITY RAILROAD COMPANY has decided to pay its drivers and conductors two dollars for a day's work of twelve hours and additional pay at the rate of $16\frac{1}{2}$ ceuts an hour for all time over twelve hours. About 800 men will be affected by the change.

Chicage, 111.

Commissioner of Public Works De Witt C. Cregier was appointed Superintendent of the Chicago West Division Street Railway, the position held for many years by Mr. Jas. K. Lake, and will enter on his new duties Feb. 1. Mr. Cregier was trained in the Quintard Iron Works in New York, and came here in 1853 to set up some pumps for the city. He was offered the position of Superintendent of the city pumping works and held it for more than twenty-three consecutive years. A hostile administration crowded him out of the place, but he was restored a year or two later, and held the position until he became Commissioner of Public Works in 1882. He has been a thoroughly efficient official, and has had the reputation of being the hardest working man in the City Hall.

THE CHICAGO WEST DIVISION COMPANY has planned work for the coming season to cost in the neighborhood of \$240,000. For the accommodation of the different lines and the new lines anticipated, six new stables and five car houses and storage rooms are to be built, each two stories in height. It also expects to construct twelve miles of single track. In the work planued there will be used 18,000 castings for substructure, 1,500 iron and 30,000 wood ties, 300 kegs of nails, 126,000 lineal feet of stringers, and about 1,000 tons of steel rails.

THE VAN DEPOELE ELECTRIC RAILWAY MOTOR COMPANY has been incorporated to construct an elevated railway in Chicago. It proposes to erect a structure, suspeuded between crossings by an iron lattice work structure supported at the crossings by towers surrounded by electric lights. The electricity by which the cars will be run will do away with smoke, noise and dirt, and give rapid transit. The capital stock is \$500,000 and the incorporators are:— Lucius Clark, Wm. A. Stiles and John Easau.

THE CHICAGO PASSENGER RAILWAY Co., having complied with all the conditions imposed npon it by Mayor Harrison with regard to the Harrison street extension and bridge, he has signed the ordinance granting the franchise. The conditions are that the company shall pay one half the cost and \$1,000 a year for the maintenance of the new bridge, at the pleasnre of the city, after five years. The company pays a hiere fee of fifty dollars a car a year, and agrees to take up its track and leave the street in good condition at the end of twenty years.

THE CHICAGO WEST DIVISION RY. Co. have been granted permits to lay additional track on Van Buren, Division, Eighteenth and Leavitt streets, and Ogden avenue.

THE NORTH CHICAGO STREET RAILWAY COMPANY are getting out plans for a new car shop that will be $150' \times 106'$, two stories high, and capable of storing forty cars, besides carrying on extensive repairs. Mr. Augnstine W. Wright, the very able chief engineer, does not favor the practice of street car companies building their own cars, but he believes in providing the very best facilities for doing repairs. When these shops are completed, they will contain over a mile of heating pipes.

THE CHICAGO HORSE & DUMMY RAILWAY has been sold at auction to F. W. Betz for \$46,000. The road extends from the westeru limits of Chicago to the Desplaines river.

THE CONSOLIDATED RAPID TRANSIT AND ELEVATED RAILROAD Co. has been incorporated with a capital stock of \$12,000,000. The purpose is stated to be to construct an elevated railway from the City of Chicago to Riverdale, South Chicago, Englewood, Washington Heights, Proviso and Norwood Park.

The patrons of the North Chicago City Railway Co. have called, through a committee, for warmer cars. The economic and comfortable car heater, that shall warm and veutilate street cars satisfactorily, is one of the necessities of the near future.

Charleston, S. C.

THE ENTERPRISE STREET RAILWAY COM-PANY are extending their tracks through five streets.

Danbury, Conn.

A new street railway is projected for Danbury.

Dulath, Minn.

For some time negotiations have been pending with Minneapolis capitalists for the purchase of the Duluth street railway and all its franchises. Sam Hill, of Minneapolis, and Judge Thomas Wilson, of St. Panl, have closed the deal, paying \$100,000 for the property. The new company will consist of Sam Hill and Thomas Lowry, of Minneapolis; Judge Wilson, of St. Paul; A. S. Chase and G. G. Hartley, of Dulnth. Hill will be President of the company and A. S. Chase will continue as Manager. The President of the new company is the owner of a large amount of Minneapolis real esstate, and is interested in different elevator companies and other Minneapolis enterprises. Thomas Lowry is the owner of the Minneapolis street railway lines and is President of the St. Paul street railway company. Judge Wilson is heavily interested in the St. Paul street railway system, and is the owner of the three best cablecar patents yet invented. One of these is to be utilized soon in a line of road up the hill, probably on Lake avenue. A. S. Chase, who will be the manager of the business, has held that position since the first establishment of the company. In 1886 it is proposed to lay double tracks on Superior street. Four miles of new track will also be put down. The present line will be extended both to the east and west ends as fast as the streets are graded by the village. A building for stable, cars, repair shops, and office is to be erected at a cost of not less than \$15,000 early in the spring. The old cars will be taken off and thirteen new ones of latest design will be purchased. One hundred head of horses and mules will be required to handle the business before the end of 1886. It is estimated that the expenditure of the company for improvements contemplated will amount to \$175,000.

Geneva, N. Y.

Enterprising citizens of this place are talking up a street railway, and a pronounced move in the enterprise will soon be made.

Gloucester, Mass.

THE GLOUCESTER STREET RAILWAY COM-PANY, with a capital of \$60,000, will build and operate four miles of road the coming season.

Greenbush, N. Y.

A portion of the new street railway which connects this village with the capital city has been formally opened. The cars are very handsome, and run every thirty min-Upwards of 400 passengers have utes. been carried every day. The cars start from the corner of Ferry street, Greenbush, thence along Broadway to the bridge which spans the Hudson River, thence across the bridge (1,800' loug) crossing Broadway, Albany, thence up Sonth Ferry street to South Pearl street, where it connects with the Albany railroad company's tracks, thence up South Pearl street to Maiden Lane, the whole distance about one and one-half miles. The track is built of metal, (Gibbon's patent) and is very smooth riding, and although the frost has been most severe Messrs. Egerton & Gibbon have demonstrated that their system is a success.

The Metallic Street Railway Supply Company have also just finished a single track across Lark street, 1,800 feet, thus connecting Washington Avenue and Hamiltou street routes. These two roads have been built under severe trials from frost, and could not have been built under any other system without enormous cost.

We understand from Mr. Gibbon that he intends laying track to the aniline works this winter, a distance of about three-quarters of a mile.

Hamilton, Ontario.

THE HAMILTON STREET RAILWAY, of Hamilton, Ontario, has been leased for five years from January 16th, to J. C. Bigelow, who has purchased the cars and horses. The equipment embraces eleven cars and eighteen horses.

Indianapolis, Ind.

The ELKHARDT STREET RAILWAY Co., Wm. P. George, President, has been incorporated with \$50,000 capital.

Jersey City, N. J.

THE JERSEY CITY R.R. COMPANY'S new stables at Greenville have 210 stalls. While this is more than is necessary to accommodate the present line, provisiou is made for extension to Bayonne, which is probably to occur in the spring, provided the bridge is built to that place. Their recent improvements also include the laying of a mile and a half of the Johnson girder rail for double track.

Mayor Collin's veto of the Star Horse Company's ordinance was sustained by the motion of the Jersey City Board of Aldermen at their meeting, January 8th. The veto was not called up.

Long Island City, N. Y.

THE LONG ISLAND CITY & NEWTOWN RAIL-ROAD'S annual report to the Railroad Commission contains the following figures:

Gross earnings Operating expenses	\$15,458.21 12,688.21
Net earnings	\$2,770.00
Interest on funded debt 4,500.00-	4,962.50
Deficit	\$2,192.50

The operating expenses were repairs to cars, &c., \$1,600; repairs to harness, \$78;

horse shoeing, \$359.50; provender, \$4,680; wages of conductors and drivers, \$5,814.71; light and fuel, \$130; water tax, \$26.

Thirty horses, eight open and eight closed cars carried 300,000 passengers over the four and one half miles of road various distances during the past year. The employees number ten.

Maeon, Georgia.

THE MACON CITY AND SUBURBAN STREET RAILWAY is a belt line, built in 1885. It is no 7 extending tracks to East Macon, and contemplates running to South-west Macon. The small Texas horses and mules are being replaced with larger ones. The entire road is being very much improved. Macon has doubled its population in six years, has increased 85% in last four years. They have seven steam railroads, two more building, and a tenth is agitated. Will soon be the railroad center of Georgia.

Madison, Wis.

THE MENASH & NEENAH STREET RAILWAY Co. 18 a new enterprise in this city. Capital stock, \$25,000. We understand the work is already begun.

Meriden, Conn.

THE MERIDEN CITY RAILWAY Co. is an enterprise on paper that is expected to soon assume tangible shape.

Milwankee, Wis.

A very determined movement is being made by patrons of the West side street railway lines for conductors in place of fare boxes. The crowded condition of the cars and the inconvenience of getting through to the front end, has caused a very considerable amount of free riding.

Montgomery, Ala.

THE CAPITAL CITY RY. Co., are experimenting with a view to the use of Electric Motors on their road in place of mules. Nashua, N. H.

THE NASHUA HORSE RAILROAD COMPANY has decided to build its line in the Spring, and has appointed a committee to purchase supplies.

New Bedford, Mass.

THE ACUSHNET STREET RY. Co. have added several new cars from the works of J. G. Brill & Co., fitted with the Bemis box.

New York City, N. Y.

THE JOHN STEPHENSON Co., (LIM.) is building twenty-four new cars for the Chambers Street Cross-town Line of New York, and a number for a road in Montevideo, Uruguay. They are also fitting up the busses that are to run upon the Fifth avenue temporary line in New York.

THE THIRD AVENUE LINE has granted its drivers' request for reduction of hours. The time now is twelve hours with half-anhour out for dinner; wages two dollars a day.

THE SECOND AVENUE LINE has voluntarily reduced its drivers' time to twelve hours a day with full pay.

Controller Loew, having got an impression from the statements of the daily press, that the Broadway cars were not turning in 3% of gross carnings for passengers below Fourteenth street, has made a personal investigation, and reports the company as living up to the letter of its contract.

HUMPHREYS & SAYCE. This firm has secured the contract for supplying all material and cars to the Mt. Vernon & East Chester Railroad.

M. M. WHITE & Co., New York, have already begun their spring trade in switches. They are doing some work for the Brooklyn City road, and report a very satisfactory number of inquiries from different parts of the country.

THE SIXTH AVENUE RY. Co. has reduced the hours of car drivers to eleven hours and forty minutes; actual time on cars, nine hours and thirty-four minutes; pay on Canal street line, \$1.96; and on Vesey street linc, \$1.98 a day.

THE EIGHTH AVENUE RY. Co. has made its employees' time twelve hours including "swings." The pay remains at two dollars a day.

THE BROADWAY SURFACE RAILROAD speaks in very flattering terms of the large sweeper which they have beeu trying on their road, which was built by Andrews & Clooney.

JOSEPHINE D. SMITH, 350 Pearl street, N. Y., recently received an order for car lamps through The John Stephenson Company, for St. Louis, amounting to about \$3,000. This is one of the largest orders ever received for street car lamps. A previous month's business was the largest in the history of the establishment.

The stables of the Fifth Avenue Stage and Transportation Company, on Fortythird street, now contain 131 strong, young horses and fifteen old stages which are now running. The contracts for the construction of the new vehicles will be awarded at once.

Alderman Van Reusselaer has introduced a resolution which proposed to regulate the giving of consent by the Common Council to the construction of street surface railroads in this city. An application for a franchise must specify the route or routes and the manner in which it is proposed to construct the road, and the petitioners shall ask the Common Council to sell the franchise at public auction. The board may then order the sale of the franchise at auction by the Controller upon such terms as the Common Council may prescribe. The sale is to be contingent upon the consent of the Common Conncil to its construction. Such sale is to be made to the corporation bidding the highest percentage of the gross receipts each year from such raihoad.

THE FIFTY-SECOND & FIFTY-THIRD STREETS AND EASTERN BOULEVARD RAILROAD COM-PANY, to construct a surface railroad in the above thoroughfares in New York, a distance of fonr miles, has been incorporated. The capital is \$1,500,000. The Trustees are Elsworth L. Striker, Theodosius F. Secor, Jr., William M. Walker, Philip Donohue, Edward F. Brown, New York; Isaac W. Maclay, Yonkers; and William E. Davies, Demarest. Each of the above take ten shares. The resolution recently passed by the Common Council requiring all persons who drive street cars to be twenty-one years of age, a resident of the State one year, and of this city four months, and to pay an annual license of one dollar, became a law January 14th, by limitation of the time in which the Mayor has the right to approve or veto ordinances. Corporation Counsel says the ordinance is in conflict with the Constitution of the United States, and Marshal Byrnes says it will be enforced after February 1st. We shall see what we shall see.

At Special Term of the Supreme Court, in the suit of Alfred L. Loomis against the Thirty-fourth Street Railway Company, a permanent injunction was granted perpetually restraining the company from constructing its railway in Thirty-fourth street, between Broadway and Fourth avenue. The General Term of the Supreme Court, January 8th, decided that the injunction must be modified so as to merely restrain the company from constructing its road until it shall have obtained the consent of a majority of the owners of the abutting premises or shall have been authorized by the General Term on a report of Commissioners in its favor.

ANDREWS & CLOONEY have among other work in hand, orders for 400 wheels for South America, some 300 for New England roads, and report the outlook good. The Western business of this firm has grown to such proportions that they have concluded to open an office in Chicago, which will be located in the Lakeside Bnilding, and be under the management of their Mr. R. G. Mattern. This enterprising house is growing in prominence.

The Board of Aldermen, January 11th, referred to the Bailroad Committee the petitions of several railroad companies, all of which were before the old board. Persons interested in the St. Nicholas Avenue road will be heard on February 2nd; Citizens' road February 8th; Twenty-eighth and Twenty-ninth streets to-day (Jan. 29). An application of the New York, Lake Erie & Western Bailroad Company for permission to lay tracks in Thirteenth avenue, between Twenty-third and Twenty-fourth streets, for the use of freight cars, was referred to the Bailroad Committee.

Regarding the duplicate cable system in use on the Tenth avenue line, the following extract from the minutes of the meeting of the Board of Directors, held Monday, November 9th, 1885, speaks for itself.

"Whereas; The Third Avenue Railroad Company of the City of New York, have constructed a cable railway on Tenth avenue, in this City, and

"Whereas; said road has been running steadily and uninterruptedly since the opening of the same on the 31st day of August, 1885; Therefore, be it

"Resolved; That we, the Board of Directors of said company, are highly pleased with the system of cable railroads which it represents, aud express our entire satisfactiou with the same." THE FORTY-SECOND STREET, MANHATTAN-VILLE & ST. NICHOLAS AVENUE FAILWAY CO. January 21st, held its annual meeting, and directors were elected as follows:—Arthur Leary, John B. Dutcher, Alfred Wagstaff, Daniel D. Conover. John S. Foster, Alfred Skitt, Johu Whalen, Henry Steers, Jacob Fleischhauer, James Matthews, Warren A. Conover, Charles F. Naething and Charles Phelps.

Edward A. Klein, January 19th, in the Superior Court, before Judge O'Gorman and a jury, obtained a verdict of \$9,000 against the Second Avenue Railroad Company for injuries received ou the 21st of May, 1882. Klein hailed a car at Second avenue and Third street, and after having placed oue foot upon the platform, the car started and he was thrown to the pavement striking on his head. He sued the company asking \$50,000 damages. The defense was that Mr. Kleiu jumped ou the car while it was in motion.

THE JOHN STEPHENSON COMPANY, New York, has the new extension to its Street Car Works about ready for occupancy. The building occupies two lots and is two and four stories in height. It gives very advantageous space, well lighted, and will be used for building summer cars, or woodworking machinery, for brass work, &c. It enables the shops to be arranged more advantageously even than heretofore. This company builds only street cars, and it is, of course, well prepared to do that class of work. Among 'recent orders for summer cars is one for ninety for St. Louis.

THE FOURTH AVENUE LINE, without committees or memorials, without solicitation on the part of those most interested, posted the following communication in its depots.

NEW YORK, Jan. 13, 1886.

To Conductors and Drivers:—On and after February 1st, twelve hours' labor, including time spent ou stand at both ends of road, will constitute a day's work. Rate of pay will remain at two dollars.

Alfred Skitt, Sup't.

Approved.

C. VANDERBILT, Vice Pres't.

Thus those drivers heretofore receiving \$1.85 for twelve hours and six minutes work will be advanced fifteen cents a day to two dollars, while those now working thirteen hours and twelve minutes will earn the same wages in an hour and twelve minutes less time.

Newton, Mass.

A horse or electric railway is being talked of. The legislature has been petitioned for a charter.

Ogdensburg, N. Y.

The proposed street railway in Ogdensburg, mentioned in these notes before, is to be built, the capital, \$60,000, having been raised.

Olean, N. Y.

Olean's street railroad on the first of the year declared a divideud of 10%. Philadelphia, Pa.

Presideut Harrah, of the Peoples' Passenger Railway Company, Phila., in his

auuual report, speaks iu favorable terms of the permanent register as compared with the portable, formerly used. This compary has added 165 Lewis & Fowler registers during the last year.

The annual meetings of all the street car companies of this city, were held January 17th, and resulted in every instance in the old officers being rc-elected.

The incorporators of the Tramway Motor Co., of Philadelphia, chartered by the State Department, with a capital of \$100,000, are L. U. Maltby, Silas W. Petit, Andrew T. James, and Henry Bradley, Philadelphia, and Oliver C. Maltby, Norfolk, Va.

Rochester, N. Y.

THE ROOHESTER CITY & BRIGHTON R.R. Co., Secretary C. C. Woodworth informs us, now has thirty-five miles of track, one hundred and forty oars, and five hundred and eighty-five horses.

Rome, N. Y.

Five thousand dollars have been subscribed by the people of Rome, to build a street railway in that eity.

South Bend, Ind.

The Vau Depoele system of electric motors for street railways is, we understand, working very satisfactorily at South Bend, Ind., that the horses have been abaudoned and the road is running commercially by electricity. At New Orleans, a plant is also in successful operation, but, we understand, the owner of the plant receives less patronage than was hoped for, owing to the lighter attendance on the Exposition than had been anticipated. Recent developments of the Van Depoele system, it is safe to say, have gone far to establish the possibility and practicability of the application of electricity to the running of street railroads.

Springfield, Mass.

THE SPRINGFIELD STREET RY. Co. has completed a new car house at an expense of \$20,000.

THE BEMIS CAR Box Co. mention recent orders from the Cambridge Railroad Co. and the Middlesex Railroad Co., of Boston; the Globe Street Railway of Fall River and the Union of Provideuce. They are furnishing gears for Brill, also for J. M. Jones & Sons for cars for Buffalo and other roads.

Springfield, Obio.

D. W. STROUD, Esq., President of the Citizens Street Railway Company, informs us that his road contemplates a two mile extension this spring.

St. Joseph, Mieh,

THE ST. JOSEPH & BURTON HARBOR RY. Co. is in successful operation.

St. Louis, Mo.

The street car dynamiters, Pinkerton, Keenen, Withers, Byrns and Withrow, were placed on trial here, January 6th. Withrow surprised the others by turning State's evidence. He described the meeting which the five dynamiters had held, and told how they had drawn a check ou Pinkerton, then the Treasurer of Cleveland Assembly Knights of Labor, for twenty dollars. This amount they turned over to Withers. Withers went to Louisville, got the dynamite sticks, and returned to St. Lonis with them. Witness said that after Withers' return from Louisville he mct him often. Withers told him how he had blown up the cars. He always put the dynamite stick in his hat, placed the stick ou the track, picked up his hat, and then touched the stick off; he said that two or three times premature explosious had occurred, and once he thought the force of the explosion would shake all the teeth out of his head. Witness went into details and told every thing the conspirators had done from the time they entered into the conspiracy up to the time they were arrested.

Staten Island, N. Y.

Street cars will be run ou the North Shore Railroad January 29th.

St. Paul, Miun.

THE ST. PAUL CITY RY. Co. will lay fifteeu hundred tons of steel rails ou exteusions to their present twenty-five miles of track. The cost of the extension will exceed \$300,000.

Vicksburg, Miss.

A charter has been obtained and a company organized with a capital of \$25,000 for the purpose of building a street railway in varions portions of the city. The line will be about five miles long, and will extend throughout Washington street, with branehes to Cherry street and to Clay and Jackson streets, by way of South and Cherry streets. The leading spirits in the enterprise are Captain E. C. Carroll and Mr. E. Martin.

Washington, D. C

An electric street railway, after the same plans and using the same motors as the Baltimore road, is being agitated. The Ccutral Electric Street Railway Company is the title of the company.

Waterbury, Conn.

There will be a street railway laid in Waterbury, Conn., this spring, seven or eight miles in length.

West Troy, N.Y.

The Midland Industrial Gazette says:-Gradually the enterprising and progressive Covert Manufacturing Company, of West Troy, N. Y., are downing the unprincipled robbers, who have boldly tried to appropriate the valuable patents of that company which have taken years of labor, study and expense to effect. At a session of the United States Circuit Court held at New York, December 5, 1885, Hon. W. J. Wallace presiding, the infringement suit of James C. Covert, of the Covert Manufacturing Compauy, as plaintiff, against Sargent & Co., of New York, as defendants, was called and an injunction granted, placing the defendants nnder bonds for damages, etc. For years this company with others has attempted to deceive the public by trying to palm their worthless goods off as Covert's, designating their imitations by the dcceptive name of "Covered." The trade journals of the country have time and again shown them up in

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their true light as unprincipled robbers, and have been repeatedly threatened with a libel suit by them, but as they know that uothing is libelous that is true, a threat has always been the end of it. We earnestly hope that the Coverts will eventually suppress the "Covereds" and be allowed to reap the honest reward of their toil and study.

The Covert Manufacturing Company is not the first party from the benefit of whose large advertising, others have sought to illegitimately derive the advantage. Few, however, have so fully demoustrated their ability to defend themselves.

Wichita, Kan.

The following are the new officials of the Wichita Street Railway Company, under the new management:-B. H. Campbell, President; E. R. Powell, Vice President, Treasurer and General Manager; G. W. Laramer, Secretary; E. C. Rnggles, Attorney. Board of Directors :- B. U. Campbell, E. R. Powell, J. O. Davidson, C. R. Miller, E. C. Ruggles, G. W. Laramer.

Yonkers, N. Y.

A third railroad is projected in Yonkers. The incorporators have filed the necessary papers at Albany and are now asking the city of Yonkers for a franchise to lay their tracks through the streets. The other two companies have done nothing yet toward the building of their roads.

Success of the Cable System in Chicago.

The adoption of the cable system for pour street car propulsion in Chicago has now wor after a fair trial of five years been proved a 2.6°_{-2} complete success. The last report of the full Chicago City Railway Company, to whom is 011 due the credit of introducing this system exac east of San Francisco, states that the cables us c and machinery have operated with great in & satisfaction throughout the year. Although nia : the last winter was the most severe ever experienced by the company, the mercury Stock for several weeks remaining below zero and the no the falls of snow being frequent and heavy, and d only one delay of any importance occurred. thing

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This effectually disposes of the argument, which was nrged when the use of cables was first proposed for Chicago, that the climate was too severe and that frost and snow would make it impossible to operate them. The report states that the cost of moving a car one mile by cable is about one-half of what it is with horses. Sixty thousand miles of service is the average life of cables in the main line.

As a special safeguard against extreme weather about one-half of the cable channel has been provided with $1\frac{1}{2}$ inch steam pipe for melting snow and ice. The company now operates twenty miles of cabl road, with 2,000 horse power of steam er gines moving cars at an average speed of ' miles per hour.

The President says that the strug which the company has had "agr natural difficulties, stubborn prejudices opposition of the most pronounced acter has resulted in a complete succe

the company and its patrons, and has raised the value of property 50 per cent. over many miles of territory."

While San Francisco was the pioneer in the adoption of the cable system, impelled thereto by the steep grades of its streets, Chicago has proved the adaptability of the plan in a northeru climate and for a level surface, and the successful demonstration of the principle here has been the means of introducing it in many other cities. The cable uow seems destined to take the place of horses for street car movement in cities quite generally, unless indeed it is superseded by some adaptation of the power of steam or of electricity.-Railway Age.

Experience in San Francisco in Running Cable Roads.

The Mining and Scientific Press iu discuscing the various systems of cable propulsion, speaks very emphatically in favor of the system in use in San Francisco, and compares the work done with that on the East river bridge. It says, that it is not in possession of exact figures for the weight of cars ; w used on the bridge, but will to be 25,000 pounds each. Asassume sume a additional standing capacity of four ti: s the seating capacity, and we have 2' passeugers per car. This at 125 pounds ch, will make the total weight of passer 3 27,500 pounds, and of the cars fully] d 52,500 pounds. Assuming the frict be forty pounds per ton, the due to friction would be 1,050 resig d that due to the grade of 31% about 1,575 pounds, a total of ds total resistance for oue car ed ascending the steepest grade lyn bridge. The figures arc uot not far from the truth. Now let re this with one of the hill roads Francisco-say the one on Califor-

> de on this line from Dupont to streets is 18.2 per cent., and on plock but slightly less. The car ny used on that road weigh somer 8,500 pounds. Sixty passeugers unusual load (110 having been p that grade at one load), which, unds each, would make the total loaded car and dummy 16,000 Such a load can be found every it six o'clock in the evening. The a due to friction, at the rate of nds per ton, as before, would be ds. The resistance due to the lift e of 18.2 per cent. is about twoof the total weight, equal to aking the total resistance 3,260 which is considerably greater than untered on the Bridge, Yet the no trouble, and there is no posf the cable slipping out of the doue cable has run more than vo mouths ou this line. It is y necessary to stop on that r is held securely by y-brake, which tion: but

quired to back down to the crossify of the balow, before starting, to gay of on six ros quired to back down to the crossing m_{1} and m_{1} and m_{2} and m_{1} and m_{2} and m_{2} the same, but the case the tire converte actions the actions heavy. The Clay street was the tire converte actions road ever constructed, and heavy there in establishes of testing to stimp of the stimp of the stimp of the stimp. heavy. The one of the second s Six, Once Market street road, when most important and bnsy shift in multice that an Francisco, about two years and dopr methids. If the that an The safety rail brake is conceded eschipal's compared to all roads having steep to describe a period used by all the cable roads have extend the emergencies appear the time species appear that it is much more species appear

used by all the cable roads have $e_{mergencies}$ the call Geary street. We are aware that it is in the more services appear on the cable starting a load Gurs 2000 the factpounds than 16,000 pounds under the santent in a pounds than 16,000 pounds upper the same in conditions, but the brid regars dan slways make the start at the same places, and only add have to start twice ou dan und ton add site and would be an easy matter to make the thinking

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'HE STREET RAILWAY JOURNAL.

urd street, and their lines are leased to e main company.

'hey propose to run the underground ' from the Battery up Broadway to Fiftystreet. A brauch will lead from the line at Madison Square, going up n avenue to Harlem river, thence by to connect with the railroads beviriver. The underground strucnot be a tunnel, but a continuous It will be divided into six parts le will extend from curb to curb, ug the vaults. The two midill be devoted to express trains o at-Union Square, Madison 'econd, and Fifty-J 'th Sts.

" In

The way tracks and cars can be built to lead to the express trains. The plan is perfectly feasible. There are no engineering difficulties to compare with those in the underground railways of London. The cars will run by electricity; there will be no vibratiou, owing to the uature of the supporting columns; veutilation will be self-adjusting, for the cars act like a piston iu a cylinder to keep up a draft of air. They auticipate uo trouble in securing consents and hope to begin work in the spring. The plan is to extend the system thronghout the city. The capital is \$3,000,000 a mile. The work will be doue by the use of bridges. Every detail has been arranged, even to every bolt and screw.

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HUMPHREYS & SAYCE, Broadway, New York.						

Directory of Manufacturers and Dealers in Street Railway Appliances, and Index to Advertisers.

AUTOMATIC SWITCHES' Page	CROSSINGS. Page.	PEDESTALS. Page.
M. M. White & Co., 531 W. 33d St., N. Y	Andrews & Clooney, 545 W. 33d St., N. Y140-141	Andrews & Clooney, 545 West 33d St., N. Y 140-141
Andrews & Clooney, 545 W. 33d St., N. Y 140-141	CHANNEL PLATES.	PANELS. Gardner & Co., 183 Canal St., N. Y
AXLES. F. W. Jesup & Co., 67 Liberty St., N. Y	A. Ayres, 625 Tenth Ave., N. Y	RAILS.
A. Whitney & Sons, Philadelphia, Pa128	CHAINS, Brake, Trace, Halter, Breast.	Humphreys & Sayce, 1 Broadway, N. Y120
Andrews & Clooney, 545 W. 33d St., N. Y140-141	Covert Manuf. Co., West Troy, N. Y129	Pugh & Russell, Stewart Building, N.Y132 F. W. Jesup & Co., 67 Liberty St., N. Y129
BEARINGS. Andrews & Clooney, 545 W. 33d st., N. Y 140-141	CABLE ROADS.	Pennsylvania Steel Co., 160 Broadway, N. Y131
Ajax Metal Co., Philadelphia, Pa	D. J. Miller, 234 Broadway, N. Y	Plttsburgh Bessemer Steel Co., 48 Flith Ave.,
BOXES, JOURNAL	ELECTRIC RAILWAYS.	Pittsburgh, Pa
Bemis Car Box Co., Springfield, Mass, 129	Van Depoele Electric Manufg. Co	RUBBER CAR SPRINGS.
A. Whitney & Sons, Philadelphia, Pa	FROGS.	N. J. Car Spring Co., Jersey City, N. J 129
Andrews & Clooney, 545 W. 33d St., N. Y140-141	Humphreys & Sayce, 1 Broadway, N. Y	Fred J. Kaldenberg, 125 Fulton St., N. Y 133 RUBBER VALVES.
BRAKE RODS.	Andrews & Clooney, 545 W. 33d St., N. Y140-141	Fred. J. Kaldenberg, 125 Fulton St., N. Y133
Lewis & Fowler, Brooklyn, N Y138-139	FARE BOXEN.	RUBBER HOSE.
BRAKE SHOES. Andrews & Clooney, 545 W. 33d St., N. Y140-141	Wales Manuf. Co., 76 and 78 East Water St., Syracuse, N. Y	N. J. Car Spring and Rubber Co., Jersey City, N. J
BRAKE CHAINS.	Tom L. Johnson, Indianapolis, Ind	Fred. J. Kaldenberg, 125 Fulton st., N. Y 133
Covert Mfg. Co., West Troy, N. Y	Lewis & Fowler Mfg. Co., Brooklyn, NY138-139	RATTAN SEAT COVERINGS. Hale & Kilburn Manuf'g Co., 48 and 50 N.
BRAKE PADS, RUBBER.	FARE REGISTERS, STATIONARY.	Sixth st., Philadelphia, Pa
N. J. Car Spring & Rubber Co., cor. Wayne & Brunswick Sts., Jersey City, N. J	Lewis & Fowler Mfg. Co., Brooklyn, N. Y138-139 FARE COLLECTORS.	STEEL RAILS.
Fred. J. Kaldenberg, 213 to 229 E. 33d st., N. Y133	Lewis & Fowler Mfg. Co., Brooklyn, N. Y138-139	Pennsylvania Steel Co., 160 Broadway, N. Y., 208 S. Fourth [st., Philadelphia, Penn 131
BOOKS, STREET RAILWAY.	FEED CUTTERS.	Pittsburgh Bessemer Steel Co., 48 Fifth Ave.,
Am. Ry. Pub. Co., 32 Liberty St., N.Y114 CARS, NEW.	E. W. Ross & Co., Springfield, O133	Pittsburgh, Pa
John Stephenson Co., New York	FILING CABINETS.	Humphreys & Sayce, 1 Broadway, N. Y 120 F. W. Jesup & Co., 67 Liberty st., N 129
J. G. Brill & Co., Phila., Pa142-143	Schlicht & Field, Rochester, N. Y134 GUTTERS.	SEATS & SEAT SPRINGS.
Brownell & Wight Car Co., St. Louis, Mo131 J. M. Jones' Sons, West Troy, N. Y131	Bowier & Co., Cleveland, O	Hale & Kilburn Manuf'g Co 126 SPRING TOP UNIFORM CAP.
CARS, SECOND HAND.	GROOVED CURVES.	P. Goldmann, 133 Grand st., N.Y
Humphreys & Sayce, 1 Broadway, N. Y	Humphreys & Sayce, 1 Broadway, N. Y	SWITCHES.
sington Ave., Philadelphia, Pa	Andrews & Clooney, 545 W. 33d St., N. Y140-141 HAMES.	Wm. Wharton, 'Jr., & Co., 25th St. & Wash- ington Ave., Philadelphia, Pa127
CAR STARTERS.	Charles E. Berry, Cambridge, Mass	Humphreys & Sayce, 1 Broadway, N. Y 120
C. B. Broadwell, 169 Laurel st., New Orleans, La. 129	U. S. Harness Co., Chicago, Ili132	M. M. White, 531 West 33rd st, N. Y 128 Andrews & Clooney, 545 West 33rd st., N. Y.140,141
CAR LAMPS. Josephine D. Smith, 350 & 352 Pearl St., N. Y132	HOSE (Rubber).	STREET RAILWAY BUILDERS.
Geo. M. Ciute, West Troy, N.Y	N. J. Car Spring and Rubber Co., Jersey City, N. J	Metallic St. Railway Supply Co., Albany, N. Y. 132 Wm. Wharton, Jr., & Co., Phila., Pa
CAR WHEELS.	Fred J. Kaldenberg, 125 Fulton st., N. Y133	Wm. P. Craig, 95 Liberty st., N. Y 128
A. Whitney & Sons, Philadelphia, Pa128 Lewis & Fowler, Brooklyn, N.Y138-139	HARNESS.	Andrews & Clooney, 545 West 33rd st., N. Y 140,141
Andrews & Clooney, 545 W. 33d St., N.Y140-141	U. S. Harness Co., Chicago, Ill	A. J. Hutchinson, 95 Liberty St., N.Y
CAR WHEEL PRESSES.	HAY CUTTERS.	Humphreys & Sayce, 1 Broadway, N. Y 120
Watson & Stillman, 471 S. Grand St., N.Y133	E. W. Ross & Co., Springfield, Ohio133	Metallic Raiiway Supply Co., Albany, N. Y 132 Pugh & Russell, Stewart Bldg., N. Y132
CAR SPRINGS. N. J. Car Spring & Rubber Co., cor. Wayne	HAND & POWER WHEEL PRESSES.	F. W. Jesup & Co., 67 Liberty st., N. Y 129
& Brunswick Sts., Jersey City, N. J129	Watson & Stillman, 471 S. Grand st., N. Y133	Wm. P. Craig, 95 Liberty st., N. Y 128
Fred. J. Kaldenberg, 213 to 229 E. 33d St., N.Y. 133	Watson & Stillman, 471 S. Grand st., N. Y133	Lewis & Fowler, Brooklyn, N. Y
Lewis & Fowler, Brooklyn, N.Y	HYDRAULIC PRESSES.	SPRINGS.
Richard Vose, 13 Barclay St., N.Y	Watson & Stillman, 471 S. Grand st., N. Y133	Richard Vose, 13 Barclay st., N. Y
CAR SEATS.	HORSE SHOES.	Andrews & Clooney, 545 West 33rd st., N. Y.140,141 Fred J. Kaldenberg, 125 Fulton st., N. Y 138
Hale & Kilburn Mfg. Co., 48 & 50 N. 6th Str., Philadelphia, Pa126	Nevership Horse Shoe Co., 36 India Wharf, Bos- ton, Mass	N. J. Car Spring Co., Jersey City, N. J 129
Gardner & Co., 643 to 657 W. 48th st., N.Y126	The Goodenough Company, 156 and 158 E. 25th	SNOW PLOWS. Andrews & Clooney, 545 West 33rd st., N. Y.140,141
CAR SASH.	st., N. Y	TURNOUTS.
W. L. Everit, New Haven, Ct	KNEES.	Wm. Wharton, Jr. & Co., 25 St. & Washing- ton Ave., Philadeiphia, Pa
CAR CEILINGS.	Andrews & Clooney, 545 West 33d st., N. Y140-141	Andrews & Clooney, 545 West 33rd st., N. Y.140,141
Gardner & Co., 643 to 657 W. 43th st., N.Y127	LAMPS.	TURN TABLES.
COUPLING PINS. Lewis & Fowler Mfg. Co., Brooklyn, N.Y138-139	Josephine D. Smith, 350 & 352 Pearl st., N. Y 132 METALLIC RAILWAY.	W. P. Craig, 95 Llberty st., N. Y
CAPS, UNIFORM.	Wm. Wharton & Co., Phila., Pa	TRACK CASTINGS.
P. Goldmann, 133 Grand & 19 & 20 Crosby, N. Y 132 CASTINGS.	Metallic Street Railway Supply Co., Albany N.Y. 132	Humphreys & Sayce, 1 Broadway, N. Y 120 Andrews & Clooney, 545 West 33rd st., N. Y.140,141
Bowler & Co., Cleveland, O129	Humphreys & Sayce, 1 Broadway, N. Y	TRACK SCRAPERS.
F. W. Jesup & Co., 67 Liberty St., N. Y	MATTING (Rubber).	H. H. Littell, Louisville, Ky
A. Whitney & Sons, Philadelphia, Pa128 Wm. P. Craig, 95 Liberty St., N.Y128	N. J. Car Spring & Rubber Co, Jersey City N. J129 Fred. J. Kaldenberg, 125 Fulton St., N. Y133	Andrews & Clooney, 545 W. 33d St., N.Y140-141 VARNISHES.
A. Ayres, 625 Tenth Ave., N. Y	MATTING.	John Babcock & Co., 2 Liberty sq., Boston Mass.126
Andrews & Clooney, 545 W. 33d St., N.Y140-141 CURRY COMBS.	Warneck & Toffler, 211 E. 22d st., N. Y	Parrott Varnish Co., Brldgeport, Conn
Muncie Novelty Co., Muncle, Ind	MOTORS-Steam.	Watson & Stillman, 471 S. Grand st., N. Y 133
Lewis & Fowier Mfg. Co., Brooklyn, N. Y138-139	H. K. Porter & Co., Pittsburg, Pa	WHEELS.
CURVED RAILS. A. Ayres, 625 Tenth Ave., N. Y	MOTORS-Electric. Van Depoele Electric Manufg.Co.,203 Van Buren	Andrews & Clooney, 545 West 33rd st., N. Y.140-141 Lewis & Fowler, Brooklyn, N. Y
Andrews & Clooney, 545 W. 33d St., N. Y 140-141	St., Chicago, Ill	A. Whitney & Sons, Philadelphia Pa 128



122

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

ABREVIATIONS-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.

AKRON, O.-Akron St. Ry. & Herdic Co. 2% m, 6c, 31 h. Pres. Ira M. Miller, V. Pres. James Christy Treas. B. L. Dodge, Sec. F. M. Atterholt, Supt. John T. Metlin.

Třeas, B. L. Dodge, Sec. F. M. Atterholt, supt. John T. Metlln.
ALBANY, N. Y.-Watervliet Turnpike R.R. Co. 7% m, 26:45 lb r, 27 C, 143 h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster.
The Albany Ry. 10 m, 4-8% g, 33-47 lb r, 51 c. 194 h. Pres., Supt. and Treas. John W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St.
ALLENTOWN, PA.-Allentown Pass. R.R. Co. 3% m, 6 c, 22 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balliet, Supt. Russel A. Thayer.
ALTON, ILL.-Alton & Up. Alton Horse Ry. Co. ALTOONA, PA.-City Pass. Ry. Co. of Altoona.
3% m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John J. Buch.
AMSTERDAM, N. Y.-Amsterdam St. Ry. Co. 1% m, 4-8 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. President's office 112 Front St., L. Island City, N. Y.
ANNISTON, ALA.-ASHTARULA, O.-Ashtabula City Ry. Co. 4 m, 4-8% g, 40 lb r, 6 c, 60 h. Owner & Prop. Jno. N. Stewart.
ATCHISON, KAN.-Atchison St. Ry. Co. 5%

ASHTAB ULA, O. – Ashtabula Clty Ry. Co. 4 m, 4-84 g, 40 lb 7, 6 c, 60 h. Owner & Prop. Jno. N. Stewart.
ATCHISON, KAN. – Atchison St. Ry. Co. 5½ m, 4-84 g, 20-30 lb 7, 19 c, 60 h. Pros. & Gen. Man. J. H. Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. Gate Clty St. R.R. Co. 2½ m, 4-8½ g, 16 lb r, 7 c, 26 h. Pres. L. B. Belson, V. Pres. L. DeGlve, Sec. & Treas, John Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co.
West End & Atlantic R.R. Co. 2m, 4-8½ g, 20 lb r, 6 c, 34 m. J. Pres. L. D. BeGlve, Sec. & Treas, John Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co.
West End & Atlantic R.R. Co. 2m, 4-8½ g, 20 lb r, 6 c, 34 m. Pres. J. D. Turner, V. Pres. T. L. Langston, Sec. & Treas. B. H. Brumhead, Man. & Pur. Agt. Juo. S. Brumhead.
ATLANTA, G.A. – Atlanta St. Ry. Co. 13 m, 4-8½ g, 42 lb C. B. rall, 40 two h cars, 150 horses. North Atlanta Line 1 m. Decatur st. Line 1.50 m. Marletta St. Line 2.50 m. Meet End Line 2.50 m. West End Line 2.50 m. Mest 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. Office, 49 Line St.
ATLANTIG, N. J. – Atlantic Clty Ry. Co.
AUBURN, N. Y. – Auburn & Owasco Lake R.R. Co. 1½ m, 4-8½ g, 28-30 lb r, 3 c, 12 b. Pres. D. M Osborne, Sec. & Treas. C. B. Fosters, Supt. B. F. Andrews.
East Genesec & Seward Ave. Ry. Co. 1½ m, 4-8½ g, 28 lb r, 7 c, 10 h, 30 mu. Pres. H. H. Evans, V. Pres. S. W. Thatcher, Sec. A. J. Hopkins, Treas. E. W. Truth, Supt. J. B. Chattee.
BABYLON, N. Y. – Babylon Horse R.R. Co. 1½ m, -6.54 g, 26, 14 c. Th. Pres. W. F. Norton.
BALTUNDRE, MD. – Baltimore & Powhatan Ry. Co. 6 th. 74 c, 26 h. Pres. Out M. Ketrick.
Baltimore M. Catonsville Ry. Co. 6 m, 5-4½ g, 40 lb r, 54 c, 1000 h. Pres. Oc. 6 m, 5-4½ g, 35 lb

Sec. S. L. Bridge. Battimore Union Pass. Ry, Co. Supt. T. C. Robbins, Baltimore & Catonsville Ry, Co. 6 m, 5-4½ g, 35 lb r, 15 c, 51 h. Pres. J. C. Robbins, Supt. & Pur. Agt. G. W. Appleby. Office Pratt St. & Frederick Av. Baltimore & Halls Spring R.R. Co. Central Ry. Co. 5½ m, 5-4½ g, 40 lb r, 22 c, 180 h. Pres. Peter Thompson, Sec. & Treas. Walter Blakl-stone. Citizen's Ry, Co. 90 m, 5.44% g, 40 hb r, 20 c, 180 h.

Pres. Peter Thompson, Sec. & Treas. Walter Blakl-stoue.
Cltizen's Ry. Co. 20 m, 5-4% g. 46 lb r, 34 c, 360 h.
Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed.
Monumental City Ry. Co.
North Baltimore Passeuger Ry. Co.
People's Pass. Ry. Co. 6½ m, 5-4% g, 42-45 lh r, 30 c, 200 h. Pres. R. E. Hamilton, Treas. Gustavus Ober.
Sec., Supt. & Pur. Agt. Wm. A. House, Jr. Office, Fort
Ave. & Johnsou St. Soou move to Druid Hill Ave.
York Road R.R. Co.
BATTLE CREEK, MICH.—Battle Creek Ry. Co.
5 m, 3-6 g, 28 lb r, 8 c, 18 h, 3 mu. Pres. Geo. Dct-J.
White, V. Pres. H. H. Brown, Sec. Chas. Thomas, Supt. John A. White, Gen. Man. J. W. Hahn.
BAY CITY, MICH.—Bay City St. Ry. Co. 7½
m, 4-3½ g, 18 lb r, 13 c, 35 h. Pres. James Clements, Trass. Wm. Clements, Sec. Edgar A. Cooley.
BEAVER FALLS, PA.—Beaver Valley St. Ry. Co.
3 1-40 m, 5 c, 21 h. Pres. M. L. Knight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whitla.

BELLAIRE, 0.-Bellalre St. R.R. Co. BELLEVILLE, ONT., CAN.-Belleville St. R.R.

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BEREA, O.—Berea St. Ry. Co. 14, m, 3-6 g, 28 lb r, 2 g, 2 h. Pres, C. W. D. Müller, V. Pres, T. Chinch-ward, Sec. & Treas, A. H. Pomeroy, Supt. A. W. Bishop.

Bishop.
BINGHAMTON, N. Y.-Washington Street & State Asylum R.R. Co. 4½ m. 4g, 16-25 lb r, 13 c, 23
p. Pres. B. H. Meagley, V. Pres. Geo. Whitney, sec. C. O. Root, Treas. F. E. Ross.
Binghamton Central R.R. Co. 3½ m (2½ laid), 3
g. 28 lb r, 6 c (not in operation). Pres. Geo. L. Crandaul, V. Pres. Nelson Stow, Sec. & Supt. Chas. O. Root, Treas. H. J. Kneeland. Offices 63 Court St. Binghamton & Port Dickinson R.R. Co. 5 m, 4-8½

g, 20-30 lb r, -c, -h. Pres. Harvey Westcott, Sec. & Treas. G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 State St. Main, Court & Chenango St. R.R. 5 m, 4-8 g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St. BIRMINGHAM, ALA.-Birmingham St. Ry. Co. 5½ m, 4-8 g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris, Supt., Sec. & Treas. W. H. Morris. Highland Avenue Raliway. 6½ m, -g, -lb r, -h. Pres. H. M. c Idwell, Supt. W. J. Milner, Owners The Elyton Land Co. BLOOMFIELD, N. J.-Newark & Bloomfield R. R.

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BLOOMFIELD, N. J.—Newark & Bloomfield R. R.
BLOOMFIELD, N. J.—Newark & Bloomfield R. R.
BLOOMINGTON, ILL.—Bloomington & Normal Horse RY. Co.
BOONE, IA.—Boone & Boonsboro St. Ry. Co. 1½ m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds Treas. J. B. Hodges, Supt. A. B. Hodges.
BOONSBORO, IA.—Twin City & Des Moines River Motor St. Ry. Co. 3 m, 3-6 g, 2 motors, 3 c. Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger.
BOSTON, MASS.—Highland St. Ry. Co. 19 m, 4-8½ g, 50 lb r, 187 c, 925 h. Pres. Moody Merrill, Clerk R. B. Falrbairn, Treas. Samuel Little, Supt. J. E. Rugg.
Lynn & Boston. 34½ m, 4-8½ g, 25-48 lb r, 114 c, 514 h. Pres. Amos F. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.
Metropolitan R. R. Co. 80 m, 4-8 g, 50 lb r, 700 c, 500 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas. Chas. Boardman. Office, 16 Kilby St. Middlesex R.R. Co. 26 m, 4-8½ g, 50 lb r, 150 e, 700 b. Pres. Chas. E. Powers, Treas. & Supt. John H. Studiey. Address, 27 Tremont Row, Boston. So. Boston Ry. Co. 13 m, 4-8½ g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersey, V. Pres. Janes Brodey.
BRADFORD. PA.—Bradford & Kendall R.R. Co. 1½ m, 4-8½ g, 32 lb r, 30 c, 2 m, 42 g, 20 lb r, 3 c, 2 m. Pres. T. J. Pampel, Sec. John A. Raudle, Treas. D. C. Giddiugs.
BRENHAM, TEX.—Brenham St. Ry. Co. 2 m, 42 g, 91 br, 3 c, 4 b. Pres. James Brodey.
BRENHAM, MASS.—Brockton St. Ry. Co. 3 m, 42 g, 91 c. 0 h. Pres. Albert Earner, Sec. & Treas. F. Hurd, Supt. Enos Parsons. BRENHAM, MASS.—Brockton St. Ry. Co. 3 % m, 42 g, 91 c. 3 c, 2 m. Pres. T. J. Pampel, Sec. John A. Raudle, Treas. D. C. Giddiugs.
BRENHAM, MASS.—Brockton St. Ry. Co. 3 % m, 24 c, 97 h. Pres. W. W. Cross, Treas. & Sec. Z. C. Keith, Supt. H. R. Rogers.
BROOKLVN, N. Y.—The Atlantic Avenue R.R. Co. of Brooklyn. 24½ m, 4-8 g, 60 lb r, 94 c, 682 h. Pres. William Richardson, Treas. Newburg H. Frost. Office cor. Atlantic & Third Aves.
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Pres. William Richářdsón, Seč. W. J. (Richárdson, Treas. Newburg H. Frost. Office cor. Atlantič & Third Aves.
Broadway R.R. Co. 10 1-10 m, 4-8½ g, 45-50-60 lb r, 166 c, 657 h. Pres. W. H. Husted, V. Pres. Edwin Beers, Sec. & Treas, Robert Sealer, Supt. Joshua Crandall. Office 21 Broadway R. D.
Brooklyn Cross Town R.R. Co. 8 m, 4-8½ g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Edra B., 702 c, 400 h. Pres. Henry W. Slocum, V. Pres. Edra B., 702 c, 400 h. Pres. Henry W. Slocum, V. Pres. Edra B., 702 c, 400 h. Pres. Henry W. Slocum, V. Pres. Co. 20 m, 4-8½ g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, Y. Pres. Wm. H. Husted, Treas. S. Sec. 8. D. Hallowell, Supt. Wm. M. Morrison. Office 22 Broadway, N. Y.
The Brooklyn, Bushwick & Queens County R.R. 6 m, 4-8½ g, 42-47 lb r, 41 c, 117 h. Pres. Richard H. Green, V. Pres. James W. Elwell, 69 South St. N. Y. Scc. John D. Elwell, Treas. M. W. Greene.
Brooklyn City R.R. Co. 44 m, 4-8½ g, 60 lb r, 761 c, 3445 h. Pres. William H. Hazzard, Y. Pres. William M. Thomas, Sec. & Treas, Land F. Lewis, Asst. Sec. Francis E. Wrigley. Offices 8 & 10 Fulfon St. Brooklyn City & Newtown R.R. Co. 11 m, 4-8½ g, 45-60 lb r, 125 c, 416 h. Pres. Louis Fitzgeraid, N. Y. City, Sec. & Treas. H. A. Schuz, Supt. H. W. Bush.
Office cor. DeKalb & Central Ares.
Calvary Cemetery, Greenpoint & Brooklyn Ry. Co. Coney Island, Sheepshead Bay & Ocean Avenue R. R. Co. Pres. A. A. McClemer, V. Pres. Daniel Mouc, Sec. John St. Brooklyn, Super William Farrell. Office cor. Smith & Huntington Sts.
Coney Island, Sheepshead Bay & Ocean Avenue R. R. Co. Pres. A. A. McClemer, V. Pres. Daniel Mouc, Sec. John McMahon, Sheepshead Bay, Treas. Horac Valkulth, Office 16 Red Hook Lane. Crosstown Line, Hamilton Ferry to Bridge. Grand St. & Newtown R.R. Co. 24 m, 4-8½ g, 50 lb r, 72 c, 250 h. Pres. Martin Joost, Sec. & Treas. Wrie, St. Horwill, Supt. Waitter G. Howey. Office 129 First St.
Grand Street, Prospect Park & Flat

so lb r, 72 C, 250 L. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First St. Grand Street, Prospect Park & Flatbush R.R. Co. 4'4 m, 4-8% g, 50 lb r, 75 c, 244 h. Pres. Louis Fitz-geruld, 120 Broadway, N.Y., See, & Treas. Duncan B. Cannon, Supt. Jno. L. Heins. Offices Franklin Ave. and Prospect Place. Greenpoint & Lorimer St. Prospect Place. Treas. A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, Supt. Robert Attlesey. Offices Ninth Ave., 19th & 20th Sts. Prospect Plack & Flatbush R.R. 1½ m, 4-8½ g, 34 lb r, 70 c, 360 h. Pres. Loftls Wood, Sec. & Treas. South Brooklyn Central R.R. Co. 7 m (4½ m laid), 4 SM g, 60 lb r, 42 c, 192 h. Pres. Wm. Richardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Ruddy. The New Williamsburgh & Flatbush R. R. Co. 6½ m, 4-5½ g, 47-50 lb r, 74 c, 255 h. Pres. Geo. W. Van Alien, 54 Ann St., New York, Sec. W. B. Waltt, 34th St. & 9th Are., New York, Sec. W. B. Waltt, 34th St. & 9th Are, New York, St. R. Co. 1½ m, 4-8½ g, 45 lb r, 7 c, 24 h. Pres. Johns Le Harris, Nost-rand Ave. & Carroul st., Brooklyn. The Union Railway Co. of the City of Brooklyn not in operationy. Wan Brunt St. & Erle Basin R.R. Co. 1½ m, 4-8½ g, 45 lb r, 7 c, 24 h. Pres. Johns Cunnaingham, Sec. & Treas. Edmund Terry. BRUNSWICK, GA.-Brunswick St. R.R. Co. BUFFALO, H.L.-See Mechanicsburg, III. BUFFALO, N. Y. -Buffalo St. R.R. Co. 172 Mres. P. P. Pratt, Sec. S. Spaulding, Treas, W. H. Watson, Supt. Edward Edwards.

Buffalo East Side St. R.R. Co. 24 4-5 m, 4-8% g, 42 Ib r, 47 c, 218 h. Pres. S. S. Spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watsson, Treas. W. H. Wat-son, Supt. Edward Edwards. Office 346 Main St. BURLINGTON, IA.-Burlington City R.R. Co. 2% m, 4-8% g, 22 10 r, 9 c, 30 h. Pres. John Patterson, sec. & Man. C. T. Patterson. Union St. Ry. Co. CAMBRIDGE, MASS.-Cambridge R.R. Co. 43 m, 4-8% g, 50 lb r, 245 c, 1,410 h. Pres. Prentilss Cum-mings, Treas. & Clerk F. T. Stevens, Exec. Com. I. M. Simpson, P. Cummings, O. S. Brown, Clerk of Di-rectors, O. S. Brown, Supt. Wm. A. Bancroft. Charles River St. Ry. Co. 10 4-5 m, 2-8% g, 50 lb r, 50 c, 330 h. Pres. Chas. E. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlain, Supt. John M. Akarman. CAMDEN, N. J.-Camden & Atlantic St. Ry. Camden Horse R.R. (0. 9 m, 5-1 g, 35-47 lb r, 26 c, 85 h. Pies. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas, & Supt. John Hood. CAPE MAY, N. J.-Cape May & Schellenger Landing Horse R. R. CARTINA, G., Canton St. R.R. Co. (new road.) CAPE MAY, N. J.-Cape May & Schellenger Landing Horse R. R. CARTILAGE, MO.-CEDAR RAPIDS, IA.-Cedar Rapids & Marion St. Pass. Ry. Co.

CEDAR RAPIDS, IA.—Cedar Rapids & Marion St. Pass. Ry. Co.
CHAMPAIGN, ILL.—Champalgn R.R. Co.
Urbana & Champalgn St. R.R. Co. (See Urbana.)
CHAR LESTON, S. C.—Charleston City Ry.
Co. 8 ½m, 48½ g, 38:42 lb r, 22 c, 84 h. Pres. Jno. S.
Riggs, Treas. Evan Edwards, Sec. Frank Whelden, Supt. Jno. Mohlenhoff.
Enterprise R.R. Co. 12 m, 5 g, 42 lb r. 14 c, 51 h.
Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. Jno. Buckley.
ChARTANOOGA, TENN.—Chattanooga St. R.
R. Co. 2½ m, 4-8½ g, 16-25 lb r, 8 c, 50 h. Press. J.
H. Warner, Sec. C. R. Gaskill, Supt. A. B. Wingfield.
CHESTER, PA.—Chester St. Ry. Co. 5½ m, 5-2½ g, 12 c, 70 h. Press. Richard Peters, Jr., Solicitor, Geo. B. Lindsay, Treas. Sam'l A. Dyer, Sec. E. M.

Geo, B. Lindsay, Treas. Sam'l A. Dyer, Sec. E. M. Cornell.
CHICAGO, ILL. - Chicago City Ry. Co. 87 m, 4-8½ g, 45 lb r, 567 c, 1,416 h, cable doing work of 2,509 h. Pres. C. B. Holmes, Sec. H. H. Windsor, Treas. T. C Pennington, supt. C. B. Holmes, Sec. George L. Webb, Supt. Jas. K. Lake.
Chicago & Hyde Park St. - m, -g, -lb r, -c, Chicago & Hyde Park St. - m, -g, -lb r, -c, North Chicago City Ry. Co. 35 m, 4-8½ g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. C. Turner, V. Pres. Jacob Relin, Sec. & Treas. Hiram Crawford, Supt. Jack. Supt. Track & Construction, Augustue W. Wright, Asst. Supt. Fred. L. Threedy, Supt. Horse Dept. Robt, Akins, Purch. Agt. John W. Roacb, Master Mechanic J. Miller.
CHLLICOTHE, O.-Chillicothe St. R.R. Co. 12 m, 3g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewel McMartin.
CINCINNATI, O.-Clincinati Inclined Plane Ry. Co. 3 m, 5-2½ g, 48 lb r, 24 c, 150 h. Pres. Geo. S. Hill.
Cincinnati St. Ry. Co. Pres. Jno. Kilgour, V. Pres.

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Hill, Cola Colportions in Problem, Proceedings, Friday Colar, Chennatt St. Ry. Co. Press. Jno. Kligour, V. Pres. Albert G. Clark, Treas. R. A. Dunlap, Sec. & Audltor, Jas, A. Collins, Supt. Jno. Harris, Pur. Agt. B. F. Haughton. Cinclinati & Mount Åuburn R.R. Co. 3½ m, 3 g, 35 lb r, 3 c, 6 dummy c. Press. C. II. Kligour, V. Press. John Kligour, Treas. B. F. Branman, Sec. A. H. Meiler, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.

Ib 7, 3 c. 6 dummy c. Pres. C. H. Kilgour, V. Pres. John Kilgour, Treas. B. F. Brauman, Sec. A. H. Meler, M. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.
Mt. Adams & Eden Park Incllued R.R. Co. 3½ m, 5-2½ g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Ker-per, Sec. J. R. Murdock, Supt. Chas. Whitten.
So. Covington & Cinchnatl. (See Covington, Ky.) CLEVELAND, O.—The Brooklyn St. R.R. Co. 3½ m, 4-5½ g, 52 lb 7, 66 c, 375 b. Pres. Tom L. Johnson, Y. Pres. A. J. Moxham, Sec. J. B. Hoetgen, Treas. John McConnell, Supt. A. L. Johuson.
Broadway & Newburg St. R.R. Co. 6 m, 4-8½ g, 10 c, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Superior St. R.R. Co. 15 m, 4-8½ g, 52 lb 17, 46 c, Superior St. R.R. Co. 15 m, 4-8½ g, 35-40 lb r, 92 c, 450 h, 1 electric motor. Pres. A. Evorett, Supt. E. Duty. Offices, 1154 & 1155 Euclid Ave.
Woodland Avenue & West Side St. R.R. Co. 17 m, 4-5½ g, 43 br, 100 c, 550 h. Pres. Co. 17 m, 4-5½ g, 43 br, 100 c, 550 h. Pres. M. A. Hanna, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mulben.
South Side St. R.R. Co.
Suth Side R.R. Co. CLINTON, IA.—Lyons & Clinton Horse R.R. Co. (See Lyons.)
CollumBy, GA.—Columbus St. R.R. Co. 3 m, 4-8½ g, 61 br, 60 c, 55 h. Pres. Clint B. Grimes, Sec.

(See Lyons.) 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. Ga-bourgh

bourgh.
COLUMBUS, O. --Columbus Consolidated St. R. R.
COLUMBUS, O. --Columbus Consolidated St. R. R.
Co. 19 m, 5-2 g, 30-46 lb r, 83 c, 350 h. Pres. A. Rodgers, V. Pres. H. T. Chittenden, Sec. & Treas. E. K.
Stewart, Supt. J. H. Atcherson.
Glenwood & Greeniawn St. R.R. Co. 4½ m, 3-6 g,
24 lb r, 9 c, 25 c. Pres. A. D. Rodgars, V. Pres. B. S.
Brown, Sec. R. S. Rockley, Treas. S. S. Rickley, Supt. Jonas Wilcox.

Jonas Wilcox. CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippia, Clerk E. C. Hoag. CORTLAND, N. Y.—Cortland.& Homer Horse Ry. Co. 4 m (2½ faid), 4-8½ g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y. Sec. J. M. Milne, Treas. 8. E. Welch, supt. S. E. Welch. (Leased to D, N, Miller.) Office 23 No. Mercer St.

Brown, Sec

THE STREET RAILWAY JOURNAL.

COUNCH. BLUFFS, IA.—Council Bluffs St. R.R. COVINCTON, KY.—So. Covington & Cincinnati St. Ry. Co. 17% m, 5-2% g, 43 lb r, 46 c, 296 h. Pres. F. Abbott, See S. C. Bunton, Treas. G. M. Abbott. DALLAS, TEX.—Dallas St. Ry. Co. 4% m, 4-8% g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec. Harry Keller, Supt. C. E. Keller. Commerce & Way St. R.R. DANULLE, HL.—CHIzens' St. Ry. Co. 4 m, 4 g, 20 lb r, 7 c, 35 mu. Pres. Wm. I. Cannon, V. Pres. & Gen. Man. Wm. Stewart, Sec. & Treas. Adam P.. Samuel.

Samuel

a Gen. Mah. Wh. Stewart, Sec. a rieas. Adam r...
banucl.
DAVENPORT, IA. — Davenport Central St. R. R. 25 (m, 4-5% g, 2016 r, 12 c, 36 h. Pres. James Grant, Y. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. B. Runsey, Sec. O. S. McNell.
Davenport City Ry. Co. H. Schuitger, Lessee.
DAYTON, KY. — Newport & Dayton St. Ry. Co. 20, 5-22 g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.
DAYTON, O. — Dayton St. R.R. Co. 31 m, 4-8½ g, 44 lb r, 23 c, 66 h. Pres. J. W. Stoddard, V. Pres. H. S. Williams, Sec. C. B. Clegg, Supt. A. W. Anderson. Oakwood St. Ry. Co. 31-3 m, 4-8½ g, 38 lb r, 13 c, 60 h. Pres. Charles B. Clegg, Sec. M. P. Moore, Supt. Wm. Davis.

Oakwood St. Ry, Co. 3 13 m, 4-84 g, 38 lb r, 13 c, 60 h. Pres. Charles B. Clegg, Sec. M. P. Moore, Supt. Wm. Davis.
The Wayne & Fifth St. R.R. Co. 3½ m, 4-8½ g, 34 38 lb r, 5c, 30 h. Pres. Geo. M. Sbaw, Sec. & Treas. Eugene Winchet, Supt. N. Routzahn.
DECATUR, ILL.-Decatur Horse Ry. Co. Clitzens' Street R.R. Co. 2 m, 4-8½ g, 20 lb T, 7, c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. Kinney.
DEERING, ME.-See Portland.
DENVER, COL.-Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Waterhouse, snpt. S. A. Robinson.
DENVER, COL.-Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 5 c, 22 mu. Pres. Co. 10 wall St., New York City, Sec. G. D. L'hniller, 10 Wall St., New York City, Sec. G. D. L'hniller, 10 Wall St., New York City, Sec. G. D. L'hniller, 10 Wall St., New York City, Treas. & Man. G. E. Randolph.
DETROIT, MICH.-Fort Wayne & Elmwood Ry. Co. 6 m, 4-8½ g, 5 lb r, 18 c, 100 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Treas. George B. Pease, Sec. N. W. Goodwin, Supt. Go. S. Haelmood Ry. Co. 0h. Includes Jefferson Ave. line, Woodward Ave. line, Mchigan Ave. line, Gratiot Ave. line, Brush St. Ine, Cast Pres. George Hendric, Sec. James Heugh, Gen. Supt. Robert Bell, Mast. Mech. John Willis.
Grand River St. Ry. Co. 23 (m, 4-8½ g, 43 lb r, 13 c, 10 h. Pres. M. Dauley.
Supt. C. M. Dalley.
DOVER, N. H.-Dover Horse R.R. Co. 22-5 m, 3 g, 30 br, 4-6, 14 h. Directors, Z. S. Wallingfor, Chas. H. Abyre, Jan. Buttelfeld, Treas. Harlson Haley, Frask. Williams, Cyrus Littlefield, Treas. Harlson K.R. S. M. Aswyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley.

Hartison Haley.
DUBUQUE, IA.—Dubuque St. R.R. 5 m, 48% g, 21 c, 45 h. Pres. J. A. Rhonberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Linehan.
DULUTH, MINN.—Duluth St. Ry. Co. 3 m, 3-6 g, 30 lb r, 6 c, 7 h, 31 mu. Pres. A. S. Chase, V. Pres. O. P. Stearns, Sec. & Treas. L. Mendenhall, Supt. & Fur. Agt. W. T. Hoopes.
EAST OAKLAND, CAL.—Oakland, Brooklyn & Fruitvale R.R. Co. of East Saginaw. — m, 48% g, 30 lb r, 14 c, 35 h. Pres. J. Beter.
EAST ST. LOUIS. H.L.—Past St. Louis T. P. P. Beter.

Supt. W. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. LOUIS, HLL.-East St. Louis St. R.R. Co.
EAST ST. 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.
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 CLAIR, WIS.-Eau Clair Clty Ry. Co.
ELIZABETH, N. J.-Elizabetb & Newark Horse R.R. Co. 14 m, 5-2½, 4 10½ g, 30 lb r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard.
ELMIRA, N. Y.-The Elmira & Horsebeads Ry. Co. 92 am, 482g, 25-304 lb r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wn. S. Kershner, Supt. Henry C. Silsbee. Officers, 212 E. Water. St.
EL PASO, TEX.-El Paso St. Ry. Co. 2½ m, 483g, 20 lb r, 8 c, 25 h. Pres. St. Ry. Co.
Supt. Sc. 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magoffice, Sec. & Supt. J. A. Tays.

Tays. **EMPORIA, KAN.**—Emporia City Ry. Co. 3¼ m, 5g, 20 lb r, 6 c, 23 m. Pres. Van R. Hoimes, Treas. A. F. Crowe, Sec. & Man. J. D. Holden. **ENTERPRISE, MISS.**—Enterprise St. Ry. Co. 1¼ m, 3-6 g, 24 lb r, 2 c, 6 b. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. Jno. Gaston. **ERIE**, **PA**.—Erle City Passenger Ry. Co. 5 m, 4-8½ g, 30-40 lb r, 17 c, 70 h. Pres. Wm. W. Keid, Treas. J. C. Spencer, Sec. A. L. Lettell, Supt. Jacob Berst. EUREKA SPRINGS, ARK .- Eureka Springs

EUREKA SPRINGS, ARR. Butter Construction of the second sec

FORT SMITH, ARK.—Fort Smith St. Ry. Co. 2 m, 3-6 g, 16-28 lb r, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks. FORT WAYNE, IND.—Citizens' St. R.R. Co.

FORT WORTH, TEX.—Fort Worth St. Ry. Co. 7½ m, 4 g, 25-38 lb r, 16 c, 73 m. Pres, K. M. Van-zandt, Treas, W. A. Hoffman, Acting Sec. & Gen. Man. S. Mims.

Man. S. Mims. FRANKFORT, N. Y.—Frankfort & Ilion Street Ry. Co. 2% m, 5g, 4 c. Pres. A. C. McGowan, Frank-fort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Fredk. Gates, Frankfort. FREDONIA, N. Y.—Dunkirk & Fredonia R. R. Co. 3% m, 4 10 g, 25 10 r, 5 c, 8 h. Pres. Wr. M. McCins-try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.

try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.
GAINSVILLE, FLA.—Gainsville St. Ry.
GAINSVILLE, TEX.—Gainsville St. Ry. Co. 2½
m, 3-6 g. 17 lb r, 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Scc. & Treas. F. R. Sherwood.
GALESBURGG, HL..—Galesburg Horse R.R. Co.
GALVESTON, TEX.—Galveston City R.R. Co.
GALVESTON, TEX.—Galveston City R.R. Co.
Gut Cester, MASS.—Gloucester City R.R. Co.
GLOUCESTER, MASS.—Gloucester City R.R.
GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. Weston, Grand Rapids, Asst. Sec. Jas. Fickands, Cieveland, O.
GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8½ g, 23 lb r, 3 c, 12 h. Pres. & supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.
GREENVILLE, S. C.—Greenville City Ry. Co.

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

GREEAN HAIRS, 5. C.
GREEAN HAIRS, 5. C.
HARTS, E.
HAMILTON, O.—The Hamilton St. Ry. Co. 4 m, 3 g, 28 lb r, 11 c, 12 h. Pres. James F. Griffin, Sec. O.
V. Parrisb, Treas. H. L. Morey, Supt. J. C. Bigelow.
HANNIP AL, MO.—Hannbal St. Ry. Co. 2 m, 48% g, 164 clb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O. Hearn.
HARTISBURGH, PA.—Harrisburgh City Pas-senger Ry. Co. 2% m, 6-2% g, 42-47 lb r, 15 c, 36 h, Pres. H. A. Kelker, V. Pres. Daniel Epply, Sec. John T. Ensminger, Treas. R. F. Kelker, Supt. S. B. Reed.
HARTFORD, CONN.—Hartford & Wetbersfield Horse R., Co. 12 m, 4-8% g, 45 lb r, 49 c, 250 b. Pres.
& Treas. E. S. Goodrich, Sec. Geo. Sexton.
HAVERHILL, MASS.—Haverhill & Groveland St. Ry. Co. 4½ m, 4-8% g, 30 lb r, 10 c, 19 b. Pres. Jas. D. White, Treas. John A. Colby, Supt. L. R. Mitchell.
HUTENA, ARK,—Helena St. Ry. Co.

HAVERHILL, MASS. Haverhill & Groveland
 St. Ry. Co. 4% m, 48% g, 30 lb r, 10 c, 19 b. Pres.
 Jas. B. White, Treas. John A. Colby, Supt. L. R. Mitchell.
 HELENA, ARK. Helena St. Ry. Co.
 HERKIMER, N. Y. Herkimer & Mohawk St.
 Ry. Co. 1% m, 48% g, 25 lb r, 3 c. Pres. J. M. Ansmen, Sec. Joab Small, Treas. H. D. Alexander.
 HOBOKEN, N. J. –North Hudson County Ry.
 Co. 18% m, 47 g, 50-60 lb r, 16 c, 630 h. Pres. John H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. Nicholas Goetz, Union.
 HOLYÖKE, MASS. –Holyöke St. Ry. Co. 2 m, 4-8% g, 35 lb r, 8 c, 24 b. Pres. Wm. A. Chase, Treas.
 C. Fayette Smith, Supt. H. M. Smith.
 HOT SPRINGS, ARK. –Hot Springs R.R. Co. 3 m, 4-8% g, 20-304-40 lbr, 40 c, 118 m. Pres. Wm. H. Sinclair, Galveston, V. Pres & Gen Man. H. F. McGregor, Houston, Supt. J. L. Butterfield.
 HOUSTON, TEX. –Houston City St. Ry. Co. 18 m, 4-8% g, 20-304-40 lbr, 40 c, 118 m. Pres. Wm. H. Sinclair, Galveston, V. Pres & Gen Man. H. F. McGregor, Houston, Supt. J. Henry Friend, Houston, Sec. & Treas. F. J. DeMeritt, Galveston.
 HUTE PARK, HLL. –Ewing Avenue Horse Ry.
 Co. 4-8% g. Pres. Andrew Rehm, Sec. A. Kitmbill.
 LION, N. Y. –Frankfort & Ilion Ry. Co. 22 m, 5 g, 25 lb r, 4c, 6 b. Pres. A. C. McGowan, Sec. D. Lewis, Treas. F. Remington, Supt. Frederick Gates.
 INDIANAPOLIS, IND. –Citizens' St. Ry. Co. 101ANAPOLIS, IND. –Citizens' St. Ry. Co. 114, 48% g, 20-33-40-52 lb r, 70 c, 530 h. Pres. A. W. Johnson, Indianapolis, Jireas. Tom. L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Mattor P. Woodridge, Louisville, Ky.
 HWIGTON, N. J. –Newark & Irvington R.R. JACKSON, MICH. –Jackson Street Ry. Co. JACKSON, MICH., Jackson Street Ry. Co. JACKSONYHLE, FLA. –Pine St. Rato, C

Turston, V. Pres. Wm. Keeney, Treas. C. F. Flace, Sec. Warren E. Dennis, Newark, Supt. Thos. M. Sayre. Paronia Ferry Ry. Co. JOHNSTOWN, N. Y.—Tbe Johnstown, Glovers-ville & Kingsboro Horsc R.R. Co. 5 χ m, 48 χ g, 26 lb (f. 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fan-cher, Sec. & Treas. I. M. Law. JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. (6 χ m, 5-3 g, 41-43 lb r, 13 c, 56 h. Pres. James McMil-len, Sec. B. L. Yeagley, Treas. W. H. Rosensleet, Jr. JOILET, JLL.—Jollet Clty R.R. Co. 3 χ m, 4-8 χ g, 40 lb r, 16 c, 30 h. & mu. Owner, J. A. Henry, A. Blschman, Cash. J. E. Henry. JOPLIN, MO.— KALAMAZOO, MICH.—Kalamazoo St. Ry. Co. 10 m, 4-8 χ g, 55 lb r, 22 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P. H. Brown. KANSAS CITY, MO.—Kansas City Cable Ry. Co. 2 χ m, 4-8 χ g, 45 lb r, 10 pass, cars, 10 dummy cars. Pres. Wm. J. Smith, Sec. W. H. Lucas, Eng. Robert Gillham. Supt. Edward J. Lawless.

123

Corrigan Consolldated St. Ry. Co. 20 m, 41 g, 20 Ib r, 80 c, 350 h. Pres. Bernard Corrigan, Gen. Man. Thos. Corrigan, Sec. Jas. T. Kelley. Jackson County Horse R. R. Co. Kansas City & Westport St. Ry. Co. Kansas City & Westport St. Ry. Co. KEOKUK, IA.-Keokuk St. Ry. Co. 4 m, 4-8½ g, 27 lb r, 10 c, 42 h. Pres. Jas. H. Anderson, V. Pres. Jos. G. Anderson, Sec. R. James Anderson, Treas. & Supt. W. Z. Anderson. KINGSTON, ONT., CAN.-Kingston St. R.R. Co. ½ m, 3-6 g, 91 br, 10 e, 36 h. Pres. Robert Car-son, Sec. & Treas. F. Sargent, Man. Willam Wilson KNOXVILLE, TENN.-Knoxville St. Ry. Co. 2 m, 4-8½ g, 221 br, 5 c, 2 backs, 20 b. Pres. W. W. Woodruff, Sec., Treas. & Supt. T. L. Beaman. LACONIA, N. H.-Laconia & Lake Village Horse R.R. 2½ m, 3 g, 34 br, 5 c, 17 h. Pres. A. G. Folson, Treas. Edmund Little, Man. Bela S. Kenniston. LA CROSSE, WIS.-City Ry. Co. of La Crosse. 2½ m, 4-9 g, 24 lbr, 5 c, 16 h, 3 mu. Pres. Geo. F. Gund, V. Pres. Jas. Vincent, Sec. Mills Tonteel-lotte, Treas. Fred Tiliman, Supt. Geo. F. Smith. La Crosse St. Ry. Co. Pres. B. E. Edwards, Treas. G. Van Steenyrk, Sec. Mills Tourtellotte, Supt. Peter Valler. LAFAYETTE, IND.-LaFayette St. Ry. 2½ m,

La Crosse St. Ry. 6.4 G. Van Steenyk, Sec. Mills Tourtellotte, Super-Valler. LAFAYETTE, IND.—LaFayette St. Ry. 2½ m, 48½ g, 35 br, 6 c, 38 h. Pres. F. B. Caldwell, LaFay-ette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette. LAKE CITY, FLA.—Lake City St. Ry. Co. LAMPASAS SPRINGS, TEX.—Lampasas City Ry. Co. 3½ m, 4-8½ g, 22 lb r, 6 c, 15 h. [Owned by Mrs. L. R. Snodgrass.] Gen. Man. Geo. M. Snod-grass. LANCASTER, PA.—Lancaster & Millerville St.

LAWRASTER, FA.-Lancaster & Millerville St. Ry. Co. Lancaster City St. Ry. Co. LARCHMONT, N. Y.-Larchmont Manor Co. 1 m⁴4-8 g, 25 lb r, 2 c, 8 h. Pres. C. H. Murray, Treas. S. H. French, 38 East Fourteentb St., N. Y. City. LAWRENCE, KAN.-Lawrence Transportation Co. 43 m, 4-1 g, 38 lb r, 7 c, 30 b. Pres. H. Tisdale, Sec. W. H. Bangs.

Sec. W. H. Bangs. LAWRENCE, MASS.-Merrimack Valley Horse R.R. Co. 6 45 m, 4-8½ g, 48 lb r, 20 c, 70 h. Pres. Wm, A. Russell, V. Pres. James Walton, Metbuen, Clerk & Treas. James C. Eaton, Supt. A. N. Kimball, Law-

LEWISTON, ME.-Lewiston & Auburn Horse R.R. Co. 75 m, 4-8% g, 32 lb r, 16 c, 45 h. Pres.Frank W. Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinch-

W. Dana, Lewistoń, Člerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinch-field, Auburn.
LEXINGTON, KY.-Lexington City Ry. Co. 5
m, 4-10 g, 20 lb r, 20 c, 35 h. Pres. John Cross, V. Pres. C. R. Diver, Sec. & Supt. Bert. Cross.
LEXINGTON, MO.-Lexington St. Ry. Co. LINGOLN, NEB.-Capital City Ry. Co. 3 m, -g, -lb r, 5 c, -h. Pres. E. B. Durfee, Sec. & Supt. H. B. Durfee, Sec. & Supt.

g, ----br, f. b. Pres. E. B. Durlee, Sec. & Supt. H. B. Durlee. LITTLE ROCK, ARK.-Little Rock St. Ry. Co. Citizens' St. Ry. Co. 4% m, 410 g, 201b r, 32 c, 80 h. Pres. Jobn Cross, Sec. and Treas. F. C. Reed, Supt. C. R. Diver. Hot Springs St. Ry. Co. LOG ANSPORT, IND.-Logansport Ry. Co. 2 m, 4 g, 28 lb r, 6 c, 29 mu. Pres. Frank. G. Jaques, Sec. M. Jaques, Supt. Vm. P. Jaques, Office, Urbana, Ill. LONDON, CAN.-London St. R.R. Co. 3 m, 4-8% g, 30 lb r, 12 c, 30 h. Pres. Y. Cronga, Sec. Jas. H. Flock, Supt. Henry Thos. Smith. LONG ISLAND CITY, N. Y. - Steinway & Hunter's Point R.R. Co. 26% m, 4-8% g, 47 lb r, 60 c, 150 h. Pres. Wm. Steinway, Steinway Hall, N. Y City. V. Pres. Henry A. Cassebeer, Jr., Steinway Dutch Kills & Hunter's Point R.R. - m, -g, - lb r, - c, - h. Pres, R. J. Gleason. Long Island City & New Yoo 3 m, 4-8% g, 45-55 lb r, 25 c, 60 h. Pres. Isaac Buchannan, N. Y. City, Sec. Geo. S. Crawford, Brookyrn, N. Y., Treas. Patrick J. Gleason, Supt. Micbael Conway. Officers 112 Front St.

City, Sec. Geo. S. Crawford, Brooklyn, N. X., Treas, Patrick J. Gleason, Supt. Micbael Conway. Officers 112 Front St.
LONGVIEW, TEX.-Longview & Junction St, Ry. & Zim, 3-6 g, 2 g, 4 h. Pres. F. T. Rembert, Sec. R. B. Levy, Treas. F. I. Whaley, Supt. C. W. Booth, LOS ANGELES, CAL.-Boyle Heights R. R. Co. Central R. R. Co. and the Sixth & San Fernando St. R. R. Co. 7 m, 3-6 g, 16 lb r, 13 c, -h. Pres. E. T. Spencer, Sec. F. X. Palmer, Supt. J. A. Fairchild. City R.R. of Los Angeles. 4½ m, 4-5½ g, 36 lb r, 9 c, 75 h. Pres. I. M. Heilman, V. Pres, W. J. Brodrich, Sec. John O. Wheeler, Supt. J. A. Fairchild. City R.R. of Los Angeles. 4½ m, 4-5½ g, 36 lb r, 9 c, 75 h. Pres. I. M. Heilman, V. Pres, W. J. Brodrich, Sec. John O. Wheeler, Supt. J. A. Mary, Sec. & Treas. Thos. Donigan.
Central Pass. R.R. Co. -m, -g, -lbr, -c, -h, Pres. To. J. Minary, Sec. & Treas. Thos. Donigan.
Central Pass. R.R. Co. -m, -g, -lbr, 199 c, 1300 h. Pres. Maj. Alexander Henry Davis, Syraeuse, N, Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell.
LOWELL, MASS.-Lowell Horse R.R. Co. 6 m, 4-5½ g, 2-47 lb r, 29 c, 10 h. Pres. Yure. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell.
LOWELL, MASS.-Lowell Horse R.R. Co. 6 m, 4-5½ g, 2-547 lb r, 29 c, 100 h. Pres. Yure. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell.
LWCHBURG, VA. - Lynchburg St. R.R. Co. 2 m, 6-1 g, 26 lb r, 6 c, 31 b. Pres. Stepben Adams, Treas. John L. Adams, Supt. William M. Payne.
LYNCHBURG, VA. - Lynchburg St. R.R. Co. 5 m, 4-5½ g, 19-30 lb r, 16 c, 40 h. Pres. Jb. Joyce, V. Pres. & Man. R. N. Rand.
MACON, GA.-Macon & Suburban St. R.R. Co. 5 m, 4-8½ g, 20-lb r, 12 c, 60 h. & mu. Pres. Joo. S. Bransford, Sec. & Supt. Jano. T. Voss. Office, 151 second St.

Second St.
MADISON, IND.—Madison St. Ry. Co. 2% m. 4
g, 16 lb r, 7 c, 8 h, 10 mu. Pres. Jacob Wendle, V. Pres.
Peter F. Robenthus, Supt. & Treas, Chas. F. Tuttle,
MADISON, WIS.—Madison St. Ry. Co. 2% m, 3
g, 23 lb r, 6 c, 24 h. Pres. E. W. Keyes, V. Pres. Sec.
& Treas, D. K. Tenner, Supt. G. W. Carse,
MANCHESTER, N. H.—Manchester Horse R.R.

FEBRUARY, 1886.

4½ m, 3-½ g, 27-34 lb r, 12 c, 41 h. Pres. S. N. Bell, Treas. Frederick Smyth, Clerk J. A. Weston, Supt.

124

A.Q. Guage. MARSHALLTOWN, IA.-3 m, 4 g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gillman, Supt. A. E. Shorthill. MARYSVILLE, CAL.-City Pass. R.R. Co. (No

MARYSVILLE, CAL.—City Pass, R.R. Co. (No returns.)
 MAYSVILLE, KY.—Maysville St. Ry. & T. Co. 3 m, 20 lb r, 4-3½ g, 6 c, 32 mu. Pres. L. W. Robertson, Sec. & Treas. W. S. Frank.
 MECHANICSBURG, ILL. — Mechanicsburg & Buffalo Ry. Co. 3½ m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. J. N. Fullenweider, Treas. A. T. Thompson, Sec. J. T. Fullenweider, TRNN.—Memphis CityR.R. Co.—m, -g, —In, -c, —h,—Pres. R. Dudley Frayser.
 MERIDIAN, MISS.—Meridian St. Ry. Co. 1½ m, 4-8 g, 16 lh r, 3 c, 12 h. Pres. J. Shannon, V. Pres. J. L. Handley, Sec. R. M. Houston.
 MIDDLETOWN, O.—M^A delenant & Madison St. MILDERSVILLE, PA.—Lancaster & Millersville St. R.R. Co.

MILDER SVILLE, PA.-Lancaster & Millersville St. R.R. Co.
MILWAUKEE, WIS.-Cream Clty R.R. Co. 8 1-6 m, 4.8½ g, 37-38 lh r, 74 c, 307 m, 2 h. Pres. Winfield Smith, V. Pres. Christlan Preusser, Treas. Ferdinand Knehn, Sec. Wn. Damkoehler, Supt. H. J. C. Berg. Milwaukee Clty Ry. Co. 15 m, 4.8½ g, 27 lb r, 75 c, 430 h. Pres. Peter McGeoch, Sec. & Treas. Geo. O. Wheatcrott.
West Side St. Ry. Co. Owner & Manager, Washington Becker, Supt. --- McNaughton.
MINNEAPOLIS, MINN.-Minneapolis St. Ry. Co. 45 m, 3-6 g, 27-354 lb r, 146 c, 725 h and mu. Pres. Thos. Lowry, V. Pres. C. Mortissey, Treas. W. W. Herrick, Sec. & Supt. C. G. Goodrich.
MOBILE, ALA.-City R.R. Co. 17½ m, 6-2 g, 35 lb T., 68 c, 240 h. Pres. Jno. Maguire, Sec. I. Strausse, Treas. James W. Gray, Pur. Agt. & Man. J. G. Robertson.
MOBILE Spring Hill R.R. Co. 8 m, 5-2½ g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Danlel M. Nell, Sec. & Treas., G. MOHAWK, N. Y.-Mohawk & Ilion R.R. Co. 12 m, 4-32 g, 30 lb r, 4 c (contract for motive power).
MOHAWK, N. Y.-Mohawk & Ilion R.R. Co. 12 m, 4-32 g, 30 lb r, 4 c (contract for motive power).
MOHAWK, N. Y.-Mohawk & Ilion R.R. Co. 12 m, 4-32 g, 30 lb r, 4 c (contract for motive power).
MOHAWK, N. Y.-Mohawk & Ilion R.R. Co. 12 m, 4-32 g, 30 lb r, 4 c (contract for motive power).
MOLINE, ILL.-Moline Central St. Ry. Co. 14 M. St. Man. J. A. Bartan M. Devendorff, Supt. O. W. Bronson.

MOLINE, HLL.—Moline Central St. Ry. Co. 1% m, -g, -lbr, 3 c, 11 h. Pres. S. W. Wheelock, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway m

Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway.
Moline & Rock Island St. Ry. Co. 5 m, 4.8½ g. 20 lb
r, 13 c, 41 h. Pres. J. Huntoon, Sec. 1. M. Buford,
Treas. C. Lyons, Supt. Wm. Gamble.
MONTREAL, CAN.—Montreal City Pass. Co. 21
m, 4.8½ g. — Ih r, 76 c, 465 h. Pres, Jesse Joseph, V.
Pres. Wm. Smith, Sec. & Man. Ed. Lusher, Supt. T.
H. Robilland.
MOUTREALES C. Middle St. & Sull

MOULTRIEVILLE, S. C.-Middle St. & Sulli-

MOULTRIEFVILLE, S. C.-Middle St. & Sullivan's Landing Ry.
MUSCATINE, IA.-Muscatine Cit7 Ry. Co. Pres.
Peter Musser, V. Pres. Geo. W. Dillaway, Sec. T. R.
Fitzgerald, Supt. & Treas. O. J. Chapman.
MUSKEGON, MICH.-Muskegon Ry. Co. 4% m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V. Pres. Chas. Merrian, Boston, Mass. Sec. Thomas
Munroe, Treas. G. R. Sherman, Supt. C. H. Newell.
NASHUAL, N. H.-Nashus St. Ry. Co.
NASHVILLE, TENN.-Nashville & Edgefield
R. R. Co. Fatherland Estreet Rallway Co. North Edgefield
R. R. Co. Fatherland Estreet Rallway Co. North Edgefield
R. R. Co. Fatherland St. Ry. Co. management.
5 m, 5 g, 16 lh r, 21 c, 100 h. Pres. Jno. P. White, Sec.
& Treas. H. B. Stubblefield, Supt. Daingerfield Deaderlek.

erick.
McGavock & Mt, Vernon Horse R.R. Co. Nashville D. & N. St. R.R. Co. 7½ m, 5 g, 16-32 lh r, 25 c, 140 mu. Prcs. Jno. P. White, V. Pres. B. F. Wil-son, Sec. & Treas, H. B. Stubblefield, Supt. D. Dead-erick.

erick.
south Nashville St. R.R. Co. 4½ m, 6 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.
NEVADA, MO.-Nevada Street Ry. Co.
NEW ALBANY, IND.-New Alhany St. Ry. Co. 6 m, 4-11 g, 25 lb r, 15 c, 50 h. Pres. Geo. T. Vance, Sec. G. Vance, Treas. Letitla V. Vredenburgh, Supt. Wm. L. Timberlake.

NEWARK, N.J.—The Newark & Bloomfield St. R.R. Co, 7 ID, 5-2% g, 47 lb r, 22 c, 140 h. Pres. S. S. Battln, Sec. W. L. Mullord, Supt. H. F. Totten. Broad St. R.R.

Broad St. R.R.
NEW BEDFORD, MASS.—New Bedford & Fair-haven St. Ry. Co. 75/ m, 4-8% g, 35-40 lb r, 38 c, 138
h. Pres. Warren Ladd, Treas. Andrew G. Pierce, Clerk Edward T. Pierce.
Acushnet St. R.R. Co., 6 m, 4-8% g, 38 lb r, 29 c, 103
h. Pres. Ohas. E. Cook, Sec. & Treas. A. P. Smith.
NEWBURYPORT, MASS.—Newhuryport & Amesbury Horse R.R. Co. 6 i-3 m, 12 c, 54 h. Pres.
W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens. Lessee, E. P. Shaw.
NEW HAVEN, CONN.—Fair Haven & Westville R.R. Co. 7 m, 4% g, 42 lb r, 23 c, 151 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Walter A. Graham.

R. R. Co. 7 m, 4% g, 42 lb f, 23 c, 136 h. Pres. H. B. Ives, Sec. & Treas. G. Cander, Supt. Walter A. Graham.
New Haven & Centreville Horse R.R. Co. 2% m, 45% g, 42 lb r, 4 c, 30 h. Trustee Cornelius Pierpont. State Street Horse R.R. Co. 2% m, 4.8% g, 42 lb r, 4 c, 30 h. Trustee Cornelius Pierpont. The Whitney Ave. Horse RY. 23% m, 4.8% g, 52 lb r, 3 c, 25 h. Pres. Geo. H. Watsons, Sec. George D. Watson, Treas. Eli Whitney, Jr.
NEW ORLEANS, I.A.—Canal & Claiborne St. R.R. Co. 18 m, 5-2% g, 37 lh r, 40 c, 200 h. Pres. E. J. Hart, Sec. & Supt. John H. DeGrange.
Crescent City R.R. Co. 26 m, 5-2% g, 35-45 lb r, 90 c, 400 h. Pres. Frank Roder, Sec. & Treas. Jno. J. Juden, Supt. A. V. Smith.
New Orleans & Carroliton R.R. Co. 8 m, 4-5% g, 30 h. 51 h, 16 sc. 200 h, 19 engines. Pres. Wm Benthuysen, Sec. Walter F. Crouch, Supt. C. V. Halle.
New Orleans (15 x Lake R.R. Co. 64 m, 5-2% g, 46-40 lb r, 180 c, 39 coaches, dummy engines, 1650 mu. Pres. J. A. Walker, Sec. W. E. Levorich, Supt. F. Wintz.

New Orleans St. R.R. Co. Orleans R.R. Co. — m, — g, — lb r, 32 c, 140 h. & mu. Pres. & Supt. H. Larquie, Sec. & Treas. P. Cougot. Office, cor. White & Laharpe Sts. St Charles St. R.R. Co. 15 m, 5-2% g, 52 lb r, 60 c, 366 m. Pres. & Supt. Alden McLellan, Sec. Vincent Rivere. NEWPORT, KY.—Newport St. R.R. Co. NEW YORK, N.Y.—Ninth Ave. R.R. Co. 8 m, 45% g, 60 lb r, 45 c, 380 h. Pres. V. H. Hays, Sec. & Treas, James Affleck, Supt. Herman B. Wilson. Offi-cer, Nortu Ave., cor. 59th. St. Broadway & Seventh Ave. R.R. Co. 7 m, 4-8% g, 47-60 lb r, 150 c, 1,350 h. Pres. James W. Foshay, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell Office 761, Seventh Ave. Central Crosstown R.R. Co. 2% m, 4-8% g, 52 lb r, 42 c, 231 h. Pres. John B. Slawson, V. Pres. A. Cam-mack, Sec. M. J. Masson, Treas. John L. Macaulay. Office 365 Ave. A Central Park North & East River R.R. Co. 14 m, 45% g, 60 lh r, 162 c, 1,225 h. Pres. J. H. Scrbiner, V. Fres, C. D. Wyman, Sec. H. Seribner, Treas. J. L. Valentine, Supt. M. W. A. Harris. Office, Tenth Ave., 53d & 54th. St. Christopher & Tenth St. R.R. Co. 6 m, 4-8, 4.5, 4.5 b, 54, 74 c, 290 h. Pres. Jacoh Sharp Treas. W. T. Hatch, Sec. & Supt. George W. Lynch. Office, 168 Christo-pher St. Dry Dock, East Broadway & Battery R.R. Co. 11/2

pher St

Sec. & Supt. George W. Lynch. Once, 188 Christo-pher St. Dry Dock, East Broadway & Battery R.R. Co. 114/ m, 4-8/4 g, 60 lb r, 187 c, 1,132 h. Pres. William White, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred F. White. Offices, 605 Grand sS. Eighth Ave. R.R. Co. 10 m, 4-8/4 g, 60 lb r, 112 c, 1155 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. H. B. Wilson. Office, Eight Ave., & 50th. St. Forty-Second Street & Grand Street Ferry R.R. Co. 5/4 m, 8-4 g, 64 lb r, 50 c, 500 h. Pres. Chas. Curtis, Sec. & Treas. E. S. Allen, Supt. John M. Calhoun. Office, 653 W. 23d. St. Harlem Bridge, Morrisanla & Fordham Ry. 4/4 m, 4-8/4 g, 4-60 lb r, 50 c, 233 h. Pres. Henry Sprafley, V. Pres. Richard M. Hoe, Sec. & Treas. Wm. Cald-well. Office, North Third Ave, near 170 St. Houston, West Street & Pavonia Ferry R.R. Co 5 m, 4-8/4 g, 60 lb r, 50 c, 400 h. Pres. Richard Kelly, Sec. & Treas. Daniel B. Hasbrook. Office, 415 E. 10 St.

Sec. 10 St.

Sec. & Treas. Daniel B. Hasbrook. Onice, 415 E. 10 St. Jerome Park R.R. 1 m, 4-8½ g, 50-56 lb r. Pres. Leonard M. Jerome, Sec. Fred A. Lovecraft, Treas. Theodore Moss. Office, cor. 5th. Ave. & 22d St. New York Clty St. Ry. Co. 10 m, [not ln operation]. Pres. Loomis L. White, Sec. W. L. McCorkle, Treas. Wm. L. Skidmore. New York & Harlem R.R. Co. 6½ m, 4-8½ g, 56-75 lb r, 144 c, 1,408 h. Pres. W. H. Vanderbilt, V. Pres, & Sec. Cornellus Vanderhilt, Treas. Ed. V. W. Rossi-ter, Sup t. Alfred Skitt, Pur. Agt. Chas. Reed. Sixth A ve. R.R. Co. 4 m, 4-8½ g, 60 lb r, 127 c, 1296 h. Office, 756 Sixth Ave. South Ferry Ry. Co. - 3¼ m, 48½ g, 60 lb r, 127 c, 14 b. Pres. Hen ry Hart, Sec. Wm. N. Cohen, Treas. Albert J. Ellas, Supt. Chas H. Meeks. Office 20 Whitehall St. The Second Ave. R.R. Co. 13 m, 4 8½ g, 60 lb r, 316

Winnehan St. The Second Ave, R.R. Co. 13 m, 48% g, 60 lh r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second Ave. cor.

Cars, 1750 L. Fres. W. Horn, V. Fres. J. wadsworth, Sec. & Traes. J. B. Underhill. Office Second Ave. cor.
96th St. The Third Ave. R.R. Co. 13% m, 45% g, 60 & 74 bl r, 318 c, 2150 h. (3% m of cable road on 10th ave.) Pres.
Lewis Lyon, 739 Madison ave., V. Pres. Henry Hart, 110 Tribune Building, Sec. Alfred Lazarus, 436 W.
61st st., Treas. John Beaver, 211 E, 112th st., Supt. John H. Robertson, 307 E, 65th st. Twenty-third St. R.R. Co. 7 m, 4-S% g, 54 lb r, 102 c, 692 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Treas. Lewis May, Act-Supt. George Ferry. Office 621 West 23d St.

lark. NORWALK, CONN.-Norwalk Horse R.R. Co, m, 4-10 g, - Ib r. 7 c, 20 h. Pres. James W. Hyatt, . Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt, NORWICH, CONN.-Norwich Horse R.R. Co. OAKLAND, CAL.-Alameda, Oakland & Pled-

OAKLAND, CAL.—Alameda, Oakland & rieumont R.R.
Berkley Villa R.R.
Broadway & Pledmont St. R.R. Co.
Fourteenth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, —
h. Pres. & Supt. Walter Blair, Sec. P. J. Van Loben.
OGDEN CITY, UTAH.—Ogden City Ry. Co.
3 m, 4-3% g, 20 lb r, 4 c, 21 h. Fres. L. W. Shurtleff,
Ogden City, V. P. & Supt. O. P. Armold, Salt Lak
City, Sec. & Treas. H. S. Young, Ogden City.
O LEAN, N.Y.—Olean St. Ry. Co. 11-10 m, 3-6 g,
25 lh r, 3 c, 8h. Pres. M. B. Fobes, Sec. & Treas. M. W.
Barse.

OILHIA, NEB.—Omaha Horse Ry, Co. 15 m, 4-8% g, 35 lb r, 40 c, 300 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W.

A. Smith. **ONEIDA VILLAGE, N. Y.**—Oneida St. Ry. — m.—g.,—lb r.,—c.,—h. Pres. Jerome Heacock. **OSHKOSH, WIS**.—Oshkosh St. R R. Co. 3½ m, 4-5½ g, 27 lb r, 9 c, 24 h. Pres. Tom Wall, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson

¹¹ OSWEGO, N.Y.-OSWEGO St. Ry. Co. 2 m, 4-8½ S, 45 lh r, 3 c, - h. Pres. Jas. F. Johnson, V. Pres. R. J. Ollphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor. [Not in operation]

yet.) OTTAWA, ONT.—Ottawa Clty Passenger Ry.Co. 3 m, 4-5% g, 34 lh r, 1 c, 40 h. Pres. Thomas C. Keet-er, V. Pres. R. Blackburn, Sec. James D. Traser. OTTUMWA, IA.—Ottumwa St. R.R. Co. 2 m, 3-6 g, 27 lh r, 4 c, 2 h, 14 mu. Pres. J. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick. Mineral Springs St. Ry. Co. 1 m, 1 c.

PADUCAH, KY.—Park R.R. Co. PARIS, TEX.—Parls St. Ry. Co. PATERSON, N. J.—Paterson & Passaic R.R. Co. PATERSON, N. J.—Paterson & Passaic R.R. Co. 7 m, 4-10 g, 33 lb r, 16 c, 24 h. Pres. John N. Ter-hune, Treas. John I. Brown, Sec. E. S. Brown, Man. & Pur. Agt. Ambrose T. King, Supt. M. O. Rourke. Paterson City R.R. Co. 65 m, 4-85 g, 35 lb r, 12 c, 31 h. Pres. Garrett Planten, Treas. Heimas Romaine, Siec. Albert A. Wilcox. PENSACOLA, FLA.—Pensacola St. Ry. Co. PEORIA, ILL.—Central City Horse Ry. Co. 41/2 m, 4-85/2 g, 40 lb r, 60 c, 135 h. Pres. H. R. Woodward, Strong.

Strong.

Fort Clark Horse Ry. Co.-m,-g,-lb r,-c,-h.-Pres J. H. Hall

Pres, J. H. Hall.
Peorla Horse Ry. Co. 7% m, 4-8% g, 40 lb r, 63 c, 140 h. Pres. H. Woodward, Sec. M. Preiffer, Treas.
H. N. Wheeler, Supt. John Strong. **PETERSBURGH, VA.** –Petersburgh St. Ry. Co. 3% m, 4-8% g, 42 lb r, 9 c, 44 h. George Beadle, Pro-PIILADELPHIA, PA. – Citizens Pass. Ry. Co. 10% m, 5-2 g, 45-47 lh r, 92 c, 420 h. Pres. John McCarthy, Sec. & Treas. John J. Adams, Supt. Sam'l Citine.

Frankford & Southwark Phila, City Pass, R.R. Co. 18 1-10 m, 5-2 g, 47 lh r, 91 c, 8 dummy c, 580 h. Pres. Henry Geiger, Sec. & Treas. Geo. L. Gaudy, Supt. W.

18 1-10 m, 5-2 g, 47 in r, 91 c, 8 dummy c, 580 h. Pres.
Henry Gelger, Sec. & Treas. Geo. L. Gaudy, Supt. W. H. Janney.
Hestonville, Mantua & Fairmount Pass. R.R. Co. 20 m, 5-2 g, 43 lh r, 50 c, 480 h. Pres. Charles F. Lafferty, Sec. & Treas. W. C. Foster.
Lehigh Ave. Pass. Ry. Co. Pres. John Lamon, Sec. Chas. A. Porter, Treas. John L. Hill. [Track not laid.] Lombard & South Sts. Pass. Ry. Co. - m, 5-2 g, 43 lb r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas.
Francis Hazelhurst, Supt. Jno. M. Gaughen.
People's Pass. Ry. Co. 44 m, 5-29, 47 lb r, 15 c, 1,080 h. Pres. C. J. Harrah, V. Pres. C. J. Harrah, Jr., Sec. & Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiler.
Philadelphia City Pass. Ry, Co. 109 m, 5-2½ g, 45-78 lb r, 595 c, 3,160 h. Pres. W. H. Kemhle, V. Pres. P. A. B. Widener & W. L. Elkins, Sec. & Treas. D. W. Dickinson.

Inson, Philadelphla & Gray's Ferry Pass, R.R. Co. 101-3 m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-

Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 65 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lam-hert, Sec. & Treas. Wm. S. Blight, Supt. William Ingles.

C, 352 ft. Pres. E. B. Edwards, V. Pres. John Lambert, Sec. & Treas. Wm. S. Blight, Supt. William Ingles. second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William r. Miller, Seventeenth & Nheteenth Sts. Pass. Ry. Co. 74 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Ped-die. [Leased to Philada. Traction Co.] Thirteenth & Fifteenth Sts. Pass. Ry. Co. 74 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Ped-die. [Leased to Philada. Traction Co.] Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 (4) 80 r. 32 c, 432 h. Pres. Thos. W. Ackley, Sec. & Treas. Thos. S. Harris, Supt. Wm. B. Cooper. Union Pass. Ry. Co. 70 m, 348 c, 1,724 h. Pres. Wm. H. Kemble, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. West Philadelphia Pass. Ry. Co. 18½ m, 122 c, 646 h. Pres. Peter A. B. Widener, Sec. & Treas. D. W. Dickson, (Leased by the Phila. Traction Co.) **PHILLIPSBURGH, N. J.** —Phillipsburgh Horse Car Ry. Co. 2½ m, 4-8 g, 351 b r, 4 c, 13 h. Pres. Daniel Runkle, Sec. & Treas. James W. Long. **PHTTSBURGH, PA**.—Central Pass R. R. Co. 3 m, Treas, E. R. Jones, Supt. R. G. Heiron. Beaver Falls & New Brighton Ry. Co. Citizens' Pass. Ry. Co. 16½ m, 5-2½ g, 47 lb r, 40 c, 37 h. Pres. Jao. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner. Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, 5-2½ g, 4-650 lb r, 20 c, 154 h. Pres. Wm. H. Creery, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny City.

5-2½ g, 46-50 lb r, 20 c, 154 h. Pres. Wrn. H. Creery, Treas. James Boyle, Supt. Wrn. J. Crozler, Allegheny Clty.
People's Park Pass. Ry. Co. 2 m, 5-2½ g, - lb r, 10 c, 75 h. Pres. Wrn. McCreery, Treas. James Boyle, Supt. Wrn. J. Crozler, Allegheny Clty.
Pittsburgh, Alleyheny & Manchester Pass. Ry. Co. 5 m. 5-2½ g, 46 lb r, 40 c, 275 h. Pres. Chas. Atwell, Sec. & Treas. Chas. Selhert, Supt. James C. Cotton.
Manager J. P. Speer.
Pittsburgh, Oakland & East Liberty Pass. Ry. Co. 11 m, 5-4½ g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T. Jordan, Sec. John G. Traggardth, Treas. D. W. C. Bidwell, Supt. II. M. Cherry.
Pittsburgh Lilon Pass. R.R. Co. 5 m, 5-2½ g, 45 lb r, 29 c, 170 h. Pres. Chas. Selbert, Cash. Saml. C. Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 3½ m, 5-2½ g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec. D. F. Agnew, Treas. John G. Holmes.
Pittsburgh & Wikinsburg St. Ry. Co. Scouth Side Pass. Ry. Co. 20 (Scoud Avenue Pass. Ry. Co. 21 (Supt. W. M. Rosborough. 243 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Wal-lace, Supt. W. M. Rosborough.
Transverse Pass. Ry. Co. (Scout Avenue Pass. Ry. Co. 243 h. Pres. C. L. Magee, V. Pres. C. F. Klopter, Sec. 4 Treas. Wrn. R. Ford, Supt. Miller Ellot.
PITTSTON, PA.-Pittston St. R.R. Co. 1½ m, 3 (c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morrls, Sec. William Allen.
PORT HURON, MICH.-Port Huron St. Ry. Co. 6½ m, 4-5½ g, 7 (c, 22 h. Pres. Jno. P. Sanborn, V. Pres. Frank A. Beard, Sec. Trcas. & Man. J. R. Was-tell.
PORT LAND, ME.-Ocean St. R.R. Co. Portland R.R. Co. 7% m. 4-8% g, 30-33-45 lb f. 14 d.

tell **PORTLAND, ME.** – Ocean St. R. R. Co. Portland R.R. Co. 7% m, 4.8% g, 30-33-45 lh r, 34 c, 154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A. Newman, Supt. Geo. W. Soule. **PORTLAND, ORE.** – Portland St. Ry. Co. 1% m 3-6 g, 42 lb r, 9 c, 35 h. Pres. D. P. Thompson, Sec. & Supt. C. K. Harhaugh. Multhomah St. Ry. Co. 2% m, 3-6 g, 30 lb r, 19 c, 65h. Pres. A. N. King, Sec. E. A. King.

SANTA BARBARA, CAL.—Santa Barbara St. R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPhail. SAUGATUCK, CONN.—Westport & Saugatuck orse R.R.

Transcontinental St. R. R. Co. 3 m. double, 3.6 g, 15 c, 63 h. D. W. Wakefield Sec., Tyler Woodward, Supt. **PORTSMOUTH, 0.**—Portsmouth St. R. R. Co. 2 m, 3-6 g, 181b r, 4c, 10 h. Pres. James Skelton, Treas., Sec. & Supt. Enas Reed. **POTTSVILLE, PA.**—People's Ry. Co. 9½ m, 16 c. 56 h.

16 c, 56 h. POUGHKEEPSIE, N. Y.-City R.R. of Pough-keepsie. 3 m, 4-8½ g, 35 lb r, 11 c, 38 h. Pres. Aaron Innis, V. Pres. G. B. Adriance, Sec. A. B. Smith, Treas. Hudson Taylor, Supt. C. M. Davis. Office 491 Vet. 57

Treas. Hudson Taylor, Supt. C. M. Davis, Main St. **PROVIDENCE**, R. 1.—Union R.R. Co. 50 m, 4-Sig g, 24-54 lb r, 240 c, 1,200 h. Prcs. Jesse Metcalf, V. Pres. & Gen. Man. D. F. Longstreet, Sec. and Treas. C. A. Babcock, Aud. B. A. Jackson. **QUEBEC**, CAN.—Quebec St. Ry. Co. 3 m, 4-824 g, 45 lb r, 9 c, 40 h. Pres. Chas. St. Michel, Quebec, V. Pres. G. Kenfrew, Quebec, Sec., Treas. & Supt. Samuel Moore, Book-keeper, Francis Boomer. Quehec R.R. Co. St. John St. R.R. **QUINCY, ILL.**—Quincy Horse Ry. & Carrying

Quence R.R. Co. St. John St. R.R. 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.—m—g— lb r,—c—h.Pres. — Sec. — Treas. Chas. Hatha-

Ibr,-c-h.Pres. — Sec. — Treas. Class. Hadna-way.
READING, PA.-Reading City Pass. Ry. Co. 21.5 m, 5-24 g, 45 lb r, 19 c, 44 h. Pres. B. F. Owen, V. Pres. Jas. L. Douglass, Sec. & Treas. H. A. Muhlen-berg, Supt. J. A. Riggs. Perklomen Ave. Pass. Co. 21.5 m, 5-2½ g, 45 lb r, 14 c, 36 h. Pres. Chas. Breneiser, Sec. & Treas. Isaac Hiester, Supt. John B. Houp. **RED OAK, IA.**-Red Oak St. R.R. Co. 1½ m, 4-2% g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V. Pres. Geo. West, Sec. F. M. Byriket, Treas. & Supt. F. O. Judkins. **RICHMOND, IND.**-Richmond City Ry. Co. 3 m, 3g, 25 lb r, 9 c, 30 h. Pres. J. Y. Miller, V. Pres. Joseph Rathliff, Treas. H. I. Miller, Supt. F. M. Fran-clsco.

Joseph Ratliff, 'Ireas. H. I. Miller, Supt. F. M. Francelsco.
RICHMOND, ILL.-Richmond St. R.R. Co.
RICHMOND, VA.-Richmond City Ry. Co. 7 m, 4-5/g g, 60-40 ln f, 40 c, 180 h. Pres. J. H. Schoolcraft, Sec. & Treas. F. D. Mellen, Man. C. M. Baeton, Supt. Charles Sieders.
ROCHESTER, N. Y.-Rochester City & Brighton R.R. Co. 35 m, 4-8/g g, 45 lb r, 140 c, 58 · h. Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. E. Woodworth, Supt. Thomas J. Brower.
Cittizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas, J. E. Pierpont, Supt. S. A. Creen.
ROCKFORD, ILL.-Rockford St. Ry. Co. 6 2-5 m, 4-8/g g, 30 lb r, 13 c, 52 h, 16 m. Pres. Antbony Halnes, V. Pres, L. Rhodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Halnes.
ROCK ISLAND, ILL.-Rock Island & Milan St. Ry. Co. 7 m, 4-8/g g, 20-30-42 lb r, 10 c, 7 h. Pres. Join Peety.
RONDOLT, N. Y.-Kingston City R.R. Co. 24-5

Peety. **RONDOUT, N. V.**—Kingston City R.R. Co. 24-5 m, 4-8% g, 40 lb r, 10 c, 40 h. Pres. James G. Linds-ley, V. Pres. S. D. Coykendoll, Sec. & Treas. John C. Romeyce, Supt. Wm. H. DeCarmo. **SACRAMENTO, CAL.**—Sacramento City St. R.R.

Co

SACRAMENTO, CAL.—Sacramento City St. R. R. Co.
SAGINAW, MICH.—Saginaw St. R. Co. 2½
m, 4-8½ g, 42 lb r, 10 c, 50 h. Pres. David H. Jerome,
V. Pres. Geo. F. Williams, sec. & Treas. Ceo. L. Burrows, Supt. Fred G. Benjamine.
SALEM, MASS.—Salem & Danvers St. Ry. Co.
6 m, 4-8½ g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Russell, Sec. G. A. Vickery, Treas. Geo. W. Williams, Supt. W. E. Furgurson, Asst. Supt. David N. Cook.
Naumkeag St. Ry. Co. — m, 4-8½ g, 30-35-45 lh r, 50
c, 140h. Pres. Chas. Odeil, Clerk Joseph F. Hickey, Treas. Henry Wbeatland, Supt. Willard B. Ferguson.
SALT LAKE CITY, UTAH.—Salt Lake City, R. R. O. 13 m, 4-8½ g, 30 lb r, 38 c, 125 mu. Pres. James Jack, Snpt. Orson P. Arnold.
SAN ANTONIO, TEX.—San Antonio St. Ry. Co.
15 m, 4 g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas.
I. Withers, San Antonio, Sec. E. R. Norton, Supt John Robb.
Prospect Hill St. Ry. Co.

Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas I. Withers, San Antonio, Sec. E. R. Norton, Supt John Robb.
Prospect Hill St. Ry. Co.
SANDUSKY, O.-Sandusky St. Ry. Co. 2 m, -g, -ibr, -c, -h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude.
SAN FRANCISCO, CAL.--California St. R. R. Co. Central R. R. Co. 6 m, 5 g, 45 lb r, 31 c, 290 h. Pres. Cbas. Main, V. Pres. Jos. Roseberg, Treas. A. J. Gunnison, Sec. C. P. LeBreton, Supt. J. F. Clark. Clay St. Hill R. R. Co. 1 m, 3-6 g, 30 lb r, 11 c, 12 dummy cars. Pres. Joseph Britton, V. Pres. James Moffit, Treas. Henry L. Davis, Sec. Chas. P. Campbell, Supt. Joseph Britton, V. Pres. James Moffit, Treas. Henry L. Davis, Sec. Chas. P. Campbell, Supt. Joseph Britton, N. Pres. Chas. P. Campbell, Supt. Joseph Britton, C. Market St. Cable Ry. Co. 109-10 m, 4-8% lb r, 137 c, 2 motors. 73 h. Pres. Leland Stanford, V. Pres. Chas. F. Crocker, Treas. N. T. Smith, Sec. J. L. Willeutt North Beach & Mission R.R. Co. 8 m, 5 g, 46 c, 400 h. Pres. Jos. Rosenberg, Sec. H. W. Hathorne, Treas. Carl Ahfel, Supt. M. Skelly.
Omnibus R.R. & Cable Co. 8½ m, 5 g, 35 th r, 50 c, 364 h. Pres. Leland Stanford, V. Pres. Chas. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt. Sutter St. R.R. Co. 5½ m, 4-11 g, 35-th r, 30 c, 125 h. Pres. Leland Stanford, V. Pres. Chas. Crocker, Treas, N. T. Smith, Sec. J. L. Willcutt. Sutter St. R.R. Co. 5½ m, 4-11 g, 36-th r, 30 c, 125 h. Pres. R.F. Morrow, Sec. A. K. Stevens, Treas. M. Schmitt, Supt. James McCord. Telegraph Hill St. Ry. Co. 1,707 ft, 4-11 g, 36 ib r, 30 c, 125 h. Pres. R.R. Co. 5½ m, 5 g, 48 b r, 73 c, 285 h. Pres. R. B. Woodward, V. Pres. Ce. Raum, Sec. M. Demicke, Sec. & Treas. C. J. Werner.
The City R.R. Co. 5½ m, 5g, 48 b r, 73 c, 285 h. Pres. R. B. Woodward, V. Pres. Ce. Raum, Sec. M. E. Willis, Treas. J. H. Coodman, Supt. William Woodward.
SAN JOSE, CAL.-San Jose & Santa Clara R.R. Co.

SAN JOSE, CAL.-San Jose & Santa Clara R.R.

SAN JUSE, CAL. Co. First St. & San Pedro St. Depot R.R. Co. Market St. & Willow Glen R.R. Co. North Side R.R. Co. People's R.R. Co.

R.B

SANTA DARDALA, CAL. SAIL BATDATA St.
S.R. CO. I m. 3-65, 3 c. 8 nu. Pres. A. W. McPhall.
SAUGATUCK, CONN.-Westport & Saugatuck
Horse R.R.
SAVANNAH, G.A.-Clty & Suburban Ry. Co. 18½
m, 5 g. 16-30 lbr, 49 c, 110 h, 3 engines. Pres. J. H.
Johnson, Asst. J. W. Alley, Treas, E. Schmidt.
Coast Line R.R. Co. 7 m, 5 g, 30 lb r, 17 c, 37 h.
Pres. Geo. Parsons, New York, Sec., Treas. & Gen.
Man. R. E. Cobb, Savannah.
SAYKE, PA.-Sayre St. Ry. Co. Pres. Howard
Elmer (organization not completed).
SCRANTON, PA.-People'S St. Ry. Co. 9½ m, 4-8½ g, 35-12 br, 19 c, 70 h. Pres. Wm. Matthews, sec. & Treas, J. C. Platt.
SEARCY, ARK.-Searcy & West Point R.H. Co, 8 m, 4-8½ g, 20 lb r, 7 c, 6 mu. Pres. A. W. Yarncl.
Sec. W. H. Lightle, Treas, Jasper Hicks.
SEARCY, ARK.-Searcy & West Point R.H. Co, 8 m, 4-8½ g, 20 lb r, 5 c, 20 h. Pres. F. H. Osgood Sec. Geo. Kinnear.
SEDALLA, MO.-Sedalia St. Ry. Co. 2½ m, 4-10
g. 54 lb r 6 c 31 h. Pres. Joseph D. Sicher, V. Pres.
Jouns Deutsch, Treas, F. H. Guenther, Sec. & Supt. Coas, S. Conrad.
SENECA FALLS, N. Y.-Seneca Fails St. Ry. Co. SHEEVAPAILS, N. Y.-Seneca Fails St. Ry. Co.
SHEEVEPORT, LA.-Sherman City R.R. Co.
SHEEVEPORT, LA.-Sherepart City R.R. Co.
SHEEVER CLIFF, COL.-Silver Citff St. R.R. Co.
SHUX W. Bohlia.
SOUTH CHILCAGO, HLL.-Clicago Horse & Jumny R. 5 m, 4-8½ g, -1 hr, -c, -h. Pres.
Jounsy R. 5 m, 4-8½ g, -h r, -c, -h. Pres.
Joung R., 5 m, 4-8½ g, -h r, -c, -h. Pres.
Jounth PIEBLO, COL.-Pueblo St. R.R. Co.
SPRINGFIELD, HLL.-Citizens' St. R.R. Co.
SPRINGFIELD, MASS.-Springfield St. Ry. Co.

Treas. Frank Reisch, Sec. Chas. F. Harman. Springfield City Ky. Co.
SPRINGFIELD, MASS.—Springfield St. Ry. Co.
48% g, 33-40 lb r, 28 c, 115 h. Pres. John Olmstead, Auditor L. E. Ladd. Cierk Cideon Weils, Treas. A.
E. Smith, Supt. F. E. King.
SPRINGFIELD, MO.—The People's Ry. Co. of Springfield, No. 3% m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Cbas.
Sheppard, Supt. H. F. Denton.
Springfield R.R. Co. 2 m, 30-40 lb r, 4-8% g, 7 c, 19 h. 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas.
B. F. Hobart. Supt. J. A. Stoughton, No. Springfield.
SPRINGFIELD, O.—Citizens' St. R. Co. 10 m, 4g, 29 c. 135 h. Pres. D. W. Stroud, V. Pres. A. S. Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, SPATEN ISLAND, N. Y.—Staten Island Shore Ry. Co.
ST. CATHARINE'S, ONT.—St. Catbarine's, Mer-rilton & Thorold St. Ry. Co. 5% m, 4-8% g, 30 lb r, 7 c, 30 h. Pres. E. A. Smythe, Sec. S. R. Smythe, Supt.
ST. MOSPIL, MO. Cittizens' St. R. B. Co. 2 m

c, 30 h. Pres. E. A. Smythe

ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m, ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m, 4-8% g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F.

Meriuan. Frederick Ave. Ry. Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thomas E. Tootle, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas. Thomas W. Evins, Supt. Sec. w. D. S. Rowen.

Sec. W. D. B. Motter, Freas. Finances W. Evrils, Super-S. Rowen.
St. Josepb & Lake St. R.R. Co. Union Ry. Co.
ST. LOUIS, MO.-Baden & St. Louis R.R. Co.
ST. LOUIS, MO.-Baden & St. Louis R.R. Co.
M. Hang, -b r, 7c, 21 h. Pres. George S. Case,
V. Pres. William Z. Coleman, Supt. J. H. Archer. Benton & Bellefontaine Ry. Co. 7½ m, 4:10 g, 45 lb r,
29 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas. Parsons. Sec. Robert McCulloch.
Cass Avenue & Fair Grounds Ry. Co. 8 m, 4:10 g,
38 lb r, 37c, 290 h. Pres. W. R. Allen. V. Pres. Ceo. W.
Allen, Sec., Treas. & Supt. G. G. Gibson, Casbier O. H. Wiltiams.
Cittzen's Ry. Co. -m, -g, -lb r, -c, -b. Pres.
Julius S. Walsb.
Jefferson Ave, Ry. Co.
Lindeil Ry. Co. 13½ m, -g, -r, 65 c, 475 b. Pres
John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Lleweilyn.
Missouri R.R. Co. -m, -g', -lb r, -c, -h. Pres.
P. C. Maffit.

Missouri R.R. Co. -m, -g, -lb r, -c, -h. Pres. P. C. Maffit. Mound City R.R. Co. Northern Central. Springfield Ry. Co. 2 m, 4-8% g, 25-40 lb r, 7 c, 40 h. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart, Springfield, Supt. J. A. Stoughton, No. Springfield, Asst. Supt. Frank B. Smith, No. Spring-field.

Southern Ry. Co. 7 4-5 m, 4-10 g, 35-52 lb r, 49 c, 250 . Pres. E. R. Coleman, Sec. J. S. Minary, Man. W.

H. FICS, E. R. CO. and the People's R.R. One St. Louis R.R. Co. and the People's R.R. One management. 11 m, 4-10 g, 38-44 lb r, 58 c, 375 h. Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt. Detried: Shea

Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt. Patrick Shea. Tower Grove & Lafette R.R. Union Depot R.R. Co. —m, -g, —lb r, —c, —h. Pres. John Scuilin. Union R.R. Co. STONEHAM, MASS.—Stoneham St. R.R. Co. 2% m, 4-8% g, 33 lh r, 10 c, 23 h. Pres. A. V. Lynde, Neirose, Treas. & Clerk Lyman Dyke, Supt. John niii.

IIII.
ST. PAUL, MINN.—St. Paul City Ry. Co. 25 m, 4.8½ g; 80 c; 150 h, 294 mu. Pres. Toos. Lowry, V. Pres. C. C. Goodrich, Sec. J. H. Randall, Treas. Clint-on Morrison, Supt. A. L. Scott.
STILLWATER, N. V.—Stillwater & Mechanics-ville St. Ry. Co. 4½ m, 45½ g; 25-30 lh r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. H. O. Balley, Mechanicsville, Treas. E. N. Smith.
STROUDSBURGH, PA.—Stroudsburgh Passen ger R.R. Co. 145 m, 48½ g; 28-30 lb r, 3 c, 9 h. Pres & Treas. J. Lantz, Sec. Jacob Houser.
SYRACUSE, N. Y.—Syracuse & Onondaga R.R.

125

L. 125
Co. 2.3.5 m, 4-8 g, 28-47 lbr, 9 c, 18 h. Press. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. Henry Thompson.
Central City Ry. Co. 2½ m, 4-8½ g, 40 lb r, 12 c, 37
h. Pres. Ceorge N. Kennedy, V. Jrea. Daniel Pratt, Sec. & Treas. James Barnes, Snpt. Ceorge Crampton.
4 Syracuse Savings Bank Building.
Fith Ward R.R. Co. 2½ m, 4-8½ g, 35-56 lb r, 8 c, 20 h. Pres. P. H. Brayton, Sec. & Treas. O. C. Pot-ter, Supt. Hugh Purnell. Office W. Washington St. Genesce & Water St. R.R. Co. and Fourth Ward R.K. Co. 4 m, 4-8½ g, 18-30 lb r, 10 c, 25 h. Press. Robt. G. Wynkoop, Sec. & Treas. Geo, J. Gardiner, Supt. W. J. Hart. Onondaga Savings Bank Building New Brighton & Onondaga Valley H.R. Co. 1½ m, 4-8 g, 16-35 lb 1, 2 c, 4 h l dummy. Pres. Mattblas Britton, Sec. T. W. Meacham, Treas. J. H. Anderson, Supt. J. H. Anderson.
Syracuse & Ceddes Ry. Co. 2 m, 4-8½ g, 25-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasse-ias A. Bonta, Supt. Wm. J. Hart.
TEILRE HAUTE, IND.-Terre Haute St. Ry. Co. 4½ m, 4-8½ g, 28 lb r, 16 c, 48 h. Pres. T. C. Buntin, V. Pres. Josephus Collect, Sec. John R. Hagen, Supt. John T. Shriver.
TEXARKANA, ARK.-Texarkana St. Ry. Co. TOLEDO, OHIO.-Toledo Consolidated St. Ry. Co. 17 m, 4-8 g, 42 lb r, 37 c, 180 h. Pres. John E. Balley, Sec. A. F. Lang. Adams Street Ry. Co.
Metropolitan St. Ry. Co. 8½ m, 3 g, 29 c, 88 b. Pres. Jno, J. Sulpherd of Cleveland, Treas. H. E-Wells of Cleveland, Cen. Man. T. F. Shipberd, Supt. Joh. A. Watson.
Monroe Street R.R. Co.
TOPEKA, KAN.-TOpeka City Ry. Co. 9 m, 4 g, 27 4f h, 7 c, 70 h. Pres. F. B. Seagrave, V. Pres. A. R. Seagrave. Tolean Street R.R. Co.
TOPEKA, KAN.-TOpeka City Ry. Co. 9 m, 4 g, 25-48 th r, 25 c, 90 h. Pres. Joab Mulvane, V. Pres. Ja W. Stormont, Sec. A. Tenzes. E. Wildes, Supt. A. R. Seagrave. Tolean Street R.R. Co.
TOPEKA, KAN.-TOpeka City Ry. Co. 9 m, 4 g, 25-48 th r, 25 c, 90 h. Pres. Joab Mulvane, V. Pres. D

23-48 ID1, 25 C, 30 IL 716S. JOAD Matvalle, V. Flés. D. W. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse Shaw.
TORONTO, CAN.—Toronto St. Ry, Co. 18 m, 4-10% g, 301h r, 136 c, 670 h. Pres. Frank Smith, Sec. James Green, Supt. John J. Franklin.
TRENTON, N. J.—Trenton Horse R.R. Co. 1½ m, 5-2 g, 43-47 th r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, r, Supt. Thomas Sillorits. City Ry. Co. 3 m, 5-2 g, 45 lb r, 15 c, 69 h. Pres. Adam Extoir, V. Pres. W. H. Skinn, Sec. H. B. Howell, Treas. & Mang. Director Chas. J. Bramford.
TROY, N.Y.—Cortland & Homer Horse R.R. Co. 14% m, 48% g, 25-30 bb r, 2 c. —h. Pres. C. H. Carrison, Troy, V. Pres. E. A. Fish, Cortland, N.Y., Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Albia Street Hy. Co. 3½ m, 4, 25-45 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Haslehurst, Supt. W. R. Bean.
Troy & Lansingburgh R.R. Co. 20½ m, 4-8½ g, 47 lb r, 9 ic, 466 b. Pres. William Kemp, V. Pres. Charles Cleminshaw, Sec, & Treas. Joseph J. Hagen, supt. Leander C. Brown. 295 River St.
Urbana & Champaign St. Ry. Co. 2 m, 4-8½ g, 33 lb r, 4 c, 20 h. Pres. Wm. Park, Sec. & Treas. Frank G. Jaques, Supt. W. Park.
UTICA, N.Y.—Utica, Clinton & Bingbamton St. R.R. 7½ m, 4-8½ g, 45-56 lb r, 17 c, 52 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt. Roger Rock.
The Utica & Mobawk R.R. Co. 2½ m, 4-8½ g, 25-40

UTICA, N.Y.-CUCCA, CIMION & BIRGUMIUM St. R.R. 73, m, 4-83, g, 45-56 lb r, 17 c, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt. Roger Rock. The Utica & Mobawk R.R. Co. 2½ m, 4-8½ g, 25-40 lb r, 9 c, 5 h. Pres. Chas. W. Hutchinson, V. Pres. Natban S. Haynes, Sec. Ceo. M. Weaver, Treas. Josbua W. Church. VALEBURGH, N. J.-Newark, So. Orange, Ferry St. & Hamburg Place R.R. Co. VALEJO, CAL.-Valejo St. Ry. Co. VICKSBURG, MISS.-Vicksburg St. Ry. Co. WACO, TEX.-Waco St. Ry. Co. 5 m, 4-8 g, 14 18 fb r, 9 c, 44 h. Pres. E. Rotan, Sec. & Treas. W. R. Kellum, Supt. J. W. Sedhury. WALTHAM, MASS.-Waltbam & Newton St. Ry. Co. 3½ m, 4-3½ g, 30 lb r, 6 c, 14 b. Pres. R. E. Robbins, Sec. & Treas. Henry Bond. WASHINGTON, D.C.-Capital, No. O. St. & So. Washington R.R. Anacostia & Potomac River Ry. Co. 3 m, 4-8 g, 37 lb r, 9 c, 24 b. Pres. H. A. Chiswoid, Sec. Edward Temple, Treas. T. E. Smithson. Columhia R.R. Co. of the District of Colombia, 2% m, --g, --lb r, 19 c, 56 h. Pres. H. A. Willard, Sec. & Treas. William M. Morse, Supt. L. W. Emmart Washington R.R. Co. 21½ m, 48 g, 38 lb r, 90 c, 400 b. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William M. Morse, Supt. L. W. Emmart Washington R. Co. 21½ m, 48 g, 38 lb r, 90 c, 400 b. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William M. Morse, Supt. L. W. Emmart Washington & Georgetown R.R. Co. 10 m, 4-84 g, 42 lb r, 167 c, 750 h. Pres. H. Hurt, Sec. & Treas. C. M. Koones, Gen. Supt. C. C. Saller. WATERFORD, N. Y.-Waterford & Coboes R. R Co. 2 m, 4-8M g, 45 lb r. Pres. Thos. Breslin, Sec. & Treas. C. B. Ormsby. (Leased by the Troy & Lan-singburgh R. R. Co.) WESTHORN, CONN.-New Haven & West Haven R.R. Co. WESTHORN, CONN.-New Haven & West Haven R.R. Co.

WIIEELING, W. VA.—Citizens Ry. Co. Wheeling & Eim Grove R.R. 7 m, 4-8% g, 30 lb r, 12 4 Baldwin Moters. Pres. J. D. DuBois, Sec. E. J.

c, 4 Baldwin Mouris, 1968, 2018 Rutter, WICHITA, KAN.-Wichita City Ry. Co. 756 m, 11 c, 60 mu, 4 h. Pres. B. H. Campbell, V. Pres., Treas & Gen. Man. E. R. Powell, Sec. G. W. Lara-mer, Atty. E. C. Ruggles, WILKESBARKE, PA.-Wilkesbarre & Kingston Page R.R.

WILKESBARKE, PA. - Wilkesbarre & Kingston Pass, R.R. Wilkesbarre & Ashley Passenger R.R. Co. Coalville Passenger R.R. 2½ m, 4-3½ g, 20-34 lb r, 4 c. 10 h. Pres. Chas. A. Miner, Sec. & Treas. Ceorge Loveland, Supt. Albert G. Orr. WILLIAMSPORT, PA.-Williamsport St. R.R.

Co. WILMINGTON, DEL.-Front & Union St. Pass-

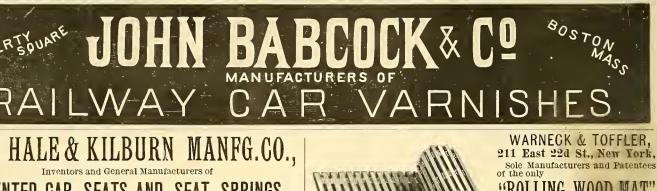
enger Ry. Co.

THE STREET RAILWAY JOURNAL.

FEBRUARY, 1886.

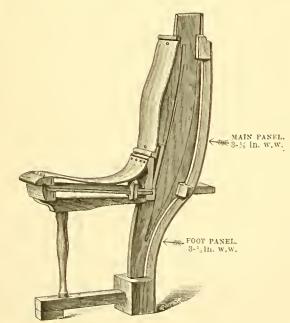
5½ m, 4-8½ g, 45 lh r, 19 c, 100 h. Pres. Geo. H. Sceley, N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas & Supt. Harry S. Searls, Worcester.
YOUNGSTOWN, O. - Youngstown St. R.R. Co. ZANESVILLE, O. --Beliaire, Chillicothe & Canton Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend, reas. T. B. Townsend.

Wilmington City Ry. Co. 4½ m, 5-2½ g, 45 lb r, 20 c, 82 h. Pres. W. Canby, Sec. & Treas. John F. Miller, supt. Wm. H. Burnett. WINDSOR, CAN.—Sandwich & Windsor Passen-ger R.R. Co. WINNIPEG, MANITOBA, CAN.—The Winni-peg St. Ry. Co. 5 m, 4-8½ g, 35 lb r, 13 c, 75 h. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young. WINONA, MINN.—Winona City Ry. Co. 4 m, 3-6 g, 37 lh r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas, C. H. Porter. WOBURN, MASS.—No. Woburn Horse R. R 2% m, 48 g, 4 c, 4 h. Pres. & Treas, John Carter, Sec J. G. Macuire, Supt. Dexter Carter. WORCESTER, MASS.—Worcester St. Ry. Co





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Being stronger, they brace and stiffen the car. 2d.

3d. They cannot split nor crack by nailing into place, even though the nail be placed near the edge.

4th. Being laid up over a form to suit side or shape of the car frame or post, tbey cannot buckle or twist, a feature which also adds strength to the Car. 5th. For Repairing Old Cars these sides have no equal.

They have been on trial for a number of years, and this test has left them as firm and good as the day they were put on.



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Shoe is, that it gives the most perfect satisfaction, and for a winter shoe it has no equal. For economy it saves the horse's feet from the fre-

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them full of nail-holes. I

never had our horses so free from lamencss as at

the present time; and should recommend them to everyone who has to

get horses shod often

Supt. Manchester, N.

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No. O A Pattern or Flat Shoe

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A. Q. GAGE,

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NEVERSLIP TAP.

For cutting threads for Neverslip Calks. The small end, A in cut, of tap indicates size of hole to be drilled in the shoe.

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FOR STREET RAILROADS.









132

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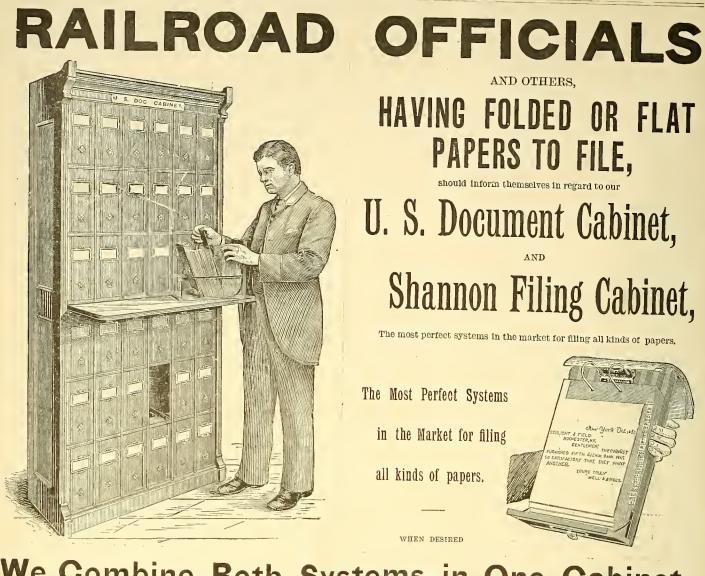
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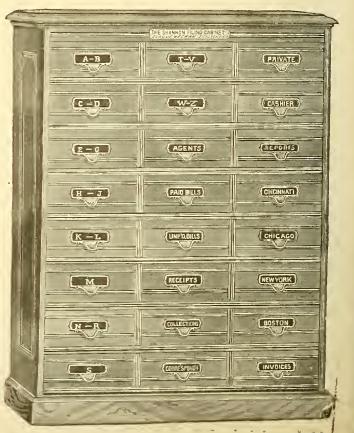
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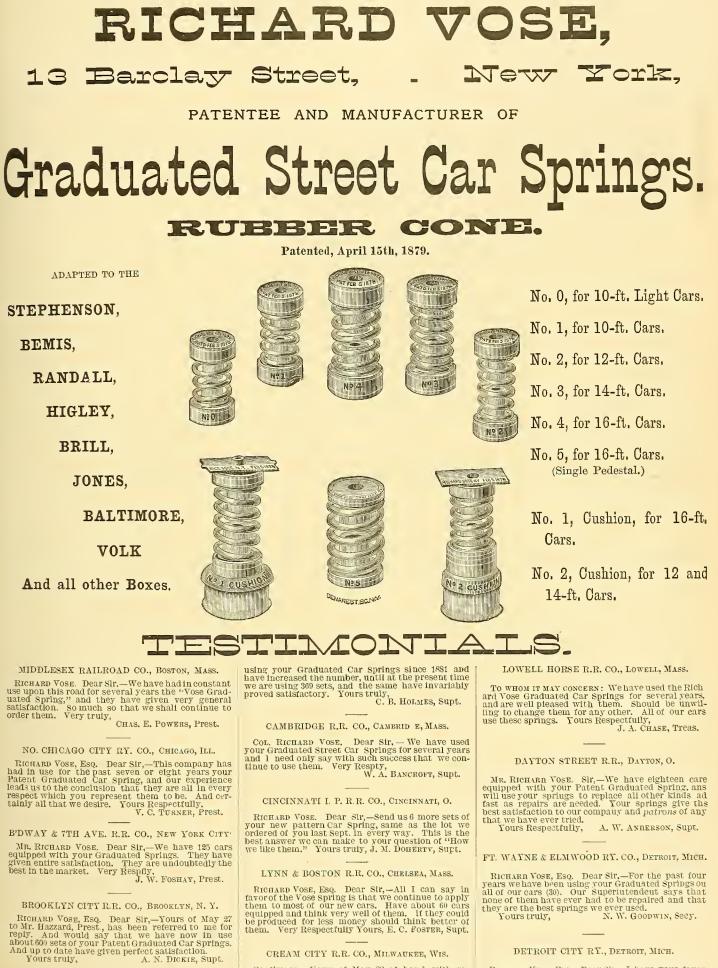
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[FEBRUARY, 1886.

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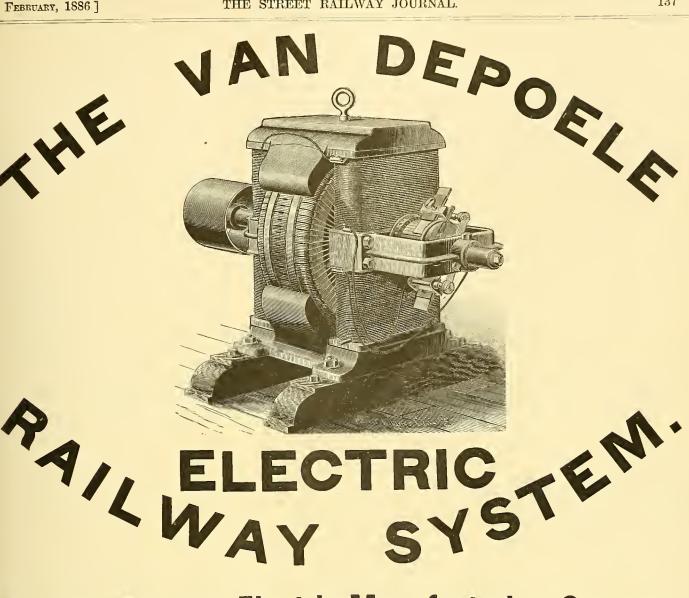
"HORSE-SHOEING," and "FACTS FOR HORSE-OWNERS."

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FEBRUARY, 1886]



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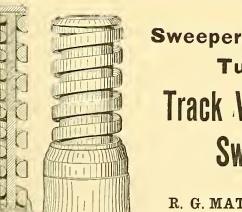
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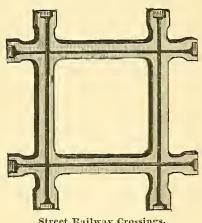
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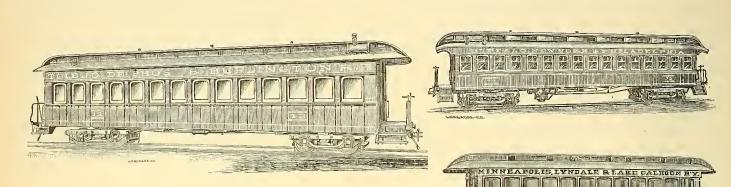
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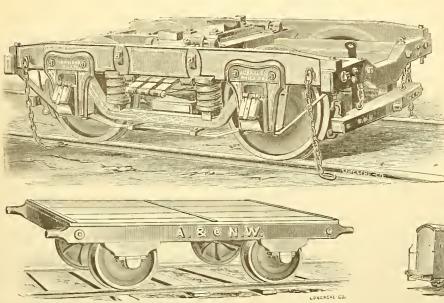
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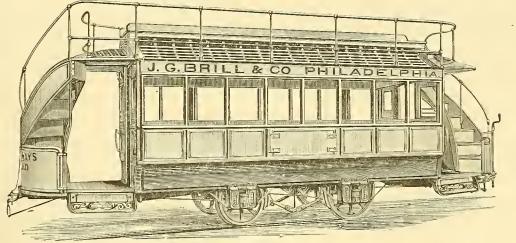




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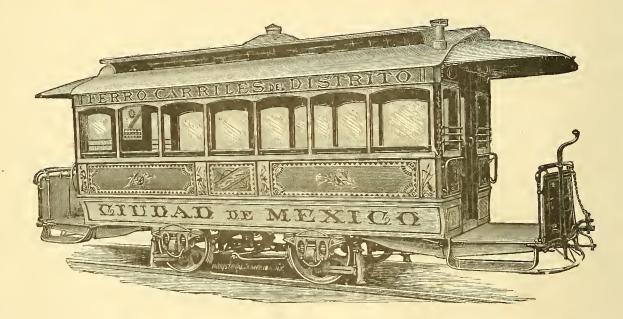
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VOL. II. { NEW YORK: 32 Liberty Street. }

APRIL, 1886.

{CHICAGO: {Lakeside Building.} NO. 6.

Electricity for Street Railways.

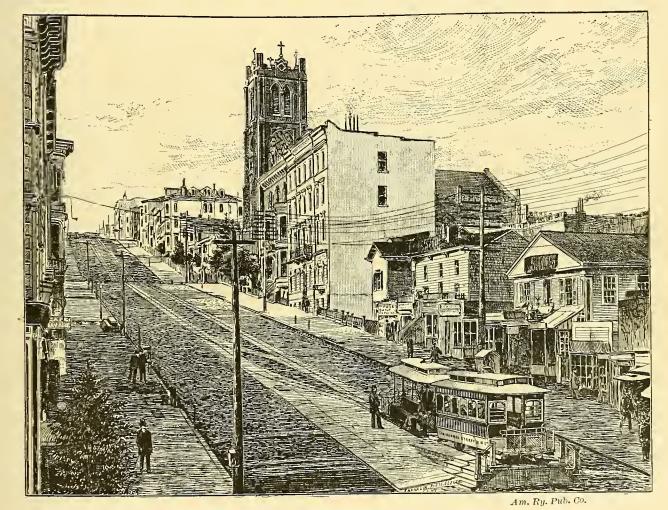
In an address at the Baltimore meeting of the National Electric Light Association, Mr. Charles J. Van Depoele, in a paper he read, gave the following interesting details of his experience in electrical street railway experiments:

During the summer months of 1885, I

an electromotive force of about 1,400 volts, and an intensity of current of about 18 ampères. The engine and dynamo were placed in Machinery Hall, close to the boiler-room.

The dynamo was connected: one pole with the rails, which were fastened together by means of fish-plates, and the other pole to an overhead wire, hanging motor the current was carried to the axles of the wheels, the wheels to the track, thus closing the circuit npon the generator.

We began placing poles, etc., on the 1st of September, and made our first trip on the 5th of September. From beginning to end not the slightest hitch occurred, running regularly from 8 A. M. till 10.30 P. M., without stopping a minute. On many oc-



SAN FRANCISCO CABLE ROADS. VIEW ON THE CALIFORNIA STREET RAILWAY, UP CALIFORNIA STREET HILL.

entered into a contract with the directors of the Toronto (Ontario) annual exhibition, to run a train of three cars and a motor car, from the street railway terminus to the upper grounds of the exposition, a distance of a mile. Having only a single track, I had to prepare here for a light train and good speed. The plant consisted of the following: One steam-engine, 10x16, running 125 revolutions per minute, driving an ordinary 40-light arc machine, having over the center of the track, by means of arms extending from poles placed along the length of the track. On top of the car on which the motor was placed, was a contact wheel, carried by a pivoted beam, the latter being provided with a spring, on one end, pressing the wheel at the other end up against the underside of the overhead wire; this contact wheel was in communication, by means of a flexible cable, with the switches, rheostat and motor. From the casions, we carried from 225 to 250 people. On one end of the track we had a 200-feet curve to start, then a level of some 2,000 feet, with two curves of about 1,000 feet radins, than a grade of some 1,500 feet, gaining gradually to about six per cent. The rest of the road had a downward grade up to the terminus, which made it a disadvantage in starting. As above said, the distance wis a mile, and the round trip never exceeded eight minutes; so, including starting and stopping, we made, for part of the way, at least thirty miles per hour. During the last five days of the fair, we carried 50,000 (fifty thousand) people. The consumption of coal, as given by Doty & Sons, who ran the engine, was on the average 1,000 lbs. in ten hours.

The next step was to South Bend, Ind., where we equipped four ordinary street cars: one large open car, with a 10 horsepower motor, and the other three closed cars each with a 5 horse-power motor. The largo car was run for the first time on Nov. 14, 1885, and was packed with humanity to its utmost capacity; everything worked like a charm. The plant consists at present of the following: A 50 horse-power water-wheel and two 20 horse-power generators, and as above stated, one 10 and three 5 horse-power motors. The track is laid with the ordinary flat rail; so in order to connect the rails together, we placed copper plates, 3"x12", under the joints, and spiked the rails down upon the copper plates; this was done on both sides of the track, so there is no chance of breaking circuit. As will be understood, the rails, in the present case, form again one part of the circuit; the other part consists of a copper wire, 1 inch diameter, suspended above the track, from cross-wires fastened to poles placed near the curbstone, and at a distance of about 100 feet apart. From the underside of this copper wire or conductor hangs a carriage, fastened to a flexible cable, passing to the inside of the car, where it is in connection with the switches, the motor, etc. This carriage travels along with the car, and makes a perfect contact. After the first trial, of Nov. 14th, the 5 horse-power motors were soon in place, and have worked admirably well. The tracks are nevor perfectly clean, on account of constant traffic over the road; but since both rails are connected, and also all four of the wheels, it is almost impossible to break circuit between the motor and the rails. The cars have run right along, through mud and snow, and no trouble has been experienced with the circuit,

On running the four cars at once, the generators work perfectly, from 6 at morning till 11 P. M., requiring not the slightest attention, the brushes aro set in the morning and are not touched afterward. Every car works independently, back or forward, without interfering with the others; the division of the current leaves nothing to be desired. The only trouble we have encountered with the plant has been with some small mechanical details, such as link belts breaking, etc., these of course, boi g small matters, are easily porfected. The main point here was the electrical part, and this has proved to be an unqualified success; there is no wear to speak of on the generators, and the same can be said of the motors. The motors are placed under the cars, betweeu the whoels, and connected to the axles by means of link belting. At either end of the car is placed a dial-plate fastened to the dash-board, over one-half of this moves a handle directing the motion of the car either forward or

backward; over the other half is another handle, by which the speed is regulated. When full current is turned on, the maximum speed of 8 miles an hour is attained, and this speed cannot be surpassed. Six to 8 miles an hour being the maximum speed allowed within the city limits on any ordinary tramway.

The length of the present road is about $2\frac{1}{2}$ miles, the other roads will be equipped as soon as the weather allows the placing of the poles for the cross wires.

On the 6th day of October, 1885, we entered into a contract with Mr. McCannico, President of the New Orleans Exposition, to run a train of cars in the grounds, with a carrying capacity of from 180 to 200 people. This road is similar to the one in Torouto, nearly a mile long, running from St. Charles street main entrance, along the Government Buildings, through the grounds to the main building and Art Hall.

All was ready for operation for the opening day, but on account of delay in obtaining steam power, we only began running regularly on the 14th of December.

The generator is run by an engine 12x18, running 100 revolutions per minute; the generator is of 35 horse-power capacity; the motor is placed in the center of an open ear, only taking away the two middle seats, thus leaving the other seats for the public. Besides this, are two more large open cars. The car containing the motor is provided with a contact wheel pressing up against the under side of the overhead wire, as in the Toronto road. This train runs regular from 8 A. M. to 7 P. M., and has up to dato proved a perfect success. The maximum speed is 15 miles per hour.

The heaviest work we have done so far is in Minneapolis, Minn., and that during the winter months when snow and ice are faithful companions on the track; whether invited or not, they are there, never fail.

Before undertaking the job I was very much afraid that electricity would not be practicable iu a climate where the thermometer rises seldom above the freezing point, for at least three months of the year. All my fears, however, have been removed in the past six weeks; we have ascended the grade and turned the curves with at least as much facility as the steam dummies. On one occasion the steam dummy brought us down to the road where we had our electrical connections. The steam dummy got stuck with our motor car and a large open car, the latter about fifty feet long; we dismissed the dummy, and as soon as we had current on we furrowed onr way through the snow and had the track clear in a short time. This proves that we could do at least as much as the dummy.

A brief description of the track will give an idea of the work done by the motor.

Starting from Bridge square is a curve sixty feet radius; the road is then straight for about a mile, but rises and falls continually until 13th is reached, here is another curve of fifty feot radius to right, one block furthor is a similar curve to the left, the rest of the road straight, but continually rising up to 24th street, the top of the hill;

the steepest grade is about fifteen hundred feet long, and six per cent. beyond this is a switch and the termini of our present electrical equipment.

The electrical plant consists at present of one 60 horse-power generator and a 50 horse-power motor. Our circuit consists of the rails for one side and an overhead wire, 3-10 inch copper wire, for the side.

As in South Bend, we have water-power as the prime motor. We ran for the first time on New Year's Eve. 1885, and continued on New Year's Day. The water-wheel had no governor and we found it rather dangerous for the generator; as the water-wheel had to be governed by hand, it was impossible to keep the speed anywhere near constant. It was decided to put a governor on before running regularly. Several trips, however, were made over the entire length of the road, giving entire satisfaction. The weight of the motor is 3,500 lbs., and the total weight of motor-car or electric locomotive is 3 tons. The passenger cars in use here are similar to those on the New York Elevated. While the water-governor was being made a steam-engine with a 12x18 cylinder, 125 revolutions per minute, was used, and although too small for the purpose, very satisfactory work has been done. In some instances we had three to four inches of solid ice on the track and broke our way through it without the least trouble; in a few days the water-power will be in shape to run regular, when we will run on schedule time.

Thus far we have demonstrated that electric railroads can be operated anywhere where the steam motor can go, and that there is much in favor of electric motors in cold countries, is very evident; there is no danger of pumps freezing up, nor of brakes becoming inoperative, no water-tanks are needed along the road, nor is there any coal to be taken; in fact there are thousands of advantages in the application of the electric locomotive on street and other railroads. Whenever water-power is obtainable, the economy need not be disputed, and even in the case where stoam is to Le used as a prime motor, there will be considerable economy.

No cheaper nor better plant can be expected to run light trains on suburban roads than the electric motor, as for instance in the Detriot road now in progress, connecting the latter city with Dearborn. A single train will be run with six large sized street cars, the speed will be from 15 to 20 milos per hour; the length of this road is nearly three miles, and will be in operation in a few weeks.

A similar road will be in operation early in the spring, in Apploton, Wis.; in this case, however, six cars will be equipped with 10 horse-power motors and run independent; the length of the road is about 8 miles; the speed about 10 miles per hour Water-power will be used to run the generators.

The street railway in Montgomery, Ala., is now boing equipped with our motors, 12 cars in all, and will be running within 30 days.

In all the above places we are using overhead conductors, which are no more of an obstruction than the ordinary telegraph and electric light wires, in fact much less, since the conductors are over the center of the roads; so wherever wires are allowed for other purposes, they cannot be refused for the present purposes. I do not believe, however, that overhead wires would be practicable in large cities where other wires have to be buried; but in this case the electric conductors can be placed under ground in conduits similar to those used for cable cars; this will be much more expensive than the overhead conductors, but it will be a permanent and practical fixture.

I feel sorry that I have not found more

light and cheer during the absence of old Sol.

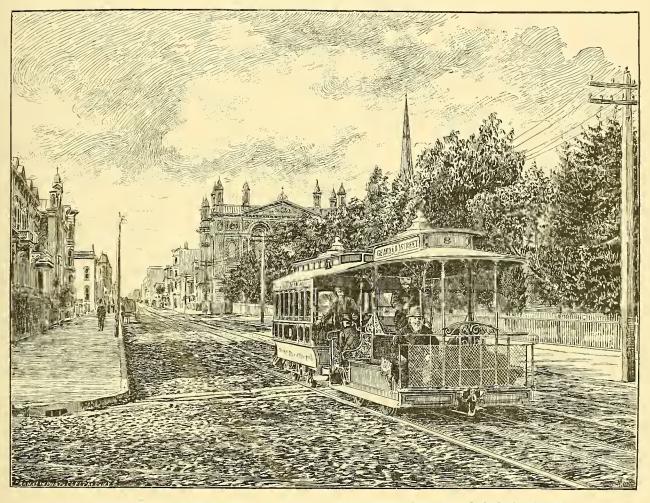
San Francisco Cable Roads.

We give three illustrations in this issue of views taken on the cable line of street roads in San Francisco. One view is taken on the Geary St. and Ocean R. R., along Geary St. from the corner of Stockton, another on the Presidio & Ferries road along Union St., showing Washington Square in the background with Telegraph Hill and the observatory in the distance. The third is a view up California St. Hill, from the corner of Kearney St. This last shows very clearly the changes of direction that are made on this line at each street crossing where the street crossing is level and the

Transmission of Power by Electricity.

At a recent meeting of the National Electric Light Association Mr. Upton of the Jarvis Engineering Co., of Boston, read a paper on the above subject. We give below that portion devoted especially to the subject as applied to street railways:--

The most important use to which the principle of electric transmission of power is at present being put, is the running of street railways. It was only a little over five years ago that the first electric railway was built in Germany, and to-day there are many in that country, where their practical success has been demonstrated. In France and England they are fast becoming popular, but it seems that those in America are yet almost of an experimental nature; in



SAN FRANCISCO CABLE ROADS. VIEW ON THE GEARY STREET, PARK AND OCEAN RAILWAY.

tracks run into the grade at each side.

time to prepare some figures with regard to tests of motors and general transmission, but the above is a resume from practical experience and facts on the track instead of on paper. I am a solid believer in the saying that experience is the best teacher, and to all the above I havcattended personally from beginning to end, and am more than ever convinced that electrical transmission of power has ceased to be ephemeral but has become a real fact and a blessing to the world; all is ready, it has only to be applied judiciously and success is imminent.

Many thousands of horse-power are now running waste in our water falls which can be all utilized to advantage, in some cases running our tramways, in others our factories, etc., giving at the same time The grade on this line from Dupont to Stockton streets is 18.2 per cent. and on the next block but slightly less. The car and dummy used on that road weigh something over 8,500 pounds. Sixty passengers is not an unusual load(110 having been carried up that grade at one load), which at 125 pounds each, would make the total weight of loaded car and dummy 16,000

pounds. Such a load can be found every

day, about six o'clock in the evening. The cuts were made from photographs, by our engraving department, expressly for the STREET RAILWAY JOURNAL. They give an excellent representation of the "surface working" of the system. The conduit, grip, and other features, were illustrated in our columns some months ago.

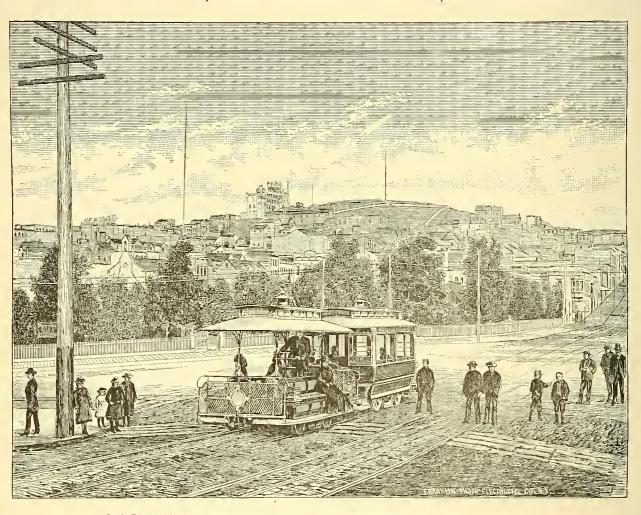
this brauch of electrical science, at least, America is far from foremost.

The advantages of electricity over steam for railroad purposes are many and great. In the first place, the bulky locomotive is done away with, as the electro or motor can be placed either under the car or on trncks by itself; in either case great weight and room being saved. The machinery for converting the coal into the power, or rather extracting the power from the coal, is not portable, but stationary, and can be placed in the most convenient spot. For transmitting the power, in many cases no difficulty has been experienced in using ore middle rail as the conductor. Sometimes it has been found that the dirt sticking to the rails and the wheels formed a sort of crust so insulating as to prevent

adequate communication. From all the information I can gain on this subject, it is my opinion that the most practical way will be to use wires on poles. I understand this system is used in the West by the Vau Depoele Company. The poles can also be made available for stringing electric wires for both incaudescent and are lighting. The future of this system is filled with possibilities. It will eventually become the motive power of all the present horse railroads. In a few years elevated electrical railroads will be as plenty as steam railroads are now, and in time it will supersede the present system of running locomotives on all railroads-and why not? It is simply a question of cost of making power. It is acknowledged by every practical engineer ways, elevated or surface. The economy of this system over the cost of running horses, as used now, will be over fifty per cent.

As to speed, it is impossible to give the limit which can be reached on electric railways, because those so far constructed are on streets or in localities where very rapid transit is notpossible or desirable. On the very first one built a rate of seven miles per hour was customary. On the Berliu railway, opened in 1881, the greatest speed reached was at the rate of eighteen miles per hour. More was possible, but the police authorities refused to permit more than nine miles per hour. Up to August, 1882, there had becu no breakdown on this road. On the Siemens' railway, at the Paris Exhibition of Septem-

this, we propose to put it into actual practical operation. Petitions are now before the present Legislature of the State of Massachusetts for charters for over a dozen sireet railways, part surface and part elevated, all to be run by some system of electric motors. In Massachusetts a horse railroid can be started under the general law; Lut, as the law stands now, an electrical railway requires a special charter. A petition has been presented asking for an amendment to the general law, and allowing electrical railways to be started the same as horse railroads are started now. We believe that the cost of power, as compared with the present cost of using horses, will show an economy of over fifty per cent. In the town of Winthrop, Mass., near Boston, suf-



SAN FRANCISCO CABLE ROADS. VIEW ON THE PRESIDIO AND FERRIES RAILWAY.

hat the present system of making steam in locomotive boilers is expensive as well as wasteful. The evaporation of pounds of water to each pound of coal consumed to make steam in locomotive boilers does not average over three and one-half pounds of water, using the best grades of bituminous coal, while with stationary boilers set to burn coal screenings for fuel, an evaporation of nine pounds of water to oue pound of fuel is made, and the reduction in cost of fuel is from one-third to one-half. It is only a question of time when all the different electric lighting stations in this country will use their engines in the day time to make power to be sold for manufacturing purposes, the same as they sell power in the form of electric lights now. They can also furnish power to run electrical rail-

ber, 1881, a distance of over 1,600 feet was traversed in a minute, which is at the rate of nearly twenty miles an hour. There is every probability that electric locomotives can be run faster than any steam locomotive now in use. About ten miles an hour is the average speed that a car can be run on an electrical street railway, but I think it possible to run at the rate of 100 miles an hour. In the near future, on elevated railways, this will, no doubt, be accomplished. I believe the time will come when cars will be run by electricity between Boston and New York in about two honrs' time, where it now requires six hours by steam railroads. We Yankees call ourselves practical people; we believe in the success of the use of electricity for elevated aud surface street railways; believing ficient money has been subscribed for erecting an elevated railway on the Enos system to be run by electricity. The station will be constructed so as to include the use of dynamos for electric lights, and the elevated railway will be utilized for stringing wires to run them. If the charter is granted, work on this railway will be started at ouce. The plans are all made for an electrical station three stories high, the upper stories to be used as a manufactory, and power supplied from the station below—a most profitable way of utilizing the power of electric light stations in the day time.

We shall give the first of avaluable series of horse papers, by a sell known veterinary authority, iu an early issue.

Low sized, about 1100 pound horses, are the standard car horse in Boston.

The Kingsbridge Cable Railway.

The Charter of the Kingsbridge Cable Railway Co. provides for a double track cable road, commencing at the intersection of the Boulevard and 59th street, at Central Park, running thence along the Bonlevard to 65th street and 9th ave. along 9th ave. to 106th street, to New ave., along New ave. to St. Nicholas ave., along St. Nicholas ave. to Kingsbridge Road, and thence along Kingsbridge Road to Kingsbridge.

The cool breezy plateau constituting the upper section of Manhattan island, is without donbt the most picturesque and the most healthful portion of the city of New York. Already its peculiar advantages are drawing away the attention of builders from the densely settled east side and down-town districts, so that building activity, in dwellings at least, has been almost entirely transferred to the streets and avenues west and north of Central Park. The city itself realizes this, and is rapidly opening up new streets and putting existing streets in good order, building sewers and improving parks, in order to make,-what was till within a few years since, a terra incognitathe most beautiful part of the city. The cause, however, which has so long retarded development still obtains, and lack of proper transit facilities is universally admitted to be the great and only drawback, which here stands in the way of settlement.

This want has been in part met by the 10th avenue cable road which rnns along 10th avenue from 125th street to 187th street. Property in the vicinity of this enterprise has already risen from 25 to 75 per cent. in value. A ride over the line, providing one is fortnuate enough to squeeze into one of the little cars of the company, will disclose even to a casual observer the relative activity in building here, as compared to streets and avenues farther removed from the rails.

It will be noted that the line of the Kingsbridge Cable Railway rnns through a well settled part of the city along 9th avenne, from 59th street, to some distance above Central Park. And it will be further remarked that beyond lies that part of the city where building is most active, and which is already well bnilt np in many sections. Above 125th street, along St. Nicholas avenue and Kingsbridge Road the linc of the intended road is, as nearly as possible, a median line between the Hudson and Harlem rivers. It avoids close proximity to the steep blnff of the Harlem, along the edge of which skirts the 10th avenue cable road, and similarly has a wider territory on either side to draw below 162nd street; neither is it merely a section of a road, but continues from 187th street up to Kings Bridge, and from 125th street down to 59th street and Central Park.

Cable cars *can* travel at the rate of ten miles per hour, or they may be made to slowly press and inch their way through a crowd, in sympathy with all its movements, and instantly responding to every tonch of the grip-man. By reducing the grip pres-

sure on the cable the cable slips along, and the car takes any speed between that of the cable and complete rest. As an instance of the 'nice regulation possible, it may be stated that on a steep grade, the gripman by regulating the friction of the grip and the cable can bring the car to a stand still, and keep it there against gravity without applying the brakes to the wheels. Owing to the solid road bed of iron and concrete, the motion of the cars when properly managed is steady, and not jerky and shaky as with the horse cars. Cable cars can be started quickly, and yet not abruptly, and can be similarly brought to a stop.

Cable cars average much better time than horse cars on account of this advantage of starting and stopping quickly. This average gain varies much with the conditions of traffic, but when frequent stops are necessary it has been estimated to amount to full thirty per cent, and with fewer stops to greatly exceed this estimate. The average time taken to make the trip on the 10th avenne cable road from 125th street to 187th street, being a distance of three and a quarter miles, is twenty-three minutes.

Mr. D. J. Miller in an address delivered before the Western Society of Engineers, October 3, 1882, says :- "With all motors the carrying power is of necessity limited, bnt with the cable system it is, comparatively speaking, nnlimited, and the tractive power of the cable, when operated by a stationary engine, gives this system an advantage over all others, as no dead weight is required to produce adhesion to the rails. It seems almost incredible, but is nevertheless a fact, that the State street (Chicago) road, now in operation, has a carrying capacity of ten thonsand passengers per hour, and even this enormons traffic will not overbnrden the cable."

A cable railway necessitates an excellent driveway, which must be at least as wide as the distance between the outside rails. The roadway on each side of the cable track along the greater part of Tenth avenue, is in about as bad a condition as a city road can be, while the middle section, which constitutes the roof of the cable tunnel, is in a better condition than any pavement in the city, and constitutes about the only part of the avenue used for driving.

Another advantage to be brought abont by the Kingsbridge Cable Railway Company, would be the means of avoiding the necessity of ascending the sixty-one steps of the elevated railroad station at 125th street, as this road would carry its passengers to the 104th street station, where the climb is made np of only twenty-eight steps.

although the first cost of the road is greater with the cable system."

These roads without exception have been profitable from the beginning; no cable road yet built having been a losing operation. In every instance the stock is worth from 25 to 60 per cent more than it cost, which is a very important point for capitalists. * * * * "All those portions of the city which the road or its branches tap, have already felt the good infinences of rapid communication, and the improvement will be even more plainly manifest within the next year. * * * * The cars ride smoother than any horse car in the city, there being none of the jolting motion so common. The road bed is so solid and the rails so well joined, that the whole road is smooth. The cars are well lighted by end and center lights, and brilliant head lights are nsed in front which light np the street far ahead. It is a mistaken idea that these cars can run no slower than the cable. By reducing the grip pressure by means of the lever, the cable slips along and the cars do not move so rapidly, in fact they may be slowed to a snail's pace almost, while waiting for a team to get ont of the way; and the starting np is so gradnal that no shock is felt. * * * * It is found in practice that one of these cars weighing 9,600 pounds, and loaded at that, while rnnning at a speed of eight miles an honr, can be stopped in ten feet."

Many impracticable schemes have been devised for street locomotion, but none of these have met the wants successfully snpplied by cable traction. The committee on motive power appointed by the street railway convention, held at Chicago, October, 1883, reported as follows : "This is a system which utilizes the power of a stationary engine to operate cars at will miles away from the source of power, transmitting the power by the medinm of an endless cable to the point required, and at the necessary time. This system, in our judgment, though it is yet in its infancy, is on the right road to solve the problem of dispensing with animal power; a system which instead of being a disadvantage, and less serviceable on heavy grades and in the midst of snow storms, fnrnishes at such times a superabundance of speed and ability to resist obstacles—a system that does not depend npon the friction between the wheels and the rail for its power of locomotion-a system that enables street railroads to handle immense crowds by the simple addition of a few more bushels of coal and the putting on of extra cars, without the fear of overloading its animals, and killing more in one day than its profit would be in a month; giving us, in other words, more latitude in the way of economizing in dull times, without having horses to feed, and furnishing ample means of expansion on short notice, without the necessity of hiring extra animals for such occasions.'

"We believe in conclusion that the only practical means presented to our view of dispensing with animal power is the cable system. At present the cable road is confined to a few favorable localities; but rapid strides are being made in the direction of its perfection, which will surely result in bringing this motive power within the reach of roads less favorably located.

"Concluding, we will add: Beware of 'car-starters,' and lend a helping hand to those trying to perfect a $s_{\mathcal{F}}$ stem which is, at present, our only hope for dispensing with the noise and expense of animal power."—It will be noted that this report emanated from horse car men.

In relation to the expense of operating cable roads it may be said that much depends on the manner in which a road is built, for if constant repairs must be made and the same number of horses maintained as if using animal power, it would be a difficult matter to find wherein a saving were effected; but if a road be properly constructed there is every reason to suppose that a gain of from 30 to 50 per cent. would be made where from 200 to 300 horses were needed for the work, and from 60 to 70 per cent. could probably be realized on larger roads with heavier traffic by careful and judicious management.

On one section of the Chicago road, before the cable was put in, the number of trips made necessitated the keeping of 600 horses at a daily expense of seventyfive cents per head, or \$450. After the introduction of the cable the number of trips uccessary to be made was such as would have required twenty-five hundred horses at a daily expense of \$1875. The cost of running the cable per day, was about \$325.00 dollars including interest on eapital invested. The President, Mr. C. B. Holmes, of this company says: "That the trouble that has been experienced against natural difficulties, stubborn prejudices and opposition of the most pronounced character, has resulted in a complete success for the company aud its patrons, aud has raised the value of property fifty per ceut. over many miles of territory,"

Geo. W. Specht, Civil Engineer, San Francisco, writing to the Engineering News, March 6th, 1886, iu relation to the cable system there, says:

"The introduction of this system marks the beginning of an epoch of large and extensive improvements of the city. Large areas which were nothing but barren sand hills ten years ago, are now covered densely with large business houses and thousands of fine residences. Last year was especially marked by an immense activity in building. The principal cause of this must be attributed to the extensions of the cable railways. When the Geary street railroad was extended beyond Buchauan to Devisadero street, building lots along its line were sold for less than \$70 a front foot. Now in the same district between California and Haight streets the average price is \$110 per foot, and in many instances the increase in value is greater than fifty per cent. The difference along the Haight street route is even more marked. Five years ago au entire block. 412.5 ft. \times 275 ft. on Fillmore street, was sold for \$20,000. It is to-day without improvements worth at least \$50,000. The approach to it is on a very steep incline aud horse cars would not have added much to its value. Another block was sold just before the construction of the Haight street cable road for \$12,000. On the mere prospect that the road was to be built, it was resold almost immediately to the railroad company for \$20,000. After the road was completed the company sold half of it for \$30,000 and the other half is now held at \$25,000. There are several cases like this. The mere expectation that the Market street line will be extended along Castro street, which is now being graded, has already caused an advance in that neighborhood."

In 1865 the railroads of New York city carried 79,618,818; in 1870, 113,609,539; in 1875, 165,737 079; in 1880, 209,444,888; in 1884, 281,205,332. This shows an enormous growth of intermural travel. From 1880 to 1884 inclusive, the increase of travel alone amounted to $34\frac{2}{10}$ per ceut.

New York is rapidly filling up. The northern section constituting part of the route of the Kingsbridge Cable Railway is the only remaining unbuilt part of Manhattan Island. This region unprovided asit is with proper transit facilities is rapidly being built up. The action of the Kingsbridge Railway Company in building and properly equipping a cableroad will not only add largely to values, but will also handsomely repay investment in its securities.

The company will include among its rolling stock a number of parlor cars handsomely furnished. During the hours when the travel is greatest these will be found to be of great convenience to ladies and others who can be certain of securing a seat at a small advance over the regular fare.

It will be remarked that the Kingsbridge Cable Railway constitutes not only the trunk line for upper New York, but is also the route over which the surface lines below 59th street will pass their up-town passengers.

Property along the lower section of the road is already well settled, and travel here is assured. The Summer pleasure travel to aud from this charming locality will itself prove a most lucrative addition to the regular fares. Aud as the less built up portiou of the route developes as it is doing and will much more rapidly continue to do under the stimulus of quick transit, there is no reason why the Kingsbridge Cable Railway Company, operated cheaply by steam, over a distance of eight miles, should not be one of the most profitable cable systems extant.

The committee ou street railways of the New York legislature held a hearing recently on the expediency of legislation to grant street railroad companies the right to operate their roads by electricity and also distribute currents for incaudescent and arc lights and the distribution of power. It is claimed that, under the present laws, towns and cities have a right to dictate what motive power shall be used on street railroads, and legislation is desired so that no difficulties may be in the way of a change. There was little opposition, and that only on the part of the Watertown Gas Co.

Maek's Elevated Railway.

The elevated railroad that has been so successfully operated in New York, has naturally turned the attention of other large eities that are desirous of securing rapid transit through their streets. In New York, however, except the short distance run through Pearl street and the lower part of Greenwich street, the streets occupied by the elevated tracks are wide enough to allow of a double track road being built without serious inconvenience to property holders along the line, of having their windows darkened by the structure that has been erected in the street.

In Boston, however, the streets in all of the central portion of the city are so exceedingly narrow, that the construction of the ordinary two-track road would darken the windows of the lower stories to such a degree as to necessitate the use of gas during even the brightest days. In order to overcome this difficulty and yet have the double-track road, iu one and the same street, the various single rail designs have been brought ont. Among these is one designed by Mr. W. B. Mack*, who is already well-kuown as au inventor through the Mack injector. The superstructure of the roadway is intended to be built of heavy cast or wrought iron pipe, screwed into heavy foot-pieces, which in turn are firmly imbedded in a masonwork foundation. It is the intention of the inventor to use two of these columus, placed a few feet apart, aud thus form the lower portions of the structure. At a height of teu feet from the street these two columns are to be capped by a heavy casting that has pockets for the reception of three other pipes extending up to the roadway. At the top of this second tier of pipe is another cap, with a groove to receive the stringer carrying the center rail. At this point the peculiarity of the strncture begins. The whole weight of the car is to be carried by a center rail, just as it is now carried by the center piu of the track; and as the side bearings are of use only to keep the car iu balance so these side wheels serve the same purpose, running as they do upon light rails of twentyfive pounds or less fastened to the top chord of the girder. These rails may be of the ordinary pattern or of the side bearing street rail

The girders serve to carry the weight of the center rail by means of cross girders, upon which the longitudiual stringer is placed. The advautages elaimed for this style of construction in the narrow streets, are that the rail is lowered to the bottom of the girder instead of being placed eight or more inches above the top, and that the whole may be constructed of light open work without the capping of crossties now in use, that makes almost a complete shed the whole length of the road. The truck designed for use upon the structure must necessarily be of a somewhat unique design. At first it was intended to make it a threewheeled truck but it was afterwards modified, and the form shown in the eugravings

*92 White street, East Boston, Mass.

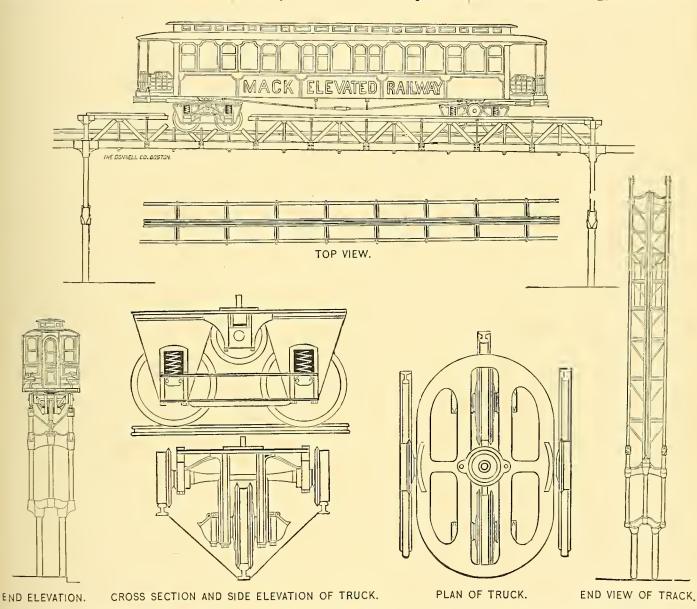
is the one that it has been decided to use. It will be seen that there is a single axle extending across the middle of the truck upon which are placed the side-bearing wheels. In a central longitudinal line we find the two 33" wheels running upon the middle rail, and held in position by pedestals upon each side that are fitted with housings of the ordinary kind. The journals, of course, may be somewhat lighter than those that would be employed to carry the same weight with the ordinary construction. The wheels are double flanged, but there will be more play allowed between

The New York Third Avenue Street Railway.

THE ELABORATE SYSTEM REQUIRED IN THE RUNNING OF STREET CARS,

THE DUTIES, HOURS OF LABOR, AND WAGES OF THEIR EMPLOYEES.

The following information gleaned by a reporter of the Sun, relates in a very comprehensive manner the inside story of a very perfect system of horse railroading. It will be found interesting to our readers whose systems are "yet small but growing." Probably not more than four corporations —the oldest, and one of the largest and most perfect concerns of its kind in the world—is run. In addition to the line between the Post Office and Harlem, eight miles in length, there are two branches, one on 125th street, between Third and Tenth avenues, and another from Thirty-fifth street and Third avenue, through Thirtyfifth street and Lexington avenne to the Grand Central Depot. The cable road from 125th street up to or near Fort George is also run by this corporation, but as horse railroads are the theme in hand, that need not be considered here. The horse railro



the flanges and the rail-head in practice than is shown.

The springs upon which the car is hung are spiral, placed over the housings, and the long elliptic spring shown in the end elevation resting upon the boxes of the side wheels is intended to throw a small portion of the center weight upon these wheels. The frame of the truck is of wronght iron welded into the shape shown in the plan, and affording sufficient opportunity for bolting the pedestals, center plates, and other necessary truck attachments.

When wanting Street Railway Supplies consult our Directory.

in the country approach it in extent, and in most of those the service is so subdivided as to practically break them up into several systems. Undoubtedly Superintendent Robertson is a very busy man, as our readers will agree after reading the story detailed below.

Simple as it all looks, the running of a horse railroad is really a very complex business. The starting of the cars alone is a matter to bewilder and "rattle" most people.

To illustrate this, let us see if it is possible to convey to the mind of the reader just a general idea of the system upon which the Third avenue line and its branches

day, on the main line, begins with the starting out of a car from Harlem at 3.58 A. M., and from that time on they continue starting down-town until 2.20 P. M. At first the cars start only every ten minutes, then every six, then four, two, one and a half, and finally, in what the bulk of the community considers daytime, from 8.30 A. M. to 7.30 P. M., they are but one minute apart below the Sixty-fifth street depot, and double that above. After the latter hour the intervals gradually increase again to one and one-half, two, three, four, five, six, and so on until fifteen minnte gaps are between the cars in the time from 1.30 to 4 A. M. Each driver and conductor on those long runs down to the Post Office and back, makes four trips—of two hours and forty minutes each actual running time, though ten minutes additional at the Harlem end are allowed—to constitute a day's work of 12 hours, for which the pay is \$2. Two of the trips are made before dinner, and two after. Thirty to forty minutes are allowed for dinner.

All that, which may be considered as the buckbone of the system, is easily understood, but now the trouble begins. Sandwiched in between the long-trip Harlem cars are others that ply only between the Sixty-fifth street depot and the Post Office, a round trip that takes one hour and fortyfive minutes. The first day car of those starts at 4.36 A. M. and the first night car at 6.58 P. M. Then there are twelve "run offs" of this sort, which take up in their turn the day cars as their regular drivers finish their twelve hours' work, and the night cars in like manner, each until the return of the regular drivers on schedule day and night time, so as to keep the trips continuous. And there are eight cars, known as "trippers," that are slipped in for four trips each over this lower half of the road to cover the time between 4.47 P. M. and 5.09 A. M., in place of the regular cars of the day men who were earliest off. Of another series of trippers sixteen rnn two trips each between Harlem and the Post Office, and six more make three such trips each. The first of these starts down towu at 6.54 A. M. and the last at 8.57 A. M. And there are thirty cars that make two trips each, in the afternoon, between Sixty-fifth street and Harlem, or three down-town trips, the first, starting at 1.51 P. M., gets through at 10.41 P. M., and the last, starting at 2.57 P. M., finishes at 1.52 P. M. These runs are considered as day's works, and are so paid at the established rate of \$2 per diem, though the time occupied in making them is considerably less than the stipulated twelve honrs. and consequently assignment to this service is considered a picnic by the men. The pay of the drivers and conductors on the trippers does uot seem to be yet accurately fixed, but will, it is understood, be upon the basis of \$2 for twelve hours' work, and will not, iu any case, be below \$1.50.

There are of regular cars ou the Third avenue line, in operation in each twentyfour hours, 220; on the Grand Central branch, 26; on the 125th street line, 26; and on the cable road connection, 15; making 287 in all. That requires 547 drivers and as many conductors. Ont of so many there will be daily at least 35 or 40 who, on account of sickness, family trouble, attendance at a wake the night before, or some other cause, are not able to work, and their places are filled by the starters from the ranks of the "extras," who are always in attendance looking for a job at the hours when their services are likely to be in demand.

When a man applies for employment on the road as a driver he goes to the Superintendent, Mr. J. H. Robertson, who, if his references are satisfactory and he seems to understand the business, puts him on the list as an "extra," to await his turn for appointmeut to fill a vacancy as a "regular." In like manner the applicants for conductors' places, who have to make their applications to Mr. J. Beaver, Treasurer of the company, are listed as extras to await their tnrn. Bnt it is a rather more serious matter to get employment as a conductor than as a driver. The conductor must not only bring a recommendation from his last employer testifying to his honesty, industry, sobriety, reliability, &c., but must give bonds in the amount of \$1,000 for the faithful discharge of his duties. It is to be feared, however, that in not a few instances those bonds are of rather mythical value. Not a great while since the bondsman for a conductor who left the company's services was looked up and found to be a well-to-do horseshoer over on the west side of town who cannot write his name. Not only had his name been signed to the bond without his knowledge, but he had been falsely personated before the Notary Public whose attestatiou was upon the bond.

When a man is appointed as an extra his name is given to the starter, who puts it on a small slip of paper, which he slips into a recess at the bottom of a long list of names upon a board. At $4\frac{1}{2}$ A. M. and again at 6 A. M. the starter calls the roll of these names. As temporary vacancies are reported among the regular meu when the time comes for them to go on duty, the extras are drawn upon the draft, commencing at the top of the list, to fill their places, Those who do not answer at either of the roll calls are put at the bottom of the list to work their way up again to chance for employment as fortune may favor them. Those who have had a day's employment are in like manuer put below to work their way up to the top again. There are always about fifty drivers and 100 conductors on the extra list, but their opportunities for chance work are at least sufficient to give them a living while waiting for places as regulars. While casnal employment is a matter of rotation, appointmentas a regular must be in order of date of getting place among the extras. The drivers are generally older men thau the conductors, and a larger proportion are men of family. As a rule, too, more of them have been long in the service of the company. The conductor who has served longest has only collected fares about sixteen years, but there are several drivers still at work who came on when the operation of the road was begun in 1853.

In the big depot at Sixty-fifth street the company has set apart an old car for men to eat their dinners in, making it comfortable by steam pipes under the seats, and supplying a table for them to eat from. The single men among them keep going to two or three cheap restaurants in the neighborhood of each depot.

The starters, already mentioned as those who find work for the extras, only have that authority at the depots. Those at the Post Office have only to watch the dial of their clock and strike the starting bell on time. There are teu of them-two in Harlem, two at Sixty-fifth street depot, two at the cable road, one at 125th street, two at the Post Office, and one at Forty-second street. They work twelve hours a day, with an hour off for breakfast and another hour for dinner. While they are away feeding their duties are discharged by the "monitors" who are stationed at each of the points mentioned to note and record the register indications in the cars as they arrive, except at the Post Office, where the "waterman"-who at other times waters the horses-is their relief, and at the Grand Central depot, where the foreman from the depot of that branch serves in the starter's stead at meal times. The starters get from \$2.25 to \$3.25 a day, according to the duration of their service and the responsibility of the posts they fill. The eight monitors get the same pay as conductors and drivers in some instances, and in others \$1.25 a day.

Boys from 16 to 20 years of age are employed to work the towing horses on the steep hills on the line and its branches at Chatham square, Seventy-fourth street and Thirty-fifth street; also during the summer when the heavy open cars are run, at Ninety-sixth street and Twenty-third street. They work from ten to twelve hours, with half an hour for dinner, and get \$1.25 a day each.

Trackmen, to keep the tracks in repair, are coustantly employed in varying numbers, from 20 in winter to as many as 100 in spring, summer, and autumn. They work ten hours a day, except on Saturday, when they only work nine hours. The pavers get \$2, the rammers \$1.60 to \$1.75, and the laborers \$1.35 a day.

'The hardest-worked man in the company's employ is beyond a doubt the Superintendent, Mr. J. H. Robertson. In good weather, when everything is working smoothly, he does not work more than from fourteen to sixteen hours a day, but when a snow storm occurs he has to be out fighting it from the time it begins until it ends, and the tracks are clear. Even if days elapse in the course of that continuous struggle, he can take no time for rest until the battle with the elements has been won. Every detail in the working of the road must be directed and supervised by him, on the line, in the shops, throughout the stables, everywhere in fact, and if he did not meet all the requirements of a superintendent, as specified in the beginning of this article, he would be no good. The morning of the recent great strike among the railroad employees was an anxious one for him. At 4 o'clock he found that the only men in that vast depot besides himself were the night engineer, the night starter, and the night foreman of the stables. To say nothing of the terrific damage that might have occurred from an accidental fire while there were only four men to fight it, there were 1,625 hungry and thirsty horses in the stalls to be fed and watered. Early in the forenoon he got twenty-five Italians to help in the stables, and at noon the strikers sent in enongh stablemen to take care of the horses.

There are about one hundred stablemen

employed in the Sixty-fifth street depot. Each man takes care of 16 horses, feeding, watering, and grooming them. The night men do the work of feeding the horses that are to go out early in the day. Between $4\frac{1}{2}$ and 6 A. M. the day men come around to work. Their first work is to clean out the stable, and then to make ready for the 9 o'clock feeding. The horses that have been fed by the night men are put out in teams for the early cars by the day men who have just come on duty in time. When a stableman has got his horses on the knows exactly how long it will be before they come back and he will have to put others out, so he can arrange for his meals in the intervals quite conveniently, to snit himself. Nearly all the stablemen live close to the depot and can get their meals at home regularly, except the extras looking for work, who bring their dinners in cans. Their day's work only averages about ten hours, and their wages are \$1.75 a day. In the matter of feeding, their work follows that of the feed-room men. There are twenty-two of these, who work in night and day shifts of twelve hours each, and get \$1.75 a day. It is their dnty to get the hay and grain up by the steam power elevators to the several floors where they are to be handled; to cut the hay by means of steam-cutting machines provided, and to mix it, when cut, with coarsely-ground and mixed corn and oats, in the proportion of $17\frac{1}{2}$ pounds of grain meal to 81 pounds of cnt hay-a day's ration for a working horse. Water and a little salt are mixed with the cut and ground feed. The quantity specified is fed in three portions, the largest of which is the horse's dinner, and the others his breakfast and supper. The diet, though good, might strike a fastidious horse as somewhat monotonons, but if he reflected upon how hard and short a life he was doomed to in the street railroad service, he probably wouldn't care much about his feed. The average serviceable life of a horse in street railroad work is only from three to three and a half years, and the Third Avenue Railroad Company uses up about 600 horses a year. A knowledge of that fact might well alarm and depress any reflective horse. And yet the work laid ont for the horses does not seem so very severe. Sixteen miles a day on the Third avenne line, which is, by reason of its grades, the hardest; or twenty miles on its branches are deemed a sufficient day's work for a horse. And then an effort is made to give each horse one day of rest in seven. or, failing in that, to make up its equivalent to him by diminishing his hours of toil. But the fret, and worry, and strain of frequent stopping and starting the car, and continnal pounding of the feet on the hard. ronud cobblestones, and the cruel sprains inflicted by slipping on the smooth rails, all these soon wear ont the poor horse, break his heart, and make him a mere wreck, fit only to snffer a little longer betw: en the shafts of a hnckster's cart, or, by a happier fate, go to the knacker's vard at

once. There is a good hospital here for

sick horses, capable, with the gangways reserved for this nse, of accommodating as many as 100 sick and lame horses at once, bnt, except when the epizootic was in the stables, not so many animals worth treating have ever been in it at one time. If a horse is used np, or very sick, it is not worth while to bother with him here. Temporary lameness, cansed by slips and falls, is the principal thing treated in the hospital. Last April when the police enforced the ordinance forbidding the sanding of the tlacks, there were 75 horses lamed by the slippery pavements at one time. The hospital is in charge of a veterinary snrgeon, whose dnty it is to be on hand all day, and all night too if he is wanted, and who gets \$25 a week. He has as helpers four or five skilled old stablemen, who are selected for their possession of some knowledge of rough horse-doctoring, bnt who get no more pay than the others.

The company always has on hand in its stables from 2,000 to 2,300 horses. Of these, at the beginning of the present month, 1,625 were in the stables of the Sixty-fifth street depot building. As many as are kept here are abont equally divided between the stalls on the lower floor-which is even with the ground at Second avenne, bnt one story down at Third avenue-and in those upou the upper floor; the intermediate floor, on a level with Third avenue. being devoted to the storage, shifting, and starting of cars. The horses from the lower floor are bronght up by the stablemen two teams at a time, ready harnessed, their trace chains are made fast to the doubletrees left lying in place by teams jnst discharged, and their lines are made fast to a long tant chain on the sonth side of the great opening in the floor, down which rnns the sloping way to the stalls below. From that chain they are taken by the drivers to whose cars they belong; the donbletrees behind each team is carried by the driver to the front of the car npon which he is about to start out, is quickly coupled up, and he is ready for the starter's bell to start on a down-town trip. The team that he has brought in he leaves tied to the chain for the stablemen to take away.

The other persons about the place who have anything to do with the horses are the five trackmen—who get \$2 a day for twelve hours' work in hauling continually to the stables loads of hay, ground feed and straw —and the horseshoers, of whom the company employseighteen here, two in Harlem, and two at Thirty-fourth street depot, at a salary of \$3 a day for ten hours' work each week day, except Saturday, when they work but eight honrs. The company bnys its horseshoes ready made, so that men doing this work must be experts in the art of shoeing horses withont laming them.

A corrugated iron building in the great yard inside the fireproof depot and stable which occupies sixty lots—is a harness shop, where a foreman and five men are continually at work making harness. The collars, hames, and trace chains are purchased ready made, but all else of the harness nsed by the company is made here. The honrs of labor in the harness shop are nine on Saturdays and ten on other week days. The foreman gets \$2.50 a day and his men get from \$1.50 to \$1.91 2.7.

West of the feed room, which is on the Second avenue end of the building, is a great room, 200 by 300 feet in size, where cars are constructed and repaired. Since the building of twenty open cars, a year ago, the only work done here up to the present time has been repairing, bnt every facility is enjoyed in these shops for the construction of cars throughout, excepting their castings, and work will be commenced in a few days on a new lot of close cars. The ordinary complement of workers in the shops consists of fifteen to twenty blacksmiths, twenty carpenters, and six or seven painters. The painting is done by contract. Blacksmiths get from \$1.75 to $\$2.37\frac{1}{2}$ a day, and the carpenters, who receive various prices, average \$2.25. Those are less wages than are demanded by the unions of those two trades, but it is said that they should be less, because the men work under the most comfortable conditions, are employed steadily the whole year through, and are not the most skilled workmen, which, indeed, they are not all required to be. Open cars made here cost the company about \$1,000 each, and box cars from \$1,000 to \$1,100. The company has at present 350 cars in good condition. The new cars for the cable road, which Superintendent Robertson prouounces the most unqualified success, are being constructed by contract in Philadelphia, and will be much more expensive.

There are five more men, who are very important, who have to do with the financial results of the running of the cars. They are known as "receivers," and may be seen behind small grated windows in a large room on the north side of the main hall of the Sixty-fifth street depot, clutching the moneys that conductors hastily slam down moneys that conductors hasting shall down before them momentarily. They handle all the money that is taken in on the road, having that gathered on the branches brought to them in a "bank wagon," in charge of a well-armed driver. They count it, report its amount to the Treasurer, who has one assistant only, make it up in proper form for banking and send it daily to be deposited in a bank. When it goes away it is in charge of one of their number and the driver of the bank wagon, which is bnilt to resist invasion, and both men fairly bristle with offensive and defensive arms. A number of years ago one of the receivers was robbed of about \$200 which he was bringing from up town. He was riding in a horse car. A couple of desperadoes sprang aboard the car, pounded his head, jammed a pistol down his throat, and per suaded him to let go of the money box. Since then no chances are taken, and the person who seeks to interfere with Third Aveune Railroad funds in transit will be very liable to get only harm by his eudeavor.

Are there any more regular employees of the company worth mentioning? Well, decidedly, yes; there is one; wiry, oily, shrewd, canny Scot John Stewart, whose business it is to guard the company, as far as possible, against damage suits, by getting up defensive evidence, finding out unpleasant things concerning antagonistic witnesses, compromising ugly cases with plaintiffs, and otherwise protecting the interests of his employees, whose respect and entire confidence he has won by many years of faithful and able service,

Improvements in Track Sweepers.

The accompanying illustrations show several improvements in track sweepers.*

Fig. 1 relates to a cast journal box which carries the outer end of revolving broom shaft. By means of lugs on the upper surface a vertical lifting bar is fastened to the box, and being connected with levers on upper part of sweeper raises and lowers the broom as required. By means of a ring or gnide hole left in the side of the box it slides up and down on an arm or hanger which is rigidly fastened to the frame of the sweeper and which holds the broom firmly in place except in its up and down motion. These arms or hangers are gently curved, allowing the utmost freedom to the broom, which being constructed of oak, admits of an automatic adjustment to the inequalities of the track,

rod and confined between its bars, when the latter are folded and secured in the folded position by means of bolts passing through lugs secured to or formed on the bars. One pair of bars with their rod and rattan form a section. The section is then placed in position by its ends being received in the sockets in the broom heads.

It will, of course, be understood that the number of sockets in the heads and consequently the number of sections which go to make up a broom may be varied within certain limits. A broom of substantially circular form is thus constructed with more or less sections as desired.

Fig. 3 shows an improvement in construction of the pedestal by which the strain on the bolts from the plow-board or stationary broom is relieved by means of projections cast upon the face of the pedestal and forming a seat or rest for the rigid hang

twenty-five. The summit level occurs about midway, at an elevation of about 160 feet above either terminus, the total rise from the depot at Portrush to the summit being 203 feet. Some sharp curves exist along the line, the worst one having a radius of about forty feet. There was some doubt in the mind of Sir William Siemens, the constructor of the line, whether with the arrangements adopted these inclines could be worked satisfactorily; but experience has proved that they can be, and the car, when fully loaded, is drawn up the grades without difficulty. There are seven "passing places" along the line, where the "points" are set so that the cars traveling in opposite directions always take their own sides respectively.

At first the power was produced by a steam engine at Portrush, giving motion to a shunt-would dynamo of twenty horse

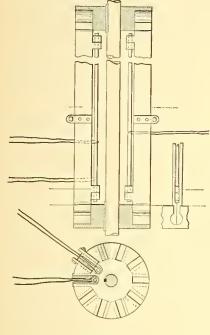


FIG. 2.

Fig. 2 relates to the construction of a re- | volving broom used in snow or dirt sweeping. These brooms are made in a cheap and rapid manner and may be repaired with little tronble. Two cast broom heads are employed keyed upon the broom shaft at such distance as the required length of broom dictates. Each head is formed with a series of radial sockets, the sockets in one head facing those in the other. Between the broom heads and parallel to the shaft extend stont bars hinged together in pairs by means of lugs and rods. The ends of these bars are so shaped that when folded they will fit into the sockets in the healsall of the bars being of course of the same length-so that there are as many pairs of hinged burs connecting the heads as there are sockets in one of said heads. The splints or rattau, only a few of which are shown in the drawings, are bent at about midlength and pushed over the rod and between the bars, while the latter are open until a sufficient quantity of rattan is thus hooked to a

•The Brooklyn Railway Supply Co., 37 and 39 Walworth Street, Brooklyn, N. Y. ers or supports that hold the stationary plow, so that almost all the leverage that is usually thrown upon the suspending lever that holds the broom in position is obviated and resolved into a direct straiu upon the pedestral

IMPROVEMENTS IN TRACK 'SWEEPERS.

FIG. 1

Electricity in Ireland.

An electric railway has been in successful daily operation in the north of Ireland since November 5, 1883. It starts from the railway terminus of the Northern Counties railway at Portrush, in the county Antrim, and runs along the magnificent coast road to Bushmills, a distance of six miles, endiug within a short distance of the Giant's Causeway. The total length of the way, including the branch way, to the harbor of Portrush, and the several sidiugs, is neward of seven miles. The road is one continuous series of long inclines; grades of one in forty-five and one in forty are frequeut for upward of a mile in length, while steeper grades of one in thirty exist for shorter distances, the worst grade being one in

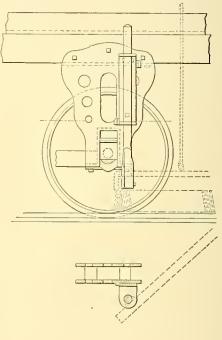


FIG. 3.

power, but arrangements were subsequently made to utilize a waterfall of ample power on the river Bush, situated 1600 yards from the nearest point of the tramway and six and a half miles from Portrush. A fall of twenty-six feet head of water is used to drive two turbines, each capable of working up to fifty-two horse-power.

A speed of ten miles an hour is readily obtained. Mr. Traill, the engineer of this road, told the Inventors' Institute last year that, after repeated failures, they had at last hit on a thoroughly trustworthy plan for getting electricity from the conductor. This was by means of a steel spring in the form of a carriage spring; two concavesteel springs were fastened at the top and rubbed along the bottom. His cars had then successfully traveled over 30,000 miles with 100,000 passengers. The cost of electricity generated by water power a mile distant was one-quarter that of steam used ou the same railway.

same railway. It is said that the construction of this road cost \$225,000; that it is paying a 12 per cent. dividend; and that the working expenses are five cents per train mile. "Au extension of six miles is contemplated.— Robert Luce, in Electric Railways.

Editors Street Railway Journal:-

In your last issue is a letter from Mr. W. P. Craig in reply to my letter on the above subject. I need not say that metal vs. timber for railway construction is a subject that has and now is occupying the minds of men in many parts of the world, and from what has practically been done to solve the problem, it is now generally conceded that iron has much longer life than timber, therefore these problems have been or are to be solved :- Has iron the qualities necessary for climatic changes? security in fastenings? uniformity of position? preservation of gauge? does it give smooth and elastic movement to the rolling stock? If it has all these qualities, economy must ensue irrespective of first cost.

Many years ago the governments of Germany, Belgium, India, Egypt and France built railways with iron sleepers with a view to their future adoption if found superior to timber. They detailed expert engineers to closely watch the movements of trains and note the results, and after many years of such observations called for their testimony as to the merits or demerits of the system. Below are some remarks on the subject.

In a circular issued some years ago by Von E. Gruttenfien, very high authority on such matters, he says: "Iu my opinion we must accustom ourselves to apply to the construction of the permanent way of railways a share of that intelligence which, for instance, is already assumed as necessary in the building of bridges, in order that we may place the constructiou and maintenance of the permanent way on a higher level than hitherto, to the furtherance of economy and of safety iu working. * * * The experience which has been gained with the iron sleeper system ou the Prussian State Railways in the last five years leaves no doubt as to its lasting adoption. As compared to the construction with wooden sleepers, the greater durability, the secure fastenings of the rail, the uniformity of position, the preservation of gange, and the smoother and more elastic movement of the rolling stock, caused by all these properties, are nearly generally acknowledged; nor has any material shifting of the permanent way, nor any waste by friction of the surface betweeu rails aud sleeper, been remarked."

Mr. Simon, Chief Engineer, England, says: * * * "Moreover and independently of the question of economy in first cost, * * * * the inevitable consequence of using timber and iron together, is at all points of contact between iron and wood a want of that exactitude and reliability which is desirable and which can be secured by the use of *iron parts only*."

H. Reese, Esq., of Baltimore, an engineer of marked ability and who has devoted much thought on the subject, remarks: "What their life (iron sleepers) may be cannot be told, but some sleepers recently taken from an Indian railway which had been in the track for over forty years were found to be still practically as good as new. Probably in ordinary track it would be safe to allow fifty years as the life of a metallic sleeper, but when at last worn out they would be worth at least half the current cost of iron to manufacture."

If these opinions of eminent men will not convince I would further illustrate the superiority of iron over timber as follows:

In the STREET RAILWAY JOURNAL of April 1885 is an estimate on the authority of Mr. Longstreet of Providence—who says the cost of material alone for tramway track, using 52-lb. rail, is \$5,147, to which may be justly added for track laying, carpenters and spikers

 Actual cost in this city......\$1,271.40

 Taking up paving aud repaving.
 699.00

 Hauling sand, &c.....
 122.00

\$2,092.40

a total of \$7,239.40 or about 1_{100}^{37} per lineal foot of track.

Our system will not exceed this figure. Assuming the life of rail and timber stringer to be the same, viz., twenty years, the cost of renewing the timber system would be \$7,239 with an addition of say \$400 for taking np and removing decayed debris, equals \$7,639.40, less seventy-five tons of scrap at \$20 equals \$1,500, would still leave an ontlay of \$5,739.40 for first renewal.

Now assume that metallic longitudinal sleepers have but twice the life of timber. viz., forty years, we have only to renew the rail at the expiration of twenty years, which amounts to \$3,280, less for scrap, would amount to about \$1,825 for first renewal—the difference being \$3,814 in favor of the metal system.

Let us further assume that this amount, \$3,814, is placed at 4% interest as a sinking fund, we have at the expiration of twenty years over \$8,000 to meet the demand for the next renewal which would be: Rails, metal, longitudinal sleep-

ers, tie rods and wedge key....\$7,239.00

Less 120 tons cast steel scrap at \$20.....2,400.00\$4,839.00Therefore at the expiration of forty years the timber system has cost: First cost.....\$7,239.00First renewal, twenty years.....\$7,239.00Second renewal, forty years.....\$7,739.00Total outlay.....\$18,717.00The metallic sleeper system: First cost....\$7,239.00First renewal, twenty years.....\$7,239.00First renewal, twenty years.....\$7,239.00First renewal, twenty years.....\$7,239.00First renewal, twenty years.....\$7,239.00

\$13,851.00 Less balance in sinking fund..... 3,253.00

In other words, the adoption of the metallic system, creates a fund more than equivalent to meet all demands for future renewals, besides reducing track repairs to a minimum. A timber track can be built for the same price we build a metallic track, but I doubt, nay am certain, the timber track will not last as long, be as elastic and smooth riding, need so little repairs, or be worth as much at renewals. These are important items, which railway officials look at; they do not think "twenty years long enough."

The assertion that a hollow rectangular metal sleeper, when filled with, and embedded in the sand in the street, would be rigid, as track laid on solid stone, is a libel on theory and practice.

The eminent anthorities I have quoted are worth more than my humble opinion, yet in Albany, I can show a track built of metal only, that possesses uniform elasticity, is smoother riding, and almost noiseless in comparison with the timber system.

T. H. GIBBON,

Eng. Metallic Street Railway Co. Albany, N. Y.

An Early Electric Motor.

Professor Page made a trial trip with his electro-magnetic locomotive on Tuesday, April 29, 1851, starting from Washington. The progress of the locomotive was at first so slow that a boy was enabled to keep pace with it for several hundred feet. But the speed was soon increased, and Bladensburg, a distance of, I believe, about five miles and a quarter, was reached in thirty-nine minutes. When within two miles of that place, the power of the battery being fully np, the locomotive began to rnn, on nearly a level plane, at the rate of nineteen miles an hour, or seven miles faster than the greatest speed heretofore attained. This velocity was continued for a mile, when one of the cells cracked entirely open, which caused the acids to intermix, and as a consequence, the propelling power was partially weakened. Two of the other cells subsequently met with a similiar disaster. The professor proceeded cautiously, fearing obstructions on the way, such as the coming of cars in the opposite direction, and cattle on the road. Seven halts were made, occupying in all forty minutes. But, notwithstanding these hindrances and delays, the trip to and from Bladensburg was accomplished in one minute less than two honrs. The cells were made of light earthenware, for the purpose of experiment merely, without reference to durability. This part of the apparatus could therefore easily be guarded against mishap. The great point established was, that a locomotive on the principle of Professor Page, could be made to travel nineteen miles an hour. But it was found on subsequent trials that the least jolt, such as that caused by the end of a rail a little above the level, threw the batteries out of working order, and the result was a halt. This defect could not be overcome, and Professor Page reluctantly abandoned his discovery .- Ben. Perley Poore.

The electric motors on the Baltimore & Hampden Railroad have given so much satisfaction that another line under the same direction is to be equipped with them.

Pneumonia in Car Horses.

Following is a part of Dr. W. H. Arrowsmith's paper on "Diseases Common to Car Horses," read at the St. Louis convention, giving his very successful methods of detection and treatment of inflammation of the lungs, Stablemeu will find profit in its careful study:

The causes of pneumonia are of a specific character, the nature of which is at present unknown. That it is a purely constitutional and not local disease is now held and believed by all of the most recent investigators; that it is essentially of a constitutional type is not only proven from the fact of its clinical history and anatomical nature, but also from the fact that it cannot be produced by any external or mechanical means.

Its nature and cause is believed to be due to some specific morbid condition of the blood, yet unknown, which nature endeavors to rid itself of by means of the local manifestations in the lung substance; still there are certain influences and conditions which are exciting and predisposing.

Horses that are convalescing from some debilitating disease, or run down and weakened from severe exertion, insufficient food, and bad hygiene are more liable, and usually undergo a severe type of the disease. Sudden variations in the temperature, at any time of the year, is a predisposing cause. The removal of horses from a distaut place, the excitement and nervous prostration due to the journey, the change of climate, the want of proper clothing and good feed, are inducing causes. The lack of ventilation and insufficient air space in large stables, and the close confinement of a number of horses in a stable without due care given to the emanations and gases, will excite an attack of pnenmonia.

The horses which are exposed to the vicissitudes of the weather and are overworked are most liable, and yet the disease is frequently found among those animals that are carefully uurtured, well groomed, and used only for road purposes. Pneumonia also occurs as a complication of other diseases. Different affections of the kidneys have been supposed to stand in a cansative relation to it.

In the middle Atlantic States, it occurs most frequently during the winter and spring months. Some years it prevails more and proves more fatal than others.

The symptoms of pneumonia are as a rule very promineut: anorexia, a dejected countenance, frequently a cough, although sometimes wauting, temperature increased from 102° to 104° Fahr., pulse and respiration increased, aud in most cases there is a well. marked chill which may continue from one to three hours. The bowels become constipated, and the bladder is not evacuated as frequently as in health. These are the general symptoms. The local signs are to be elicited from the chest itself by means of percussion and ascultation. Percussion is an act performed by pressing the middle finger of the left hand firmly upon the different parts of the chest, either upon the ribs or the intercostal spaces, and distinctly

and uniformly tapping it with the tips of the closed fingers of the right hand. By this means if the lung is healthy there will be heard a low, resonant sound over all parts of the lung, but should any portion of the lung be inflamed and contain an exudative product, perenssion on that point would elicit a hard distinct sound without resonance and appear as though one was rapping ou a hard substance.

Auscultation is the method by which we listen to the sounds caused by the air passing in and out of the lungs. It is performed by pressing the ear against the different parts of the surface of the chest and listening to the sounds of the air passing in and out. If the lnngs are healthy there will be a soft, rustling sound, somewhat approaching a murmur, and might be compared to the gentle rustling of green leaves in the woods. And in the first stage of pneumonia there will be heard over the affected parts a crepitant sound, which might be compared to the sound of salt sprinkled on the fire. This crepitancy will continue for two or three days and then gradually give way to no sound at all, excepting the bronchial sound of the air passing into the larger bronchial tubes, and this want of any sound will indicate the second stage of red hepatization. This lack of respiratory murmur may continue from four to eight days, and then there will be noticed in the sounds a return of the crepitancy, which will indicate a third stage. Should resolution continue favorable a return of the rustling murmur of healthy lung tissue will be found. Anscultation is the best means for determining the coudition of the lnugs when diseased, and also the most difficult. And to become familiar with the normal and abnormal sounds, one should carefully listen to the sounds of healthy lungs, and then compare them with those that are diseased.

By percussion or tapping the surface of the chest, the diseased portion of the lung will be detected by the sound. Instead of a clear, resonant sound that will be produced over a healthy lung, there will be heard over the affected part a dull, hard sound as though one was tapping ou a board, or some solid substance.

In the treatment of pneumonia we must always remember that it is a self-limited disease, has three stages which it undergoes before resolution takes place, and therefore furnishes different therapentical indications.

Should the case be seen in the first stage, that of engorgement, high fever, accelerated pulse and respiration, and presenting the crepitant sound upon anscultation, an endeavor should be made to arrest or at least to lessen the force of attack. Heretofore, blood-letting, cathartics and the secalled anti-phlogistic methods of treatment have been considered abortive; but experience has abundantly shown that these measures cannot be relied upon, and that they frequently leave the animal so debilitated as to be unable to withstand the remaining stages of the attack.

It has been found in the daily practice of

the writer, and verified by the testimony of other practitioners, that if the case is seen in its first stage, a full dose of sulphate of quinia from one to two drachms, according to the size of the animal, will in some cases arrest the disease, and should it not abort the disease, it always leaves a favorable influence in the course of it, by its autipyretic effect. Again, in the first stage the rational system of treatment should be employed, the animal should be placed in a roomy, well-ventilated, white-washed stall, containing clean fresh straw and plenty of light; there should be no draught and the animal should be moderately clothed and all the legs to the first joint be bandaged and thus endeavor to keep an equal temperature of the whole body.

Blisters, strong stimulating liniments and thick mustard paste are judicious, but the applications of a mild liniment composed of aqua-ammonia one part, spirits of thrpentine two parts, alcohol four parts and olive oil sixteeu parts, gently rubbed on the chest and a bandage of red flannel applied, or what is more convenient in our stables, the best English mustard four ounces to one quart of water, applied with moderate friction and then the flannel bandage applied, will act beneficially, and should simply be used to stimulate the chest walls and should not cause the animal great uneasiness, for the excitement following the application of strong mustards is frequently productive of unfavorable results.

Water or better gruels composed of oatmeal and water, containing one ounce of nitrate of potassæ and one drachm of chlorate of potassæ to each pailful, should be allowed to remain in the stall for the animal to drink at its pleasure. Nutritive foods and any green foods, if they can be obtained, should be allowed; soaked hay, and mashes composed of bran, cut hay and oats are often found acceptable, but the rule should be to allow the horse whatever he will eat.

During the second and third stages the treatment best adapted to onr railroad horses is of a tonic and stimulating character. As a tonic there is nothing equal to quinine, and best administered in the form of a drench composed as follows: Snlphate of quinine, $\frac{1}{2}$ drachm, alcohol, $\frac{1}{4}$ ounce, snlphuric acid, aromatic, $\frac{1}{2}$ drachm, water, 12 ounces, given night and morning, and as a stimulant the balls composed as follows:

Ammonia Carbonate, 2 ounces. Camphor Pulverized, 1 " Nux Vomica Pulr, 1 " Gentian Root Pulr, 3 "

Simple syrup, a sufficient quantity to make the mass adhere, and then divide it into six balls and wrap each in a piece of tissne paper. These balls should be given three times a day, and when the disease is approaching the point of crisis, which occurs from the ninth to the twelfth day, these stimulating balls should be given every four hours, and if the animal will drink freely, six ounces of brandy or one ounce of alcohol should be given in a pail of water.

True, there are other treatments. au for

which their adherents claim great success, but in the hands of the writer and experience of others who have had the care of surface railroad stables the above treatment has shown the best results.

The prognosis of pneumonia among railroad horses is as a rule favorable; still it should be guarded and a careful survey of the animal made before giving a prognosis.

Should the animal present a bealthy, robust appearance and there be no indication of complications, there is then reason to expect with the above treatment a favorable result; but if the animal is advanced in age, not in strong condition, and presenting grave symptoms at first, a favorable prognosis should not be given.

My Rights.

[The following letter will explain itself,---ED.]

To the Holders of Wealth :

Your forefathers, once upon a time, declarcd unto the world that all men were equal and endowed with an inalienable right to life, liberty and the pursuit of happiness. So I came here where these rights were recognized and made the law of the land, and what did I find? A rapidly growing population, a mass of wealth never before accumulated in so short a time by any nation of the globe, all the paths of wealth, honor and power laid open a free and welcome highway to whomsoever might choose to tread therein, and in the highest posts that the nation can bestow I find meu who were once the dwellers of the rudest kind of shanties. This seems well enough in the abstract to those who may stand on high and moral grounds; but a down-trodden and impoverished, ignorant peasant, what beauty could I see in the unequal distribution of this wealth ?

I have seen the rich and idle living in consummate luxury at home, I have seen the poor starving in their garrets by my side, and why should I tolerate such things as these, where my tongue is loosened and I dare to speak my mind? All [are free to pursue their chosen way to happiness. You choose yours by patient labor and accumulation, I choose mine by sudden flights to higher places than you can dare to tread. I leaped from the tongue-tied despotism of the world beyond the seas to where the freedom of speech is a God-given right. And as I've taken this step so far ahead of them that remain at home, I now declare that my right extends beyond the narrow pale that reason, such as yours, can grant, and take upon myself the duty of a redistribution of the world and all the works of man

I have the air as free as you, you breathe and live by the very things that keep the life in me, and all the wealth and luxuries that you possess, although they may be the result of years of patient labor, they come from strict adherence to the laws of nature, and in the output of these laws I have rights, that I am bound to claim. It matters not to me what you may think, or how you may struggle in the net I'll weave about you. I know my

strength. I've got my agents in every house and home and shop, and if you turn so much as by the breadth of a single hair from the straight and narrow path laid down by me for your pursuance, I'll starve you to the very death; I'll cut you off from all mankind; I'll stop the passage of the food you need to keep the life within your body; I'll strip your family of the clothes they wear ; I'll keep your friends from coming to give you succor in this time of sore distress; and when you lie gasping and panting in the agony of mind that I knew I can produce, I'll dash the very cup of water that you lift to your lips to the ground, and leave you there to die. All this now lies within my power.

You ask that I shall work. I care no more for work. I have found that by subtile undermining of the minds of men I can make the very foundations of your boasted commonwealth to shake and totter, and as I stand outside and look upon the threatened ruin, I gloat upon my work, and when the crash shall come and they be buried in the ruins they have helped to make, I will not care, since down in the very dregs of all mankind I can find those who will gladly take their place.

My tools are fools and think I give them strength and make them friends when I send them into dangers greater than they ever knew before. Yet what of them? It gives employment to the mind, if such exists, and all men know that if the mind be full, the worry of the day is gone. My creatures will not work ; I mean my confidential agents, the creatures that have taken on the externalities of men, as " hounds and greyhounds, mongrels, spaniels, curs, are cleped all by the name of dogs," but who are no more like men in truth, than white resembles black. These ministers of mine, whom I have taken to my very bosom, are the ones who haunt and live and keep alive the very densof wickedness and crime, and when I sound the watchword, they come in swarms to tear and plunder and bring down to a level with themselves all that which you esteem so highly, and which I so utterly despise-because it is not mine.

Now in these straits what will you do? What can you do? How can you keep the wealth that you call yours? How can you even keep the life you have, unless I choose to grant the privilege ? "Whom the gods would destroy, they first make mad," and in a moment of madness, you, or those like you, who have gone before, went out into the darkness of the world, and gathered here and there some fagots that the older world had cast aside, and with these fagots you purposed to build a cheerful fire upon your hearth, and show that world that what they so lightly laid aside you could use to give warmth and health and joy to all your house. But in the darkness in the midst of which you groped you picked a stick that was not what it seemed, and when you warmed it by your fire, it turned, aud endowed with life, it struck its fangs into the infant "Liberty" that lay sleeping in the crib. It drove you with your wife out

into the world of storm, and then whirling through the honse in the mad delight of its strength and power, it dashed the firebrands, that ere now were logs of yule, here and there upon the floor. It fired the house, and as it was hemmed in on every side, and there could be no escape, it perished in the flames and left to you the duties of the reconstruction. You made this blunder and you must suffer for it.

It is not the home-brewed ale that causes you the trouble that you suffer from; but you know you find it in the foreign element, of which I stand the representative, and which delights to tear away all semblance to the haughty power by which it was surrounded.

I tell you now, and tell it to your face, that if you hope to gain control and put a check upon what you choose to call my mad excess, you must use prompt and stringent measures. I have caught the bit fast in my teeth. I'll have my run though both the rider and the beast of burden may perish in the end. It is a sort of wild intoxication that I feel, to know at first that in a little place I stir things up; then that across the length and breadth of the land my name is lisped with fear and dread; then like an eagle I swoop down upon a section of my adopted country and throttle Commerce in every way that she may turn, and when I have killed her here, or made her bow and worship at my throne, I'll turn my mind to the very seat of government itself, and with a myriad of my followers at my back, I'll climb the steps that you and such as you have held before. I'll pour out the coffers of the state and hold high carnival in feasts of human flesh and blood, and make the boasts that you have made be turned to wailing and let all the wide world of kings and despots laugh at your disgrace, and tremble when they look at me.

You have cared for me in my weakness, that I know. But as a child lets go the mother's hand and wanders through the world alone, when it can walk, so I discard the guiding care that you have taken till my strength was found, and go my way alone.

And now in parting let me say but one word more. If you are anxious for peace and quiet, let me have my way, yield to each demand that I may make, and though you may not see the reason in the right, you may perchance then see it in your fear. This will give a truce, and your life will not be sacrificed at first, but when I have uo more to ask, and you no more to give, why then we'll call the shades of Robespierre and all his crew, and end the peace, and give you what I think you ought to have. For the COMMUNE.

David Winter of Peabody has a model for a horse car of his own invention to run upon a single T rail instead of two flat street rails, and upon two wheels with antifriction bearings under the center of the car. The car is held in position by four upright standards, two of which move on each side of a guide rail placed above the ground at a hight of fifteen fcet. It is claimed the telephone and electric light wires can run on the upper rail and the single T rail would obviate the necessity of street blockades by snow.

Single vs. Duplicate Cable.

EDITORS STREET RAILWAY JOURNAL :-The letter signed "D. J. Miller," in your last edition, in which he claims that the failure of the duplicate cable system in Kansas City was due to defective superintendence or negligence, calls for the following reply:-

First objection,—I have been connected with cable roads both in San Francisco and here for the past eight years, and have yet to see a cable road stop for even half a day on account of a stranded cable; such delays except on very rare occasions, last from ten to thirty minutes, as a reference to the records on cable roads will show.

The gripmen on the Tenth Avenue cable road are given credit for remarkable intelligence when it is stated they were not aware of a change of cables being made while running.

Second objection,—If Mr. Miller had taken the trouble to inquire on what portion of the road the duplicate cable was damaged in Kansas City, he would have saved himself from the awkward position of misrepresenting facts. The duplicate cable was not damaged in the curves, but was cut in those places where he states "it is almost impossible for them to interfere, and they uever have come in contact with each other."

If the running cable would retain its normal line, viz. 2" from the other, side to side, they of course would not interfere, but the trouble is it will not, owing to the variation of the tension of the cable in use.

Third objection, —The question whether a moving cable is likely to retain more grit than one that is stationary I will leave for others to decide. My experience and the condition of the duplicate cable, although thoronghly oiled as compared with the rnnuing cable, proves the contrary.

Fourth objection,-The machinery should be inspected every uight by the regular engineer in charge, and the cable by the · rugular splicer, who cau be retained at reasonable wages. By proper management the repairs and care of cable will not cost much more than the wages of a splicer, whom you are obliged to retain with either single or duplicate cable system. When a cable strands the custom is to cut off the loose strand, tuck the end and go ahead. After shutting down at night make the necessary repairs. Some time ago we cut the old splice out of our cable, pnt in a new piece and made two splices in four and three quarter hours.

Dec. 26.—At 10.40 P. M. a grip attached to a train, crossing the engine house, failed to release cable and threw it off main sheave; time lost forty minutes. In this case the running cable got in such a position that the duplicate cable could not have been operated.

Dec. 29.—Cable stranded 350 feet at 11 p. m. Time lost one hour. January 16.—Cut out old splices, put in uew piece of cable, made two splices and started one hour late Sunday morning.

February 26.—At 4.45 p. m. cable stranded 75 feet. Time lost 25 minutes.

The cable is in operation twenty hours out of the twenty-four. Any fair-minded man acquainted with cable roads, will admit that the above is a very good showing for a road that has only been in operation nine months.

The duplicate cable was not taken out until all reasonable efforts to make it a success had been tried, but it was found expeusive and cumbersome and consequently abandoned.

The duplicate cable system may be made to work; but will it do so satisfactorily? And taking every thing into consideration, are its advantages over the single cable system such as to make it desirable? At present it looks as if the duplicate cable system, as patented by Mr. Miller, would follow the fate of his grip, about which he takes particular pains to say nothing.

In conclusion I will here state that I am interested in the successful construction and operation of cable roads, not in Mr. Miller's patents; and that I do not consider it just or right that elaborate and costly experiments should be made at other people's expense, in order to advance my own personal interests and be no material benefit to those who desire to make a profitable investment. Edw. J. LAWLESS,

Supt. K. C. Cable R'y.

Horse Clipping.

EDITORS OF STREET RAILWAY JOURNAL:-

There has been a great deal of sympathy wasted upon the suffering of the horse by having the long hair clipped off and the almost naked skin exposed to the cold wiuter winds. I am aware that it is not customary to clip street car horses, but as it is sometimes done, I trust you will at least give this defense of the practice space. If a horse is obliged to stand in a cold uuprotected barn where the wide open cracks lct the winds and storms beat in, and the horse stands in his dirty stall without a blanket, it would be cruel to clip him. Neither would I clip a horse if he were to be turned out into the open fields whenever the ground was bare and obliged to support his life on the scanty nibblings that he could get from the dry dead grass.

But if a horse has the care that the ordiuary street car horse receives, the subject appears in an entirely different light. The animal is removed from the surroundings that are natural to the brute creation in an untamed state and surrounded by what to them are the luxuries of civilization. Just as au explorer covers himself with furs and heavy clothing for a winter campaign in the arctic regions while his brother wears an alpaca coat in a New York office, so the horse who is sheltered, fed and cleaned in a warm stable does not need the heavy coat that would be supplied by nature for resisting the cold of less comfortable quarters. He is blanketed while standing to keep him clean, and even when upon the street the carriage horse wears a back blanket, while the movement and exercise is sufficient to keep the limbs warm. In other words the horse is removed from the natural and is placed in artificial surroundings and his life must necessarily be modeled on this artificial basis. This then would provide for the proper care and comfort of the horse and at the same time his hair is free from the accumulation of dirt that it is snre to gather when it is long. Disease is less apt to be gathered and the whole animal is cleauer aud healthier, for it is a well known fact that hair has the peculiar property of retaining offensive odors and of carrying disease from one locality to another. Add to this the amount of labor saved in the grooming of the clipped over the nuclipped animal and we can easily see the reason for the popularity of the custom among hostlers and stablemen. D.

A New Alloy.

A new alloy* that partakes of the nature and appearance of a brass, and also one that resembles nickel plate, has been recently brought out for which great claims are made. We are not aware of the exact proportions with which the metals are mixed or even what are used. Copper and tin, however, are the main ingredients. The alloy seems to have the properties of effectnally resisting the action of the atmosphere and will not tarnish under ordinary conditions. We saw a dasher handle for a street car that had been hanging in a large stable, where it had been subjected to the action of ammoniacal vapors for three weeks, and its brightness was barely dimmed, and it was quickly restored by rubbing with a dry piece of chamois. It is claimed that acids have no effect on it, except those that can touch gold. It is made of various grades and colors and is intended for use in the manufacture of car trimmings, valves, jonrnal bearings, and all other places where the ordinary brass is now in use, and is said to keep bright without the coating of shellac that is usually applied. The composition was invented by Mr. John I. Davis, from whom it takes its name.

• E. C. White 531 W. 33rd street, New York, Manufacturer.

The Berlin City Bailroad (elevated) has been in operation four years, crossing the city from east to west and being a thoroughfare for through and suburban trains as well as for purely city traffic. The purely city trains are 280 daily; the suburban 74, and the others 90, so that 444 trains are dispatched daily. It is a four track road on a solid masonry viaduct. On summer Sundays 72 extra trains are sometimes run, and as many as 562 have been dispatched in one day. (There have been more than 800 regularly on a double-track line of the New York Elevated.) The number of passengers on the Berln' road was 8,396,460 the first year, aud 14,256,490 in 1884-85. The four New York Elevated roads carried 103,354,729, and of these 48,399,496 were carried by the Third avenue line, which is about $8\frac{1}{2}$ miles long. From 400 to 500 employees are engaged on the Berlin road and 54 locomotives arc constantly in service.

Twelve Hours Work and Two Dollars a Day.

The Knights of Labor have made some efforts in Jersey City to create dissatisfaction among the employees of the Jersey City and Bergen Railroad Company, and have so far succeeded as to cause a petition to be presented to the company asking for the same time and pay as is in vogue on the New York city roads. The following interview with Mr. C. B. Thurston, President of the road, is of general interest, and shows very clearly the futility of making one system of labor and pay apply to different companies, towns and classes of service in the railway industry. The new regime in New York has really caused many men to work more hours, and in this particular instance, as Mr. Thurston says, the majority of his men will have to do more work and many of them will receive less pay.

"When the horse car strikes commenced in New York, I at once began making a personal investigation of the affairs of our road, to ascertain whether our. employees were oppressed in any way. You see, we are peculiarly sitnated here in Jersey City -we have 'rush' trips in the morning and evening, while in the middle of the day there is very little travel. This state of affairs compels us to have our full force of drivers and conductors on duty during these 'rush' trips, and to have long 'swings' during the dull hours of the day. I found that on the Greenville line some of the drivers and conductors had excessive hours of dnty, and that their 'swings' were too long. The Superintendent and myself have been hard at work for some time past arranging new timetables, so as to equalize the hours of labor. It is our earnest desire to arrange a timetable whereby the majority of drivers and conductors will not be on duty more than twelve hours a day, and in a few instances, thirteen. Of course, the men will have to take their turns at the thirteen hour days, but they will have longer 'swings' at noon. We are at work on a schedule to run our cars on five minutes time on the belt line during certain busy hours, and it will go into effect just as soon as we can get matters in shape. We wish to arrange our affairs so as to give both the public and our enployees the greatest possible satisfaction. Our men knew that we were at work on a new time-table, and a few days ago some of the drivers and conductors handed a petition to the Superintendent, in which they stated that they knew the company was desirous of obtaining their views upon the matter, and requested us to give them 'twelve successive hours of labor, with reasonable time for dinner, and two dollars a day.' The wording of their petition shows that they knew the matter had been taken up by the officers of the company previous to the receipt of their petition. They did not make a demand, but merely a request to express their views. I have had no intimation of a threatened strike, nor do I believe that our men have any cause to talk of such a thing. The inter-

ests of the men are protected by the present management, and we don't wish to impose any hardships upon any of our employees. Since I have had charge of the road the men have always felt free to come to me with their grievances, and I have always listened carefully and attentively to what they have had to say. I have always done everything in my power for my men, and all of them appear to be well satisfied. Some of them, however, have been tampered with by the ropers-iu of the Knights of Labor and other outside elements for the evident purpose of getting them into their organizations, and handling some of their money. I don't blame a workingman for seeking better wages and shorter hours of labor, but I think our men have been led into asking for the New York system under a misapprehension. So long as our men do their dutyfaithfully we don't care how many labor or other organizations they belong to, but we don't intend to allow any organization to interfere with our business. We have adopted a plan of graduated payment for conductors. The first three months a conductor receives \$1.75 a day; the next three, \$1.80; the next four, \$1.85; the next four, \$1.90, and the next four \$1.95. After eighteen months' faithful service he receives \$2 a day from that time on. This rule only applies to new conductors. If any of them are receiving \$1.90 a day the rule does not affect them. This plan will make it their own interest to remain with us and serve us faithfully. We want to make it an object for our men to stay with us. We make promotions from the ranks, and I insist npon all our office help being residents of Jersey City. None of our drivers receive less than \$2 a day. In making the investigation of the hours of labor and pay of our men, I found that eleven of our drivers were getting \$2.25 a day, while the remainder were getting \$2 a day, or the same as the New York drivers are now receiving. I asked why some drivers received \$2 and others \$2.25 a day. I found that those who got \$2 a day on the belt line make eight round trips, while those who received \$2.25 make nine round trips. It takes thirty minutes to make the down trip on the belt line, and thirty-four minutes the up trip, so that the \$2 drivers, who make eight round trips, put in eight hours and thirtytwo minutes actual labor, and the \$2.25 drivers, who make the nine round trips, put in nine honrs and thirty-six minutes actual labor, with swings in the middle of the day. Now, by comparing these facts with what the men ask for in their petition, it is very evident that they don't fully understand what they have asked for. Their request is for 'twelve successive hours of labor, with reasonable time for dinner, and two dollars a day.' That is what the New York men now get, which I don't think is near as good as our present system. Now, if we would adopt the system the men ask us to, the company could get ten round trips from them with forty minutes for dinner, where we now get only eight and nine, while the \$2.25 drivers would get only a \$2

day, and the additional labor to all hands around. Their plan would really impose greater burdens upon them than at present. This is evidence to me that they don't know what they are asking for. Any one familiar with horse railroading, knows that eight honrs driving a car in New York is a greater physical strain than twelve hours in Jersev City. The New York driver is put to a constant strain every moment he is on his car; with one hand on the brake and the other tugging at the horse's reins, he must be on the constant lookout, and the work is very severe. They are not provided with seats and are not allowed to sit down. The dutics of our drivers are comparatively much easier. They do not have to endure near the strain and labor the drivers over the river do. Our drivers are provided with seats and can rest by sitting down whenever they desire. Our road is conceded to be one of the easiest on its men of any large city in the country. The pay is really better and the labor lighter than in New York. Then again, rent is lower, living cheaper, and many other advantages enjoyed in this city, not found in New York. However, we shall do all we possibly can to accommodate our employees and the public to the best advantage, and we trust our efforts will be appreciated."

The Londoners who go to pieces badly on a fall of 5 or 6 inches of snow, are very much pleased with the working of the cable road they have; it was about the only mode of locomotion, except the underground, that was not interrupted during their late storm.

Iron asserts that they ran without difficulty and that the superintendent wished for more snow so that he could show what he could do, and that on Highgate Hill, grade 1 in 11, where teams of six horses could not pull four tons, the vehicles were attached to the cable cars and were drawn up without difficulty.

This is in effect the same experience had last winter in Chicago, nutil the shaft of their winding engine broke down. In spite of the intense cold, and drifts, said to have been six feet deep, the cable pulled the cars steadily through, until the four 24x48 inch cylinders twisted off the shaft of their winding drums. This year they have added two 30x60 inch cylinders and strengthened their shaft, proposing to pull their cars through anything that any blizzard may bring.

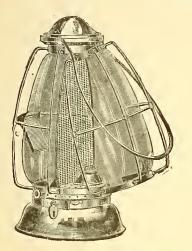
The difficulty experienced by street railways with a heavy snow storm, and the continual fight existing at all times regarding the use of salt, renders any suggestion for the lessening of the trouble of interest. In Vienna, which although far from being a model of cleanliness, there is a system in use for the removal of snow that is worth copying, as the rapidity with which the work is accomplished is truly remarkable.

Car horses are the best feed and most carefully looked after of all work horses, yet their average years of service are less han four,

Combined Fare-Box and Lantern.

This invention consists of a combination of fare-box and lantern ;* portable and inexpensive. The prominent features are, above all, a lantern that may be nsed as such and a money box. The lantern proper occupies one-half of the device, and when looked at from that side resembles an ordinary conductors' lantern very closely. The lamp is placed on one side of a partition, dividing the upper portion in halves, and supplied with air through the perforations in the bottom upon which it stands. The globe is made in two pieces, the one on the lamp side being hung in a hinged frame that may be swung ont, giving access to the lamp. The joint between the two halves of the globe is made tight by a strip of metal on either side, against which the glass is pressed.

The base is made large and with close bottom and sides, so that it may serve as a



money-box. This bottom is fastened to a band upon the upper framework by staples, and kept closed by a padlock. The fares are dropped into an opening on one side and slip through an oblong oponing in the glass, dropping upou a tilting top of the money box. Here it is exposed to the full view of the conductor and passenger, as the vertical partition between the fare side and tho lamp is made of wire gauze. The tilting bottom is provided with a rod and button, by which it may be inclined and the money dropped into the box. It is so arrauged, however, that a spring keeps it shut, and if the lantern is upset there is no danger of the mouey being spilled.

The lamp is secured in its place by a spring catch, attached to the wire partition, and holds it so that there is no danger of its getting out of place.

The chute, by which the fare is deposited, may be made of glass and solid with the half-globe, or of metal and attached.

In the use of this combined fare box and lantern, the conductor receives an empty one at the office, and is provided with packages of money, as is now done with the drivers of the bob-tail car, to make change for the passengers, so that the latter may always be enabled to drop the exact fare into the chute. The money then lies in full view of both passenger and conductor,

• Benj. P. Ward, Rochester, N. Y.

until the latter tilts the bottom and drops it into the box. At the end of the trip the conductor delivers the whole lantern at the office and receives an empty one for the next trip. Among the advantages that are claimed for the device, is that the conductor is provided with a lantern upon the back platform for use in lighting passengers on and off the car.

Car Ventilation.

I am not a railroad man, nor am I even a stockholder in one. I am merely one of the great number of peaceable citizens that go to make up that indefinite mass called the "public." We are in the main good natured, we do not care to overthrow the established customs that have been sanctioned by time and usage, but we have our minds made up on certain topics, and to these opinious we will always cling, even when we know that we are wrong, and especially is this true in the care we exercise over our health. This is especially exemplified by our actions in a street car. We know that it is dangerous to sit in a draft, and the fear of a cold and perhaps the resulting consumption is always held before our eyes. But we do not know that the dangers of lung disease are equally as great by the use of foul air for breathing purposes; we do not seem to know that even the dangers of consumption are increased by a long ride in a close and crowded car, with the air reeking with the odors of steaming garments, and the mixture of foul and fetid breath that is sure to exist in every crowd of thirty persons; we do not know and do not care that disease and danger lurks in every fold of our neighbor's dress; and last of all, we do not seem to know that pure air is what our lungs are made to breathe.

What then should be done? If I fall from a platform through negligence of a company's servant, they must pay me for the injury that I may sustain. They make a clear unwritten contract to carry me in safety from point to point, then why may they uot be compelled to execute their agreement? I own I am unreasonable. I'll close every ventilator that there may be in the roof, and force a spring to be used so that not a breath of air can enter at a shaking window joint. I close with a quick and vicious jerk the little slide where the conductor passes change in through the door; and as for doors, I will not tolerate their opening by so much as the breadth of a hair. I want a stove, and heat, and then with a party of stubborns like myself, I stay inside, and sweat and bake, and steam and suffocate.

But safety must be given, and these conditions are not safe. So the owners of the ear are bound by the duty that they owe the public to ventilate these cars. They must force in air so that at least two cubic feet may be supplied to each occupant every three minntes. Now how must this be done? It must steal in so gently that the most delicate organism cannot in any part of the car detect the slightest draft; no opening must be visible, and the air must come and pass away by secret channels; a hot fire must also be kept burning all the while, so that the temperature may be kept up to the present steeping point, and if a little harmless odor that resembles the present fetid one can be introduced the shock of freshness will not be quite so trying to our nerves.

Cannot some road adopt this plan, and thus by stealth compel us to breathe pnre air? And then perhaps after a season or two of careful trial we may even come to look with favor on the change, and not regard the doors and windows as the innate enemies of onr race. PUBLIC.

The Street Railway Companies must Repair the Streets.

An important decision relating to the liabilities of street railway companies was handed down by Judge Paxson, of the Pennsylvania Supreme Court. The case is that of the City of Philadelphia vs. the Frankford and Southwark Passenger Railway Company. The defendant company was incorporated in 1854 with power to construct a passenger railway from a point north of Cherry Street to the extreme northern portion of the city. The Legisture subsequently passed a supplement to the act of incorporatiou, authorizing the company to extend its route south of Cherry Street provided the consent of the City Councils was first obtained. The city gave their consent on the condition that the company would comply with the terms of an ordinance regulating passenger railways, which ordinance provided that said companies should keep in repair the streets occupied by them. This the company consented to do, and filed a bond as security for the performance of its promise. In 1882 the Chief Commissioner of Highways notified the railway company to repair Berks Street, from Second to Howard. This the company refused to do, npon the ground that they were not liable for such repairs as the street was north of Cherry Street, and as their right to construct a railway thereon was given by the original act of incorporation. The city then repaved the street, at the cost of \$1,465, and then sued the company for this amount. The Snpreme Court holds in affirming the judgment of the lower court, that under all these circumstances the defendant company was liable, and that the Passenger Railway Company must repay to the city the cost of the repairs.

A handsome horse, belonging to Henry A. Page, of the Valley road, in South Orange, betrayed symptoms of rabies Saturday night. The horse had been unmanageable for several days. Saturday evening he became violent, and the sight of a pail of water held to his nose threw him into convulsions. Henry A. Fenner, aveterinary surgeon, who was called, declared that the animal was suffering from rabies, and Mr. Page authorized him to kill him. The animal took a premium for style at the late horse show in New York, and was valued at \$2,500.

Street Railway Strikes.

We recently asked a number of the street railway companies "what in your opinion is the best way to prevent and enre strikes among street railway employees?" The uumber of answers we have received is very gratifying, but the diversity of views leads one to think that this important subject will need much houest and enlightened discussion before it it settled to the satisfaction of all concerned.

The following are some of the answers:

"Pay wages sufficient to attract intelli-Govern them Hire only such. gent men. wisely, firmly, but not harshly. Treat them trusted servants, not as abject slaves. Protect them always when they are in the right. Condemn them without fear or favor Show no when they are in the wrong. partiality.

"Do justice to your employees of all grades and they will not strike.

'Pay them a sufficient compensation." "To prevent strikes, give fair wages. If practicable have employees dependent. This could be effected by having a barrack or lodgings for the men, with rooms for those having families. By this plau the men would be always available. The single men could form a mess and live cheaperthan any other way. Say two rooms to each married man. Of course the wages should be lower if free lodgings were given. The employees should be engaged for uot less than a year, and re-engaged every year. The employee to give say a month's notice when he wishes to retire, and it to be well nuderstood that di honesty, misconduct or repeated breaches of the company's by-laws will be punished by instant dismissal, or by law in certain cases, where such a course could not be carried ont. Rewards and promotions should be held out for long and faithful service, but forfeited by strike or misconduct. When there is a demand for labor, and the company is able to give an increase of wages, it would be well to do so. But when men are plentiful and wages low the company has as good a right to reduce wages as they had before to raise wages,"

"To prevent strikes, in my opiniou pay men a fair salary, and do not employ men belonging to labor organizations when Compel meu to siguan agreement known. before entering the service that they will not do so. This will not prevent men band-ing themselves together nor will it prevent striking; but it will prevent any company from dropping completely into the hands of an organization such as the Knights of Labor. This is what we do here."

"Employ married men aud pay them good wages, making it an object for them to keep their places."

"Fair wages and kiud and respectful treatment."

"To treat them like meu."

"Pay a fair price for hours worked."

"Pay good wages and reduce the hours

to twelve or less." "Employ as far as possible men with families and old residents of the city in which the road is operated. Employ only sober men, and encourage weekly savings of money."

"No method of preventing strikes, as geuerally men have but httle gratitude and don't know when to stop asking if you give iu to them all the time.

"Let them go, and hire others."

"Don't hire men that belong to any society.

"Pay up all indebtedness and theu give the entire property to the employees.

"Discharge the men and stop running the railroad if violence is used by the strikers, until the civil authorities will fully protect the operations of the road."

"For the city, state, and general govern-

ment to show more backbone in dealing with mobs and riots." "Never had any. Don't know."

The last man is fortunate, and the one bcfore him is sensible. The man who wrote "let them go and hirc others" has not experienced a genuine strike we judge. That is what the road wants most to do. The uext last quotation above is the key to the whole question when the strike is really inaugurated. If the authorities would thoroughly and successfully keep the public peace, it would be comparatively easy to break strikes, but in many cases the authorities really cucourage the strikers as in the Chicago strikes. We shall give our readers the views of many other street railway managers in our uext issue but think our readers can find text for aggressive comment pro aud con on this subject and we hope to hear from them in our columns.

The Bench on Strikes.

In his charge to the Grand Jury at Napanee. Canada, March 15, Chief Justice Camerou made the following remarks in reference to the recent strike:—There is a street car company in Toronto which employs several hundred men, and it is said, (of course I am not familiar with the facts more thau has appeared through the public press), that this company feel it in their interest that the people who work for them should not be associated with any labor association which interferes with the individual liberty of the meu themselves, and so the company stipulated that no one belonging to such au organization could be employed by them, and it is said the men signed an agreement that they would not join any such an association. However, some of them thought well to do so and the result was that they were summarily dismissed by the railway company. Perhaps the company in dismissing them in the very summary manner they did, acted with a want of discretion, but at the same time they only acted within the right that the law gave them, because I presume there is nothing clearer to the mind of any man of common-sense than that every mau, whether employer or employed, can make just such bargain as he pleases, and any mau who makes a bargain with another, according to our notion of what is right or wrong, is bound to carry that bargain out, unless it be a bargain for some improper or im-moral purpose. There can be uo question under the sun that a man has a right to say, "I will not work for another man unless that man will pay me certain wages," and he has a right to unite with a dozen or a thousand other men who say the same thing. That is their right, and if they stop there no one can say they violate the law; but unfortunately they do not stop there, and, when they are exercising that uudesirable right, they generally go beyond that limit and interfere with and infringe upou the rights of others, and theu they do wrong and overstep their privilege, and that is the danger there is to the community in these organizations. In the city of Toronto the cars were stopped from running. A number of people gathered together, and I myself saw a car with several ladies in it forced off the track. It is discreditable to a city like Toronto that any outrage of this kind should occur in it.

It is said now, that an organization either exists or is about being formed in the United States by which capitalists are uniting for the purpose of protecting themselves against what they say are the unreasonable demands of these trade and labor unions. These organizations will exist throughout the length aud breadth of the land, and, if a number of meu strike in Chicago, immediately iu Massachusetts mills will stop ruuning and the employees be turned out. That is what capitalists say they have to do

in order to protect themselves against the unreasonable demands of labor. Evervone admits that a man who works is entitled to be paid a fair day's wages. No one can dispute that the laborer's rights stand as high in every respect in the community as the employer's rights do. Both capital and labor have their rights, both should be coadjutors, both working toward the same end, the prosperity and advancement of the people at large; but when we find them in antagonism we find that, instead of acting in that harmonious way, they act in a man-uer that is injurious to the peace, good government, and best interests of country.

It is very much to be regretted that we do find people forgetting themselves so much as to enter into these combinations with the effect of bringing about these bad results. Of course you will understand that no one should complain if a dozen men say they will not work for a particular man, but they should go and find work somewhere seel. If that man cau find other men to work for the wages he chooses to give them, surely it is the right of those men to go to work. Why should they be prevented from working? There can be no reason for it, and yet that prevention frequently takes place, and the result of it is anarchy, bloodshed sometimes.

For several weeks the Buffalo Express has waged a ceaseless and merciless warfare npon the street railway system of that city. The bitter and inexcusable personal abuse it has showered npon the managers and owners of the roads and their agents, plainly showed that its real object was either the gratification of personal spleen or mal-ice. The unprejudiced criticism of the press upon questions of public interest and importance is both desirable and commendable. And the measures before the legislature affecting the Bnffalo street railways and their patrous are deserving and worthy of careful and honest criticism and approval or condemuation as the Express may weigh their merits.

The officers of the road have made their returns to the state of their receipts and expenses as required by law. Their books unmistakably show that they can not afford the concessions demanded by the so-called Giese street car bill, and in order to make an argument in favor of the measure the express assumes the accounts are "doctored" so as to cover up profits. By a curious juggling of the report it leads its readers to suppose the company pays \$91,000 of inter-est \$39,000 of which it claims is unnecessary and is a clear profit to certain owners of the road. In point of fact the reports show the road pays only \$77,441,80, and it is a perfectly fair inference that its interest account is kept as low as possible. Such criticism and argument is not journalism : it is simply a sensational misrepresentation of facts to influence legislation that has no solid argument to snstain it. The volumin-ous arraignments by Editor Matthewsof Solicitor Box, his personal character, habits and practices have nothing to do with the merits of the question. The only issue is can the road afford to carry twelve years old passengers for ten cents and five years old passengers for nothing. The desirability of such a service is not to be questioned (aside from the teudency it would have to largely increase the total of over grown five year olds.) If the Express can show by honest argument, facts and figures. that the demand ou the road is not unreasonable, it ought to pass, but its treatment of the subject for the past six weeks is oue of the strongest reusons for thinking it unwise and unjust.

The National Motor Company of Chicago has been incorporated, with a capital stock of \$250,000, to manufacture street railway motors. . .



MONTHLY, \$1.00 PER YEAR

E. P. HARRIS, General Manager.

American Railway Publishing Co., 32 LIBERTY ST., LARESIDE BUILDING, NEW YORK. H. FAXON, Treasurer.

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BIANCH OFFICES: Boston, Masse, 8 ExcHANGE PLACE. H. M. SWET-LAND, Manager. Philadelphia, Pa., 113 So. FOUNTH ST. J. H. Mc-GRAW, Manager. J. H. McGRAW, Manager Subscription Department.

Iu the suit of the city against the Broadway & Seventh Avenue Railroad Company, to recover license fees for the cars used by the defendant corporation from 1875 to 1885, Judge Donohue, in the Supreme Court, March 17, directed the jury to find a verdict for the city for \$48,014,15.

Street railway securities have not escaped the effects of the recent labor difficulties and the market is in a kind of flurry. A number of roads have cut down the quarterly dividends from 1% to 1% and some have passed the last entirely. Among the latter class is the Broadway line, and the fact is attributed to tactics rather than actual inability. Other roads have fluctuated because of the increase of expenses brought about by the concessions made to the strikers. The rioting has also made the stocks regarded as less secure, and in one case in New York, the market value has fallen off fifteeu points. Another cause is the neglect to keep up the needed repairs in the past, which entails an increase this spring.

Railroad men, however, do not regard the matter as permauent and think that as soon as the present labor troubles are settled, the stocks will rise to their old values and the customary dividends be declared.

The multiplication of surface railroad facilities is a logical outgrowth of populons cities, and however reluctantly consented to at first by property owners, there is not a road now constructed in this city that the people would willingly spare. Even the "L" roads, that have put blinders on the second stories of many of the New York streets, are acceded to as a public necessity.

At the present moment facilities for getting up or down town are more or less convenient. The main thoroughfares are provided with surface or rapid transit at pleasure. Tho pressing need is the means of getting across town at convenient points, and of adequate branch roads to bring the east and west sides into quick and easy communication with the up and down town roads.

Whatever else may be the result of the recent street railway strikes in New York city and Brooklyn it is certain to produce in the minds of street railway officials the conviction that the labor question is a real and vital one and that it must be faced and grappled with as a reality and not as a

thing having an existence iu mere talk. We believe there is also recognized the necessity of combination and united action on the part of the street railways. The folly of putting off until the evil day of a strike, a demand which is granted when brought up by the committee of a labor organization, is showing its results with roads in various parts of the country. Whatever varying positions may be maintained by the street railways with regard to the legitimacy of the labor organizations and the wisdom of their existence, one truth cannot be gainsaid and that is that uo concession should be made at the hands of the strike which would not be granted by a peaceable interview.

THE CITY PASSENGER RAILWAY CO. controls most of the lines in Baltimore. As the cars here are not run all night, but at the latest 1 o'clock in the morning, the compaules contended that they could uot employ two sets of men but offered the men \$2.50 a day, an increase of fifty cents, if they would continue to work the sixteen and seventeen hours a day. This was refused. Theu began a contest in the Legislature. A bill was introduced to compel the companies to limit the hours of work to Street railway companies here twelve. have to pay annually niue per cent of their gross receipts as a tax for the support of Druid Hill Park. The City Passenger Railroad Company aloue pays \$63,000 a year tax. All the companies stood together to fight the twelve hour bill, and had an amendment tacked on to it providing that twelve hours constitute a day's work, and that the park tax be abolished. But the bill passed the House without the amendment. Now the companies threaten that unless the Legislature relieve them of the park tax they will, if the twelve hour system is forced upon them, cut the meu's wages down to \$1.50 a day. We learn that the struggle has had a depressing effect upou the shares of the Company. Its last report to us states that the City Passenger has now 160 cars and 1076 horses.

Almost every town or city having a street railway is just now being agitated more or less by the questions of the duties and renunerations of street railway employees. In many cases the mon themselves are the very last to fall into line and ask to have their fancied wrongs redressed. The agitation is in nearly every instance started and in its first stages carried along entirely by the daily press, until it has by coustant hammering created an honest but mistaken public sentiment that forces the men, in some if not a majority of cases, to an undesired strike. The truth of the statement made by a representative of this paper at the St. Louis Convention, that the interference of the press was largely responsible for the discontent among employees, has been proven many times in the past few months. One example of this is afforded by the Buffalo Express and the street railway employees of that city. In its criticisms of the railways it has made out the lot of the men to be so wretched and hard that one of our

representatives investigated matters to see how much foundation in fact the charges had. In talking with eight conductors he found two that had not read the Express, who expressed entire satisfaction with the management and their treatment. Those who had read the paper were more or less influenced by its comments. The policy of the road is not severe by any means. The net average hours of work of the men is 12. 08 hours. They buy their men's uniforms giving them all the time wanted to pay for them. They furnish their coal at wholesale rates, allowing them all the time wanted to pay for it. Their intercourse with their men is on the whole pleasant and satisfactory, and it is only after the paper has hammered away for weeks that some of the men perhaps have become dissatisfied. Considering the very vigorous campaign the Express has waged in its self-imposed position of street railway employee's champion, its success in stirring up dissatisfaction has not been remarkable. For a paper of the ability of the Express to use its columns for the purpose of "shanghaiiug" the employees of a corporation into a strike against their company is a sorry spectacle.

The fact that organized labor directed its fight against street railways in New York, conduced to the decisive victory obtained by the bread-winners. The public was on the side of the opponents of the street car monopolists. Why? Because of all cor-porations which thrive in a large city, the street rail any is most addicted to taking everything and giving nothing. They impede traffic and revel in franchises for which they make little or no return to the city grauting the same. A street car driver is eudowed with the right to whistle auything aud everything off of the track with the aud everything off of the track with the autocracy of those who in olden times pre-ceded royalty and shouted "Make way for the King." The street car lines pay big dividends and low wages. They do not re-quire, in their operation, a *tithe of the brains needed* to conduct a big steel or trou works, and though manifestly a public convenience are too often arrogantly and andeniably a public nuisauce. It is therefore natural to read that the New York crowd was "good-humored" while the mob was harassing the street car company; and as natural to find that nearly every one was glad when the overworked, underpaid drivers were victorious.-East End Bulletin, Pittsburg.

Fndge! The above contains seven positive statements only oue of which unfortunately for the interests of street railways is true. The popular feeling during the first of the strike in New York was on the side of the drivers, but when the general tie up was ordered on all the roads in order to force a settlement of differences on the Dry Dock line and the Brooklyu lines, it was quite different. The half million of people who were deprived of their usual means of reaching business, on account of matters uot iu the most remote degree affecting the lines they patronizc, as for instance all of upper New York and the West side of the town, had no manner of sympathy with the strikers and a continuation of the tie-up for two days would have created so much disgust in New York that the "Empire Asso." could never have successfully appealed to public sentimen tagain.

Street railways give a greater return to the public for the privileges granted them than any other corporations. Gas companies, telegraph, telephone, steam heating, water supply, pneumatic tube, and all other enterprises tear up and deface our streets and the portion of the public beuefited by them is confined to the wealthy or well off portion of the community and they have to pay dearly for the advantages, as witness the elastic proportions of the gas bill, the messenger boy's service, the telephone monopoly, etc. Now the street railway not only has to pay its taxes but it keeps the pavement of the street in first-class condition; in fact streets that have tracks on them are the best in the city, and traffic will go through them in preference to any other thoroughfares. Then again all the people enjoy the privileges of the street car service, rich and poor alike, though in point of fact the poor people in larger proportion than the rich. The charges are universally low in every city in the country having street car service. Some years ago an effort was made to stop running street cars Sunday by the law and order league, and we remember that Henry Ward Beecher, from his Plymouth Pulpit, made a very strong and earnest appeal for the Sunday street car, on the ground that it is the poor man's carriage and convenience. The rich don't need them for they have their carriages but the middle and poorer classes do. Surely the street railway pays greater tribute to the public for its privilege than any other corporation.

They do not impede traffic. Rather they make it more free and regular as the Broadway road in New York has demonstrated. A good double track through a busy street makes a steady current up and down that carries everything along in a comfortable orderly manner. In the old days of omnibuses a lady could not cross Broadway below Bleecker, without a policeman on each side of her

As to that whistle, did our Pittsburg friend ever think that it is the voice of thirty to sixty of the "dear public" in the car who in that manner very politely request that other portion of the "dear public" who are not in so much of a hurry as they are, to "turn out and let us go by." It is in no sense the autocratic note of the street railway company.

Street car lines unfortunately do not "pay big dividends and low wages." It is the rule and not the exception for them not to pay any dividend, for the first few years of their existence. The Third avenue line in New York, we are informed, paid no dividend for "eighteen years." In view of that does any one think their quarterly four per cent. is large? Not one company in ten, pays ten per cent. a year and not half the companies pay five per cent. ou their capital stock and there is very little water in street railway stock as yet. It represents solid cash as a rule. The wages, as we showed in our columns recently, are more than thirty per cent. higher than any other field of the same class pays. It is a fact that when the four or five thousand drivers went out on the

recent strike, there was no possible work that they could do, provided they could all get work at once, that would yield them \$14.00 a week which they were getting. Nothing but skilled labor gets as much as \$12.00 a week, now, and much of that gets less.

As to the brains required, if our E. C. will carefully read the story of the working of a New York road in another column and then add the infinite amount of worry and fret incident to keeping the public in good humor and the expenses inside the receipts. aud making "both ends meet" to say nothing of a dividend, he will find it will busily employ even a "steel or iron works brain." We doubt if a business can be found requiriug more tact, energy, wealth of resources and availability, clear and unfailing judgment and prompt action in a thousand and one details that are never done but always recurring, The business not only has the proportions of the "steel or iron works" but au endless amount of aggravating detail the latter never is troubled with.

We notice in our columns of this issue the prospectus of the Kings Bridge Cable Railway Co. The officers and directors of the company are a sufficient indication of its corporate vitality.

Contrary to the usual method of procedure, the parties abont to organize the company first went quietly to work and secured almost the requisite number of property owners' consents, as required by law. It was found, as is generally the case, that these people were anxious enough to have the road built, and the company now carries a solid realestate influence at its back. A number of years since when horse car roads were being first mooted, it occurred to a shrewd but impecunious Jerseyman that it would be a good thing for him to become the happy pos-sessor of one of these franchises which were being so liberally doled out by the legislature of that incorruptible State. backed up by his friends, and bustling with influence, he appeared at Trenton and requested for himself the longest and busiest street of his city. Of course he got it. After which some absent minded assemblyman inadvertently asked where the money was to come from for horses and rails.

The old chap rose to the full dignity of the occasion and replied that as the profitablencss of the enterprise was uncertain, the company would start out in a correspondingly modest way, using clotheshorses and fence-rails, and develop improvements as the future might warrant. Many roads now in operation have not felt themseves warranted, even yet, in advancing much beyond this stage. The Kings Bridge people, however, stage. The Kings bridge people, however, believe that the largest economy is not to be found in "the public be damned!" principle, and it is their intention to make their road as attractive to the public as modern invention and tasteful appointments cau make it. The duplicate system of cables and eugines, which they will employ, is generally admitted to have its advantages. It is intended to build the road in the most substantial manner and equip it with rolling stock comparable with nothing east of San Francisco, the birth-place of cable roads. The somewhat cynical adjective "Western", which is frequently used to set off so-called "Eastern refinement", when applied to street railway rolling stock, may act as a boomerang against Eastern people | per day.

who may not it. Cable roads east of the Mississippi are thought by many critics to be especially remiss in this respect, and if the fine promises what this road makes are in the main carried out, and we have reason to think this will be the case, it will be a source of congratulation as tending to elevate the standard of comfort. The route which the road takes is such that it will open up to rapid settlement the remaining section of Manhattan Island, which is very much in need of such a road, and will, we think, prove to be a most valuable property.

Notes and Items.

Appleton, Wis

THE APPLETON ELECTRIC STREET RAILFway Co. is the name of the company referred to in Mr. Van Depoele's address. Cars are being specially constructed by the Pullmans for this road; and a large and convenient building is being built constructed for the utilization of the water power for running the Van Depoele motors. Atlanta, Ga.

ATLANTA ST. Ry. Co. will rebuild and pave about a mile of track this season.

THE METROPOLITAN STREET RAILWAY CO. are preparing to extend their line to Grant They will Park, also in other directions. be in the market for steel rails. Ashtabula, O.

THE ASHTABULA STREET RAILWAY CO. will build abont a mile of new track to open up a new picnic ground of forty acres they have just purchased. It is pleasantly lo-cated with frontage, dock, etc., on Lake Erie, J. N. Stewart, Esq., owns and manages the company.

Boston, Mass.

THE METROPOLITAN STREET RAILFOAD CO. have got their shops nearly moved into their new quarters in the immense build-ing they recently purchased of the N. E. Mechanics & Mannfacturers Association, the foundry only remaining to be transfer-red. When they get thoroughly settled they will undoubtedly have the most commodious and complete shops for manufacturing and repair work of any street railway company in the world. The building will also afford ample storage room for their open cars in winter and box cars in summer. Their old shops at Tremont Crossing will be built over into much needed stable accommodations. We noticed on a recent visit six new box cars receiving their finishing touches. and they are at work on fifteen new open cars. A small army of painters were puting the spring coat on their open cars; as we counted, about eighty were being treated to new colors and varnish. Not mauy paint shops can handle so many at once.

The Metropolitan have built twenty box cars the past fall and winter in their shops at Tremont Crossing.

THE HIGHLAND STREET RAILWAY Co. are having two uew open cars built at the works of J. M. Jones' Sons, West Troy, N. Y. They like all the Highland equip-ments will be first class in every respect containing all the latest improvements. This road has adopted the "Chaplin Roller Bearings," after a trial of several years. and it is put under all their new cars and replaces those in their elder cars as fast as occasion warrants. The officers are as occasion warrants. warm in the praise of it as the manufacturers themselves.

THE MIDDLESEX RAILROAD Co. has raised the pay of its drivers and couductors from §1. 75 to \$2 per day, though no dissatisfaction had been expressed by the men. This company calls a day's work on a week day twelve hours and on a Sunday ten hours. All the Boston companies now pay \$2

Beaver Falls, Pa.

THE BEAVER VALLEY STREET RAILWAY Co. has re-elected M. L. Kuight President; J. F. Merriman, Secretary and Treasurer; and L. Richardson, Superintendent. The road has been doing well since starting. July 4, 1885. A contract for three addi-tional cars has been placed with the John Stephenson Co., to be delivered May 1. Birmingham, Ala.

THE BIRMINGHAM STREET RAILWAY CO. was granted right of way on nearly all the principal streets of the city several years ago, but has never laid tracks on a number of them, including Eighteenth street. March 17th. the City Council granted this street and several others to the Birmingham and Pratt Mines Street Railway Com-The management of the company pany. put a squad of men to work as soon as the papers were signed and laid track all night. The next day they worked on one-end of Eighteenth street, and the hands of the old company on the other. On the 19th, the the Mayor, to prevent a collision, stopped both. The old company shortly afterward filed a bill in the Chancery Court to enjoin the other.

Bloomington, Ill.

BLOOMINGTON & NORMAL HORSE RY CO., not hitherto reported in our directory, has 54 miles of 4 foot 81 inch track, 36 lb. rail, 10 cars, 60 horses. They built two miles of track last year. A. H. Moore is President and Proprietor, and Edward Sharp Secretary.

Brooklyn, N: Y:

THE ATLANTIC AVENUE R. R. Co. reports oight and one-fourth miles more track, fifty-three more cars, and 327 more horses than a year ago.

THE JAY AND SMITH STREET Co. raised the pay of its drivers and conductors to \$2.25 a day about a mouth ago, and have uow reduced the hours of labor from thirteen to twelve, at the same time reducing wages to \$2. The men wanted the change.

The Rapid Transit Commission has decided upon the route for an elevated road along Atlantic Avenue from South Ferry to East New York, with a brauch through Boerum place to Fulton street.

The ordinance requiring driver sand conductors to pay a license of \$1 each after April 1, has become a law.

THE BROADWAY RAILWAY Co. and the Bnshwick Railroad Co. have agreed to pay drivers and conductors \$2 per day of twelve hours including time for meals, and trippers \$1.50 per day of twelve consecutive hours

Cambridge, Mass.

THE CAMBRIDGE RAILROAD CO.'s directors elected Franklin Perrin Treasurer March 15, in place of Fred T. Stevens. Mr. Perrin has been City Auditor of Cambridge.

The company have ordered fourteen now open eight seat cars from Brill & Co., Philadelphia, they will have to move a half mile of T rail track in Watertown from the side to the middle of the street by order of the town authorities. Cost of improvements about \$18,000.

President Raymond of the Charles River Street Railway Co., has returned from a fifty day trip to the West, where he looked over the different roads for new ideas. At a meeting of the employees of the company he showed them, from a frank exposition of the company's affairs, that it could not be expected to pay increased wages; and his remarks were warmly applauded by the men. Nine trips of an hour and ten minutes each, or ten hours and a half in all, constitute a day's work. President Ray-mond said that, in relation to the hours on the PorterStation, Cottage Farm and Web-ster avenue lines, the time would be so changed that while still running nine trips the day would be made shorter.

Chicago, Ill.

Edward L. Rung, a boy of eleven years recovered a verdict of \$10,000 against the Chicago West Division Railway Company at Chicago on the 26th. The boy jumped off a car just in time to be run over by a car coming from the opposite direction. His injuries were so serious that oue leg was ampnt ted.

The control of the North Chicago City Railroad Company has passed to a syndicate of Philadelphia capitalists, who were represented in the transactions by two Philadelphians, John Widener and John Elkins, and who are said to be the chief members of the syndicate. The negotia-tions were carried on by Charles T. Yerkes of Chicago, who represented the Philadel-phians. There are 5,000 shares of stock, and 2,505 have been secured, the holdings of Jacob Rehm, 719 shares, and V. C. Turner and his relatives, 1,786 shares. The price paid was \$600 a share the transaction involving \$1,503,000, which was paid in cash. Mr. Yerkes has been elected President, and Mr. Rehm will retain his connection with the company for some time. Mr. Turner, who is one of the parties to the transfer, is defendant in a suit for \$500,000 damages for alleged failure to carry out a contract to sell his stock in the road to George Schneider, Frederick W. Peck, and Walter L. Peck. Mr. Turner claims that Schueider and the Pecks agreed to take the stock upon certain conditions which they failed to fnlfill, and he therefore refused to make the transfer. The capital stock is \$500,000 and the present bonded debt \$1,-249,000. At \$600 per share the property is worth \$3,000,000. The company employs between 600 and 700 men, owns eight combination barns and car houses, sixteen large structures, 350 cars, 1,765 horses, and about forty miles of track.

Chester, Pa.

THE CHESTER STREET RAILWAY Co. has 51 miles of track, 471b. rail, 14 cars and sixty-six horses. Richard Peters, Jr., is sixty-six horses. Richard Peters, Jr., is President, E. Mitchell Cornell Secretary and Manager, and Samuel H. Seeds Treas. Ciuciunati, O.

THE WALNUT HILLS Lines' employees have accepted \$1.85 a day for twelve hours work, and those of the Cousolidated Company \$2 a day for conductors and \$1.75 for drivers.

Cleveland, O.

THE PAINE AVENUE LINE is to be extendcd, making its whole length five and a half miles. The now turntable patented by Hathaway & Robinson is in successful operation at the stables of this company.

Cleveland, 0. THE EAST CLEVELAND R. R. Co. will make the following improvements this seasou: add two miles of new track; build a car house for thirty cars for the Garden street line; will build six new open cars, and purchase one hundred horses.

THE WOODLAND AND WEST SIDE ST. RY. Co, added twelve cars and thirty-five horses last year. Columbus, O.

Drivers and conductors on all lines have received an increase of 20 cents a day.

Covington, Ky. THE SO. COVINGTON AND CINCINNATI ST. Rr. Co. have elected J. C. Benton, Esq., Secretary, to succeed Mr. S. C. Bunton. Conception, Argentine Republic.

A street railway is about to be opened in this growing city.

Dauville, Ill. 'THE CITIZENS' STREET Ry. Co. have added a new car to their equipment.

Dayton, O. THE THIRD STREET LINE and the Fifth Street line now pay \$2 a per day for sixteen hours' work.

THE DAYTON STREET RAILROAD NOW reports 24 cars and 80 horses and mules.

OAKWOOD ST. RY. Co, have just com-pleted a new car shed to take the place of the one burned in January, and are adding five new palace cars to partly take the place of the seven burned. The new shed costs \$1500 and the uew cars \$900. Duluth, Mina.

DULUTH ST. Rr. Co intend adding eleven new cars this spring, also sixty mules, and building an addition to their barn and car house. In a few weeks they expect to lay three and a half miles of track. All the improvements will cost \$45,000.

Decatur, III.

THE CITIZENS STREET RAILWAY Co. will add eight mules and two or three cars to their stock. They are building a ball park at the western terminns of their road. Cost about \$3000.

East Saginaw, Mich.

THE STREET RAILWAY OF EAST SAGINAW, has been sold, possession to be given April 1st. We have no particulars of sale or who the purchaser was.

Erie, Pa.

THE ERIE CITY PASS. Ry. Co., are about to build an extension of one and one-half miles, and will add three cars and twelve horses to their stock. Some additions to their stables will bring the total cost of their improvements to over \$12,000.

Elkhart, Ind.

CITIZENS' RY. Co. is a newly organized company, being the first street railway in Elkhart. About four miles of standard gauge are being built, with 30 lb. rail, six cars, and thirty horses; and the line is to be running by Jnne 1st uext. F. W. Miller is President, G. C. Johnson Vice-President, E. C. Bickel Secretary, and A. R. Burns Treasurer.

Fort Smith, Ark.

FORT SMITH ST. RY. Co. think of putting on two uew cars at a cost of \$1,500. Galesburgh, Ill.

THE COLLEGE CITY ST. RY. Co., will build a two mile extension and add five uow cars and ten horses to their equipment at a cost of \$12,000.

Gloucester, Mass.

THE GLOUCESTER STREET RAILWAY CO. has been incorporated nuder the general laws, with the following directors: Henry Souther of Boston, Walter A. Jones, of Troy N. Y., F. W. Homans of Gloucester, David S. Presson of Gloucester, J. H. Lewis of Boston, Dr. George Morse of Gloucester, and Morris C. Fitch of Boston. The officers consist of Morris C. Fitch, President and Superintendent; Walter A. Jones, Vice-President; Francis W. Homans, Treasnrer; and David S. Presson, Secretary. About seveu miles of single track will be laid, running from the railroad station through Main, Prospect and Washington streets to Eastern Point, returning by two or three different routes. The " girder " system which is to be used is that of the Johnson Street Rail Company of Johnstown, Pa., and the T rail is from the Cambria

Iron Company of Pennsylvania. The cars are to be furnished by J. M. Jones & Sons of West Troy. N. Y. Six open cars and four box cars will be put on this summer, and eight more box cars will be ready for next winter. It is hoped to have cars running before hot weather. Gloncester has till now been the only city in Massachusetts withont a street railway. Haunibal, Mo.

THE HANNIBAL STREET RY. Co., are replacing sixteen pound Trail with thirty-six pound centre-bearing rail. Brownell & Wight, of St. Louis. Mo., are building their new summer car. Their improvements will new summer car. cost about \$3000

Haverbill, Mass.

Over \$30,000 has already been subscribed for the new horse railroad, and its building is assured.

Holyoke, Mass.

THE HOLYOKE STREET RAILWAY Co., have hought the rails and are about to put down a two mile extension, costing about \$15,000. Hyde Park, Ill.

THE SOUTH CHICAGO CITY RY. Co., will expend \$25,000 for two and one-half miles of track, six cars, ten horses, car harns, etc., this spring.

Indianapolis, Ind.

THE CITIZEN'S STREET RAILWAY Co., will make some improvements this season, con-tingent on the location of the Union Bailroad Depot.

Jamestown, N. J.

The street railway company here reports a steadily increasing hisiness, and that four new cars have been added to the equipment

Jersey City, N J.

THE JERSEY CITY AND BERGEN RAILROAD Co., purchased forty-six new horses recent-ly. The animals were hred in Indiana ly. and are first class railroaders. The com-pany has ordered seven open cars for the Greenville line. The cars will be delivered Greenville line. The cars will be delivered in May and will he put on in June for the summer. A number of new close cars are also heing built for the other lines. The rolling stock of the company is heing constantly augmented and improved. It is understood that the Currie estate is ready to give the required dedication necessary for the company to build its Bayonne branch; and it is now expected that the branch will be completed and in running order by July 4.

Kansas City, Mo. THE KANSAS CITY CABLE RAILWAY CO.

stockholders will meet at Kansas City April 19 to authorize an increase of the capital stock from \$500,000 to \$700,000, and the shareholders of that date will be privileged to subscribe for two new shares at par for every five shares held. Rights will be worth about \$10. The money is wanted to complete and put in operation the Independence avenue extension (to he finished in ninety days from Feb. 25, and at a prohable cost of \$100,000) and the balance to build the Ninth street extensiou and furnish equipment, etc., for an increas-ing husiness. The stock of the company is ing husiness. largely owned in Boston, where it is worth about 135.

This company has ordered a second lot of Brownell's improved grip cars from the Brownell & Wight Car Company, of St. Louis.

The managers of the elevated railroad are pushing their work, and, if not en-joined, will prosecute their project to a successful termination, and Kansas City, hoth the old and the new, the Missouri sister and the Kansas sister, will soon have the most intimate relations hy means of the rapid transit afforded by the cahle line and the elevated road.

The latter has contracted for cars, which will he beautiful, tasty and convenient. The cars will have the most comfortable seats, and will he supplied with the Eames vacuum brake. They will also he arranged so as to be heated by steam during the cold weather.

La Crosse, Wis.

A street car, horse, driver, and passengers, were precipated over the La Crosse River bridge March 22, making a perpen-dicular fall of twelve feet. The horse was killed, the car crushed, and five passengers seriously injured.

Laneaster, Pa.

THE LANCASTER CITY, STREET RAILWAY Co., contemplatean extension of new track. Lawrence, Kan.

THE LAWRENCE TRANSPORTATION Co., will add one car, six horses and one-half mile of new track to their equipment this spring, at about \$4000 cost.

Lawrence, Mass.

THE MERRIMAC VALLEY HORSE R.R. Co. will relay a mile of track and add two new cars, at an expense of about \$5000. Lincoln, Neb.

THE LINCOLN STREET RAILWAY CO., which has not hitherto appeared in our directory, reports six and a half miles of track, ten cars, and sixty horses. Frank L. Sheldon is President, and L. P. Young Superintendent.

CAPITAL CITY Ry, Co. will extend its track three-quarters of a mile this season, add two cars and sixteen horses, and enlarge its harn therefor. They are fixing up a forty-acre park at the end of their track, with five and a half acres of lake, track, with five and a half acres of lake, and will build a hase-hall fence, grand stand, etc. All their improvements will cost about \$7,000. This company has 5 miles of 4 foot $8\frac{1}{2}$ inch gauge, 25 lb. rail, 8 cars, 64 horses. E. B. Durfee is Presi-dent and Treasurer, and H. B. Durfee Secretary and Superintendent. Lockport, N. Y.

A new road is on paper here, with a good prospect of developing into an accomplished fact in the near future.

Long Island City, N. Y.

THE STEINWAY AND HUNTERS POINT R.R. Co., will extend their track to Woodside; also to St. Michael's Cemetery, about three miles in all, at a cost of some \$18,000. Louisville, Ky.

THE LOUISVILLE CITY RAILWAY Co., have added seventeen cars to their rolling stock the past season.

Macon, Ga.

MACON AND SUBURBAN ST. Ry. Co. will build this season to East Macon, a mile long, across the Ocmulgee river, and to Southwest Macon, amile long. Both these lines are extensions to the Belt Line, heing to sections of Macon growing rapidly and composed chiefly of the industrial classes. Four open or excursion cars, adapted to this delightful climate, have heen huilt or are building hy the company.

Milwaukee, Wis.

THE MILWAUKEE CITY RAILWAY Co. contemplate huilding two miles of new track. They are relaying their present track with 45 lb. steel rail and paving with cohlle stones. The will also put up four new huildings. The total expense for extensions and improvements will be over \$70,000. Mobile, Ala.

THE CITY RAILROAD Co., whose organization we referred to last month, have closed the purchase of the shell road and bay shore summer resort Frascati, situated in a beauti-ful locality on Mohile Bay. They will at once institute such improvements as to render the place more attractive than ever, and it is anticipated that in due time arrangements will be made for a season of "summer night concerts" to take place in the pavilion. A grand stand is to be huilt with a capacity of 1500 persons.

Montgomery, Ala.

THE CAPITAL CITY STREET RAILWAY CO., to he run by electricity, referred to by Mr. Van Depoele, in his address, has six miles of track.

Montreal, Canada.

THE CITY PASSENGER Co. will build seven miles of track, twenty new cars, a stahle, car house, etc., and pnrchase two hundred horses this season, at a cost of over \$150,-000.

Nashville, Tenn. The Nashville & Edgefield Railroad have overhauled the track from end to end, replaced the old rails with better steel in many places, and laid the Johnson 38 lb. rail for half a mile where the travel was greatest, with an improved hridge rail like - laying the floor level with the top of the rail; which makes a very fine floor, the

Superintendent writing that he is better pleased with it every day. These improve-ments have cost \$20,000.

THE MCGAVOCK AND MOUNT VEENON HORSE RAILWAY Co. intend to double their track two and a quarter miles, using either Johnson 30 lb. rail or 43 lb. side bearing tramrail steel; also to huild two new extensions of one mile each, and to add 14 cars, besides stables to accommodate 208 head of mules. About \$35,000 will cover the cost of these improvements. Superinter dent Deaderick writes us that they have just hought out the Summer Street and West Nashville Street Railway (it was only on paper) and that they have $7\frac{1}{2}$ miles of 5 feet track, with 16, 20, 28, and 32 lb. rail, 25 cars, and 140 horses and mules.

Nashna, N. H.

The stable for the new horse railroad is well under way, and track laying will be finished this spring.

New Bedford, Mass.

THE ACUSHNET HORSE RAILROAD Co. has made contracts to have its road equipped within sixty days for the substitution of electricity in place of horses as a motive power.

The Company will extend their road one mile. They are having built three new box cars expressly for electric motor service. Their improvements this season will go considerable above \$15,000. Niagara Falls, N. Y.

THE NIAGARA FALLS & SUSPENSION BRIDGE

Ry. Co. will purchase two box cars and several horses this spring.

Newburgb, N. Y.

THE NEWBURGH STREET RAILROAD CO. has secured its franchise, and will be begun hy the middle of April, or first of May at the latest. D. S. Haines, of Sandy Hill, is President. The company is trying to get the franchise for a road from Fishkill Landing, opposite Newhurgh, to Mattea-wan and Glenham, Dutchess Co.

Nevada, Mo.

A correspondent at this place writes us : "We have no street railway yet. Our city granted a franchise to a party last spring, but our streets were not properly graded, and the city delayed so long that the party abandoned the project. We are anxions to grant a liberal franchise to any party who will build the road. It is very much needed. We have over 7000 inhahitants now, and are growing rapidly. From the depot to the western line of the city, a mile and a half, the street is very easy grade. Half a mile of this is graded and graveled, and the halance needs hut little work to complete the grade. We have a party in correspondence with us now who we think will huild it this summer. I think a road will pay handsomely."

New Haven, Coun.

THE FAIR HAVEN AND WESTVILLE R. R. Co. expect to huild three miles of new track, also a new car house and stable, seven new cars and have about fifty more horses. The cost will be about \$75,000. New York, N. Y.

THE EIGHTH AVENUE RAILWAY Co. lately requested from the employees a reduction of the wages of conductors and drivers from \$2.25 a day to \$2, on the ground that the rate was a higher one than paid by any other company, with the exception of the Broadway and Seventh Avenue Company. A meeting of the men was held and they decided to accede to the request.

THE HARLEM BRIDGE, MORRISANIA & FORDHAM STREET RALROAD CO. laid tracks this winter for a branch road. This ex-tension is called the Lincoln & Morris Avenue Street Railroad. Tracks were laid from Mehrose avenue as far as the Southern Boulevard, leaving a hlock not completed, when the frost compelled the company to suspend operations in December. After

that the Southern Boulevard Street Railroad Company obtained consent to lay tracks along the boulevard and Third avenue to West Farms. The company expected to begin work March 24, but on the previons night the High Bridge Company nearly completed their line ou the block of the Southern Boulevard running from Third avenue to Lincoln avenue, thus cutting off the Sonthern Boulevard cars from their intended starting point.

On the 23d March Andrews & Clooney commenced laying temporary track on 125th street to East river preparatory to the building of a cable road from North to East rivers on Manhattan avenue and 125th street.

THE SUBURBAN RAPID TRANSIT Co.'s line will be opened in June as far as 143d street, and work beyoud will be prosecuted with a large force this summer.

THE TERMINAL UNDERGROUND RAILROAD Co. is incorporated with a capital of \$5,000,-000. It is to pass from near the City Hall Park, under Chambers, Reade, Elm, Spring, Mulberry, Great Jones, Lafayette place, Astor place, Eighth and Ninth streets, Fourth avenue to Forty-second street, connecting with the Fourth avenue improvement; also a branch from the City Hall Park to the East river and to the South Ferry. This is not a new scheme, but is the consolidation of former companies' interests, having in view the continuance of the "Fourth avenue improvement" in a direct line to the City Hall Park.

Mayor Grace vetoel the Aldermanic resolutions granting franchises to the Houston, West street and Pavonia Ferry and the St. Nicholas avenue and Cross Towu Railroad Companies.

A bill to repeal the charter of the Broadway surface road has been reported in the Senate and made the order for Tuesday, April 6.

The cars of the uew Chambers street cross-town line began making regular trips March 17. They are of the "bob-tail" variety, but have two horses. They are painted maroon and white, and cross Broadway at intervals of about five minutes. Only six cars are yet in use, but others are in course of construction, and will be put on as soon as needed. The time from one end of the line to the other is fourteen minutes. The cars connect with the Erie Ferry at the foot of Chambers street, and with the Roosevelt and James Ship Ferries on the east side. The cars run west on Chambers street and east on Dnane street.

The Jerome Park Railway service is furnished by the New York & Harlem Railroad Co.

THE CENTRAL CROSSTOWN R. R. Co. have elected George S. Hart President in place of John B. Slawson, deceased.

THE THIRD AVENUE RAILWAY Co, are having twenty additional cars built by Brill & Co., Philadelphia, after the designs of Mr. Robertson. The sash and panels are removable making an open car in summer and closed one in winter. They are for the new cable line of that company now building on 125th st.

THE NINTH AVENCE R. R. Co. have added one hundred and fifty horses and seven cars to their equipment the past season,

THE NEW YORK & HARLEM R. R. Co. have one hundred and sixty-eight more horses and seventeeu more cars than were reported last season.

Ogdensburg, N. Y.

A friend writes us that a street railway is contemplated in this place.

Arrangements have been perfected for building a cable railway, a charter for which was obtained over a year ago. Work will begin in April and four miles of double

track will be built this season, to be in operation by November. The estimated cost is \$250,000.

Philadelphia, Pa.

THE TRACTON Co. has been authorized to extend its tracks uptown. One of the provisions of an ordinance already passed compelled the company, on gettug such legislation from Conneils, to reduce fares to five cents for a continuous ride. A section in the new ordinance repeals this,

A strike has thus far been averted, the men having decided to abide by the agreement of the Arbitratiou Committee and wait for the answer of the Board of Presidents.

Pittsburgh, Pa.

THE SECOND AVENUE PASSENGER RAILwax Co. reports $3\frac{1}{4}$ miles of 47 lb. rail, five foot $2\frac{1}{2}$ inch gauge, eight cars and 60 horses. George Fawcett is President, James F. Fawcett Secretary, and W. J. Fawcett Treasurer.

Providence, R. l.

THE UNION R. R. Co. will put over \$75,000 into improvements this season including some new track, one or more buildings, and uew cars and horses.

Quebec, Canada.

THE QUEBEC STREET RAILWAY Co. will if right of way is granted build one half mile on Valier street. They are relaying their old track with steel rails. They propose running two more cars.

Rapid City, Dak.

A new street railway is being built here, of which Fred T. Evans is President. Rochester, N. Y.

ROCHESTER CITY & BRIGHTON R. R. Co. will this seasoubuild a new baru and car house at the end of the North St. Panl street line, costing about \$20,000. Saginaw, Mich.

THE CITY OF SAGINAW STREET RAILWAY Co. are building a guard rail across Loug Bridge. Cost \$1,000. They have received a new charter for thirty years.

Salem, Mass.

THE NAUMEAG STREET RAILWAY Co. begau March 15th to run cars to Webb Street.

Seneca Falls, N. Y.

THE SENECA FALLS AND WATERLOO RX. Co. will build an extension through this place to Cayuga Lake, distance threemiles, this season.

St. Catharine's, Ont.

THE ST. CATHARINE'S, MERRILTON & THOROLD ST. RY. Co. now reports eight cars and thirty-two horses.

Springfield, Mo.

SPRINGFIELD R. R. Co., owing to the city improving the street, will change the bed of their track to conform with the new grade. They are repairing six cars, and will order one or two new cars. These improvements will cost altogether \$1200 or \$1500.

It is rumored that the new City Council will be asked for a charter to build a uew road on Walnut street.

Sioux City, Ia.

SIOUX CITY ST. RX. Co. will extend their line about two miles, are having made two new cars, will get two more during the summer, and will have to buy a car of mules, and are going to pave about a mile and a half; these improvements costing \$15,000 altogether.

Stillwater, Minn.

Gentlemen from this place have been studying up the street railway question with a view to a new road. We hear of them in Winona and other places. St. Louis, No.

THE UNION DEPOT RAILWAY Co. has received a proposition to change the line to Park avenue to the electric system, at a cost of \$10,000. That would be for about

two miles, counting all the curves. In that case the blue, white and yellow cars would be taken by the electric motor to Park avenue, where they would be taken by horse power over the lines to Tower Grove, California avenue and the convent of the Sacred Heart, and Lafayette Park and the Gravois Road. The system will be more carefully investigated, as to durability, strength, etc., by an expert, and if it is reported upon satisfactorily, will probably be introduced in St. Louis at an early day.

The President of the Municipal Assembly has signed the bill for an electric railroad. Stoneham, Mass.

THE STONEHAM STREET RAILway Co. will add two cars and six horses to their rolling and live stock this spring.

Syracuse, N. Y.

A correspondent writes us: "The street car craze has struck Syracuse. It is the remark of the citizens generally and noticed by the strangers stopping here that this city has the poorest accommodations on the street car lines of any city of its size in the country., As an individual line the Fifth Ward is excepted. If all the companies in the city would take the Fifth Ward as a pattern and remodel their present system to that pattern, and bring all their lines to one starting point, the city would theu have a system of which its citizens might well be proud. The old companies do not see or else do uot want to accommodate the wants of the people by extending their tracks on streets where they are needed, so uew companies are *forced* to form to meet the wants of the people. Three new companies have of the people. The Third lately been organized here. The Third Ward Railway Company have just been incorporated and organized, and intend laying about three miles of track, com-mencing at the Empire House in Salina street, running up West Genesee street, through the village of Geddes to the soda ash works. W. B. Cogswell is President, W. S. Wales Sceretary and Treasurer. The W. S. Wales Sceretary and Treasurer. The necessary right of way from property hold-ers has been obtained, and as soon as consent from the city is obtained work on the road will be commeuced.'

THE SEVENTH WARD RAILWAY Co. have been incorporated and intend laying track through the Seventh Ward to Oakwood Cemetery, commencing at the corner of Salina and Fayette streets.

THE STRACUSE & ONONDAGA, W. B. Thompson Superintendent, contemplate extending their track, making a belt in a part of the city.

"THE GEDDES STREET RAILWAY CO." has been incorporated, and propose laying tracks in Geddes to connect with the Syracuse and Geddes road to run to the soda ash works. The company was formed hoping to head off or score the Third Ward Company.

THE CENTRAL CITY RAILWAY Co. have just added a new box car to their rolling stock similar to the Broadway (N. Y.) line's cars. THE NEW BRIGHTON AND ONONDAGA VAL-

THE NEW BRIGHTON AND ONONDAGA VAL-LEY Co. inten d to relay part of their road with heavier rail, and run oftener, and they may get another car, costing altogether from \$1000 to \$1500. They have now six horses.

Toledo, O.

THE METROPOLITAN STREET RAILWAY Co. built two miles of track late last fall, and do not contemplate any improvements during the spring and summer.

Toronto, Ont.

On the 13th, the street car employees resumed work, and the rioters arrested were fined from \$2 to \$30 and costs, the magistrate saying the peace of the city would be preserved at any cost, and mob law put down with a vigorons hand.

TORONTO STREET RAILWAY CO. reports

sixty miles of track, 160 cars and 750 horses, and that they are now finishing a new brick stable and car house, the former with a capacity of 300 horses and the latter with a capacity of 100 cars. Utica, N. Y.

THE UTICA BELT LINE STREET RAILWAY Co., which will soon be in active operation. has a capital stock of \$150,000.

Vicksburg, Miss.

In 1879 a charter was granted by the Legislature to a number of citizens of Vicksburg for the construction of street rail-roads in this city. A company was organ-ized and a road built from the foot of China street on front levee to the lower steamboat landing. Trains are only run on this road during low water. Up to the present time no move has been made to construct street railways in the city proper. Some weeks ago a number of gentlemen applied to the Legislature and were granted another charter, which rumor said would soon be put in operation by lines being constructed throughout the city. This threatened the franchise of the old company, who com-menced March 22, ou Washington street, near Jackson, tearing up the Nicholson pavement and putting down rails. On the 23d, the Aldermeu granted the new Hill City Railroad Company right of way throughout all the streets of the city, except Washingtou, that being the street that the Vicksburg Street Railroad commeuced work ou on their old franchise. Washington, D. C.

THE METROPOLITAN RAILBOAD Co., with-out solicitation of the drivers, on the 1st of March, agreed to reduce the hours of labor to twelve instead of sixteen on all the lines. The schedule of the F street line makes six trips a day's work; on the Ninth street line, nine trips; and on the short line, eight trips,-with an interval of au hour and three-quarters for dinner. The wages are \$2 per day. A committee of drivers tendered their thanks to the President and Directors in a set of resolutions.

We understand this company, among other improvements, will lay a mile and a half extension, build twelve new cars, buy fifty additional horses, build a new hay barn 120×80 feet, retimber and lay rail on one and one-quarter miles of old track, etc. They will spend over \$38,000 in this work.

Birmingham, Ala. THE HIGHLAND AVENUE RAILROAD will build two miles of track and add two locomotives and two passenger cars to their equipment, making an outlay of about \$26,-000.

THE BIRMINGHAM AND PRATT MINES STREET RAILWAY Co. have commenced operations. J. A. Van Hoose is President. Wilmington, Del.

The FRONT AND UNION STREET RAILway Co., reports 6,870 feet of 5 foot 2 inch track, 7 cars and twenty mules. George W. Bush is President, Samuel A. Price Super-intendent, and E. T. Taylor Treasurer. They propose making uo improvements this season, owing to the uncertainty of the labor and material market.

Woburn, Mass. THE NORTH WOBURN HORSE BAILROAD has 23 miles of track, 41 lb. rail, 4 foot 81 inch gauge, 4 cars and 5 horses. Woreester, Mass.

THE CITIZENS' STREET RAILWAY Co. has been formally organized, the stockholders having elected the following directors: M. Haffards and A. S. Tripp of Fall River, Charles B. Pratt, Hiram Fobes, Henry S. Pratt, N. S. Liscomb of Worcester, and Frank S. Stevens of Swansea. The directors organized with Hon. Charles B. Pratt as President, and F. W. Brigham, of Fall River, as Secretary and Treasurer. Six hundred shares were represented. York, Pa.

A new road is contemplated in this place.



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

ABREVIATIONS-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. rail

AKRON, O.-Akron St. Ry. & Herdle Co. 2% m, 6c, 31 h. Pres. Ira M. Miller, V. Pres. James Christy, Treas, B. L. Dodge, Sec. F. M. Atterholt, Supt. John

Treas, B. L. Dodge, Sec. F. M. Atterholt, Supt. John T. Metlin.
ALBANY, N. Y.-Watervilet Turnpike R.R. Co. 7% m, 26:45 lb r, 27 c, 149 h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster.
The Albany Ry. 10 m, 4-8% g, 33-47 lb r, 61 c. 194 h. Pres., Supt. and Treas. John W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St.
ALLENTOWN, PA.-Allentown Pass. R.R. Co. 3% m, 6 c, 29 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balllet, Supt. Russel A. Thayer.
ALTON, ILL.-Alton & Up. Alton Horse Ry. Co. ALTOONA, PA.-City Pass. Ry. Co. of Altoona.
3% m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John P. Levan, Sec. & Treas, L. Belfsneider. Supt. Jobo J. Buch.
AMSTERDAM, N. Y.-Amsterdam St. Ry. Co. 1% m, 4-8 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Office 112 Front St., L. Island City, N. Y.
APPLETON, WIS.-Appleton Electric St. Ry.
ASHTABULA, O.-Ashtabula City Ry. Co. 4 m, 4-8% g, 40 lb r, 9 c, 60 h. Owner & Prop. Jno. N. Stewart.
ATCHISON, KAN.-Atchlson St. Ry. Co. 5%

APPLETON, WIS.—Appleton Electric St. Ry.
 ASHTABULA, O.—Ashtabula City Ry. Co. 4 m, 4-8½ g, 40 lb r, 9 c, 60 h. Owner & Prop. Jno. N.
 Stewart.
 ATCHISON, KAN.—Atchison St. Ry. Co. 5½ m, 4-8½ g, 20-30 lb r, 19 c, 60 h. Pres. & Gen. Man. J.
 Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. Gate City St. R.R. Co. 2½ m, 4-8½ g, 16 lb r, 7 c, 96
 Pres. L. B. Nelson, V. Pres. I. LieGive, Sec. & Treas. John Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co.
 West End & Atlantic R.R. Co. 2m, 4-8½ g, 20 lb r, 6 c, 34 mu. Pres. J. D. Turner, V. Pres. T. L. Lang-ston, Sec. & Treas. B. H. Brumhead, Man. & Pur. Agt. Jno. S. Brumhead.
 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. Mari-etta St. Line 2.50 m. West End Line 2.50 m.
 Wchlehall St. Line 1.50 m. Pres. Richard Peters, Sec. & Treas. J. W. Culpepper, Supt. & Purch. Agt. E. C. Peters. Office, 49 Line St.
 ATLANTIC, N. J.—Atlantic City Ry. Co.
 AUBURN, N. Y.—Anburn & Owasco Lake R.R. Co.
 Mu H.45½ g, 28-30 lb r, 3c, 12 h. Pres. D. M Osborne, Sec. & Treas. C. B. Koster, Supt. B. F. Andrews.
 East Genesee & Seward Are. Ry. Co. 1½ m, 4-8½ g, 28 lb r, 7 c, 10 h, 30 mu. Pres. H. H. Evans, V. Pres. W. Thatcher, Sec. A. J. Hopkins, Treas. E. W. Truth, Supt. J. B. Chattle.
 BABULON, N. Y.—Babylon Horse R.R. Co.
 Mu F. 20, 10 r, 6 c, 25 h. Pres. David M. Osborne, Sec. & Treas. J. B. Chattle.
 BABULON, N. Y.—Babylon Horse R.R. Co.
 M. - g, --lb r, 2 c, 3h. Pres. W. F. Norton.
 BALTIMORE, MD.—Baltimore & Powhatan Ry.
 Co. 107 fb. Pres. Oc. 40 m, 5-4½ g, 35 lb Freeman, Sec. R. B. Clark, Supt. I. M. Ketrick. Ealtimore & Catonsville Ry. Co. 6 m, 5-4½ g, 35 lb Freeman, Sec. R. L. Bridge.
 Baltimore & Halls Spring R.R. Co.
 Baltimor

Cltizen's Ry. Co. 20 m, 5-4½ g, 46 lb r, 34 c, 360 h. res. Jos. S. Hagarty, Treas. Wm. S. Hammersley,

Cltizen's Ry. Co. 20 m, 5-4% f; 40 10 1, 50 C, 50 C H.
Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed.
Monumental City Ry. Co.
North Baltimore Passenger Ry. Co. 11 m, 5-4% 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. 5% m, 5-4% g, 42-45 lb r, 30 c, 200 h. Pres. R. E. Hamilton, Treas. Gustavus Ober.
Sec., Supt. & Pur. Agt. Wm. A. House, jr. Office, Fort Aye. & Johnson St. Soon move to Druid Hill Ave.
York Road R.R. Co.
BATTLE CREEK, MICH. – Battle Creek Ry. Co.

BATTLE CREEK, MICH.—Battle Creek Ry. Co. 5 m, 3-6 g, 28 lb r, 8 c, 18 h, 3 mu. Pres. Geo. Det. White, V. Pres. H. H. Brown, Sec. Chas. Thomas, Supt. John A. White, Gen. Man. J. W. Hahn.
BAY CITY, MICH.—Bay City St. Ry. Co. 7¼ m, 48¼ g, 18 lb r, 13 c, 35 h. Pres. James Clements, Treas. Wm. Clements, Sec. Edgar A.Cooley.
BEAVER FAILES, PA.—Beaver Valley St. Ry. Co. 3 l-10 m, 5 c, 21 h. Pres. M. L. Knight, Sec. & Treas. J. F. Merriman, Supt. of Construction, J. C. Whita.
BELAVER, O.—Bellaire St. R. B. Co.

BELLAIRE, O.-Bellaire St. R.R. Co.
 BELLEVILLE, ONT., CAN.-Belleville St. R.R.
 BEREA, O.-Berea St. Ry. Co. 14 m, 3-6 g, 28 lb
 r, 2 c, 2 h. Pres. C. W. D. Miller, V. Pres, T. Chinchward, Sec. & Treas. A. H. Pomeroy, Supt. A. W.
 Bishop.

ward, Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bishop.
BINGHAMTON, N. Y.-Washington Street & State A sylum R.R. Co. 43/m. 4 g, 16-25 lb r, 13 c, 23
h. Pres, B. H. Meagley, V. Pres, Geo. Whitney, Sec. C. O. Root, Treas. F. E. Ross.
Binghamton Central R.R. Co. 33/m (23/s) laid), 3
g. 28 lb r, 6 c (not in operation). Pres. Geo. L. Crandaul, V. Pres. Nelson Stow, Sec. & Supt. Chas. O. Root, Treas. H. J. Kneeland, Offices 63 Court St.

Binghamton & Port Dickinson R.R. Co. 5 m, 4-8½ g, 20-30 lb r, --c, --h. Pres. Harvey Westcott, Sec. & Treas. G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 State St. Main, Court & Chenango St. R.R. 5 m, 4-8g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St. BIRMING HAM, ALA.-Birmingham St. Ry. Co. 5½ m, 4-8g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris, Highland Avenue R. R. 6½ m, 4-8½ g, 20 lb r, 9 c, 25 h. Pres. H. M. C. Idwell, Supt. W. J. Milner, Owners The Elyton Land Co. Birmingham & Pratt Mines St. R. R. Pres. J. A. Van Hoose.

BLOOMFIELD, N. J.-Newark & Bloomfield R.

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BLOOMFIELD, X. 3.— Newark & Elomined R.
BLOOMINGTON, ILL. — Bloomington & Normal Horse Ry, Co. 5½ in, 4-8½ g. 361b r, 10 c, 69 e. Pres. & Proprietor A. H. Moore, sec. Edw. Sharp.
BOONE, IA. — Boone & Boonsboro St. Ry. Co. 1½ m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W. Reynolds Treas. J. B. Hodges, Supt. A. B. Hodges.
BOONSBORO, IA. — Twin City & Des Molnes River Motor St. Ry. Co. 3 m, 3-6 g, 2 motors, 3 c.
Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger.
BOSTON, MASS.—Highland St. Ry. Co. 19 m, 4-8½ g, 48 lb r, 187 c, 1000 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg.

N.S. R. Huntsinger.
BOSTON, MASS. –Highland St. Ry. Co. 19 m, 4-8% g, 43 lb r, 187 c, 1000 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. F. Rugg.
Lynn & Boston. 34% m, 4-3% g, 25-48 lb r, 114 c, 54 h. Pres. Amos F. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.
Metropolitan R. R. Co. 80 m, 4-8 g, 50 lb r, 700 c, 3600 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas. Cbas. Boardman. Office, 16 Kilby St. Middlesex R.R. Co. 28 m, 4-8% g, 50 lb r, 150 c, 700 h. Pres. Chas. E. Powers, Treas. J. H. Studley, Address, 27 Tremont Row, So. Foston Ry. Co. 13 m, 4-5% g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. E. Powers, Treas. J. H. Studley, Address, 27 Tremont Row, So. Foston Ry. Co. 13 m, 4-5% g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. E. Dewers, Treas. J. C. Giddings.
BRADFORD, PA. -Bradford & Kendall R.R. Co. 14% m, 4-8% g, 38 lb r, 3 c, 4 h. Pres. James Brodey, Sec. N. B. Parsons, Gen. Man. & Supt. Enos Parsons. BRENIAM, TEX. -Brenham St. Ry. Co. 2 m, 4g, 20 lb r, 3 c, 22 mu. Pres. T. J. Pampell, Sec. John A. Randle, Treas. D. C. Giddings.
BRIDGEPORT, CONN.--The Bridgeport Horse R.R. Co. 5 m, 45% g, 42 lb r, 14 c, 70 h. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. E. F. Lashar.
BROKIYN, N. Y.-The Atlantic Avenue R. R. Co. of Brooklyn. 32% m, (leased and owned). 45% g, 59-60 lb r, 297 c, 1139 b. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost. Office cor. Atlantic & Third Aves.
BrookKLYN, N. Y. H. Baclantic Avenue R. R. Co. of Brooklyn. 32% m, Res. Co. 8 m, 4-5% g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Edvin Beers, 59-60 lb r, 197 c, 1139 b. Pres. William Richardson, Sec. & Treas, Robert Sealey, Supt. Joshua Crandall Office 21 Broadway, E. D.
Brooklyn Cross Town R.R. Co. 8 m, 4-5% g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ear and the green, Y. Pres. Hunt, Morrison. Office system Stown R.R. Co. 10 h. Pres. Midnard H. Green,

50 lb 7, 72 c, 350 h. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First St. Grand Street, Prospect Park & Flatbush R.R. Co. 4^{12} m, 4.8% g, 50 lb 7, 55 c, 24 h. Pres. Louis Fitz-gerald, 120 Broadway, N. Y. Sec, & Treas. Duncan B. Cannon, Supt. Jno. L. Heins. Offices Franklin Ave. and Prospect Place. Greenpoint & Lorimer St. Prospect Park & Coney Island R.R. Co. 4 7-10 m, 45-30 lb r, 4-5% g, 69 c, 214 h. Pres. A. R. Culver, Treas. A. C. Washington, Sec. George H. Smith. Eng. Supt. R. Schermerhorn, Supt. Robert Attleser. Offices Ninth Ave, 19th & 20th Sts. (Leased to At-lantic Arce. R. R. Co. Prospect Park & Flatbush R.R. 1½ m, 4-5% g, 84 lb r, 70 c, 360 h. Pres. Loftis Wood, South Brooklyn Central R.R. Co. 7 m (4½ m laid), 45% g, 60 lb r, 42 c, 192 h. Pres. Wm. Richardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Ruddy. The New Williamsburgh & Flatbush R. R. Co. 6% m, 4-3% g, 47-50 lb r, 74 c, 255 h. Pres. Geo, W. Van Allen, 54 Ann St., New York, Treas. C. B. Cottrell, S Spruce St., N. Y. (1ty, Supt. Chas. E. Harris, Nost-rand Ave, & Carroll St., Brooklyn. The Union Railway Co. of the City of Brooklyn mot in operation). Van Brunt St. & Erle Basin R.R. Co. 1½ m, 4-5% g, 45 lb r, 7 c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry.

208

BRUNSWICK, GA.-Brunswick St. R.R. Co.
BUFFALO, ILL.-See Mechanicsburg, III.
BUFFALO, N. Y.-Buffalo St. R.R. Co. 17½ m.
ASW 50 br 96 c, 510 h. Pres. Henry M. Watson, Y. Pres. P. P. Pratt, Sec. S. Spaulding, Treas. W.
H. Watson, Supt. Edward Edwards.
Buffalo East Side St. R.R. Co. 24 4.5 m, 4-8½ g, 42 br, 47 c, 218 h. Pres. S. Spaulding, Y. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Watson, Supt. Edward Edwards. Office 346 Main St.
BURLINGTON, IA.-Burflington Clty R.R. Co. 22 m, 4-8½ g, 22 br, 9 c, 30 h. Pres. John Patterson, sec. & Man. C. T. Patterson.
Union St. Ry. Co. 8½ m, 4-8½ g, various r, 19 c, 85 h. Pres. Geo. E. Rust, Sec. & Supt. F. G. Jones.
CAMRO, ILL.-Cahro St. Ry. Co. 2 m, 3-6 g, 25 lb 7, 3 c, 9 h. Pres. J. A. Goldstine, V-Pres. H. Bloms, Supt. & Treas. Thos. Lewis, Sec. H. Schulze.
CAMBRIDGE, MASS.-Cambridge R. R. Co.51-59 m, 4-8½ g, 50 lb 7, 25 c, 1428 h. Pres. Prentiss Cummings, Treas. & Clerk Frauklin Perin, Exec. Com. I. M. Spelman, P. Cummings, O. S. Brown, Clerk C D1-rectors, O. S. Brown, Supt. M. A. Bancrott.
Charles River St. Ky. Co. 10 4-5 m, 2-8½ g, 50 lb 7, 50 c, 330 h. Pres. Chas. E. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlain, Supt. John N. Akarman.
CAMIDEN, N. J.-Camden & Atlantic St. Ry. Co. 25 h. Pres. Thos, A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood.
CANTON, O.-Canton St. R.R. Co. (new road.)
CAPE MAY, N. J.-Cape May & Schellenger Landing Horse R. R.
CARTHAGE, MO.CEM RAPHOS, IA.-Cedar Rapids & Marlon St. Pass. Ry. Co.
CHAPPA, M. S. L.-Champaign R.R. Co.

Landing Horse R. R. CARTHAGE, MO.-CEDAR RAPHOS, IA.-Cedar Rapids & Marlon St. Pass. Ry. Co. CHAMPAIGN, ILL.-Champaign R.R. Co. Urbana & Champaign St. R.R. Co. (See Urbana.) CHARLESTON, S. C.-Charleston Clty Ry. Co. 8 χ m, 48 χ g, 38 42 lb r, 22 c, 84 h. Pres. Jno. S. Riggs, Treas. Evau Edwards, Sec. Frauk Whelden, Supt. Jno. Mohlenhoff. Entite Street Sullivau Island Ry. Co. 2 m, 6 c, 12 mu. Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. T. W. Passallagere. Middle Street Sullivau Island Ry. Co. 2 m, 6 c, 12 mu. Pres. B. Callaghan, Sec. & Treas. Trank F. Whild-den, Supt. B. Buckley. CHATTANOOGA, TENN.-Chattauooga St. R. R. Co. 2% m, 48 χ g, 16-25 lb r, 8 c, 50 h. Pres. J. H. Warner, Sec. C. R. Gaskill, Supt. A. B. Wingdeld. CHIESTER, PA.-Chester St. Ry. Co. 5 χ m, 5-2 χ g, 47 lb r, 14 c, 66 h. Pres. Richard Peters, Jr., Treas. Sam'l H. Seeds, Sec. & Mauager, E. M. Cornell. CHICAGO, 1L.-Chleago Clty Ry, CO. 57 m, 4-8 χ g, 45 lb r, 567 c, 1.416 h, cable doing work of 2,500 h. Pres. C. B. Holmes, Sec. H. J. Windsor, Treas. T. C Pennington, Supt. C. B. Holmes. Chicago West Division Ry. Co. 30 m, 4-8 χ g, 40 lb r, 620 c, 3425 h. Pres. J. R. Jones, Suce. George L. Webb, Supt. Jas. K. Lake. Morth Chicago Clty Ry. Co. 37 m, 4-8 χ g, 45 lb r, Si Co. 17 met. χ Construction, Augustuff. Windsor, Wreat, V. Pres. Chas. T. Yerkes, Sec. & Treas, Hiram Crawford, Supt. of Track & Construction, Augustuff. W. Woach, Master Mechanic J. Miller. CHILLOWTHE, O.-Chillicothe St. R.R. Co. 24 m, 39, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewel Mechanic J. Miller. CHICAUTINE, O.-Chillicothe St. R.R. Co. 24 m, 59, 46 lb r, 7 c, 10 h. Pres. Le. Pres. Aleo A. 25 M. 548 the Pres. William Polanel, Supt. Ewel Mechanic J. Miller. CHILLIOWTHE, O.-Chillicothe St. R.R. Co. 24 m, 59, 46 lb r, 7 c, 10 h. Pres. Le. P. Safford, Sec. A. E. Wenis, Treas. William Polanel, Supt. Ewel Mechanic J. Miller. CHICAUNATI, O.-Chennati Inclined Plane (ky.

Sec. A. E. Weins, Trans. The Model of Constraints of the Constraint of Constraints of the Constraint of Constraints o

Hill.
Cincinnati St. Ry. Co. Pres. Jno. Kilgour, V. Pres.
Albert G. Clark, Treas. R. A. Dunlap, Sec. & Auditor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B
P. Haughtou,
Columbla & Cincinnati St. R.R. Co. 3½ m, 8g, 35
Ib r, 3 c, 6 dummy c. Pres. C. H. Kilgour, V. Pres.
John Kilgour, Treas. B. F. Branuan, sec. A. H. Meler, Mt. Lookout, O. Supt. J. J. Heudersou, Mt. Lookout, O.

John Kligour, Treas, B. F. Brahung, Soc. A. H.
Meler, Mt. Lookout, O. Supt. J. J. Heudersou, Mt.
Lookout, O.
Mt. Adams & Eden Park Iuellued R.R. Co. 3% m,
Mt. Adams & Eden Park Iuellued R.R. Co. 3% m,
Sely g, 42 lb r, 40 c, 320 h. Pres. & Treas, J. P. Kerper, Sc. J. R. Murdock, Supt. Chas. Whitten.
So. Covington & Chednadt. (See Covington, Ky.)
CLEVELAND, O. – The Brooklyu St. R.K. Co. 5%
m, 48% g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson,
Broadway & Newburg St. R.R. Co. 6 m, 4-8% g, 10
c, 160 h. Pres. & Supt. J. Biofgen, Treas.
John McConnell, Supt. A. L. Johnson.
Broadway & Newburg St. R.R. Co. 6 m, 4-8% g, 10
c, 160 h. Pres. & Supt. Joseph Stauley, V. Pres.
Samil Androws, Sec. & Treas, E. Fowler.
Superfor St. R.R. Co. 15 m, 4-8% g, 35-101
Koch, Sec., Treas. & Supt. M. S. Robison, Jr., The East Cleveland K.R. Co. 20 m, 4-8% g, 35-40 lb
steel r, 103 c, 520 h, 1 electric motor. Pros. A.
Everett, V-Pres. & M. C. B. Chas. Wason, Sec. & Treas, H. A. Everett, Supt. E. Duty. Offices, 1154 (158 Encid Ave.
Woodlaud Avenue & West Side St. R.R. Co. 20 m, 4-5% g, 43-45 lb r, 124 c, 55-5 h. Pres. M. A. Hanna, V.
Pres. Tom L. Johnson, Supt. A. L. Johnson, Sec.
st. Clair Street Ry. Co. -m-g, -lbr-c, -Pres. Chas Hathaway.

West Side R.R. Co. CLINTON, IA.-Lyons & Clinton Horse R.R. Co.

(See Lyons,) COLUMBUS, GA.—Columbus St. R.R. Co. 3 m, 4-8% g, 6 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtls, Supt. J. A. Ga-bourgeb bour

bourgh. COLUMBU'S, O. --Columbus Consolidated St. R.R. Co. 19 m, 5-2 g, 30-16 lb r, \$3 c, 350 h. Pres. A. Rodr-ers, 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, 9 c, 25 c. Pres. A. D. Rodgars, V. Pres. B. S. Erown, Sec. R. S. Rockley, Treas. S. S. Rickley, Supt. Brown, Sec. R Jonas Wilcox

Brown, Sec. R. S. Rockley, Treas. S. S. Rickley, Supt. Jonas Wilcox.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.
CORTLAND, N. Y.—Cortland & Homer Horse RY.
Co. 4 m (2½ lald), 4-5½ g, 25-20 lb r. Pres. Chas. H. Garrison, Troy, N. Y. Sec, J. M. Milne, Treas. S. E. Welch, Supt. St. Welch. (Leased to D. N. Miller.) office 23 no. Mercer St.
COUNCIL BLUFFS, IA.—Council Bluffs St. R.R.
COUNCIL BLUFFS, IA.—Council Bluffs St. R.R.
COVINGTON, KY.—So. 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.
DALLAS, TEX.—Dallas St. Ry. Co. 4½ m, 4-5½ g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec. Harry Keller, Supt. C. E. Keller.
Commerce & Ervay St. R.R. 1½ m, 4-8½ g, 20 lb r, 5 c, 24 mu. Pres. A. C. Ardrey, Sec., Trea. & Man. 11. W. Keller.
DANVILLE, ILL.—Clizzens' St. Ry. Co. 4m, 4 g, 20 lb r, 85 mu. Pres. Wm. P. Cannon, v. Pres. Gen. Man. Wm. Stewart, Sec. & Treas. Adam R. Samuel.
DAVENPORT, 1A.—Davenport Central St. R.R.

Samuel. DAVENPORT, IA.—Davenport Central St. R.R. 2% m, 4-8% g, 201b r, 12 c, 36 h. Pres. James Grant, V. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. B. Rumsey, Sec. O. S. McNell. Davenport City Ry. Co. H. Schuitger, Lessee. DAYTON, KY.—Newport & Dayton St. Ry. Co. 2 m, 5-2% g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

Bean. DATTON, O.-Dayton St. R.R. Co. 7½ m, 4-8½ g, 44 lb r, 24 c, soh and mu. Pres. J. W. Stoddard, V-Pres. H. S. Williams, Sec. C. A. Craighead, Supt. A. W. Anderson.

W. Anderson.
Oakwood St. Ry. Co. 6 m, 4-S½ g, 38 lb r, 14 c, 56 h. Pres. Charles B. Clegg, Sec. H. V. Perrine.
The Wayne & Flith St. R. R. Co. 3½ m, 4-S½ g, 34-38 lb r, 5 c, 30 h. Pres. Geo. M. Shaw, Sec. & Treas.
Eugene Winchet, Supt. N. Routzahn.
DECATUR, 11.1. - Decatur Horse Ry. Co. Citizens' Street R. R. Co. 2 m, 4-S½ g, 20 lb T r, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. Kinney.

Supt. A. E. Kinney.
DENISON, TEX. – Denison St. Ry. Co. 3 m
3-6g, 16 lb r, 5 c, 22 mu. Pres. C. A. Waterhouse,
supt. S. A. Kobinson.
DENVER, COL. – Denver Clty Ry. Co. 16 m, 3-6
g, 16 lb r, 5 0 c, 250 h. Pres. Geo. H. Holt, 10 Wall St.,
New York Clty, Sec. G. D.L'huilter, 10 Wall St., New York Clty, Sec. G. D.L'huilter, 10 Wall St., New York Clty, Treas. & Man. G. E. Randolph.
DES MOINES, IA. – Des Moines St. Ry. Co. 10
m, 3g, 25-30-38-52 lb r, 18 c, 100 h. Pres. M. P. Turner.
Des Moines & Sebastopol St. Ry. Co.

Berg, Sec. M. A. Turner.
Des Moines & Sebastopol St. Ry, Co.
DETROIT, MICH.—Port Wayne & Elmwood Ry.
Co. 6 m, 4-8½ g, 45 lb r, 30 c, 180 h. Pres. H. B.
Brown, V. Pres. Edward Kanter, Treas. George B.
Pease, Sec. N. W. Goodwin, Supt. Geo. S. Hazard.
Detroit City Ry. 30 m, 4-8½ g, 40-13½ lb r, 130 c, 700 h. Includes Jefferson Ave. line, Woodward Ave.
line, Cass Ave. line, Congress & Baker line, Press.
Sidncy D. Miller, Treas. George Hendrie, Sec. James Heugh, Geut. Supt. Robert Bell, Mast. Mech. John Willis.

Willis.' Grand River St. Ry. Co. 234 m, 4-834 g, 43 ib r, 13 c, 110 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. C. M. Dadley.
DOVER, N. H. – Dover Horse R.R. Co. 5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingfor, Chas. II. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Harrison Hadey.

(arrison lialey, DUBCQUE, I.A.—Dubuque St. R.R. 5 m, 4-8¼ g, I c, 45 h. Pres. J. A. Rhonberg, Sec. & Treas. B. E. Inehan, Supt. J. J. Linchan. DULUTI, MINN.—Duluth St. Ry. Co. 5 m, 3-6 , 33-51 b r, 17 c, 90 h and mu. Pres. Sam'l Hill, V-res. Thos. Lowry, Sec. & Treas. A. S. Chase, Man. Supt. T. W. Honnes.

EAST OAKLAND, CAL.-Oakland, Brooklyu &

EAST SAGINAW, MICH.—Street R. R. Co, of ast Saginaw. — m, 4-8% g, 30 lb r, 14 c, 35 h. Pres, Supt. W. J. Barton, Sec. W. H. Hark, Treas, J. B. etcr

Pete

EAST ST. LOUIS, ILL.-East St. Louis St. R.R.

EAST ST. LOUIS, ILL.—East St. Louis St. R.R. Co.
EASTON, PA.—The Easton & So. Easton Passenger Ry. Co. 1. m. 5-3% g, 45 lb r, 4 c, 20 h. Pres. H. A. Sage, Sec. & Treas. II. W. Cooley, Supt. Elisha burwell, So. Easton.
The West End Passenger Ry. Co. 1% m, 5-2% g, 45 lb r, 6 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, supt. samuel Berry.
EAV Cl. AHL, WIS.—Eau Clair City Ry. Co. ELGIN, ILL.—Elgin City Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne.
ELLIZABETH, N. J.—ELIZabeth & Newark Horse R.R. Co. 14 m, 5-2%, 4-10% g, 30 lb r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard, ELKHART, IND.—Clitzens' Ry. Co. 3% m, 4-8% g, 30 lb r, 6 c, 30 h. Pres. F. W. Miller, V. Pres. G. C. Johnson, Sec. E. C. Bickel, Treas. A. R. Burns.
ELMIRA, N. Y.—The Elmira & Horseheads Ry. Co. 92 m, 4-8% g, 25:30-40 lb r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Korshner, Supt. Henry C. Silsbee. Officers, 21 E. Water, St.
EL. PASO, TEX.—El Paso St. Ry. Co. 2% m, 4-8% g, 20 lb r, e c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Knockauer, Treas. F. Magonice, Sec. & Supt. I. A. Tays.
EMPORIA, KAN.—Emporia City Ry. Co. 3% m,

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EMPORIA, KAN.-Emporia City Ry. Co. 3½ m.
5g. 201br, 6c, 23 m. Pres. Van R. Holmes, Treas.
A. F. Crowe, Sec. & Man, J. D. Holden.
ENTERPRISE, MISS.-Enterprise St. Ry. Co.
1½ m. 3-6g, 241br, 2c, 6 h. Pres. John Kampe, V.
Pres. E. B. Gaston, Sec. & Treas. Jao. Gaston.
ERIE, PA.-Eric City Passenger Ry. Co. 5½ m,
4-5% g, 30-40-451b r, 20 c, 55 h. Pres. Wm. W. Reed,
Jacob Berst.
EURIPEA. EURIVERS.

EFREKA SPRINGS, ARK.-Eureka Springs City Ry. Co.

EVANSVILLE, IND.-Evansville St. Ry. Co. 12 m, 48 g, 25 lb r, 31 c, 190 mu. Pres. John Gilbert, Sec. P. W. Raielgh, Treas, John Gilbert, Supt. W. Bahr. FALL RIVER, MASS.-Globe St. Ry. Co. 12 m, 48% g, 40.46-47 lb r, 40 c, 160 h. Pres. Frank S. Stev-ens, Treas. F. W. Brightman, Sec. M. G. B. Swift, Supt. John H. Bowker, Jr.
FORT SCOTT, KAN.-Bourbon County St. Ry. Co. 1 m, 4 g, 22 lb r, 2 c, 4 m. Pres. Isaac stadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.
FORT SMITH, ARK.-Fort Smith St. Ry. Co. 2m, 3-6 g, 16-28 lb r, 5 c, 16 h. Pres. Sam1 M. Loud, Sec. & Treas. Geo. T. Sparks.
FORT WAYNE, IND.-Clitzens' St. R.R. Co. FORT WAYNE, IND.-Clitzens' St. R.R. Co. 74 m, 4 g, 25-38 lb r, 16 c, 73 m. Pres, K. M. Van-zandt, Treas. W. A. Hoffman, Acting Sec. & Gen. Man. S. Mims.
FRANKFORT, N. Y.-Frankfort & Hion Street Ry. Co. 23 m, 5 g, 4 c. Pres. A. C. McGowan, Frank-fort, See, J. Lewis, Illon, Treas, P. Remington, Illon, supt. Fredk. Gates, Frankfort.
TREDONIA, N. Y.-Dunkirk & Fredonia R.R.Co. 35 m, 4-10 g, 25 lb T, 5 c, 8 h. Pres. Wm. M. McCins-try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, wheelock.
GAINSVILLE, FLA.--Gainsville St. Ry GAINSVILLE, TEX.--Gainsville St. Ry Co. 25 m.

APRIL, 1886.

Wheelock. GAINSVILLE, FLA.—Gainsville St. Ry GAINSVILLE, TEX.—Gaunsville St. Ry. Co. 2½ m, 3-6 g, 17 lb r, 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Sec. & Treas, F. R. Sherwood, GALESBURG, ILL.—College City St⁻ Ry. Co. 3 m, 4-% g, 18-20-48 lb r, 4 c, 16 h. Supt. Geo. S. Clay-ton.

3 m, 4-½ g, 18-30-48 lb r, 4 c, 16 h. Supt. Geo. S. Clayton. GALVESTON, TEX.—Galveston Clty R.R. Co. 18 m, 4-8½ g, 30 lb r, 68 c, 169 mu. Pres. Wm. H. Sin-clair, Sec. & Treas. F. D. Merit, Supt. M. J. Keenan. Gulf Clty St. Ry. & Real Estate Co. GLOUCESTER, MASS.—Gloucester Clty R.R. Gloucester St. Ry. Co. Pres. & Supt. Morris C. Fitch, V. Pres: Walter A Jones, Treas. Francis W. Homans, Sec. David S. Presson. GRAND RAPIDS, MICH.—Street Ry. Co. of farant Rapids, Mhch. 13 m, 4-8½ g. 30-35 lb r, 21 c, 175 h. Pres. C. A. Otls, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. M. S. Crosby, Grand Rapids, Sec. J. M. Weston, Grand Rapids, Asst. Sec. Jas. Pickands, Cleveland, O. GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8½ g, 23 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.

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

D. Rogers, Sec. Jaines S. Nutt, Treas. Rudolph Rogers.
GREENVILLE, S. C.-Greenville City Ry. Co. 1m, 5 g, -1b r, 5 c, 20 h. Proprietors, Gilreath & Harts.
HAMILTON, O.-The Hamilton St. Ry. Co. 4 m, 5 g, 28 lb r, 11 c, 12 h. Pres, James F. Griffin, Sec. Ov. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow. HANNIP 4L, MO.-Hanibal St. Ry. Co. 2 m, 45% g, 36 lb r, 6 c, 22 h. Pres. & Supt. J. Doyle, Sec. A Treas. James O'Hers.
HARRISBURG, PA.-Harrisburg City Passenger Ry. Co. 5 m, 5-2% g, 42-47 lb r, 26 c, 65 h. Pres. H. A. Keiker, V. Prés. Daniel Eppiy, Sec. John T. Ensminger, Treas. K. F. Keiker, Supt. S. B. Reed. HARTFORU, CONN.-Hartford & Wethersheid lorse R. Co. 12 m, 4-8% g, 43-67 lb r, 26 c, 65 h. Pres. H. A. Keiker, V. Prés. Daniel Eppiy, Sec. John T. Ensminger, Treas. K. F. Keiker, Supt. S. B. Reed. HARTFORU, CONN.-Hartford & Wethersheid lorse R. Co. 12 m, 4-8% g, 36 lb r, 12 c, 20 h. Pres. M. Treas. E. S. Goodrich, Sec. Geo. Sexton.
HAYERHHL, MASS.-Haverhild & Groveland St. Ry. Co. 14% m, 4-4% g, 30 lb r, 12 c, 20 h. Pres. M. Ansmen, Sec. Joao Smail, Treas. H. D. Alexander.
HEIENA, ARK.-Helena St. Ry. Co.
HEIENA, ARK.-Jelena St. Ry. Co. 9 m, 45% g, 53 lb r, 3 c. Pres. J. M. Ansmen, Sec. Joao Smail, Treas. H. D. Alexander.
HOBOKEN, N. J.-North Hudson County Ry. Co. 15% m, 4-5% g, 50 lb r, 3 c. Pres. J. M. Ansmen, Sec. Job. Pres. John Sc. McKel, Unio, Supt. No. S. Holyoke St. Ry. Co. 2 m, 4-5% g, 35 lb r, 8 c, 26 h. Pres. S. W. Fordyce, Sec. C. F. J. Mallory, Treas. Freak. Mickel, Unio, Supt. No. Log. Math.
HOT SPHINGS, ARK.-Hot Springs R. R. Co. 3m, 4-5% g, 20-0-0 br, 14 Galveston.
HUT MINSON, KAN.-Hutchinsou St. Ry. Co. 13 m, 4-5% g, 20-0-10 br, 40 c, 118 m. Pres, Wm. H. Shichar, Galveston, V. Pres & Gon. Man. H. F. McGregor, Houston, Supt. H. Henry Friend, Houston, Sec. M. Treas. F. J. Demerit, Galveston.
HUTMINSON, KAN.-Hutchinsou St. Ry. Co. 35 m, 4-5% g, 20-30-40 lb r, 40 c, 118 m. Pres, Wm. H. Shichar, G

APRIL, 1886.]
JOHNSTOWN, N. Y.—The Johnstown, Glovers-ville & Kingsboro Horse R.R. Co. 5% m, 45% g, 26 lb r, 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fan-cher, Sec. & Treas., J. Mc Laren.
JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. T% m, 5-3 g, 41-43 lb r, 13 c, 73 h. Pres. James McMil-len, Sec. & L. Yeagley, Treas. W. H. Rosensleet, Jr.
JOLIET, HL..—Johet City R.R. Co. 3% m, 4-8% g, 40 lb r, 16 c, 30 h. & mu. Owner, J. A. Henry, A. Bischman, Cash J. E. Henry.
JOPLIN, MO.—
KALAMAZOO, MICH.—Kalamazoo St. Ry. Co. 10 m, 4-5% g, 35 lb r, 28 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P. H. Brown.
KANSAS CITY, MO.—Kansas City Cable Ry.
Co. 2% m, 4-5% g, 45 lb r, 10 pass. cars, 10 dummy cars. Pres. Wm. J. Smitb, Sec. W. H. Lucas, Eng. Robert Gillham. Supt. Edward J. La wless.
Corrigan Consolidated St. Ry. Co.
Kansas City & Rosedale St. Ry. Co.
Kansas City & Rosedale St. Ry. Co.
Kansas City & Rosedale St. Ry. Co.
Kansas City & Westport St. R.R. Co.
KEOKUIK, IA.—Freekuk St. Ry. Co. 4 m, 4-8% g, 27 lb r, 10 c, 42 h. Pres. Jas. H. Anderson, Y. Pres. Jos. G. Anderson, Scc. R. James Anderson, Treas. & Supt. W. Z. Anderson.
KNOXYILLE, TENN.—KnoxYille St. Ry. Co. 9 m, 4-5% g, 22 lb r, 5 c, 2 hacks, 30 h. Pres. W. W. Woodruff, Sec., Treas. F. Sargent, Man. William Wilson
KNOXYILLE, TENN.—KnoxYille St. Ry. Co. 9 m, 4-5% g, 22 lb r, 5 c, 2 hacks, 30 h. Pres. W. W. Woodruff, Sec., Treas. & Supt. T. L. Beaman.
LACONIA, N. H.—Laconia & Lake Village Horse R.R. 2% m, 3 g, 34 lb r, 5 c, 1 h. Pres. A. G. Polson, Treas. Edmund Little, Man. Bela S. Kenniston.
LA CNOSSE S. KY. Co. Pres. B. E. Edwards, Treas. G. Yan Steenyk, Sec. Mills Tourtellotte, Supt. Peter Valler.
LA FAYETTE, IND.—LaFayette St. Ry. 24 m, 45% g, 35 lb c, 6 c, 38 h. Pres F. B. Caldwird, LaFay

Valler. **IAFAYETTE, IND.**—LaFayette St. Ry. 2½ m, 4.8% g, 33 lb r, 6 c, 38 h. Pres F. B. Caldwell, LaFay-ette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette.

LAKE CITY, FLA.—Lake Clty St. Ry. Co. LAMPASAS SPRINGS, TEX.—Lampasas City Ry. Co. 34 m, 48% g, 221br, 6 c, 15 h. [Owned by Mrs. L. R. Snodgrass.] Gen. Man. Geo. M. Snod-

Mrs. L. R. Snodgrass. J Gen. Man. Geo. M. Snod-grass. LANCASTER. PA.—Lancaster & Millersville St. Ry. Co.—m, 4 5½ g, 30 lb r, 4 c, 14 h. Pres. J. C. Hager, V. Pres. H. S. Shirk, Sec. & Treas. Chas Dennes.

Larcaster City St. Ry. Co. Lancaster City St. Ry. Co. LARCHJONT, N. Y.—Larchmont Manor Co. 1 m⁴48 g, 25 lb r, 2 c, 8 h. Pres. C. H. Murray, Treas. S. H. French, 3S East Fourteenth St., N. Y. City. LAWRENCE, KAN.—Lawrence Transportation Co. 5 m, 41 g, 38 lb r, 7 c, 34 h. Pres. H. Tisdale, Sec. W. H. Bangs. LAWRENCE, MASS.—Merrimack Valley Horse R.R. Co. 5 4-5 m, 4-8½ g, 48 lb r, 20 c, 70 h. Pres. Wm. A. Russell, V. Pres. James Walton, Methuen. Clerk & Treas, James H. Eaton, Supt. A. N. Kimball, Law-rence. rence

rence. • LEWISTON, ME.-Lewiston & Auburn Horse R.R. Co. 7% m, 4-8% g, 32 lb r, 16 c, 45 h. Pres.Frank W. Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinch-

LEWISTON, MENLEMENT AGAIN A ADDIT MOSSING A ADDIT MOSSING CREATER AND ADDITAL ADDITAL

Patrick J. Gleason, Supt. Michael Conway. Officers 112 Front St.
LONGVIEW, TEX.-Longview & Junction St. Ry. 3/m, 3-6 g, 2 c, 4 h. Pres. F. T. Rembert, Sec.
R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth.
LOS ANGELES, CAL.-Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Fernando St.
R.R. Co. 7 m, 3-6 g, 161b r, 13 c, -h. Pres. E. T.
Spencer, Sec. F. X. Palmer, Supt. J. A. Palrchild.
City R.R. of Los Angeles. 4½ m, 4-8½ g, 361b r, 9 c, 75 h. Pres. I. M. Heilman, V. Pres. W. J. Brodrieb, Sec. John O. Wheeler, Supt. W. H. Hawks.
Los Angeles & Allso Ave. St. R.R. Co. Main St. & Agricultural Park R.R.
LOUISVILLE, KY.-Kentucky St. Ry. Co. 5m, 5-2 g, --br, 22 c, -h. Pres. T. J. Minary, Sec. & Treas. Thos. Donigan.
Central Pass. R.R. Co. -m, -g, -lbr, -c, -h, Pres. -, V. Pres. Thos. J. Minery, Crescent Hill Ry. Co.

Louisville City Ry. Co. 63 m, 5 g, 58 lb r, 214 c, 1300 mu. Press. Mai. Alexander Henry Davis, Syracuse, N Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell. LOWEIL, MASS.—Lowell Horse R.R. Co. 6 m, Sy g, 28-47 lb r, 28 c, 100 h. Pres. Wm. E. Living-ton, Gen. Man. J. A. Chase. LYNUHBURG, VA. — Lynchburg St. R.R. Co. Jm, 5-1 g, 26 lb r, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne. LYNONS, IA.—Clinton & Lyons Horse Ry. Co. 427 m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, V. Pres, & Man. R. N. Rand. MACON, GA.—Macon & Suburban St. R.R. Co. S. Bransford, Sec. & Supt. Jno. T. Voss. Office, 151 Second St. MADISON, IND.—Madison St. Ry. Co. 237 m, 4

Bransford, Sec. & Supt. Jno. T. Voss. Onice, 131 Second St. MADISON, IND.—Madison St. Ry. Co. 2% m, 4 g 15 lb r, 7 c, 8 h, 10 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenitus, Supt. & Treas. Chas. F. Tuttle. MADISON, WIS.—Madison St. Ry. Co. 2% m, 3 g, 23 lb r, 6 c, 24 h. Pres. E. W. Keyees, V. Pres. Sec. & Treas. D. K. Tenney, Supt. G. W. Carse. MANCHESTER, N. II.—Manchester Horse R.R. 5% m, 3-% g, 27-34 lb r, 14 c, 55 h. Pres. S. N. Bell, Treas. Frederick Smyth, Clerk J. A. Weston, Supt. A. Q. Gage.

A. Q. Gage. MARSHALLTOWN, IA.—3 m, 4 g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gillman, Supt. A. E. Shorthill. MARYSVILLE, CAL.—City Pass. R.R. Co. (No

returns

Returns.)
MAYSVILLE, KY.—Maysville St. Ry. & T. Co.
3 m, 20 lb r, 4-8½ g, 6c, 32 mu. Pres. L. W. Robertson,
Sec. & Treas. W. S. Frank.
MECHANICSBURG, ILL. — Mechanlesburg & Buffalo Ry. Co. 3½ m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres.
J. N. Fullenweider, Treas. A. T. Thompson, Sec. H.

J. N. Fullenwelder, Treas. A. T. Hompson, Thompson. MEMP411s, TENN, — M^{*} mphis City R.R.Co. 18 m, 5 g, 38-40 lb r, 66 c, 320 h, Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Supt. W. F. Shippey. MERIDIAN, MISS.—Meridian St. Ry. Co. 1½ m, 4-8 g, 16 lb r, 3 c, 12 h. Pres. J. J. Shannon, V. Pres. J. L. Handley, Sec. R. M. Houston. MIDDLETOWN, O.—M^{24/def} and & Madison St. MILLERSVILLE, PA.—Lancaster & Millersville St. R.R. Co.

MIDDLETOWN, O. — MIAMATAR & Madison St. MILLERSVILLE, PA. – Lancaster & Millersville St. R.R. Co.
MILVAUKEE, WIS. — Cream City R.R. Co. 8 1-6
MILWAUKEE, WIS. — Cream City R.R. Co. 8 1-6
MILWAUKEE, WIS. — Cream City R.R. Co. 8 1-6
Milwaukee City Ry. Co. 30 m, 2 h. Pres. Winfield smith, V. Pres. Christian Preusser, Treas. Ferdinand Knehn, Sec. Wm. Damkoehler, Supt. H. J. C. Berg. Milwaukee City Ry. Co. 30 m, 4-8½ g, 27 1b iron & 45 lb steel r, s0 c, 450 h. Pres. Peter Micleoch, Sec. & Treas. Geo. O. Wheatcroit.
West Side St. Ry. Co. Owner & Manager, Washington Becker, Supt. — McNaughton.
MINNEAPOLIS, MINN. — Minneapolis St. Ry. Co. 45 m, 3-6 g, 27-35-45 lb r, 146 c, 725 h and mu. Pres. Thos. Lowry, V. Pres. C. Morrissey, Treas. W. W. Herrick, Sec. & Supt. C. G. Goodricb.
MOBILE, ALA. — City R.R. Co. 17½ m, 5-2 g, 35 lb T-r, 65 c, 240 h. Pres. Jno. Maguire, Sec. I. Strausse, Treas. Jargert L. Goldsmith, Supt. A. Moog. Dauphin & Lafayette St. Ry. Co. 2 m, 5-2½ g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Dankel McNeill, Sec. & Yreas. James W. Gray, Pur. Agt. & Moning St. Ry. Co. 1½ m, 4-8½ g, 30 lb r, 4 c (contract for motive power).
MULAWK, N. Y. – Mohawk & Ilion R.R. Co. 1½ m, 4-8½ g, 30 lb r, 4 c (contract for motive power).
Paroning Mill R., Y. - Mohawk & Ilion R.R. Co. 1½ m, 4-8½ g, 30 lb r, 4 c (contract for motive power).

Alexander, Treas. R. M. Devendorn, Capar and Bronson.
MOLINE, ILL.—Mollne Central St. Ry. Co. 1/4 m, -g, -lb r, 3 c, ii h. Pres. S. W. Wheelock, V. Pres. M. Y. Cady, Sec. W. R. Moore, Treas. C. F. Hemenway.
Moline & Rock Island St. Ry. Co. 5 m, 4-8% g, 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Buford, Treas. C. Lyons, Supt. Wm. Gamble.
MONTGOMER Y, ALA.—Capital City St. Ry. Co. Electric motors.

MONTGOMERY, ALA.—Capital City St. Ry.
 Electric motors.
 MONTREAL, CAN.—Montreal City Pass. Co. 21
 4.48% g, — Ib r, 76 c, 465 h. Pres. Jesse Joseph, V.
 res. Alex. Murray Sec. & Man. Ed. Lusher, Supt. T.
 Robillard.

MOULTRIEVILLE, S. C.-Middle St. & Sulli-

Pres. Alex. Murray Sec. a Main. Ed. Lusner, Supe. 1. H. Robillard. **MOULTRIEVILLE, S.** C.-Middle St. & Sull-van's Landing Ry. **MUSCATINE, IA.**-Muscatine City Ry, Co. 3½ m, 3-6 g, 21 lb r, 7 c, 19 b. Pres. Peter Musser, V. Pres. D. C. Richman, Sec. T. R. Fitzgerald, Treas. S. M. Hughes, Supt. O. J. Chapman. **MUSKEGON, MICH.**-Muskegon Ry. Co. 43⁄4 m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V. Pres. Chas. Merriam, Boston, Mass., Sec. Thomas Munroe. Treas. G. R. Sherman, Supt. C. R. Newell. **NASHIVILLE, TENN.**-Mashville & Edgeneid R. Co. Fatherland Street Rallway Co. North Edge-field and Nashville St. R.R. Co. one management. 5 m, 5 g, 16-20-32 lb r, 21 c, 100 mu Pres. Jno. P. White, Sec. & Treas. H. B. Stubblefield, Supt. Dalngerfield Deaderick. McGavock & Mt. Vernon Horse R.R. Co. 7½ m, 5 g, 16-20-2-32 lb r, 25 c, 140 h & mu. Pres. John P White, V. Pres. B. F. Wilson, Sec. & Treas. H. B. Stubble-field and Nashville St. R.R. Co. 4½ m, 5 g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller. **NEW ALBANY, IND.**-New Albany St. Ry. Co. 6 m, 411½ g, 25 lb r, 15 c, 55 h. & mu. Pres. Sec. Treas. Letitla V. Vredenburgh, Supt. & Pur. Agt. Wm. L., Timberlake. **NEW ALBANY, IND.**-New Bedford & St. R.R. Co. 7 m, 5-2½ g, 47 lb r, 22 c, 140 h. Fres. S. 8. Battin, Sec. W. L. Mullord, Supt. H. F. Totteu. Broad St. R.R. **NEW BEDFORD, MASS.**-New Bedford & Fahr-haven St. R.R. Co., 6 m, 4-5½ g, 35-45-50 lb r, 428 c, 140 h. Pres. Warren Ladd, Treas. & Clerk, Andrew G. Pierce. Acushnet St. R.R. Co., 6 m, 4-5½ g, 38 lb r, 29 c, 103 h. Pres. Chas. E. Cook. Sec. & Treas. A. B. Stubble-Mer Chas. R. Cook. Sec. & Treas. A. P. Subth.

Acushnet St. R.R. Co., 6m, 4-8½ g, 38 lb r, 29 c, 103 h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith. NEWBURYPORT, MASS.-Newburyport &

209

Amesbury Horse R.R. Co. 61-3 m, 12 c, 54 h. Pres. W. A. Johnson, Treas. N. H. Sbepard, Sec. Geo. H. Stevens, Lessee, E. P. Shaw. NEW HAVEN, CONN.-Fair Haven & Westville R.R. Co. 7 m, 4% g, 42 ib r, 23 c, 150 h. Pres. H. B. Ives, Sec. & Treas. L. Candee, Supt. Walter A. Graham.

NEW HAVEN, CONN. – Fair Haren & Westville R.R. Co. 7 m, 4½ g, 42 ib r, 23 c, 150 h. Pres. H. B. Ives, Sec. & Treas. L. Candee, Supt. Walter A. Graham. New Haven & Centreville Horse R.R. Co. 2½ m, 48½ g, 42 lb r, 4 c, 30 h. Trustee Cornellus Pieriont. State Street Horse R.R. Co. 2½ m, 48 g, 43 br, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. C. Blatchen. The Whitney Ave. Horse Hy. 2½ m, 48 g, 43 br, 4 c, 40 h. Pres. C. A. Warren, Sec. & Treas. C. C. Blatchen. The Whitney Ave. Horse Hy. 2½ m, 48 g, 43 br, 4 c, 40 h. Pres. Geo. H. Watrous, Sec. George D. Watrous, Treas. Ell Whitney, jr. NEW ORLEANS, LA. – Canal & Claborne St. R.R. Co. 13 m, 5-2½ g, 37 lb r, 40 e, 200 h. Pres. E. J. Hart, Sec. & Supt. Jos H. DeGrange. Crescent City R.R. Co. 26 m, 5-2½ g, 35-45 lb r, 90 c, 400 h. Pres. Frank Roder, Sec. & Treas. Jno. J. Ju-den, Supt. A. V. Smith. New Orleans St. R.R. Co. Orleans R.R. Co. – m, – g, – lb r, 32 c, 140 h. & mu. Pres. & Supt. H. Larquie, Sec. & Treas. P. Cougot. Office, cor. White & Laharpe Sts. St Coarles St. R.R. Co. 15 m, 5-2½ g, Ξ lb r, 60 c, 366 m. Pres. & Supt. Alden McLeilan, Sec. Vincent Riviere. New Orleans & Carrollton R.R. Co. 8 m, 4-5½ g, 3 45 lb 7, 65 c, 200 h, 19 engines. Pres. Wm Benthuy-sen, Sec. Walter F. Crouch, Supt. C. V. Halle. New Orleans Clty & Lake K.R. Co. 64 m, 5-2½ g, 46-40 lb 7, 180 c, 39 coaches, dummy engines, 1050 mu. Pres. J. A. Walker, Sec. W. E. Leverich, Supt. F. Wintz.

Pres. J. A. Walker, Sec. W. E. Leverich, Supt. F. Wintz.
NEWYORT, KY.-Newport St. R.R. Co.
NEWYORK, N.Y.-Ninth Ave. R.R. Co. 8 m, 48% g, 60 lb r, 52 c, 530 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. Heman B. Wilson. Offices, Ninth Ave. co. 54th St.
Broadway & Seventh Ave. R.R. Co. 7 m, 45% g, 47-60 lb r, 150 c, 1,350 b. Pres. James W. Foshay, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell.
Office 761, Seventh Ave.
Central Crosstown R.R. Co. 5-22 m, 45% g, 52 lb r, 45, c, 941 b. Pres. Geo. S. Hart, V. Pres. A. Cammack, Sec. & Treas. Milton L Masson, Office 365 Ave. A. Central Park North & East River R.R. Co. 14 m, 4-8% g, 60 lb r, 162 c, 1,225 h. Pres. J. L. Scrbiner, V. Pres. C. D. Wyman, Sec. H. Scrbiner, Treas. J. L. Valentine, Supt. M. W. A. Harris. Office, Tenth Ave., 530 & 54th St.
Christopher & Tenth St. R.R. Co. 5 m, 4-8 g, 45 lb r, 47 c, 320 h. Pres. Jacob Sharp Treas. W. T. Hatch, Sec. & Supt. George W. Lynch. Office, 168 Christopher St.
Dry Dock, East Broadway & Battery R.R. Co. 1146

r, 47 C, 290 h. Pres. Jacob Snarp Treas. w. r. Haton-Sec. & Supt. George W. Lynch. Office, 165 Christo-pher St. Dry Dock, East Broadway & Battery R. R. Co. 11% m, 48%, 60 lb r, 167 c, 1,132 h. Pres. William White, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred F. White. Offices, 605 Grand SS. Eighth Ave. R.R. Co. 10 m, 48% g, 60 lb r, 112 c, 1155 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. H. B. Wilson. Office, Eight Ave. & 50th St. Forty-Second Street & Grand Street Ferry R.R. Co. 5% m, 8-4 g, 64 lb r, 50 c, 500 h. Pres. Chas. Curtis, Sec. & Treas. E. S. Allen, Supt. John M. Calhoun. Office, 653 W. 23d. St. Harlem Bridge, Morrisania & Fordham Rr. 4% m, 4-8% g, 45-60 lb r, 65 c, 233 h. Pres. Henry Spratley, V. Pres. Richard M. Hoe, Sec. & Treas. Wim. Cald-well. Office, North Third Ave, near 170 St. Houston, West Street & Paronia Ferry R.R. Co. 5 m, 4-5% g, 60 lb r, 50 c, 400 h. Pres. Richard Kelly, Sec. & Treas. Daniel B. Hasbrook. Office, 415 E. 10 St. Jarome Park R.R. 1 m, 4-8% g, 50-56 lb r, Pres.

Sec, & Tréas. Daniel B. Hasbrook. Office, 415 E. 10 St.
Jerome Park R.R. 1 m, 4-8½ g, 50-56 lb r. Pres. Leonard M. Jerome, Sec. Fred A. Lovecraft, Treas. Theodore Moss. Office, cor. 5th. Ave. & 22d St.
New York City St. Ry. Co. 10 m, Inot in operation]. Pres. Loonis L. White, Sec. W. L. McCorkle, Treas. Wm. L. Skidmore.
New York & Harlem R.R. Co. 17½ m, 4-8½ g, 60-75 lb r, 161 c, 1,560 h. Pres. Loonis L. White, Sec. W. L. McCorkle, Treas. Sec. Cornelius Vanderbilt, Treas. Ed. V. W. Rossier, Supt. Alfred, Skitt, Pur. Agt. P. S. Bemis.
Sixtb A ve. R.R. Co. 4m, 4-8½ g, 60 lb r, 127 c, 1296 h. Office, 755 Sixth Ave.
South Ferry Ry. Co. 13 m, 4-8½ g, 60 lb r, 13 c, 41 h. Pres. Henry Hart, Sec. Wn. N. Cohen, Treas. Albert J. Ellas, Supt. Chas H. Meeks. Office 20 Whitehall St.
The second Ave. R.R. Co. 13 m, 4-8½ g, 60 lb r, 316 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second Ave. cor.
Stati A ve. R. B. Co. 15 m, 4-8½ g, 60 lb r, 616 cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & The Second Ave. R.R. Co. 15 m, 16 Sec. Areas. J. B. Underhill. Office Second Ave. cor.

Sec. & Treas. J. B. Underhill. Office Second Ave. cor. 96th St.
The Third Ave. R. R. Co. 16 m main line, 6¹/₂ m 10th Ave, cable line, 4 m 125th street cable line, 4 sky g, 60 & 74 lb r, 31s c, 2150 h. Pres. Lewis Lyon, 739 Madison ave., V. Pres. Henry Hart, 110 Tribune Building, Sec. Alfred Lazarus, 436 W. 61st st., Treas. John Bearer, 211 E. 112th st., Supt. John H. Robertson, 307 E. 65th st.
Twenty-third St. R.R. Co. 7 m, 4-Skj g, 54 lb r, 102 c, 692 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Treas. Lewis May, Act-Supt. George Ferry. Office 621 West 23d St.

11 Case Down Starty and Party Couper Couper Starts and Starts a

NORWALK, CONN.—Norwalk Horse R.R. Co.
 NORWALK, CONN.—Norwalk Horse R.R. Co.
 2m, 4-10 g, —Ib r, c, 20 h. Pres, James W. Hyatt,
 V. Pres. & Sec. Edwin G. Hoyt, Sup, James W. Hyatt,
 NORWICH, CONN.—Norwich Horse R.R. Co.
 OAKLAND, CAL.—Alameda, Oakland & Pledmont R.R.
 Berkley Villa R.R.
 Broadway & Pledinont St. R.R. Co.
 Fourteeuth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, —
 Oakland R.R. Co.
 Oakland R.R. Co.
 Ogenerative Matter Blair, Sec. P. J. Van Loben.
 Oakland R.R. Co.
 OGDEN CITY, UTAH.—Ogden City Ry. Co.

3 m, 4.8% g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtleff, Ogden City, V. P. & Supt. O. P. Arnold, Salt Lak City, Sec. & Treas. H. S. Young, Ogdeu City. **OLEAN, N.Y.**—Olean St. Ry. Co. 1 1-10 m, 3-6 g, 25 lb r, 3 c, 8 h. Pres. M. B. Fobes, Sec. & Treas. M. W.

210

Barse OMALIA, NEB.—Omaha Horse Ry. Co. 15 m, 48% g, 35 lb r, 40 c, 300 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W. A Smith Smith

A. Smith. ONEIDA VILLAGE, N. Y.—Oneida Ry. Co. 2 m, 4-8½ g, 47 lb r, 3 c, 6 h. Pres. Jerome Hickox, Sec. & Treas. W. E. Northrup, Supt. Chas. Bonta. OSHKOSII, WIS.—Oshkosh St. R R. Co. 3½ m, 4-8½ g, 27 lb r, 9 c, 24 h. Pres. Leander Choate, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.

4.8% g, 27 lb r, 9 c, 24 h. Pres. Leander Choaté, V. Pres. F. Zenther, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.
OSWEGO, N.Y.—OSwego St. Ry. Co. 2 m, 4.8% g, 45 lb r, 3 c, 23 h. Pres. Jas. F. Johnson, V. Pres. R. J. Oliphani, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor.
OTTAWA, ONT.—Ottawa Clty Passenger Ry.Co. 3 m, 4-8% g, 34 lb r, 1 c, 40 h. Pres. Thomas C. Keefer, V. Fres. R. Blackburn, Sec. James D. Traser.
OTTUMVA, 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, 3½ g, 16 lb T r, 1 c 4 h. Owner, L. E. Gray.
PADUCAH, KY.—Park R.R. Co.
PATERSON, N. J.—Patterson & Passalc R.R. Co. 7 m, 4-10 g, 33 lb r, 16 c, 24 h. Pres. John N. Teraterson Clty R.R. Co. 6 (m, 4-8% g, 35 lb r, 12 c, 51 h. Pres. Garrett Planten, Treas. Heimas Routke. Paterson Clty R.R. Co. 6 (m, 4-8% g, 35 lb r, 12 c, 52 h. Pres. Garrett Planten, Treas. Heimas Routke. PENACOLA, FLA.—Pensacola St. Ry. Co. 4% m, 4-8% g, 40 lbr, 60 c, 135 h. Pres. H. Woodward, Jec. M. Pheffer, Treas. Eliot Callender, Supt. John Strong.

Fort Clark Horse Ry. Co.-m,-g,-lb r,-c,-h.-

For Clark Horse Ry. Co.-m,-g,-lb r,-c,-h.-Pres. J. H. Hall. Peorla Horse Ry. Co. $7 \swarrow$ m, $4-8 \And$ g, 40 lb r, 63 c, 140 h. Pres. H. Woodward, Sec. M. Pfeiffer, Treas. H. N. Wheeler, Supt. John Strong. **PETERSBUR(311, VA.**-Petersburgh St. Ry. Co. 3% m, $4-8 \end{Bmatrix}$ g, 42 lb r, 9 c, 44 h. George Beadle, Pro- **PHILADELPHILA, PA.**-Cltizens Pass. Ry. Co. 10 \bigstar m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John Mc-Carthy, Sec. & Treas. John J. Adams, Supt. Sam'l Cline.

Cline.
Frankford & Southwark Phila. Clty Pass. R. R. Co.
18 m, 5-2g, 47 lb r, 102 c, 8 dummy c, 618 h. Pres.
Altred Smith, Sec. & Treas. Geo. S. Gandy, Supt. W.
H. Janney.

18 m, 52 g, 4 nD 1, 102 c, 5 d uning C, 615 m. 11es, Alfred Smith, Sec. & Treas. Geo. S. Gandy, Supt. W. H. Janney. Hestonville, Mantua & Fairmount Pass. R. R. Co. 20 m, 6-2 g, 43 lb 7, 50 c, 480 b. Pres. Charles F. Laffer-ty, Sec. & Treas. W. C. Foster. Lebigh Ave, Pass. Ry. Co. Pres. John Lamon, Sec. Chas, A. Porter, Treas. John L. Hill. (Track not laid.) Lombard & South Sts. Pass. Ry. Co. — m, 5-2 g, 43 lh. r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas. Francis Hazelhurst Supt. Jno. M. Gaughen. People's Pass. Ry. Co. 44 m, 5-2g, 47 lb r, 125 c, 1,080 h. Pres. C. J. Harrah, V. Pres. C. J. Harrah, J. r, sec. & Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiler. Philadelphila City Pass. Ry. Co. 7 m, 5-2/g, 4, 77 lb r, e c, -h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. (Leased to Phila. Tractiou Co.) Philadelphila & Gray's Ferry Pass, R.R. Co. 10 1-3 m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Pathck Lov-cut. Ridge Avenue Pass. Ry. Co. 14 n, 5-2g, 47 lb r, 55

Ridge Avenue Pass. Ry. Co. 14 nu, 5-2 g, 47 lb r, 55 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lam-bert, Sec. & Treas. Wm. S. Bilght, Supt. William

c, 352 h. Pres. E. B. Edwards, V. Pres. John Lámbort, Sec. & Treas. Wm. S. Blight, Supt. William Ingles. Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William r. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens. Screnteenth & Nhetceuth sts. Pass. Ry. Co. 75 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Peddle. (Leased to Philada. Traction Co.) Thirteenth & Filteenth Sts. Pass. Ry. Co. 75 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Peddle. (Leased to Philada. Traction Co.) Thirteenth & Filteenth Sts. Pass. Ry. Co. 75 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Peddle. (Leased to Philada. Traction Co.) West Philadelphile Pass. Ry. Co. 14 m, 5-2 g, 43 hr. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas. John B. Peddle. Supt. Jacob C. Petty. (Leased to Phila. Traction Co.) West Philadelphile Pass. Ry. Co. 18 Jm, 122 c, 646 h. Pres. Peter A. B. Wideuer, Sec. & Treas. D. W. Dickson. (Leased hy the Phila, Traction Co.) **PHILLIPSBURGHI. N. J.** – Phillipsburgh Horse Car Ry. Co. 25 m, 48 g, 35 lb r, 4 c, 13 h. Pres. Daniel Runkle, Sec. & Treas. Johns R. Long. PHTSBURGHI. P. J. – Central Pass R. K. Co. 3m, 16 c, 95 h. Pres. J F. Cluley. Sec. F. L. Stepnenson, Treas, E. R. Jones, Supt. R. G. Heron. Heaver Falls & New Brighton Ry. Co. (Hizens' Pass. Ry. Co. 164 Jm, 5-23, g, 46-56 lb r, 20 c, 154 h. Pres. James Boyle, Supt. Mnrry Verner. Pres. James Boyle, Supt. Mn. J. Crozler, Allegheny City. Preople's Park Pass. Ry. Co. 2 m, 5-23, g, 45 lb r, 10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Ramsey, Treas, James Boyle, Supt. Wm. J. Crozler, Allegheny City. Preople's Park Pass. Ry. Co. 2 m, 5-24, g, 45 lb r, 10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Ramsey, Treas, James Boyle, Supt. Mr. J. Crozler, Allegheny City. Pres. James Boyle, Supt. Wm. J. Crozler, Allegheny City. Pres. Y and Star Pres. Thes. Chard. Much

Pittsburgh, Allegheny & Manchester Pass Ry. Co. Pittsburgh, Allegheny & Manchester Pass Ry. Co. 5 m, 5-29 g, 46 lb r, 40 c, 275 h. Pres. Chas. Atwell, Scc. & Treas. Chas. Selbert, Supt. James C. Cotton. Manager J. P. speer. Pittsburgh, Oakland & East Liherty Pass, Ry. Co. 11 m, 5-45 g, 47 lh r, 32 c, 140 h, 64 mu. Pres. J. T. Jordan, Sec. John G. Traggardth, Treas. D. W. C. Bidwell, Supt. II. M. Cherry. Pittsburgh Union Pass. R.R. Co. 5 m, 5-25 g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell. Supt. James C. Cotton, Sec. & Treas. Chas. Selbert, Casb. Saml. C. Hunter.

Pittsburgh & Birmingham Pass. R.R. Co. 3% m, 5-

2½ g, 48 lb r, 20 c, 170 b. Pres. W. W. Patrick, Sec. D. F. Agnew, Tréas. John G. Holmes. Pittsburgh & West End Pass, Ry. co. 3½ m, 5-2 g, 35 lb r, 13 c, 75 h. Pres. John C. Relly, Sec. & Treas. Thomas S. Bigelow, Supt. William J. Burns. Pittsburgh & Wikinsburg St. Ry. Co. Scond Avenue Pass. Ry. Co. 3½ m, 5-2½ g, 47 lb r, 8c, 60 h. Pres Geo. Fawcett, Sec. Jas. F. Fawcett, Treas W. J. Fawcett. South Side Pass. R.K. Co. 2½ m, 5-2½ g, 45 lb r, 12 c, 80 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Wallace, Supt. W. M Rosborough. Transverse Pass. Ry. Co. 6½ m, 5-2 g, 52 lb r, 39 c, 24 h. Pres. C. K. Magee, V. Pres. C. F. Klopfer, Sec. & Treas. W. M. Korbo, Supt. Miller Elliot. PITTSTON, PA.-Pittston, St. R.R. Co. 1½ m, 3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris, Sec. William Allen.
PORT HURON, MICH.-Port Huron St. Ry. Co. 6½ m, 45% g, 7 c, 22 h. Pres. Jon. P. Sanborn, V.

6½ m, 4-8½ g, 7 c, 22 h. Pres. Jno. P. Sanborn, V. Pres. Frank A. Beard, Sec. Treas. & Man. J. R. Was-

PICES, FFAIR A. BEARD, SEC. FICAS, & Mail. J. R. WaStell.
PORTLAND, ME.—Ocean St. R. R. Co.
Portland R.R. Co. 7½ m, 45½ g, 30-33-45 lb r, 34 c, 154 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A.
Newman, Supt. Geo. W. Soule.
PORTLAND, ORE.—Portland St. Ry. Co. 1½ m
2.6 g, 42 lb r, 9 c, 35 h. Pres. D. P. Thompson, Sec. & Supt. C. K. Harbaugh.
Multhomah St. Ry. Co. 2½ m, 3.6 g, 30 lb r, 19 c, 65 h. Pres. A. N. King, Sec. E. A. King.
Transcontineutal St. R. R. Co. 3 m. double, 3.6 g, 15 c, 63 h. D. W. Wakefield Sec., Tyler Woodward, Supt.
PORTSWOUTH, O.—Portsmouth St. R. R. Co. 3 m, 3 (5 g) (3 lb h, 1 4 c, 10 h. Pres. James Skelton, Treas, Sec. & Supt. Enas Reed.
PORTSWILLE, PA.—People's Ry. Co. 9½ m, 16 c, 56 h.

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16 c, 56 h.
POUGHIKEEPSIE, N. Y. -City R.R. of Pough-keepsle, 3 m, 4-8½ g, 35-42 h r, 11 c, 38 h. Pres. Geo B. Adriance V. Pres. & Treas. Hudson Taylor Sec. A. B. Smith, Supt. C. M. Davis. Office 491 Main St.
PROVIDENCE, R. I. -Union R.R. Co. 53 m, 4-8½ g, 47-51 ib r, 230 c, 1,300 h. Prcs. Jesse Metcalf, V. Pres. & Gen. Man. D. F. Longstreet, Sec. and Treas. C. A. Babcock.

PIES & Gen, Man, D. F. Longstreet, Sec. and reas, C. A. Babcock. QUEBEC, CAN.—Quebec St. Ry. Co. 3 m, 4-824 55 lbr, 9 c, 40 h. Pres. Cbas. St. Michel, Quebec, Pres. G. R. Renfrew, Quebec, Sec., Treas. & Supt.

RAPID CITY, DAK.-Rapid City St, Ry. Co.
Pres Fred. T. Evans,
READING, PA.-Reading City Pass. Ry. Co.
21-5 m, 5-24 g, 45 lb 7, 19 c, 44 h. Pres. B. F. Owon,
V. Pres, Jas. L. Douzlass, Sec. & Treas. H. A. Muhleuberg, Supt. J. A. Riggs.
Forkiomen Ave. Pass. Co. 21-5 m, 5-2½ g, 45 lb r,
14 c, 36 h. Pres. Chas. Brenelser, Soc. & Treas. Isaac
RED OAK, IA.-Red Oak St. R.R. Co. 1½ m,
4-23, g, flat r, 2 c, 2 h, 2 mu. Pres. J. W. Judkins, V.
Pres. Geo. West, Sec. F. M. Byriket, Treas. & Supt.
F. O. Judkins.
RICHMOND. IND - Dichemond Charty Conduction

, O. JUGKINS, RICHMOND, IND.—Richmond Clty Ry. Co. 3 m, g, 9 ib r, 10 c, 30 h. Prcs. J. Y. Miller, V. Pres. oscoph Rathff, Treas. H. I. Miller, Supt. F. M. Fran-

RICHMOND, HLL.—Richmond St. R.R. Co. RICHMOND, VA.—Richmond City Ry, Co. 7 m, 8% g, 99-10 hr, 40 g, 180 h. Pres. J. H. Schoolcraft, oc. & Treas. F. D. Mellen, Man. C. M. Baeton, Supt.

Sec. & Treas. F. D. Mellen, Man. C. M. Baeton, Supt. Charles Sleders.
 ROCHESTER, N. Y.-Roebester City & Brighton R.R. Co. 37 m, 48% g, 25-30-45 lb r, 142 c, 596 h. Pres, Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodworth, Supt. Thomas J. Brower. Citizens' St. Ry. Co. Pres. Wm, H. Jones, Sec. & Treas. J. E. Pierpont, Supt. S. A. Green.
 ROCKFORD, ILL.-Rockford St. Ry. Co. 6 2-5 m, 4-83 g, 30 lh r, 13 c, 52 h. J6 m. Pres. Anthony Haines, V. Pres. L. Rhodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Haines.
 ROCK FORD, ILL.-Rock Island & Milan St. Ry, Co. 7 m, 4-83 g, 20-30-12 lb r, 10 c, 7 h. Pres. A Supt. Baily Davenport, Sec. E. H. Hunt, Treas, J. F. Robinson, 2 m, with horses, 5 m, with motor.
 RODUTT, N. Y.--Kingston City R. R. Co. 24-5 m, 4-83 g, 40 lh r, 10 c, 40 h. Pres. James G. Linds-ley, V. Pres. S. D. Coykendoll, Sec. & Treas. Joint C. Romeyee, Supt. Wm, H. DeGarmo.
 SACRAMENTO, CAL.-Sacramento City St.R.R. Co.

SACHAMENTO, CAL.—Sacramento City St.R.R.
 CO.
 SAGINAW, MICH.—City of Saginaw St. R. R.
 CO. 2½ in, 4-½ g, 42 lb r, 10 c, 50 h. Pres. David H.
 Jerome, V. Preš. Geo, F. Willians, Sec. & Treas. Goo.
 L. Bnrrows, Supt. Fred G. Benjamin.
 SALEM, MASS.—Salem & Danvers St. Ry. Co.
 6 m, 4-½ g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Russell, Sec. G. A. Vickery, Treas. Geo. W. Williams, Supt. W. B. Furgursou, Asst. Supt. David N. Cook.
 Naumkeag St. Ry. Co. — m, 4-8½ g, 30-35-45 lb r, 50 c, 140 h. Pres. Ches. Odell, Clerk Joseph F. Hickey, Treas. Henry Wheatland, Supt. Willard B. Ferguson.
 SALT I.AKE CITY, UTAIL.—Salt Lake City R. R Co. 13 m, 4-5½ g, 20 lb r, 20 c, 15 mu. Pres. John Taylor, sec. David McKenzle, Treas. James Jack, Supt. Orson P. Arnold.

Supt. Orson P. Arnold. SAN ANTONIO, TEX.—San Antonio St. Ry. Co. 15 m, 4 g, 30 lbr, 88 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas I. Withers, San Antonio, Sec. E. R. Norton, Supt John Robh.

John Röbh.
Prospect Hill St. Ry. Co.
SANDUSKY, O.-Sandusky St. Ry. Co. 2 m, g. -- lb r, -- c. -- h. Pres. Chas. B. Ods, Sec. & Treas.
A. C. Morse, Supt. Clark Rude.
SAN FRANCISCO. CAL.-California St. R.R. Co.
Central R. R. Co. 6 m, 5 g, 45 lb r, 31 c, 290 h.
Pres. Chas. Main, V. Pres. Jos. Roseberg, Treas. A.
J. Gunnison, Sec. C. P. LeBreton, Supt. J. F. Clark.
Clay St. Hill R.R. Co. 1 m, 3-6 g, 30 lb r, 11 c, 12

[APRIL, 1886.

dummy cars. Pres. Joseph Britton, V. Pres. James Mofit, Treas. Henry L. Davis, Sec. Chas. P. Campbell, Supt. Joseph Britton.
Clay St. Park & Ocean R. R. Co.
Market St. Cahle Ry. Co. 109-10 m, 4-8½ lb r, 137 c, 2 motors, 73 h. Pres. Leland Stanford, V. Pres. Chas.
F. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt North Beach & Mission R.R. Co. 8m, 5 g, 46 c, 400
h. Pres. Jos. Rosenberg, Sec. H. W. Hathorne, Treas. Carl Ahfel, Supt. M. Skelly.
Omnibus R.R. & Cable Co. 8½ m, 5 g, 35 db r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Ruegg, Supt. M. Martin.
Portrero & Bay View R.R. Co. 1½ m, 5 g, 35 lb r, 20 c, 64 h. Pres. Leland Stanford, V. Pres. Chas.
Crocker, Treas, N. T. Smith, Sec. J. L. Willcutt.
Sutter St. R.R. Co. 5½ m, 4-11 g, 35-45 lb r, 30 c, 125 h. Pres. R. F. Morrow, Sec. A. K. Stevens, Treas; M. Schmitt, Supt. James McCora.
Telegraph Hills t. Ky. Co. 1,707 ft, 4-11 g, 36 lb r, 3 c, -a h. Pres. Gustav Sutro, V. Pres. E. O. Dem-icke, Sec. & Treas. C. J. Werner.
The City R.R. Co. 5½ m, 5 g, 48 lb r, 73 c, 285 h. Pres. R. B. Woodward, V. Pres. Geo. E. Raum, Scc. M. E. Willis, Treas. J. H. Goodman, Supt. William Woodward.
SAN JOSE, CAL.—San Jose & Santa Clara R.R.

SAN JOSE, CAL.-San Jose & Santa Clara R.R.

Woodward.
SAN JOSE, CAL.—San Jose & Santa Clara R.R. Co.
First St. & San Pedro St. Depot R.R. Co.
Market St. & Willow Glen R.R. Co.
North Side R.R. Co.
SANTA BARBARA, CAL.—Santa Barbara St.
R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres, A. W. McPhail.
SAUGATUCK, CONN.—Westport & Saugatuck
Horse R.R.
SAVANAH, GA.—City & Suburban Ry. Co. 18½
m, 5 g, 16-30 lh r, 49 c, 110 h, 3 engines. Pres. J. H.
Johnson, Asst. J. W. Alley. Treas, E. Schmidt.
Coast Line R.R. Co. 7 m, 5 g, 30 lb r, 17 c, 37 h.
Pres. Geo. Parsons, New York, Sec., Treas. & Gen.
Man. R. E. Cobb, Savannah.
SAYRE, PA.—Sayre St. Ry. Co. 9½ m, 4-S¼ g, 25-52 lb r, 19 c, 70 h. Pres. M.W. Matthews, Sec. & Treas, J. C. Platt.
SEARCY, ARK.—Searcy & West Point R.K. Co, 8 m, 4-8½ g, 25 lb r, 7 c, 6 nu. Pres. A. W. Yarnell.
Sec. M. II. Ligbtie, Treas, Jasper Hicks.
SEARTLE, W. T.—Seatule St. Ry. Co. 3½ m, 4-5½ g, 35 lb r, 5 c, 20 h. Pres. F. H. Osgood Sec.
Geo. Kinuear.

4.8½ g, 35 lb r, 5 c, 20 h. Pres. F. H. Osgood Sec. Geo, Kinuear. SEDALIA, MO.—Sedalia St. Ry. Co. 2½ m, 4-10 g, 22 lb r 6 c 25 h. Pres. Josepb D. Sicher, V. Pres. Louis Deutsch, Treas. F. H. Guenther, Sec. Chas. S. Conrad.

SELMA, ALA, —Selma St. R.R. 2% m, 18 lb r, 5 Sh. Pres. E. Gilman, Sec. & Treas. J. H. Hollis, upt. W. Bohlla. Sup

SENECA FALLS, N.Y .- Seneca Falls & Waterloo Ry

SENELA FALLS, N.Y. -Select Fails & Watchoo Ry.Co. SHERMAN, TEX.-Sherman City R.R. Co. SHEREVEPORT, L.A.-Shreveport City R.R. Co. I& m, 4-4 g, 46 lb r, 6 c. 14 b. Pres. Peter Youree. SIOUX CITY, IA.-Slowa City St. Ry. Co. 5 m, 4 g, -r, 8 c, 52 mu. Pres. Fred. T. Evans, V. Pres. D. A. Magee, Sec. & Treas. Fred. T. Evans, V. Pres. D. A. Magee, Sec. & Treas. Fred. T. Evans, V. Pres. D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bilss. [Not in operation.] South Chlcago City Ry. Co, 4 c, 8 h. Pres. An-drew Rehm, Sec. & Supt. A. Krimbill, Treas H. Shearrer.

Shearrer. SOUTH PUEBLO, COL.—Puehlo St. R.R. Co. SPRINGFIELD, ILL.—Citizens' St. R.R. Co. 9% m, 3.6 g, 20-36 lb r, 23 c, 100 h. Pres. J. H. Schrick, Treas, Frank Reisch, Sec. Chas. F. Harman. Springfield City Ry. Co.

Třeas, Frank Relsch, Sec. Chas, F. Harman, Springfield City Ry, Co.
S'PRINGFIELD, MASS.—Springfield St. Ry. Co.
4.8% g, 33-40 lb r, 2% c, 115 h. Pres. Jobu Olmstead, Auditor L, E. Ladd, Clerk Gideon Wells, Treas. A.
E. Smith, Supt. F. E. King.
SPRINGFIELD, MO.—The People's Ry. Co. of Springfield, Wo. 3% m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas.
Sheppard, Supt. H. F. Denton.
Springfield R.R. Co. 2 m, 30-40 lb r, 4-8% g, 7 c, 19 h. 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas.
B. F. Hobart, Supt. J. A. Stoughton, No. Springfield.
SPRINGFIELD, O.—Cltizens' St. R.R. Co. 10m, 4g, 29 c, 135 h. Pres, D. W. Stroud, V. Pres, A. S. Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hanford.
STATEN ISLAND, N. Y.—Staten Island Shore RY, Co.

Ry. Co. ST. CATHARINE'S, ONT.—St. Catharlne'S, Mer-rhiton & Thorold St. Ry. Co. 5½ m, 4-8½ g, 30 lb r, 8 c, 32 h. Pres, E. A. Smyth, Sec. S. R. Smyth, Supt. E. A. Smyth.

ST. 105EPH, 310.—Cltizens' St. R.R. Co. 3 m, 4-83/g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Tnrner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F.

Sec. & Treas, Aronur Entryperiod, Merriam, Frederick Ave. Ry. Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h. Pres, Thomas E. Tootle, V. Pres, Winslow Judson, Sec. W. D. B. Motter, Treas, Thomas W. Evins, Supt. S. Rowen, St. Joseph & Lake St. R.K. Co. Union Ry. Co.

St. Joseph & Lake St. R.K. Co. Union Ry. Co.
ST. LOUIS, MO.-Baden & St. Louis R.R. Co.
3% m, 4-10 g, -b r, 7 c, 21 h. Pres. George S. Case, Pres. William Z. Coleman, Supt. J. H. Archer. Benron & Bellerontaine Ry. Co. 7% m, 4-10 g, 45 lb r, 20 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas. Parsons, Sec. Robert McCuilocb. Cass Avenue & Patr Grounds Ry. Co. 8 m, 4-10 g, 38 hr, 37 c, 200 h. Pres. W. R. Allen. V. Pres. Geo. W. Allen. Sec., Treas. & Supt. G. G. Gibson, Cashier O. H. Williams.
Citizen's Ry. Co. -m, -g, -b r, -c, -h. Pres. Julius S. Walsh.
Jefferson Ave. Ry. Co. Lindell ity. Co. 13% m, -g, -r, 65 c, 475 h. Pres John H. Maquon, V. Pres. John II. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Llewellyn. Northern Central.

Ry

Missouri R.E. Co. -m, -g, -lb r, -c, -h. Pres. Р. . Maffi

P. C. Maffit, Mound Clty R.R. Co. Springfield Ry. Co. 2 m, 4-8% g, 25-40 lb r, 7 c, 40 h. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart, Springfield, Supt. J. A. Stoughton, No. Springfield, Asst. Supt. Frank B. Smith, No. Spring-field.

eid. Southern Ry. Co. 7 4-5 m, 4-10 g, 35-52 ib r, 49 c, 250 . Pres. E. R. Coleman, Sec. J. S. Minary, Man. W.

Southern Ry. Co. 7 4-5 m, 4-10 g, 35-52 lb r, 49 c, 250 h. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson. St. Louis R.R. Co. and the People's R.R. One management. 11 m, 4-10 g, 38-44 lb r, 58 c, 275 h. Pres. Chas. Green, Sec. & Treas. John Mahoney, Supt. Patrick Shea. Tower Grove & Lafette R.R. Union Depot R.R. Co. —m, —g, —lb r, —c, —h. Pres. John Scullin. Union R.R. Co. STONEHAM, MASS.—Stoneham St. R.R. Co. 2% m, 4-8% g, 33 lb r, 10 c, 28 h. Pres. A. V. Lynde, Meirose, Treas. & Cierk Lyman Dyke, Supt. John Hill.

STONELAM: MASS.-SUBLEMENT K.R.K. Co. 2% m, 4-SM g, 33 lb r, 10 c, 28 h. Pres. A. V. Lynde, Metrose, Treas. & Clerk Lyman Dyke, Supt. John Hill. ST. PAUL, MINN.-St. Paul City Ry, Co. 25 m, 4-SM g, 80 c, 150 h, 294 mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. J. H. Randall, Treas. Clint-on Morrison, Supt. A. L. Scott. STILLWATER, N. V.-Stillwater & Mechanics-rille St. Hy. Co. 4½ m, 4-SM g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. Edw. 1. Wood, Treas. E. H. Smith. STROUDSBUIRGH, PA.-Stroudsburgh Passen ger R.R. Co. 14-5 m, 4-SM g, 28-30 lb r, 3 c, 9 h. Pres & Treas. J. Lantz, Sec. Jacob Houser. SYRACUSE, N. Y.-Syracuse & Onondaga R.R. Co. 23-5 m, 4-S g, 28-30 lb r, 3 c, 9 h. Pres & Treas. J. Lantz, Sec. Jacob Houser. SYRACUSE, N. Y.-Syracuse & Onondaga R.R. Co. 23-5 m, 4-S g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson. Central City Ry. Co. 2½ m, 4-SM g, 40 lb r, 12 c, 37 h. Pres. Daniel Pratt, V. Pres. Jonathan C. Chase, Sec. & Treas. James Barnes, Supt. George Crampton. 4 Stracuse Savings Bank Building. Fifth Ward R.R. Co. 2½ m, 4-SM g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. 0. C. Pot-ter, Supt. Hugh Purnell. Office W. Washington St. Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-SM g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardiner, Supt. V. J. Hart. Onondaga Savings Bank Building. New Brighton & Onondaga Valley H.R. Co. 1% Im, 4-S g, 16-51 bi r, 2 c, 6 h. 1 dummy. Pres. Mathias Britton, Sec. T. W. Meacham, Treas. J. H. Anderson. Seventh Ward RY. Co. Syracuse & Geddes RY, Co. 2 m, 4-SM g, 35-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasse-las A. Bonta, Supt. Wm. J. Hart. Third Ward RY. Co. Syracuse & Geddes RY. Co. 2 m, 4-SM g, 53-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasse-las A. Bonta, Supt. Wm. J. Hart. Third Ward RY. Co. Syracuse & Geddes RY. Co. 2 m, 4-SM g, 53-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rass

Ara In, 4-32 g., 25 10 1, 16 C, 45 h. Fles. F. C. Bullun, John T. Shriver.
TEXARKANA, ARK.—Texarkana St. Ry. Co. TOLEDO, OHIO.—Toledo Consolidated St. Ry. Co. 17 m, 4-8 g, 42 lbr, 37 c, 180 h. Pres. John E. Balley, Sec. A. E. Lang. Adams Street Ry. Co. Metropolitan St. Ry. Co. 10 m, 3 g, 28-35 lb r, 31 c, 101 h. Pres. & Sec. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F. Shipherd, Supt. Jno. A. Watson. Monroe Street R.R. The Central Passenger R.R. Co. of Toledo, O. 8 m, 3 g, 27 lb r, 17 c, 70 h. Pres. F. E. Seagrave, Treas. & Man. A. R. Seagrave, Supt. Joseph Murphy. TOPEKA, KAN.—Topeka Clip Ry. Co. 9 m, 4 g, 25-48 lb r, 25 c, 90 h. Pres. Joab Muivaue, V. Pres. D. W. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse Shaw.

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W. Stormont, Sec. & Treas. E. Wildes, Supt. Jesse Shaw.
TORONTO, CAN.—Toronto St. Ry. Co. 60 m, 4-10% g, 301b r, 160 c, 750 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Franklin.
TRENTON, N. J.—Trenton Horse R.R. Co. 1% m, 5-2 g, 43-47 10 r, 10 c, 31 h. Pres. Gen. Lewis Perrine, sec. & Treas. Lewis Perrine, r., Supt. Thomas Sillouris. City Ry. Co. 3 m, 5-2 g, 45 10 r, 15 c, 69 h. Pres. Adam Extoir, V. Pres. W. H. Skinn, Sec. H. E. Howell, Treas. & Marg. Director Chas. J. Bramford.
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Troy & Lansingburgh R.R. Co. 20% m, 48% g, 47 lb r, 9 c, 46 h. Pres. William Kemp, V. Pres. Charles Cleminshaw, Sec. & Treas. Josen J. Hagen, supt. Leander C. Brown. 285 River St.
Urbana & Champaign St. Ry. Co. 2 m, 4-8% g, 33 lb r, 4 c, 20 h. Pres. Wm. Park, Sec. & Treas. Frank G. Jaques, Supt. W. Park.
UTICA, N.Y.—Utica, Clinton & Binghamton St. R.R. 7% m, 48% g, 474 bb roger Rock.
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R.R. 72 m, 4-5% g, 43-56 10 r, 17 C, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt. Roger Rock.
The Utca & Mohawk R.R. Co. 2% m, 4-8% g, 25-40 ib r, 9 c, 5 h. Pres. Chas. W. Hutchinson, V. Pres. Nathan S. Haynes, Sec. Geo. M. Weaver, Treas. Joshua W. Church.
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WAC0, TEX.-Waco St. Ry. Co. 5 m, 4-8 g, 1418 lb r, 9 c, 44h. Pres. E. Rotan, Sec. & Treas. W. R. Keilum, Supt. J. W. Sedbury.
WALTIAJU, MASS.-Waltham & Newton St. Ry. Co. 3% m, 3-8% g, 30 lb r, 7 c, 13 h. Pres. R. E. bbins, Sec. & Treas. Henry Bond.

WASHINGTON, D.C.—Capital, No. O. St. & So Washington R.R.
Anacostla & Potomac River Ry. Co. 3 m, 4-8 g, 37 ib r, 9 c, 24 h. Pres. H. A. Griswold, Sec. Edward Temple, Treas. T. E. Smithson.
Columbla R.R. Co. of the District of Columbia, 2% m, -g, -dbr, 19 c, 56 h. Pres. H. A. Wiliard, Sec & Treas. Wm. H Clayette, Supt Thos. E. Benson.
Metropolitan R.R. Co. 21% m, 4 8 g, 38 ib r, 90 c, 400 h. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William W. Moore, Supt. L. W. Emmart.
Washington & Georgetown R.R. Co. 10 m, 4-8% g, 42 ib r, 167 c, 750 h. Pres. H. Hurt, Sec. & Treas. C. M. Koones, Gen. Supt. C. C. Sailer.
WATERFORD, N. Y.—Waterford & Cohoes R. R. Co. 9 m, 4-8% g, 54 bit r, 167 c, 750 h. Pres. H. Start, Sec. & Treas. C. M. Stomes, Gen. Supt. C. C. Sailer.
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WESTFORT, CONN.—Westport & Saugatuck Horse R.R. WHEELING, W. VA.—Citizens Ry. Co. 10 m. 5-2% g, 45 lb r, 20 c, 55 h. Pres. Dr. C. A. Wingelter, Sec. Van B. Hail, Supt. Michael Lottus. Wheeling & Elm Grove R.R. 7 m, 4-8% g, 30 ib r, 12 c, 4 Baidwin Motors. Pres. J. D. DuBois, Sec. E. J. Rutter, Supt. E. Hirsch. WICHITA, KAN.—Wichita City Ry. Co. 7% m, 11 c, 60 mil, 4 h. Pres. B. H. Campbell, V. Pres., Treas. & Gen. Man. E. R. Powell, Sec. G. W. Lara-mer, Atty, E. C. Ruggles. WILKESBARRE, PA.—Wilkesbarre & Kingston Pass. R.R.

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Wilkesbarrc & Ashley Passenger R.R. Co. Coalville Passenger K.R. 2½ m, 4-8% g, 20-24 lb r, c. 10 h. Pres. Chas. A. Miner, Sec. & Treas. George oveland, Supt. Albert G. Orr. WHLLIAMSPORT, PA.-Williamsport St. R.R. Co. WILMINGTON, DEL.-Front & Union St. Pars-WILMINGTON, DEL. -Front & Union St. Parsr Ry. Co. 1% m, 5-2 g, - 15 r, 7 c, 20 h. Pres. W. Bush, Supt. Sam'i A Price, Treas. E. T. Geo.

Wilmington City Ry. Co. 4½ m, 5-2½ g, 45 lb r, 20 Wilmington City Ry. Co. 4½ m, 5-2½ g, 45 lb r, 20 e, 82 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Winning on City Ry, Co. 4% in, 5-2% g, 45 lb1, 5-(c, 82 h. Pres, W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett. WINDSOR, CAN.—Sandwich & Windsor Passen-cord H. Co.

ger R.R. Co. WINNIPEG, MANITOBA, CAN.—The Winnl-peg St. Ry. Co. 5 m, 48% g, 25 lb r, 13 c, 75 b. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin,

peg St. Ry, Co. 2010, Sec. & Mangr, Albert W. Russey, Supt. Geo. A. Young.
Supt. Geo. A. Young.
WINOMA, MINN.-Winona City Ry, Co. 4 m, 2-5 g, 27 lb r, 10 c, 29 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.
WORURN, MASS.-NO. Woburn St. Ry, Co. 2% m, 48 kg, 49 lb.r. 5c, 4 h. Pres. & Treas. J.K. Carter, Supt. Dexter Carter.
WORCESTER, MASS.-Worcester St. Ry, Co. 5% m, 48 kg, 49 lb r, 19c, 100 h. Pres. Geo. H. Seeley N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas & Supt. Harry S, Searls, Worcester.
YOUNGSTOWN, O. - Poungstown St. R.R. Co. ZANESVILLE, O. -Behaire, Chillicothe & Canton Zanesville & McIntle St. Ry, Co. 3m, 3-6 g, 28 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend reas. T. B. Townsend.

Street Railway Stocks.

Corrected by H. L. GRANT, 145 Broadway, New York.

	Par.	Amount.	Period.	Rate.	Date.		Bid.	Asked.
Bieecker St. & Fulton Ferry	100	900,000	J. & J.	3/4	January,	1886	30	25
1st mort	1,000	700,000	J. & J.	7	July,	1900	113	116
Broadway & 7th Ave	100	2,100,000	Q.—J.	3	Qu. Feb.	1856	200	250
1st mort	1,000	1,500,000	J. & D.	5	June,	1904	103	105
2d mort	1,000	500,000	J. & J.	5	July,	1914	103	105
Broadway Surface, Guarant'd	1,000	1.500.000	J. & J.	5	July,	1924	103	105
Additional	1,000	1,000,000	J. & J.	5	July,	1905	103	104
Brooklyn City-Stock,	10	2,000,000	O - F.	31/	February,	1886	205	212
1st mort	1,000	800,000	J. & J.	5	January.	1902	105	108
Brooklyn Crosstown	100	200,000	A. & O.	4	October.	1885	165	175
1st mort bonds	1,000	400,000	J. & J.	7	January.	1858	105	112
Cent. Park, No. & East River.	100	1,800,000	Q.—J.	2	January,	1886.	141%	143
Con. mort. bonds	1,000	1,200,000	J. & D.	7	December.	1902	122	125
Christopher & Tenth	100	650,000	F. & A.	2%	February.	1886	132	138
Bonds.	1,000	250,000	A. & O.	7	October,	1898.	110	116
Central Crosstown	100	600,000	Q.—J.	1%	January,	1586_{1}	160	165
1st mort	1,000	250,000	M. & N.	6	November,	1922'	114	115
Dry Dock, E. B'dw'y & Battery	100	1,200,000	Q.—F.	2	February,	1886,	180	195
1st mort consol	500	1,900,000	J. & D.	7	June,	1893	114	116%
Serip.	100	1,200,000	F. & A.	6	August,	1914	106	107%
42d & Grand St. Ferry	100	748,000	QF.	4	February,	1886	250	260
1st mort.	1,000	236,000	A. & O.	17	April.	1893	111	116
42d St., Manhat. & St. Nich. Av	100	2,500,000	35.3.9			1885	40	411/2
1st mort.	1,000	1,200,000	M. & S.	5	March.	1910'	110	112
2nd mort. In. bonds	1,000	1,600,000	J. & J.	6	*	1915	60	65
Eighth Ave-Stock	100	1,000,000	Q.—J.	2%	January,	1886	240	265
Scrlp. Houst,, West St. & Pav. Ferry	100 100	1,000,000	F. & A.	6	August,	1914	105	110
1st mort	500	250,000	QF.	27	August,	1885	150	156
Second Ave.—Stock	100	500,000	J. & J.	5	July,	1894	112	113
1st mort		1,862,000 550,000	J. & J. M. & N.	5	January,	1586 1909	204 105	205 110
Consol	1,000	1,050,000	M. & N. M. & N.	7	November, May,	1888.	105	105
Sixth Avenue	100	1,500,000	QF.	3	Ferubary	1868	210	220
1st mort	1,000	500,000	J. & J.	17	July,	1590	112	116
Third AveStock.	100	2,000,000	QF.	4	February,	1886	315	326
1st mort	1,000	2,000,000	J. & J.	7	January,	1890	110	112
23d StStock	100	600,000	F. & A.	4	November,	1885	250	260
1st mort	1,000	250,000	M. & N.		Feb.	1893	110	113
Ninth Avenue	100	800,000	M. & S.		September,	1885	138	140
Chicago St. Ry	100	000			copromotiy		299	325
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Andrews & Clooney, 545 W. 33d St., N. Y......228-229 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...168 AXLES.

A. Whitney & Sons, Philadelphia, Pa......167 Andrews & Clooney, 545 W. 33d St., N. Y 228-229 Wm. Wharton, Jr., & Co., Limited, Phila., Pa... 216

BEARINGS.

212

Andrews & Clooney, 545 W. 33d st., N. Y..... 180-181 Ajax Metal Co., Philadelphia, Pa..... Pugh & Russell, Stewart Building, New York ... 214 Edward White, 531 W. 33d. Street, New York 215

BOXES, JOURNAL.

Bemls Car Box Co., Springfield, Mass....., 217 A. Whltney & Sons, Philadelphia, Pa......215 Lewis & Fowler, Brooklyn, N. Y.......226-227 Andrews & Clooney, 545 W. 33d St., N. Y.....228-129

BRAKE RODS.

Wm. Wharton, Jr., & Co, Limited, Phila., Pa...216 BRAKE SHOES.

Andrews & Clooney. 545 W. 33d St., N. Y.....528-220 Wm. Wharton, Jr., & Co., Limited, Phila., Pa., 216 BRAKE CHAINS.

BRAKE PADS, RUBBER.

Fred. J. Kaldenberg, 213 to 229 E. 33d st., N. Y. 218

CARS, NEW.

John Stephenson Co., New York.....

CARS, SECOND HAND.

Frankford & Southwark R.R. Co., 2501 Ken-

CAR STARTERS. C. B. Broadweil, 169 Laurel st., New Orleans, La. 217

CAR LAMPS.

Josephine D. Smith, 350 & 352 Pcarl St., N. Y.....219 Pugh & Russell, Stewart Building, New York. .. 214

CAR WHEELS.

A. Whitney & Sons, Philadeiphia, Pa...... 21 Pugh & Russeli, Stewart Buliding, New York...214 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...216 CAR WHEEL PRESSES.

Watsou & Stlilman, 471 S. Graud St., N.Y......218

CAR SPRINGS.

Fred. J. Kaldenberg, 213 to 229 E. 33d St., N.Y. 218 Lewis & Fowler, Brooklyn, N.Y...... 226-227 Andrews & Clooney, 545 W. 33d. St., N.Y.... 228-229 Richard Vose, 13 Barclay St., N.Y... 001 Pugh & Russell, Stewart Bullding, New York ... 214

CAR SEATS.

Hale & Kilburn Mfg. Co., 48 & 50 N. 6th Str.,

Philadelphia, Pa.... Gardner & Co., 643 to 657 W. 48th st., N.Y 220 CAR SASH.

W. L. Everit, New Haven, Ct..... Lewis & Fowler Mfg. Co., Brooklyn, N.Y... 226-227 CAR CEILINGS.

COUPLING PINS.

Lewis & Fowler Mfg. Co., Brooklyn, N.Y 226-227

CAPS, UNIFORM. P. Goldmann, 133 Grand & 19 & 20 Crosby, N. Y. . 219

CASTINGS.

Bowier & Co., Cleveland, O.....

Andrews & Clooney, 545 W. 33d St., N.Y.... 228-229 Wm. Wharton, Jr., & Co., Llmited, Phila., Pa .. 216 CURRY COMBS.

Muncie Novelty Co., Muncie, Ind.... .162 Lewls & Fowier Mfg. Co., Brooklyn, N. Y.... 226-227 CURVED RAILS.

Page

Pugh & Russell, Stewart Building, New York ... 214 CROSSINGS. Page.

Andrews & Clooney, 545 W. 33d St., N. Y.... 228-229 CHANNEL PLATES.

Andrews & Clooney, 545 W. 33d St., N. Y.... 228-229 CABLE ROADS.

D. J. Miller, 234 Broadway, N. Y..... 222 Andrews & Clooney, 515 W. 33d St., N. Y.... 228-229

ELECTRIC RAILWAYS.

FROGS.

Pugh & Russeli, Stewart Building, New York .. 214 Wm. Wnartou, Jr., & Co., Limited, Phlla., Pa...216 FARE BOXES.

Wales Manuf. Co., 76 and 78 East Water St.,

Lewis & Fowier Mfg. Co., Brooklyn, N Y 226-227 J. B. Slawson, 16 W. 46th. Street, New York 216 John Stephenson Co., New York...... 232 FARE REGISTERS, STATIONARY.

Lewls & Fowler Mfg. Co., Brooklyn, N. Y... 226-227 FARE COLLECTORS.

Lewls & Fowler Mfg. Co., Brooklyn, N. Y....177-178 FEED CUTTERS.

E. W. Ross & Co., Springfield, O......218 GUTTERS.

Bowier & Co., Cleveland, O. Wm. Wharton, Jr., & Co., Llmited, Phila., Pa...216 GROOVED CURVES.

HAMES.

Charles E. Berry, Cambridge, Mass......213 U. S. Harness Co., Chicago, Ili..... 219

HARNESS.

HYDRAULIC JACKS. Watson & Stillman, 471 S. Grand st., N. Y......218

HORSE SHOES.

The Goodenough Company, 156 and 158 E. 25th

P. F. Burke, 860 Dorchester Ave., South Boston.217 KNEES.

Andrews & Clooney, 545 West 33d st., N. Y.. 228-229 Pugh & Russell, Stewart Building, New York...214 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...216

METALLIC RAILWAY.

Wm. Wharton & Co., Phila., Pa..... .216 Metallic Street Railway Supply Co., Albany N.Y 219 Humphreys & Sayce, 1 Broadway, N. Y......164 D. F. Longstreet, Providence, R. I..... 219 MATTING (Rubber).

Fred. J. Kaldenberg, 125 Fulton St., N. Y......213 MATTING.

MOTORS-Steam.

H. K. Porter & Co., Plttsburg, Pa......219

MOTORS-Electric.

- Van Depoeie Electric Manufg.Co.,203 Van Buren
- PEDESTALS. Page. Andrews & Clooney, 545 West 33d St., N. Y. . 228-229 Wm. Wharton, Jr., & Co., Limited, Phila., Pa... 216

PANELS.

RAILS Humphreys & Sayce, 1 Broadway, N. Y......211 Pugh & Russell, Stewart Building, N. Y.......214 Pennsylvania Steel Co., 160 Broadway, N. Y 222 Pittsburgh Bessemcr Steel Co., 48 Fifth Ave.,

..... 219 RUBBER CAR SPRINGS.

Fred J. Kaldenberg, 125 Fulton St., N. Y..... 218 RUBBER VALVES.

Fred. J. Kaldenberg, 125 Fulton St., N. Y......173 RUBBER HOSE.

Fred. J. Kaldenberg, 125 Fulton st., N. Y..... 218 STEEL RAILS.

Pennsylvanla Steel Co., 160 Broadway, N. Y.,

208 S. Fourth st., Philadelphia, Penn..... 222 Plttsburgh Bessemer Steel Co., 48 Fifth Ave.,

..... 219 Wm. Wharton, Jr., & Co., Limited, Phila., Pa ... 216

SEATS & SEAT SPRINGS. Hale & Kilburn Manuf'g Co..... 213

SWITCHES.

Humphreys & Sayce, 1 Broadway, N. Y... 211 M. M. White, 531 West 83rd st, N. Y 214 Andrews & Clooney, 545 West 33rd st., N. Y.228-229 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...216

STREET RAILWAY BUILDERS.

A. J. Hutchinson, 95 Liberty St., N.Y......165

STREET RAILWAY SUPPLIES.

Humphreys & Sayce, 1 Broadway, N. Y.. 211 Metallic Rallway Supply Co., Albany, N. Y..... 219 Lewis & Fowler, Brooklyn, N. Y 226-227 Andrews & Clooney, 545 West 33rd st., N. Y. 228-229 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...216 SNOW PLOWS.

Andrews & Clooney, 545 West 33rd st., N. Y 228-229

TURNOUTS.

Wm. Wharton, Jr. & Co., 25 St. & Washing-

ton Ave., Philadeiphia, Pa..... ...216 Andrews & Clooney, 545 West 33rd st., N. Y.228-229

TURN TABLES.

Wm. Wharton, Jr., & Co., Limited, Phila., Pa..216

Andrews & Clooney, 545 West 33rd st., N. Y.228-229 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...216

Andrews & Clooney, 545 W. 83d St., N.Y..... 228-229

John Babcock & Co., 2 Liberty sq., Boston Mass.213

Watson & Stillman, 471 S. Grand st., N. Y 218

Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 216

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A. Whitney & Sons, Philadeiphia Pa.....215

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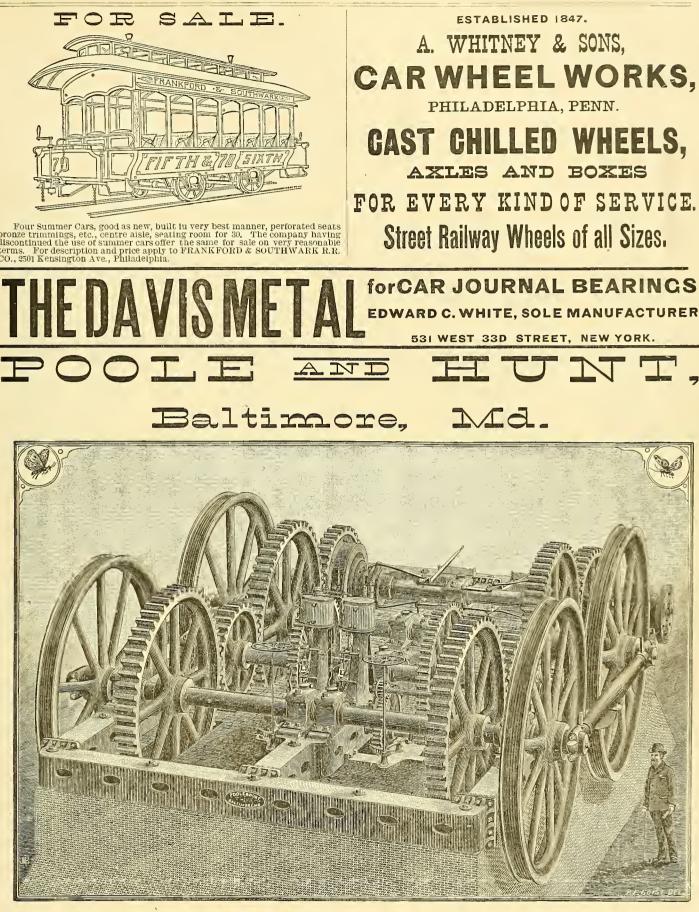
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The Rates of Freight are as Low from their Factory West and East AS THE LOWEST.

A Mild Tough Steel Shoe supplied at a small advance over Iron Shoesi



FOR STREET RAILROADS.



THE STREET RAILWAY JOURNAL.

APRIL, 1886.]

215

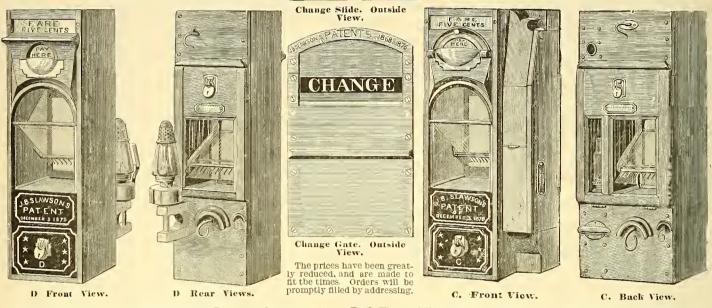
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These Boxes are of the latest and most approved pattern, and contain a front door, by opening which all of the glass inside can be conveniently cleaned. This is a late patent, and is a very valuable improvement over the old method of taking the boxes apart for that pur-pose. They are well made and not liable to get out of order, cannot possibly bepicked, 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 par-ties using them are not liable to claims for iniringe-ments, 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 Ameri-ca, Europe, Asia, Africa and Australia—in fact, nearly all places where street cars are used.



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NO. CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear Sir,—This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-tainly all that we desire. Yours Respectfully, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARD VOSE. Dear Sir, —We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respliy. J. W. FOSHAY, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN, N. Y.

RICHARD VOSE, ESQ. Dear Sir, — Yours of May 27 to Mr. Hazzard, Prest., has been referred to me for repiy. And would say that we have now in use about 600 sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly, A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear Sir,-Replying to your favor of a recent date I beg to say that we have been

using your Graduated Car Springs since 1881 and have increased the number, until at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt.

CAMBRIDGE R.R. CO., CAMBRID E, MASS.

COL. RICHARD VOSE. Dear Str. — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARD VOSE. Dear Sir,—Send us 6 more sets of your new pattern Car Spring, same as the lot we ordered of you last Sept. in every way. This is the best answer we can make to your question of "How we like them." Yours truly, J. M. DOHERTY, Supt.

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RICHARD VOSE, ESQ. Dear Sir,—Ail I can say in favor of the Vose Spring is that we continue to apply them to most of our new cars. Have about 60 cars equipped and think very weii of them. If they could be produced for less money should think better of them. Very Respectfully Yours, E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentiemen,—Yours of May 28 at hand, with re-gard to your Car Springs. We find they are the best in use. They come a little higher than the Barrel Spring, but they are much the better springs. Yours truly, H. J. C. BERG, Supt.

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To WHOM IT MAY CONCERN: We have used the Rich and Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwil-ing to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

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MR. RICHARD VOSE. Sir,—We have eighteen care equipped with your Patent Graduated Sprinz, ans will use your springs to replace all other kinds ad fast as repairs are needed. Your springs give ths best satisfaction to our company and patrons of any that we have ever tried. Yours Respectfully, A. W. ANDERSON, Snpt.

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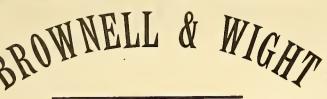
RICHARD VOSE, ESQ. Dear Sir.—For the past four years we have been using your Graduated Springs on all of our cars (30). Our Superintendent says that none of them have ever had to be repaired and that they are the best springs we ever used. Yours truly, N. W. GOODWIN, Secy. they are the Yours truly,

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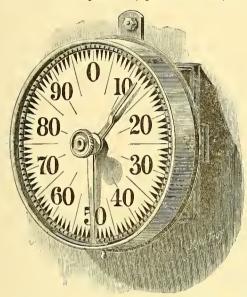
NEW YORK OFFICE . -Philadelphia Office 208 S

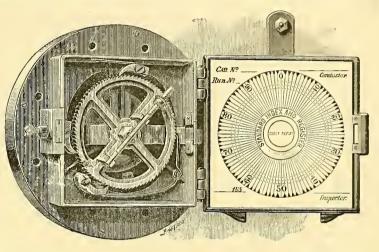
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TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY. PRESIDENT'S OFFICE. C. A. RICHARDS. 16 KILBY STREET,

ELI BALDWIN, ESQ., Prest. Standard Index & Register Co., Dear Sir. —In answer to your inquiry of March 9, 1883. New York, N. Y., Dear Sir. —In answer to your inquiry of March 81 would most respectfully state, that after a trial of some months of the two hundred odd registers that you have placed in our cars. I feel th ti do no more than exact justice to your com-pany in giving you in the strongest and most unqualified manner my entire ap-proval of them. They are in every way all that you calamed, and all that you promised me they would prove to be. In short, I like them. They answer my purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen. Very respectfully yours, &c., President Metropolities and

C. A. RICHARDS, President. CHAS. BOARDMAN, Treas. W. P. HARVEY, Secy. OFFICE OF

THE METROPOLITAN RAILROAD COMPANY,

NO. 16 KILBY STREET,

Boston, March 23, 1886. Dear Sir, --We have now in daily use four hundred and twenty-five of your registers. They have by repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of four years we feel that we are justified in recommending them. Very respectfully yours, &c., C. A. RICHARDS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY. G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Secy. and Treas. W. N. A. Harris, Supt. OFFICE, 10TH AVENUE, 53D AND 54TH STREETS,

New York, August 31, 1882. The Standard Index Register instruments purchased from you about a year and a half ago have since that time been in constant use upon the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried by us. We believe from our experience that in their construction

and result they attain the object sought with accuracy and at the same time with a minimum liability to external tampering or dishonest manipulation. Very respectfully, C. DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY. G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Treas. Howard Scribner, Secy. W. N. A. Harris, Supt. TENTH AVENUE, 53D AND 54TH STREET,

TENTH AVENUE, 53D AND 54TH STREET, NEW YORK, MARCh 24, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co.. 138 Ful:on Street, New York : My Dear Sir,—We have used about i50 of your "Standard Index Registers " for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inslde paper dial are free from the danger of being tampered with. I u a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you. Very sincerely yours, C. DENSMORE WYMAN, Vice President.

OFFICE OF THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY, Cor. 7th Ave. and 50th Street,

THE BROADWAT ALL OF THATE AND 50TH STREET, New YORK, March 25, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co.: Dear Sir, --Concerning your inquiry as to the result of our experience in the use of the Standard Register furnished by your company and the satisfaction given I will state that after five years' test during which they have been in use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I cheerfully endorse them as the best registers that we have ever seen, and have found them. The paper register or tablet upon which regis-trations are recorded of the number of passengers carried and trips made is an invaluable feature, producing as it does an infallible and indelible record of fares collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers on the cars of our roads at the present time. Very Truly Yours, J. W. FOSHAY, President.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

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 \mathbf{OF}

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The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the sole bars and frog of the horse's foot are never cut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

KEY-STONE OF THE ARCH.

The advantages of the Goodenough System are, first and foremost, SOUND HORSES; Secondly, CHEAP HORSE-SHOEING.

Horse railroads using the system in its entirety not only buy much less iron and pay for much less labor, but have also much more serviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides frogs and Boston finds cobble stones."

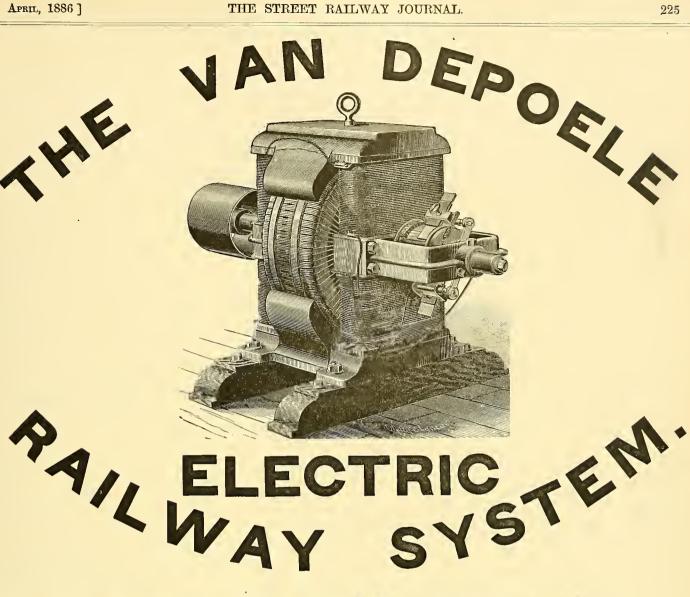
To those who desire to read further upon the subject we will send upon application free of cost our pamphlets entitled,

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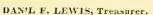
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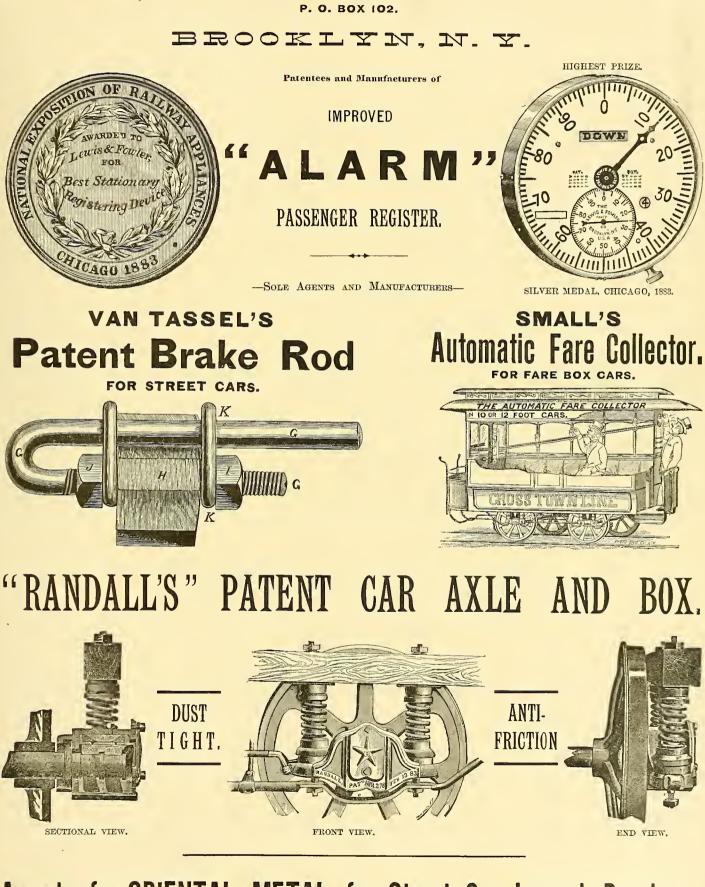
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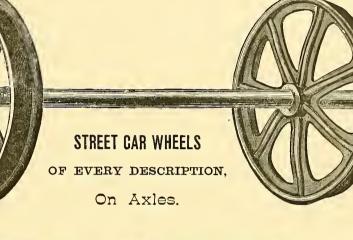
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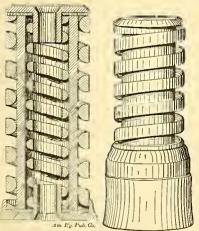
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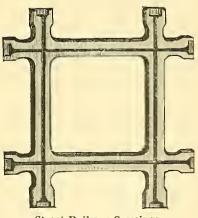


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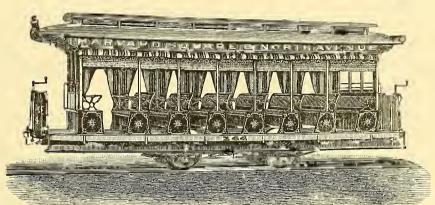


Street Railway Crossings.

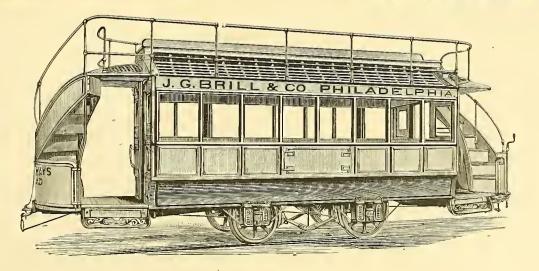


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JOHN STEPHENSON COMPANY

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LIGHT ELEGANT, DURABLE.

Every Description.

Best Materials.

Minimum Prices.

ORDERS QUICKLY FILLED. CAREFUL ATTENTION TO SHIPMENTS.

All Climates Suited.



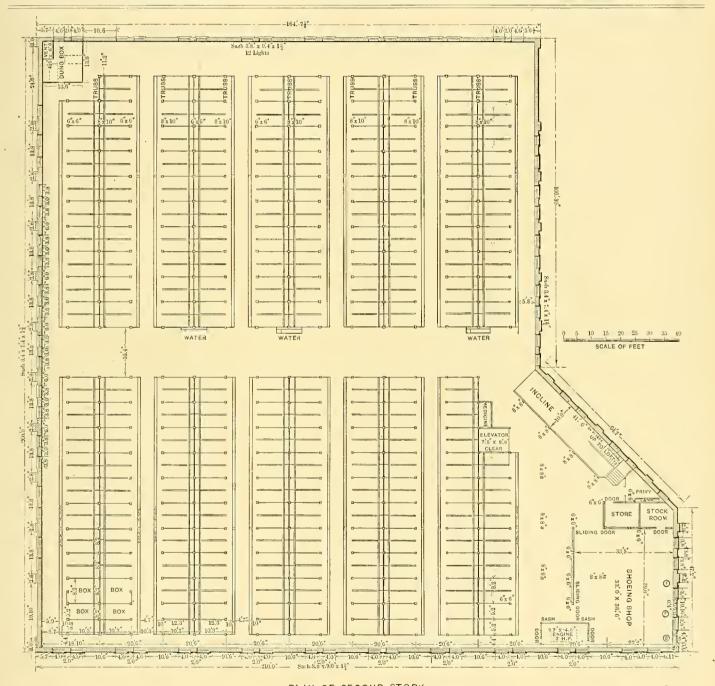
VOL. II. {NEW YORK: 32 Liberty Street.}

MAY, 1886.

(Lakeside Building.) NO. 7.

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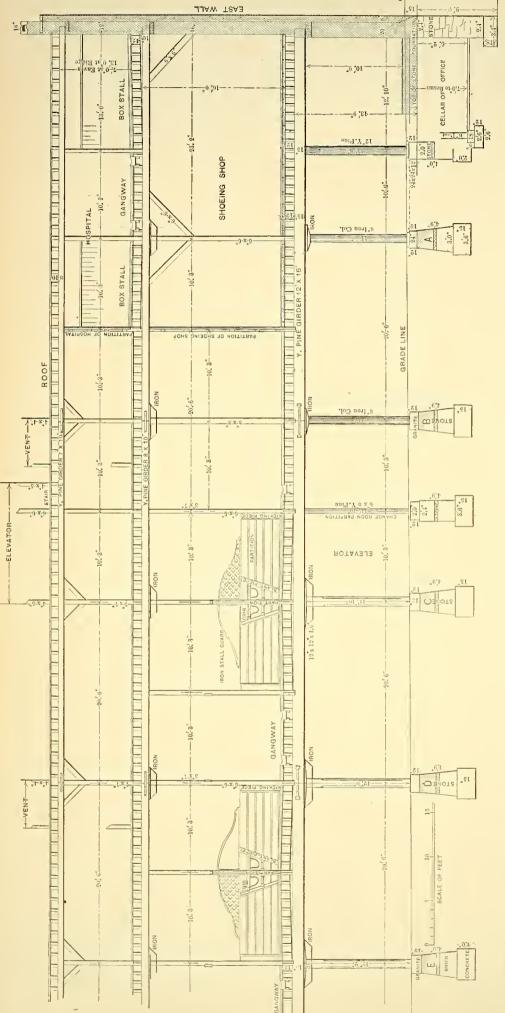


PLAN OF SECOND STORY.

The Brooklyn City R. R. have recently completed a stable for the use of the Pntnam Avenue and Halsey Street line of cars that may be regarded as a model both of simplicity and convenience. It is not as large

A Model Stable.

as many other stables that might be found in either New York or Brooklyn, but its appointments are first class and we think it will be found more interesting to a large class of readers than the stables of greater capacity would be. Few roads have need of accommodations for three or four thousand horses, and yet it is not nncommon to find as many hundred under one roof. Through the courtesy of the officials and especially of Mr. Dickey the architect for the company we are enabled to give complete illustrations showing the arrangement and construction of the building.



The Halsey Street line having outgrown its original accommodations on Gates avenue, it was decided to erect these stables on their present site. They stand at the end of the line, facing Halsey street, and west of Broadway, having stall capacity for about 400 horses.

The construction of the building wascarried on in a most thorough and workmanlike manuer. The walls are of brick; the front being supported on irou columns across the car shed, leaving openings for the tracks; while the interior is of wood neatly whitewashed. Below the offices which are located in the southeast corner of the building, there is a small cellar, with light holes. There is seven feet of headroom here clear of the beams, with the floor six feet below the top of the main walls. The treuch for the front wall of this cellar was sunk to the same depth as that of the main foundations, while the inside walls run down to 12" below the floor. The trench for the walls at the northwest coruer of the building was 3' deep and wide enongh to receive a 24" concrete base. The excavations for the piers on the Halsey street front were carried down to 7' below the top of each capstone and were 3' 6" square at the bottom. The same was done at the elevator and runway.

All the dirt that was removed from these excavations was left upon the premises and after the walls were down, was carefully rammed into place, and what remained was used for grading.

The concrete placed in the trenches for the stonework to rest upon was made from fresh Rosendale cement, mixed with clean sharp sand, broken stone or screenings, in the proportion of one barrel of cement to three barrels of fine stone or screenings and two of sharp sand, thoroughly wet and mixed in boxes before being placed in the trenches. Before placing it in position, however, the trenches were carefully cleanel out and squared np to the proper size and depth and the mixture then placed iu before setting. After this it was rammed and settled down into place. In this work all sand or screenings containing any loam whatever was rejected. This concrete was laid in a course of 3'4" wide and 12" deep under the main foundations, and under the piers it was made in squares $3' 6'' \times 3' 6''$ and 15" deep. The inside walls of the office and cellar being lighter have a footing course of only 24" wide and 12" deep ; the same being used for the inside walls of the dung yard.

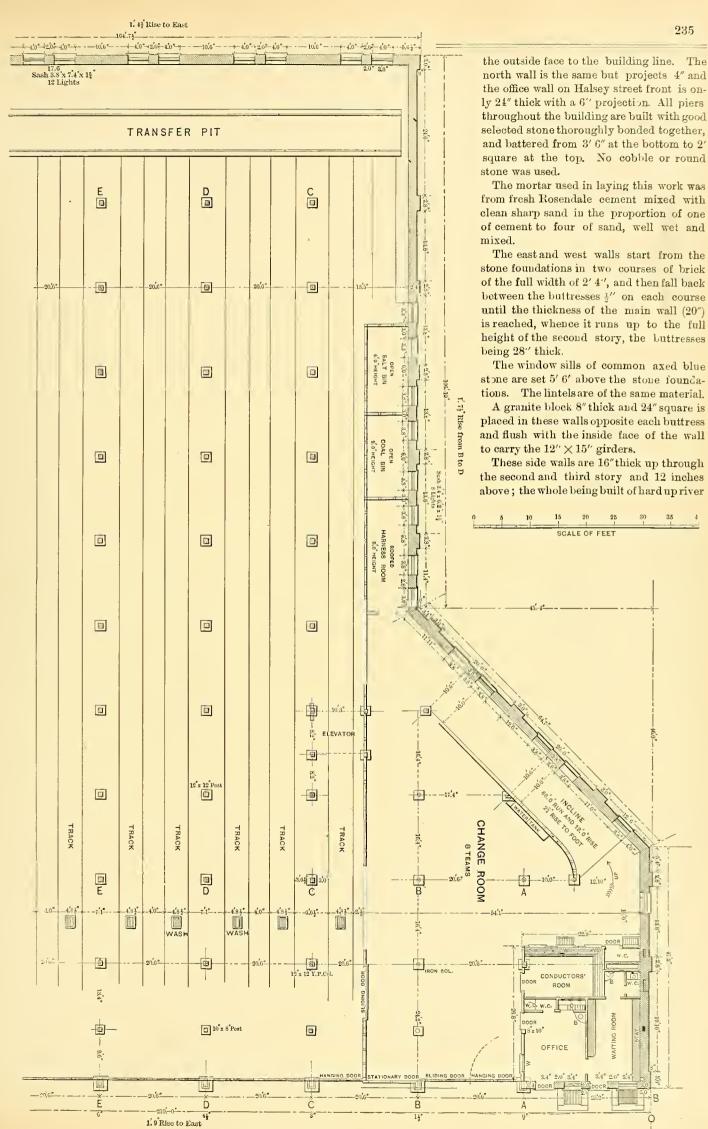
Concrete was used as a flooring of the cellar. This was floated to a depth of 4" and Grawn down hard and smooth. A 3" filling of the same material was placed between the sleepers of the change room floor. It was used as a deafener beneath the floors of the shoeing shop and the engine room, and served as a bed for the iron gutter boxes on the two fronts.

The foundation walls and piers are of New York boat stoue, laid in coment mortar, well bedded and tied together and leveled off on top to take the brickwork. The east and west sides are 2'4'' thick built with

2.8

В

'n



HALSEY STREET

brick. The buttresses run to the roof the full thickness. The side walls are further coped above the roof with 3 feet \times 16 inches coping stone, the bnttresses with 3 inches $\times 24$ inches of square edged common axed bluestone, and the chimney is capped by a 5 inch $\times 24$ inches $\times 5$ inches $\times 4$ inches perforated blue-stone cap square edged and common axed.

The rear wall is 20 inches thick on first story, 16 inches on second and 12 inches on third, laid np in the same manner as we have indicated for the side walls.

The front wall is 16 inches thick at the office with the door sills 21 inches above the top of the main foundation, projecting 2 inches beyond the face of the wall and are leveled to throw the water out. On the second floor the front wall is 16 inches thick and 12 inches on the third. All sills and lintels on this front are of fine axed blue stone, and the whole front is faced up with a first quality of Collabar fronts laid in fine cement mortar, with level joints having a projecting trnss cornice with dustal course in the frieze.

The mortar used in laying up the brick work was made up, first with a scant mixing of Thomaston lime with clean sharp sand, thrown into piles and allowed to slack for two days; it was then tempered up with fresh Rosendale cement.

The iron columns supporting the Halsey street front, are of east-irou 11 feet 6 inches long over all, and are rectangular 12 inches \times 16 inches outside measurement with 1 inch thickness of metal throughout, and with lugs cast on the back to take the door hinges. On the tops of these columns are placed three heavy rolled iron 15 inch beams, making 27 in all. Each section of these beams is thoroughly bolted together, and anchored at the extreme ends in the brick wall. The inside and outside rows are drilled and tapped for & inch bolts, two each 30 inches of length, in order to hold the furring.

On the first or car house floor there are 74 yellow pine 12 inch \times 12 inch posts and eight 8 inch \times 10 inch, to support the npper floors of the building. These posts rest on the granite base blocks to which they are attached by a 11 inch dowel pin extending 6 inches upward into the post and down into the base; they are further fitted with heavy cast iron caps 4 feet long. In the change room, however, five iron columns are used to carry the upper floors. and afford hitching posts for the horses that are waiting for their cars.

In the second story the posts are all 6 inch \times 6 inches yellow pine except seven at the back, where the spacing on the first floor is greater than the average, on account of the span over the pit of the transfer table. On the third floor the posts are all 7 inches \times 7 inches yellow pine with 6 inch \times 7 inch braces.

The second story is earried by 12 inches \times 15 inches and 10 inches \times 15 inches vellow pine girders resting on the posts of the first story, and the walls with 12 inches bearing on the latter. The third story is

 \times 10 inch and 8 inch \times 12 inch girders. The floor and root beams throughout are of spruce, and of the following dimensions: office floor 3 inch \times 10 inch with 4 inch \times 10 inch sills, and spaced 18 inch between centers; second floor 3 inches \times 12 inches for single lines and 4 inches \times 12 inches for double lines of stalls; the third floor 3 inches \times 12 inches throughout; the roof 3 inches \times 10 inches.

The floor beams of the stable are laid butting one against the other in single courses on the center of girders while the double beams butt against the 6 inch \times 6 inch posts, and are strap anchored across on both sides of these posts. The 14 inch double beams that are placed at the head of the stalls rest directly on the girders and have the top edge 14 inches above them.

For leveling up on the walls no wood was allowed, only slate being used. All beams resting at least Sinches on the front walls. and have a row of $2\frac{1}{2}$ inch $\times 1\frac{1}{2}$ inch bridging well nailed with 10 penny nails.

The office floor is laid in 3 inch $\times 1^{\frac{1}{2}}$ mill-worked yellow pine floor plank, in single continuous courses and thoroughly nailed to the floor heams. The floor of the change room was laid in the following manner. There was first laid upon the ground heavy 6 inch sawn chestnut sleepers in single courses from front to rear and 20 inch between centers over the entire space from the east wall out to the partition, and back under the harness room, coal and salt bins and under the rnn to the second floor to the front doors, with the exception of where a hasin is formed under the water trough. These sleepers were then well settled on the ground and tamped until they were perfectly true on top and flush with the tops of the pier stone. Between the sleepers the dirt was cleaned out to a depth of 3 inches helow their top faces, and the space filled with a good mixthre of fine concrete floated even with the top. The entire space was then covered with 2 inch \times 12 inch yellow pine plank well spiked to the sleepers.

In the shoeing shop and engine room on the second story, a 1 inch \times 4¹/₂ inches mill-worked pine floor was first laid over the entire space. On top of this floor strips of 2 inches \times 3 inches spruee were fastened, one over each beam. The spaces left between these strips were then filled with a fine concrete floated down flush with the top, and when it was properly set the whole was covered with three thicknesses of roofing paper stuck together with hot No. 6 roofing pitch. A second floor was then laid in the hot pitch with 2 inch \times 6 inch yellow pine pl nk aud well fastened down.

All the gangways on the second floor that circulate about the ontside walls of the stable floor, as well as those running through the center, were first covered with a 1 inch pine floor, from east and west walls out to the gutters, from the front wall out to the stalls, and in the central gaugways from gutter to gntter. This floor was then covered with a three-piv thickcarried in a similar manner by 8 inch ness of roofing paper, in the same manner The floor is then placed. It is composed of

as for the shoeing shop, except that it was turned up at the walls and at the ends of each separate row of stalls. At these poi. ts a $1\frac{1}{4}$ inch $\times 9$ inch pine base plank beveled on the top edge was placed and spiked to the brick walls, or to the head of each row of stalls. This part of the floor was then laid with a second covering of 2 inclus \times 6 inches yellow pine laid in hot pitch and well spiked to the beams. The stall floors are laid in the same manner from the gutters up to the head of the stall. with the addition that a third floor 2 inches thick is laid on top. After the stall and head partitions had heen set, this third floor was laid beginning at the head for 3 feet 8 inches ont and down towards the gntters, then a 1^{\pm} inches \times 9 inches spruee plank was placed against the side partition on each side running from the 2 inch spruce at the head down to the gutter. Then six $1_{\frac{1}{4}}$ inches \times $4_{\frac{1}{2}}$ inches spruce slats from these 9 inch plank towards the center of the stalls, leaving a 4 inch joint hetween each slat, the space in the center being filled in solid. The ends of the slats heing chamfered at the gutter end.

The hospital on the third story is floored over in exactly the same way, with the exception that the slats cover the entire floor of each stall. The mixing hox floor is the same with the exception of the slats. The remainder of the hayloft floor is covered first with narrow worked pine boards. laid aeross beams, covered with one thickness of resin sized 12 oz. sheathing paper on which is laid a floor of square edged spruce laid diagonally on the pine floor.

The roof was first covered with a good quality of 1 inch \times 10 inches tongned and grooved pine, and on this was placed a fiveply felt eement and gravel roof. The first ply was of dry sheathing, and each succeeding ply of tarred felt with every lap struck with hot cement and fastened with metal and wooden eleats, each strip having a felt hob applied with hot ecment. The entire surface was then covered with hot cement and screened gravel.

The rnn or incline from the change room up to the stable floor was built in the following manner. From the two 12 inch × 12 inch supporting columns under the secor d floor a 6 inch \times 12 inch bearing pieces of yellow pine was run aeross to the brick wall. These pieces are tenoned into the the post and have an 8 inch bearing on the wall. Between the two posts already mentioned and the post at the foot of the run, a 6 inch \times 6 inch vellow pine post was set up, reaching to the top of the guard or side which is 5 feet above the floor of the run. These posts also have bearing pieces erossing to the wall like the 12 inch \times 12 inch posts already mentioned. On these hearing pieces six 3 inch \times 12 inch carriage timbers are placed, with their feet splayed to rest on the floor of the change room, shouldered to rest square on the bearing pieces, where they break butts. The upper ends are thoroughly secured to the earrying timbers and briek wall with bolts and lag screws.

3 inch yellow pine plank spiked to the carriage pieces and cleated with 2 inch \times 3 inch oak strips 12 inches apart to prevent the horses from slipping.

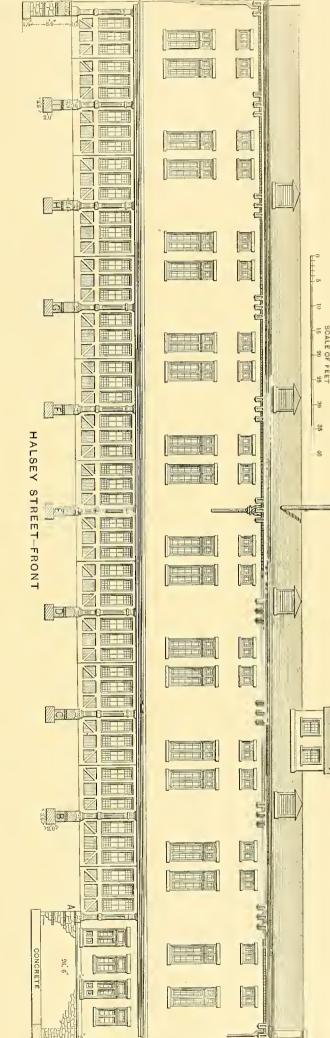
In the northwest corner of the building there is placed a dung shoot that is a model of convenience and neatness. It is partitioned off from the main rooms of the building and has a separate ventilator, so that none of its odors have any tendency to penetrate into the main portion of the building. Furthermore the manure ueed not be handled but once on the premises. When it is once gathered and dumped into the shoot, the whole work is done. It does not fall to the ground but into a box with a door at the bottom, so that it is only necessary to back a wagon underneath, open the door, allowing the dung to run out until the wagon is loaded; close the door and drive away, thus saving time and labor beside adding to the healthfulness of the building.

The medicine room, store room, privy and elevator on the second floor are studded with 3 inch \times 5 inch studding and lateral pieces and ceiled up with $1\frac{1}{5}$ inch pine ceiling on the stable side; the elevator from floor to floor and the other rooms 8 feet high. The front of the elevator on this floor has a strong batton door hung with a cord and counterbalance weight, so as to slide up out of the way.

The meal rooms on the third floor are studded with 3 inch \times 5 inch spruce and lateral pieces like the rooms on the floor below, and ceiled on the outside with one thickness of wide ceiling boards. The mixing box is built in the following mauner. The front and ends are built of 3 inch \times 5 inch joist 4 feet high, ceiled on the outside with wide one sided ceiling boards, and on the inside with 11 inches by 9 inches spruce square edged boards, all around including the brick wall. Then three thicknesses of roofing paper struck with roofers' pitch were put on, and turned up on all sides. Then a 1; inch worked yellow pine flooring laid in thick white lead was put against all four sides, and the joints slushed with roofers' pitch, and finally it was boxed up all around with 7/8 inch worked yellow pine flooring with white lead joints. This renders the box practically tight and prevents meal from working into cracks and souring.

The ventilator shafts which form so important a feature in the healthfulness of a stable are numerous, being 13 in number, and sufficient to perform their work in a satisfactory manner. They are simply boxes extending from the second story to the roof and serve to carry off all impurities. On the occasion of a recent visit to the stable on a comparatively warm day, when the windows were all closed and there were over two hundred horses in the stable, the air was so pure that there was no perceptible difference between that and the outside.

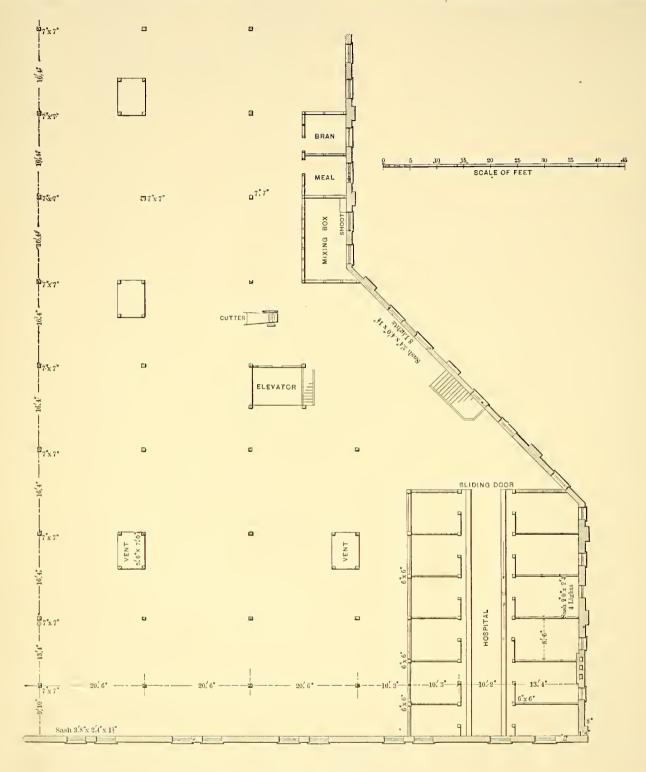
The head partitions of the stalls are of $1\frac{3}{4}$ inches by 9 inches tongue and groove spruce plank 8 feet high, cut and fitted between the 6 inch by 6 inch posts secured to the floor and with the top let into a



9.0 00

plowed 3 inches by 4 inches spruce cap. The side partitions are formed of 2 inches by 9 inches spruce plank square edged cut between the head and foot posts. On the tcp of the second plank and laid through

are made of a perfect stick of yellow pine, sound to the ends and each stick 6 inches by 12 inches and 41 feet long. The two edges are beveled 3 inch, making the top face 111 inches and the bottom 12 inches construction of the building and is sufficient to show that it has been put up in a thorough manuer. An examination of our published plans will show that the internal arrangements are such that convenience for



THIRD FLOOR.

each line of stalls are two 3 inch by 6 inch sprace timbers notched down on this plank to suit the height of the ma gers. One of these carrying timbers lies against the head posts and the other is set fair with the front of the manger. The mangers are of artificial stone. On top of the side partitions are the iron guards the shape and design of which is clearly shown in our sectional view of the building.

The gutters at the foot of all the stalls

wide. The top face is also guttered ont from nothing at the outer ends to 12 inches at the inside ends where they meet and make a perfect butt joint and take a hard wood feather. The joint was then bored through for a cast lead ferrule, the box for flanging the same, and also for an iron strainer. These were then put in position and the connections made with the drain pipes.

doing the work required coupled with safety in case of fire or by accident have taken precedence over all other considerations. The gangways and run are so arranged that the animals may be removed from the building with the least possible delay whether it be in case of danger or for the regula" passige back and forth in every day work. Care has also been exercised to provide so large a number of watering tronghs and so This completes a resume of the general conveniently located that the stock may be

An Electric Motor.

watered with the least possible amount of work; while they are fed from large feeding boxes placed upon wheels that are run down through the gangways whenever that work is to be done, and the horses fed by hand in the ordinary way.

The hospital is equipped with all the necessary appliances for the care of the sick, and horses are taken to and from it on the elevator; although up to the time of our visit it had yet to receive its first patient, which is speaking well for the healthful arrangement and management of the stable. As safety and convenience was the first consideration in the construction so cleanliness comes first in the management. The car sheds, stalls, gangways, shoeing rooms, lofts and yards are swept and cleaned as for an exhibition, and as early as nine in the morning not a wisp of straw nor a shovelful of litter will be found about the premises. The horses are groomed and the floors are made so tight that no litter is sifted down them npon them from above.

The waiting rooms and foreman's office are neat and convenient, the latter being provided with closets, wash basin, water closet and desks.

The third floor is of sufficient size to hold all the hay that will be needed for one year's use. It will be seen from what we have said that this building is indeed a model stable, and the owners may well be satisfied, while it might serve as a model for other roads whose work requires more or less horses than this is intended to accommodate.

Forged Steel Wheels.

A Sheffield (Eng.) concern have been constructing for some time for the use of mines and street railways some forged steel wheels, under the Eyre patent, from a single block of steel, so that the wheel is made withont any welding whatever. These wheels have the hub and the web in an expanded form, taking the place of the ordinary spokes and a tire. They do not resort to any banding except in cases where they desire exceptional strength. These offer a greater resistance than those of cast steel, as will be shown by the following figures obtained from comparative tests for deflection:

Forged steel wheels of fourteen inches diameter:

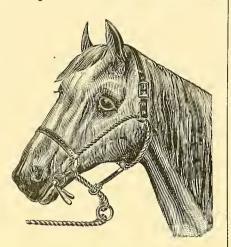
Load in tons.	Deflection in inches.
13	1-64
19	2-32
23	3-32
28	5-32
30	6-32
32	7-32
$34\frac{1}{4}$	10-32
food at at all	mballe families to 1 to 1

Cast steel wheels fourteen inches in diameter:

Load in tons.	Deflection in inches.
6	1-32
7	2-32
9	3-32
13	10-32
15	16-32
$17\frac{1}{2}$	1
19	Spokes broken.

The Eelipse Halter.

This halter* is a combination rope and strap halter that is easily adjusted to the horse and one that can readily be changed to a bridle if so desired. The strap portions are the crown piece, the nose piece, and strap running nuder the throat. At the extremities of the crown strap there are rings or tubes for holding the rope. The same is the case with the other two straps. The rope belonging to the halter proper is a long loop, passing single through all of the loops as shown in the cut except



through the throat strap where it is double. In the loop formed in this passage there is the ring to which the leading rope is attached. It will be seen from this that there is plenty of slack, allowing the halter to be slipped over the horse's head, and when once in position the leading rope tightens it so that it fits perfectly and so that it cannot be shaken off. The throat strap prevents the horse from being choked in pulling.

To change to a bridle, it is only necessary to snap a bit into the rings shown by the nose piece. It will be seen that the rope does not come in contact with the horse in any way so as to wear and cut either the mane or hair.

*J. C. Lighthouse, Rochester, N. Y.

New Compressed Air Motor.

A Pittsburg mechanic claims to have invented a compressed air motor for street car travel, an entirely new and economical principle. The front wheels are nnusnally large, and there are small air pumps, three inches stroke by three diameter, set in the periphery of the wheels. The force of the air pump is exerted by the weight of the car over the wheel, calculated at 1,000 pounds to cach wheel. The air thus compressed passes into the hollow hub of the wheel, whence it carries its force into the receiver.

We are informed, in answer to a query, that fifty-six pound steel rail costs \$3500 per mile complete. This is a very low figure. We don't remember of having a quotation of less than \$4500, exclusive of removing paving and replacing it, an expense of at least \$700 a mile.

A decided departure from the practice hitherto followed in the construction of electric machines for working tramways has recently been introduced in an electric locomotive on the London (England) North Metropolitan Tramway, by a Mr. Elieson. The London Times refers to this new device as follows: Instead of the electric motor being a fixture, and having motion transmitted from it through belt gearing to the wheels of the car, the motor itself revolves, the motion being transmitted through bevel gearing. The system is the invention of Mr. Elieson, and the locomotive has been built by the Electric Locomotive and Power Company, of London. The locomotive is similar in appearance to a short tram-car, and carries a secondary battery, consisting of fifty cells. This battery is connected up with the electric motor, the motion shaft of which projects horizontally about two feet, and carries at its end a spur wheel, which gears into a fixed circular rack. Thus when the motor is started it is, by means of this gearing, rotated. A vertical shaft is attached to the under side of the motor, carrying at its lower end a bevel wheel which gears into one or other of two similar wheels on the driving axle of the engine. The miter gearing is fitted with a friction clutch, by means of which the locomotive can be run either backward or forward. The fifty cells are equal to 280 amperes, and as the average consumption is stated to be forty-five amperes per hour, it follows that there is a good six hours' supply of power carried. The machinery is so arranged that a speed of eight miles an hour cannot be exceeded. Both the locomotive and the tram-car can be electrically lighted at night from the battery by means of glow lamps. We recently inspected the working of this locomotive at the tramway company's depot at Stratford, which was satisfactory in the limited space at command. It was started, stopped and reversed very readily. The machinery is of a simple character, and can be adapted to the tram-car itself in new stock. The electric locomotive company are building a more powerful engine, in order to demonstrate the application of the system on railway lines.

A dealer in city railway securities, Mr-Samuel M. Smith, commenting on the propositiou now before the legislature to take away the Broadway charter, says :

"Does any one believe that the Twentythird Street Railway will be held to their gnarantee of \$375,000 Broadway Surface Railway bonds which they gave in good faith for the privilege of running their Bleecker street cars down Broadway; that this privilege can be taken away and the Twenty-third Street still be held for the adove-mentioned bonds? Is this common sonse? I think not. You will find by and by that the city will be made responsible for the doings of her Aldermen."

Over half of the street railways pay their conductors and drivers by the day, about one-fifth pay by the trip, one-fifth by the month and a few by the hour and week.

An Electric Car.

At a recent meeting of the Inventors'Institute, in England, Mr. A. Reckenzann described his electric street car and motor, reference to which was made in our January issue. It has now been running for some time and giving satisfactory results. He took the position that utility is the first disideratum in an invention, and submitted his design upon the plain ground of its efficiency and practical economy. Before going iuto the details of the subject he presented a table intended to show the power a pair of horses are capable of exerting, but failed to state whether these figures were the result of actual experiments or of theoretical calculatious; a condition that will necessarily have some effect upon their ready acceptation.

According to this table the power exerted in propelling a 46 passenger car, with tractive force at 30 lbs. per ton, two horses pulling 4.5 tons is at

- L		0							
									Horse Power.
7	miles	per	hour	on	level roa	ad	•••	• • •	2.52
$\overline{7}$	66	"	66	"	66 66	·	• •		2.16
6	"	66	+4	"	gradie	nt of	1	in	75 4.32
5	66	44	6.6	64	6.6	4.5	1	"	37 5.4
4	6.4	6.6	"	"	"	66	1	"	37 4.32
3	**	44	"	44	64	66	1	"	25 4.32
4	66	66	14	66	64	66	1	**	25 5.76
б	44	44	" "	46	66				25 7.2
3	66	6.6	"	"	64	66	1	44	18 5.4

The additional power necessary to pull a car round curves cannot be ascertained with equal accuracy; it depends non the radius of the curve, the amount of play in the boxes, and the size of the wheel flanges; a flexible wheel base will considerably facilitate the movement on euroed roads.

In starting the force required is uccessarily greater than that required to maintain the speed uniformly. It has been found by experiment that the momentary starting force is about four times the tractive force when once in motiou; we may thus form a rough idea as to the exertion of a horse in starting a car on a level or on an incline, Horses cannot tell us of their sufferings; but we know that their life in street railway service is short although they work no more than three or four hours a day. That it is barbarous to use horses these figures show, yet there has been until recently no economical substitute, and it is ouly within the last few years that mechanical traction has made any headway. It is admitted on all hands, that mechanical will supersede animal power at no distant date; the only question to be decided being the kind to be employed. It is frequently asked why so much mechanical power is required for the propulsion of street locomotives, and why they indicate as much or more than 40 horse-power, while two horses seem to do the same amount of work.

It has already been shown what work is actually done, and we see that one street car horse frequently does as much work as three or four dray horses. When we consider that a locomotive often weighs from S to 10 tons without the car and passengers, it becomes evident that the indicated hor.epower already quoted is not extravagant. Take a locomotive ear and passeugers as weighing 13 or 14 tons, theu in order to move the load on a level road at a speed of 7 miles per hour, with a tractive force of 30 lbs. per ton, we require from 7 to 8 actual horse-power, which is equivalent, after allowing for engine friction, to about 11 horsepower, and when traveling upan incline of 1 in 37, something like 34 indicated horsepower. Reducing our figures to a co-efficient, and maintaining that the tractive force is 30 lbs. per ton on a level but dirty road, we come to the conclusion that, when moving at a rate of 7 miles per hour on a straight liue, we shall consume 8 foot pounds of work for every pound of weight on the rails; on an incline of 1.75 we consume 16 foot pounds; on an incline of 1.37, 24 foot pounds for every pound weight carried at the same speed. It therefore becomes of the utmost importance to reduce the deadweight to a minimum. Where the locomotive has to drag the car behind it, it becomes necessary to provide weight iu order to obtain good adhesion on the rails, and the best plan uo doubt would be to utilize the weight of the car and passengers for this purpose.

It is the purpose of this paper to inquire whether electric cars have a chance of success from a utilitarian point of view. The distinction made between electric cars and electric railways is that the former carries within itself the power required for its propulsion; whereas, in the latter the energy or electricity is conveyed from the generating station to the rails or other conductor communicating with the motor which turns the wheels.

The car under consideration belongs to the first class, and does not interfere with the rails or roadway nor with other traffic. It can be shifted to any line of the same gauge, and be run in eonjunction with the ordinary horse cars.

In order to accomplish these results, it was necessary to construct a battery of such dimensions that it can be stowed away within the car. It must be of light weight, reliable, supply any quantity of current according to the exigeucies of the road, be cheaper than horseflesh and emit no smell. Primary batteries were out of the question, and recourse was necessarily had to secondary batteries. The original Faure secondary battery, however, was never of any practical use, and very substan tial improvements had to be made in order to bring the secondary battery up to a commercial value. But this has finally been accomplished.

The battery as constructed for street car work consists of a strong teak box containing twenty-one lead plates, weighing together 26 lbs. inclusive of connecting strips and terminals. Ten of these are called positive and eleven negative. Each plate is formed of a leaden grid, the perforations of which are filled with a paste of lead oxide; the positive plates contain red lead, which in charging is converted into peroxide; the negative plates are filled with a paste of litharge, which in charging, is reduced to spongy lead capable of absorbing hydro gen. It is therefore oxygen and hydrogen that is stored, not electricity, and yet in discharging they manifest themselves as electrical energy.

The box is filled with sulphuric acid and water, of a specific gravity of about 1150°; and theu the lid is sealed all around the edges to prevent the spilling of any of the acid,

It never becomes necessary to remove the acid as long as the battery lasts.

There is no reduction of the lead or of auy other material going on within the eell, and the battery would last forever, were it uot for the fact that the leaden grid of the positive plates becomes so brittle through oxidations that it crumbles to pieces in course of time; so that these positive plates have to be replaced periodically by new / oues. Still the loss is not total as the old lead is valuable.

The life of a positive plate depends entirely upon the amount of work it has done. There are plates that have been at work for nearly a year and are still as good as new. They have frequently beeu discharged at the rate of 100 ampères while the average working current is 46 ampères. They are always charged at the rate of 32 ampères and their storage capacity is 150 ampère hours. Sixty such cells will weigh $1\frac{1}{4}$ tons and propel a car with 46 passengers for about two hours over a road with ordinary gradients, eurves, and sixty stoppages per hour.

The batteries are placed under the seats out of sight, and upon trays that may be drawn out through doors at one end of the car. The discharged cells are pulled out together by means of a small winch, and the newly charged cells pushed in, when the car is at once ready to proceed on its journey. There are three sets of accumulators or storage batteries to each car; two sets being charged, while one set is propelling the vehicle, thereby saving time and preventing delay.

In the construction of the motor it was absolutely necessary that it should have a high efficiency, and, at the same time, be of small dimensions and of light weight, and it is believed that such a machine has been produced, as it has successfully passed through some rough tests in actual service under the most trying eircumstances and conditions.

There are two motors driving the car each capable of working up to Learly 9 horse-power and weighing 420 lbs. Each motor is supported independently upon a small bogie, the whole mechanism being self-contained, and each bogie forms a small locomotive engine upon which the car rests. One axle of each begie is a driving axle. In this manner four small driving wheels are obtained, giving the requisite traction upon the rails. Either bogie can be detached from the ear in less than an hour, so that in case of repair and inspection one can be taken out and replaced without letting the car stand idle for any length of time. The speed of the motors is high, being about 1000 revolutions when the car is running seven miles

241

an hour; it thus becomes necessary to introduce some mechanical reducing gear between the motor shaft and the driving axle.

The gearing used for this purpose consists of a worm on each motor shaft and worm wheels on the driving axle, giving a ratio of about 1 to 12. This worm gearing is boxed in, as is likewise the motor, and the wheels run in oil. Dirt is thereby excluded and the lubrication kept perfect. Access to the work is readily obtained through doors in the floor of the car.

In order to vary the speed and power recourse is had to a compound switch, which arranges the motor circuits so that the machines shall work in series in parallel or singly, thus varying the resistance of the circuit, which accordingly produces a variation in the power and speed. When a greater range is desired, the motor circuits are still further divided by arranging the field magnet wires apart from the armatures. This obviates cumbersome gearing, which would add to the weight and expense by increasing the first cost and maintenance,

The driver has full control over the motive power, one handle sufficing for all the operations of starting, stopping, and varying the speed or power. There is no useless electrical resistance, and therefore no waste of energy at whatever speed the car may be traveling. Both ends of the car are provided with these details, so that the driver has only to remove the handles and two connections when reaching the end of the route, and then proceed on the return trip.

It would be an easy matter to vary the speed by decreasing or increasing the number of cells, thereby varying the electromotive force. This method, however, is injurious to the accumulators, because some of the cells would be discharged sooner than the others, and when they are all re-charged in series, some would have to be very much overcharged before the rest could receive their proper share. There would not only be a waste of power occasionally by the evolution of gases for no purpose, but the life of the cells and their efficiency is reduced by this irregular treatment.

On each platform there is the usual vertical shaft and brake handle. A chain being wound upon this shaft when the handle is turned and eight brake blocks are simultaneously pressed against the corresponding number of wheels. The car can be stopped almost instantaneously, but beside this there is an electrical brake, so that the motors act as dynamos driven by the momentum of the car or by the car running down an incline; the whole power stored up in the momentum of the car is converted into electricity and the current generated is utilized in magnetizing the brake shoes, thereby increasing their grip upon the wheels. Arrangements are being made to render this electric brake automatic, so that the main circuit will be broken and the brake circuit closed automatically when the speed of the car reaches a certain maximum.

It has already been said that the capac ity of the car is 150 ampère hours; but this does not entirely exhaust the battery, as a margin of at least 20% is left after this service. A charge of 120 ampère hours is sufficient to propel the car full of passengers for two hours or about 12 miles over an average road with frequent stoppages. When charging sixty cells at the rate of 32 ampères for four hours, and replacing the accumulators in the car every two hours, and steam power is required to the amount of 15 indicated horse power per car.

Assuming that the car has to run 72 miles a day, and that we are supplying several cars at the same time from one engine, the fuel consumed need not exceed 4 lbs. per indicated herse power per hour. The charging takes place during 12 hours of the day only. Thus 7 cwt. of coal per car per day will give a consumption of about 10 lbs. of coal per mile. Reckoning the price of coal at \$4.25 per ton*, the fuel per car mile would be about two cents! By working longer honrs smaller engines could be used, but, of course, with the same consumption of coal per car mile. The most economical steam street railway locomotives burn from 9 to 11 lbs. of coal per mile or about the same as quoted for the electric car.

There are two reasons for this consumption. First, the steam locomotive weighs four times as much as the accumulators and electric motor and driving gear, it therefore requires more power for its own propulsion; second, a street railway locomotive boiler and engine cannot be expected to compete with a large stationary engine as regards economy. The loss thus arising from the conversion of steam power into electricity, and the reconversion of electricity into mechanical power, is more than compensated by corresponding advantages. When water power is available within reasonable distance from the depot an additional economy will be manifest through its utilization.

As to the cost ; the steam engines, boilers, dynamos and shafting, and all needful apparatus for a charging station to supply a dozen electric cars, including spare power, the English price would be about \$19,500. and the complete equipment of twelve twohorse cars, inclusive of ample spare gearing, may be estimated at \$29,000. The snperintendence of machinery at the charging station will cost \$5,350 per annum; fuel at \$4.25 per ton, water, oil, waste, \$6,800; depreciation, at 10 per cent., on engines, boilers and dynamos, \$1,950; and an estimated depreciation of 35 per cent. on the whole propelling apparatus. This gives a total expenditure of \$24,300 per annum, which is equivalent to 7 cts. per mile run. It will be observed that these figures are thoroughly reasonable and allow of a good margin. It would be necessary to almost annihilate the whole concern at the end of the year, iu order to bring the working costs to such an amount as is now allowed

*We give the author's figures for the price of coal, although it is somewhat higher than current rates n this country.—Eps.

by some street railway companies for horsing.

In a resume of the paper the following claims were made for the advantages of the system: the economical cost of running; that the cars now in general use can be readily converted; the small number of parts of the wearing mechanism; the light weight of the whole mechanism; the possibility of using the driving current to lighten the car; the decreased cost in maintaining the permanent way; the less space required for the plant than for stabling the horses; and that the same plant that is used for charging the storage batteries may be used for electric lighting purposes.—Iron.

Street Railway Companies' Liabilities.

Street railways, as common carriers, are bound to the exercise of a high degree of care and diligence in their business, in the care and protection of the persons and lives of their patrons and passengers; are bound to exercise that high degree of care and diligence in the protection of the persons of its patrons, as is usually excreised by very prudent persons in their own business, under like circumstances, and are liable for injuries resulting to passeng rs from their negligence or want of such care and negligence. Where a person, without negligence on his part, and while the cars are standing still waiting for passengers, endeavors to go aboard the car, with the intention of paying fare and becoming a passenger, and the conductor of the car, without giving such person reasonable and sufficient time to enter, negligently caused or suffered the car suddenly to start, whereby the person attempting to board the same is injured, the company will be liable. But where the injury was caused by the person's want of care and prudence in attempting to get on the car while it was in motion; or where his own negligence or want of care contributed in any manner to produce the injury, there can be no recovery.- Van de Venter v. Chicago City Railway Co. Circuit Court, N. D. Illinois, 1885. 26 Fed, 32.

Three Cent Bill for Buffalo.

The street railway company operating lines in Buffalo, N.Y., is making a stubborn fight against a bill introduced into the legislature by Mr. Giese, making three cents the fare for children. It seems that a year ago the regular fare was six cents, with a half fare for children. An attempt was made to reduce the fare to five cents, and this was acceded to by the company on condition that the half fare should be abolished. Having accomplished the desired full-fare reduction, the attempt is now being made to re-establish the half fare. Mr. Henry W. Box is the attorney for the company, and represents that the change would entail such new expenses upon the company that the receipts would fall below the outlay.

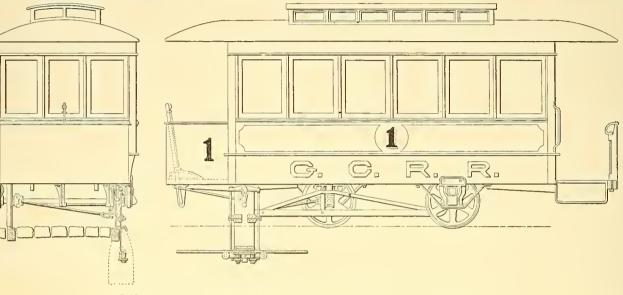
When wauting Street Railway Supplies, consult our Directory.

Gould's System of Cable Railways.

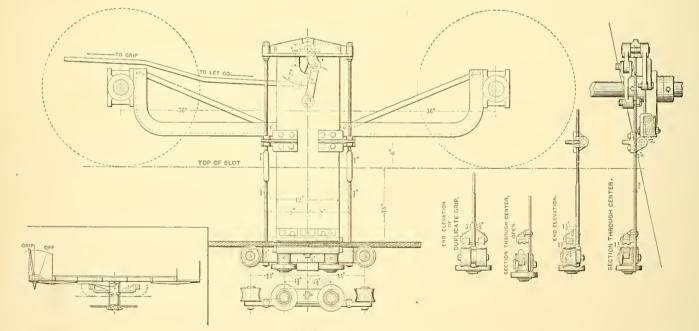
In our November issue we published a description of this invention illustrated with several small cuts. The accompanying engravings give the complete details of the conduits and grips of the new system of cable railway traction. The peculiarity of the system lies in the method of constructing the conduit and the utilization of one portion for the use of electric wires. Heretofore there has been but one conduit and this has been placed in the center between the

are laid to be tied directly and rigidly together. In order to accomplish this the slot to admit the grip is placed outside of the rails. The method of road construction is very clearly shown in the cross sections, elevation and plans of the conduits given in our engravings. Something over three feet below the surface of the pavement cross-ties of 8x2 inch channel ircns are placed. These may be laid in a sub-foundation of concrete or well-rammed gravel when the soil is light or marshy, or directly upon the natural ground when it is suitable;

end of the channel iron cross-tie that is extended on that side of the road for the pnrpose. The interior of the conduit is made of sufficient size to receive the wheels with their journal bearings that are used to carry the cable. If the twin system of traction is used, the conduit is made of sufficient size to receive the two wheels as shown in the lower section. Manholes may be placed in the street at each wheel, allowing of close inspection, and as it is located outside of the rails it will not interfere with the crossties or central bearing. An opening for one



END AND SIDE ELEVATION, SHOWING APPLICATION OF GRIP TO CAR.



rails, rendering it impossible to tie the rails together except by means of the castings of the conduit itself; and as these had the longitudinal slot extending throughout the entire length of the road the strain upon the bottom must necessarily be very severe if it is required to hold the rails together. To overcome this difficulty the rails were secured rigidly and independently in place.

The system under consideration does away with the central conduit entirely and

DETAILS OF THE GRIP.

dependent of course upon the judgment of the constructing engineer in charge. To the upper lip of these channels the sections of the conduits are riveted, this work being done before the structure is put in position.

The conduits are formed of 3-16 inch boiler plates riveted together and strengthened by means of light angle bars. The conduit for the conveyance of the driving cable is furthermore braced laterally by means of a § inch rod running from the top allows the rails or stringers upon which they diagonally downward and outward to the

of the manholes is shown in the side elevation of the conduit.

The second condnit which is shown at the right of the sectional engravings is intended to be utilized for carrying electric or other wires, or as shown in the lower section for the use of steam, water or gas companies. The construction of this conduit is identical with that of the one intended for the cable with these exceptions: It does not require the ontward bracing and extension of the cross-tie that is given to its mate, but has in addition a set of shelves, as shown in the upper section. These shelves are formed by riveting bars of light angle iron along the inside of the conduit plate, 'and these earry the cross-bars of wood or iron upon which the wires are to be placed.

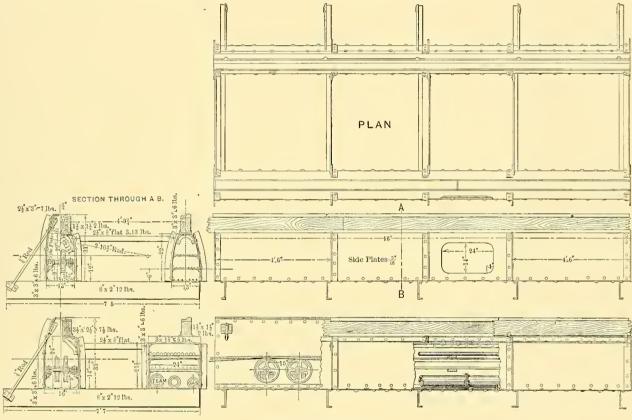
When gas or steam is to be placed in the structure provision is made by enlarging the sectional area of the conduit and providing a suitable supporting foundation for the same. Over these pipes the shelves or slats for carrying the electric wires are placed. Access is had to the whole by means of mauholes placed at suitable intervals, and arranged to admit the examiuer or workman from outside the rails.

If it is desired to construct this road in the open country where there are no wires or piping that should be provided for, the second conduit may be dispensed with and dition to those of the conduit. The main frame for the support of the grip is made of a bar of 2½ inch angle irou riveted to the journal boxes of the car. It is shaped somewhat of the form of the equalizing bar in use upon the trucks of a passenger car of a steam railroad, and is braced by bars of flat iron riveted just outside of the grip and running to the top of the box.

The grip is securely fastened to this bar aud all vertical strains aro kept within its own compass so that nothing but the power required to haul the car is brought to bear upon the angle iron brace. The construction is very simple.

An examination of the end elevation of the cross sections will show its adaptability. The cable is received upon two carrying wheels, one at each end, and bethere is a shaft with journals running boxes cast in solid. A crank is attached to the shaft connected by a rod to the gripping lever at the front of the ear by whose movement the shaft is rotated and by means of a knee-joint connection the jaw is raised and lowered. This knee-joint permits of an enormous pressure being applied to the cable so that no slipping can occur if it is desired to run the car at cable speed. When a slower motion is required the grip may be slackened and the cable allowed to slip.

Below the grip cuts we show the outlines of its attachment to the car. This is done again in the outline engraving of the car complete, and a modification is shown of the grip placed in advance of the wheels. The grip can be braced across to the oppo-



the rail that it would carry be laid in the ordinary way or as the constructing engineer may direct, while on the other hand, a steam road may be constructed on this principle, dispensing with the cable and slot, and utilizing both conduits for electric wires or piping.

The rails are spiked on stringers in the ordinary way. The stringers are securely bolted to channeled seats that are riveted to the top of the conduit; they are tied together by cross-ties of iron or wood bolted fast. Iron is preferred for this purpose because of the less space occupied and the greater strength and ease of construction. The methods employed are clearly shown in our sectional engravings.

For a cable located as this one is, a new grip differing in some of its essential details from those ordinarily in use became necessary. We give the details from working drawings of this piece of mechanism in adTHE GOULD CONDUIT

tween them lies upon the lower jaw which is made of hard wood grooved out to receive it. The frame of the lower jaw of the grip is a strong malleable iron casting with boxes cast in to receive the journals of the four inch wheels that carry the cable, with pockets for the tie rods and the horizontal guide wheels. The wooden shoe is held in position by a lug upon its bottom side through which a key is driven. This bottom frame is connected to the top where the operating mechanism is placed by two light, round rods, flattened to $\frac{6}{8}$ inch where they pass through the slot.

The upper jaw is made a counterpart of the lower as far as the shoe is coucerned. The malleable casting in which it is placed is lighter and is riveted to a x12 inch plate extending through the slot and to the top of the framework and guided by two cyes running over the round tie rods aleady referred to. At the top of the frame site side of the car, from that on which it is located, so that all tendency to swing or slew the car out of line of the rails by the side draught is avoided.

An advantage that is claimed for this system is that when carriages or wagons are being driven with the horses between the rails, there is the regular pavement to drive upon and there is no danger of the horses slipping upon the iron plates or getting the toe-calks caught in the slot. Then when the road is once laid the street need not be torn up for repairs or examination of the cable.

It is usedless to enter into the details of the dimensions and sizes that will be used in the construction of either the conduits or the grip. They are clearly shown by the figures in the engravings for the style and size intended for ordinary use on the average size of car. Strength can easily be assured and the simplicity is shown by our illustrations.

*Gould System, N. E. cor. 9th and Market street \$, Philadelphia, Pa,



MONTHLY, \$1.00 PER YEAR

E. P. HARRIS, General Manager.

American Railway Püblishing Co., ³² LIBERTY ST., LAKESIDE BUILDING, NEW YORK. I. FAXON, Treasurer.

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Our readers will note that our directory of street railways has received a very thorongh overhauling this month and last, our request for changes in business management or equipment having been very generally answered. Over two hundred roads report increased track and stock equipment and many roads have changes in the officers. The data in our directory is all official, received direct from the roads' officers themselves, and can be relied upon.

The Knights of Labor have come to be recognized as a mere striking organization. The only code they seem to recognize is one of force and intimidation. The talk of arbitration can only be a pretense because when it is proposed they so hem their delegates in by absolute and unreasonable demands that the other party has no chance to speak but must yiel l or have a strike installed. These excesses are losing them many sympathizers and will in the end do much to weaken their power of good or evil.

-

A street railway builder and owner of twenty-five years experience speaking of the desirability of equipping a new road temporarily with second hand cars says ' 1 would advise you not to invest in second hand cars. They are very deceiving things to buy. New cars are the most profitable and cheapest in the end. Rails and other equipment are different; the rails and curves that have to be taken up in a large city might do efficient and satisfactory service for years in a small town where truck traffic is light."

"Eureka" is the exultant title inscribed npon the dashb and of a new machine designed by Mr. Randal, for removing the snow from street railway tracks. Its practical value has not been demonstrated as yet by trial. If it proves a success it will be a most desirable auxiliary to street railway equipmentas its expense cannot be exeessive and it will do away with the army of shovellers that every snow storm calls out. It is a combination of the regulation snow sled and scraper and loads itself. We shall describe it more fully and perhaps illustrate it in a future issue.

Car No. 22, running on the Fourth Avenue line, New York, is in good corlition and

promises many more years of active service. This car was built in 1857 by John Stephenson and has been in continual use ever since. As a proof of the actual service of the original car, and that it is not merely the number that has been running, the panels have not been removed, and in the interior there are some quaint decorations that were put in by Mr. Stephenson's master painter at that time, and which, owing to their originality, have not been touched up or obliterated.

Some time since we queried as to practicability of relieving rnsh on "bobtail" lines with two horse cars with conductors. The road in Altoona, Pa., does just that thing quite satisfactorily to itself and the public. They run nine one horse cars on ten and twelve misute headway; they put on two horse box cars night and morning for the rnsh of workmen to shops and manufactories, and to carry passengers to and from the Opera Honse at night, or whenever there is a rush of travel. When the open cars are rnn the one horse cars are taken off. Conductors are used on the two horse cars. The average cost is about five dollars a day for each car, which includes every expense.

That so great a public convenience as the Broadway (N. Y.) street railway, the ret moval of which would be protested agains by the entire populace, should require thirty years of constant agitation before its accomplishment is a striking illustration of the perversity of human nature. And if, now that there seems to be no doubt it was really born in corruption and bribery, the charter is taken away from it by the courts, the bill to repeal it having passed the assembly, the property owners can eongratulate themselves that it is still there. All the anti-street railway cranks of the Empire State could not prevent a street railway on Broadway henceforth, and the parties fortugate enough to control it in the future will have a hearty goodspeed from the very men who so strennonsly and unremittingly opposed its construction.

On another page will be found a digest of returns from some ninety established coads of their experience in the street railway business. The " gist" of the best of them is that a street railway, thoroughly built and equipped, and properly managed, in towns of 7,000 or npwards, is a good investment. It requires an actual investment of money, a good track, good ears, good stock, polite and attentive drivers and conductors and a constant effort on the part of all hands to please the publie. Cars must be run as frequently and rapidly as public safety will permit, and as nearly as possible on exact schedule time. If it don't pay under these conditions the town is too "slow" and capital in any line of business wants to shun it. It is not impossible for ontside or non-resident capitalists to make roads pay, but it is desirable that most of those interested in its management should be identified with the business and social circles of the place.

The recent strikes and "tie up" on the New York roads have worked adversely to the men on one road at least. The Houston, West Street and Pavonia Ferry Railway Company were paying for six round trips from Chambers street to Forty-second street thirty-six cents a trip or \$2.16 a day: the trip consumed 115 minutes or eleven and a half hours a day. On the Chambers Street and Tenth Street Ferry trips, they paid twenty-three cents a trip for ten trips or \$2.30 a day. On the morning their men strnck, forced on as they admitted by the ontside executive committee, the company had posted a notice that they should in the future pay \$2.40 on the Forty-second street route and proportionately on the other line, Most of the men preferred to take the higher wages and make an extra trip but they were compelled by the organization to accept \$2.00 and twelve hours. The company granted their demands and covers the rest of the time from five A. M. to twelve at night by "extras."

There are probably few cities in the world that have such a novel service of street railways as the free city of Hambnrg. Scarcely a street of any importance is without its steam or horse railway, whilst in a great number of streets in Hamburg and Altona the peculiar feature is the adoption of a vehicle that can be rnn either upon the rails as a car, or upon the ordinary road as a carriage. The conveyance in question has five wheels, four ordinary coach wheels, with a radiating leading axle, when used upon the paved streets, and when used upon the rails a small flanged wheel, under the control of the driver, is lowered upon the rail, when by its flange running in the groove of the rail, the car is kept on the metals, and assuming the curves to be properly constructed no difficulty is experienced, whilst in the event of any obstruction upon the line, the matter of the diversion of the car is exceedingly simple.

The secretary of a Baltimore road writes us: "We had intended making an extension of one mile double track and other additions but the unsettled condition of the labor question has made our road give up the idea," The Wilmington (Del.) road give np intended improvements for the same reasons, and the secretary of the Federal Street and Pleasant Valley Passenger Railway Company of Pittsbnrg in reply to onr query says: "Plans, abandoned. An organization rendered paramonut to law, by the honest though badly mistaken force of publie opinion, has rendered street railway property nearly worthless by reason of excessive demands of the employees." These are only three instances. It is probable that the new enterprises stopped in the same way in railway and other interests, by this same unwise and revolutionary organization, has deprived many more laborers of profitable employment than those engaged in the strikes. It is said that one car building company in Maryland has refused contracts for over three-quarters of a million dollars because of the nneertainty

Notwithstauding the troubles that the labor organizations are making, there is a very gratifying activity in street railway building, extension and improvements. Numerous returns received at the office of the STREET RAILWAY JOURNAL in the past month indicate an active demand for street railway supplies of all kinds. Many roads report their plans as not sufficiently matured to be announced but most of the roads are making or will make improvements and additions to a greater or less extent in their track, motive power and rolling stock, stables, carhouses, parks and entertainment facilities. There is now being built or will be built this spring one hundred and four miles of extensions to old roads, nine miles of it cable road ; three hundred and thirtynine new cars and twelve hundred and thirty-three new horses, and two locomotives, will be alded to their equipment; twenty-one new stables and car houses are being built or will be commenced at once ; about seventy miles of old track is being relaid and paved, new turnouts added, etc.; several roads are grading and otherwise improving parks and pleasure grounds to increase travel; new repair shops are being provided by several companies, and other improvements amounting in all to \$2,196,-000.00. Thirty-one roads report additions to track and equipment now in process or soon to be begun, the expenses of which they cannot now tell, but which will bring the total up to \$3,500,000.00. When we remember that there are still a large number of roads unreported with probably much more expenditure in improvements, and add the many new roads now building or to be built during the coming summer, a most active and profitable season for contractors and supply men seems assured.

The New York Evening Post commenting editorially on the recent strikes on the surface roads says: "It has been commonly observed, since the Dry Dock Railroad strike, that the manuers of the conductors of the street railroads in New York have deteriorated, and that the tone which they have taken on toward their employers has been in numerous instances taken toward their passengers also. Of course this has not become general, but it is true to an extent sufficient to be remarked. It is very easy to account for, because it would be the natural consequence of a conductor's holding himself responsible, not to his employers, but to the Empire Protective Association. The average member of this association will insensibly copy the manners of his immediate superior, the Walking Delegate, and will use upon occasion as much discourtesy to the passenger as he thinks will be tolerated by the union to which he belongs. In short, the new system which O'Donnell and his Executive Bound are seeking to establish is a demoralizing one in its complete transfer of diseipline from the Directors of the compauies to the Directors of the Empire Protective

Association. The conductors of the street railroads are no better than the rest of ns, and we should all be exposed to the deterioration of manuers if we were responsible to no authority higher than ourselves."

Horse Expenses of Street Railways.

The accompanying tables of horse expenditure and passenger transportation on the Houston West Street and Pavonia Ferry Railway Company, New York eity, will be found interesting and valuable to our readers. The road is an average one as to size, having five miles of track and running fifty cars and about four hundred horses. From its happy location in the center of New York business life, its traffic is exceptionally heavy, which of course makes its horse expense give a mere favorable showing than many roads less favorably aged 4,163,928, and estimating expenses for stable service at \$20,000 it would seem that about forty per cent of the receipts from passengers goes to this item of horse expenses alone. We shall be glad to receive like information from other roads, the publication of which for comparison and study will be found profitable to all interested in street railway interests.

The De Kalb Avenue Stables.

The De Kalb Avenue Railroad Co. have some large and well appointed stables on Myrtle avenue in Brooklyn, N. Y. The ground floor is utilized for the storage of cars, for office purposes and for a small repair shop. The arrangement of the tracks is particularly worthy of attention from the fact that the cars can be rnn in and out of the building without the use of switches or

THE HOUSTON, WEST STREET AND PAVONIA FERRY RAILWAY COMPANY. STATEMENT OF THE COST OF HORSES AND FEED FOR FIVE YEARS ENDING SEPTEMBER 20TH, 1884.

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located; but we judge the wear and tear on stock on most roads of this size is about the same, and the cost *pro rata* of maiutaining horse stock will not vary much from their average of \$20 a year. They feed twelve pounds of hay and fifteen pounds of meal and bran mixed to each animal daily, and the average expense for feed per year is \$95.04 for each horse. About fifteen per cent of their stock has to be replaced each year, which is below the average of street railways, twenty-one per cent being a generally allowed estimate. The passenger transportation for the past five years has aver-

290,959

285,208

318,464323,575

302,567

330.559

312,456

358,210

326.332

3,341.547 3,124,092 3,213,399 3,357,261 3 451,072 3,880,220 4,009,100 4,268,820 4,273,500 4.387,699

388,441 365,026

July

August. Sept. 320.469

307,803

transfers. This is accomplished by joining incoming and outgoing rails in the form of a U, allowing the various U's thus formed to intersect and cross each other in the ordinary way, so that a car when driven in passes down to the rear of the stable, makes a turn and comes back to the door on what is in reality a single line of rail s.

4' 3.540

403.798

405,050

400.634

382.367

 $\frac{407,373}{394,994}$

At the center of the front there is a small office for the starter, and entrance to the iucline plane which affords a means for leading the horses to and from the stails upon the second story. Back of the offices and in the car house there is an elevator with a capacity of ten tons. In the center of the platform of this elevator there is a set of scales, by means of which the loads upon the elevator can be determined, and the amount of supplies checked off at the same time.

The second story contains the stables, which are of the ordinary type and possess uo marked feature. They have merely the ordinary capacity and accommodation necessary for four hundred horses. The ventilation, however, is most excellent, and is accomplished by means of a large number of ventilating shafts which keep the air in a remarkably pure condition, so that even to the stranger coming in from the outside the atmosphere is not offensive.

The third story affords a large store loft for cars and fodder and it also contains a small grist mill with two run of stone. One is generally used for grinding corn and the other for oats. In an adjoining room the fodder is mixed in the following proportions, for one day's rations: 6000 lbs of chopped hay; 4000 lbs. corn meal, and 1080 lbs. of oatmeal, which makes an average of about twenty-six pounds of fodder per day per horse. This is somewhat higher than that usually allowed although not so much as to be improbable. These figures were obtained from the miller and should be accurate.

In the room next to the mixing room there is the hay cutter where all of the hav is cut up, and it has one attachment that is very valuable. This is a fan run by power which takes out all of the dust that makes hay dirty and gives it at times that suffocating odor. This dust is drawn out by a draught sufficient to thoroughly cleanse the hay, and one would be snrprised to see the amount of this fine powder that thoro is. It is so soft and fine that it is almost impalpable to the touch and so light that the slightest breath is sufficient to blow it away. Instead of feeding this indigestible dirt to their horses, it is blown into an air tight room, aud afterwards seut off with the other refuse of the stables.

The company have also provided themsclves with their own water supply. In the cellar there are some wells from which water is pnmped into three tanks in the npper portion of the building, which have a capacity of 500 gallons each. From these the water is drawn off for the use of the building. There is also a connection made with the city water mains, but this is intended for use only in case of fire; as the well water is softer, sweeter and purer than that supplied by the city.

The building is of brick with the interior of wood and is constructed in a thoroughly substantial manuer.

A Superintendent of a successful western street railway company say, truly: "The street railroad business is not all sunshine. It needs the closest attention, and but few mea are adapted to make such business a success in small towns."

See our Supply Directory for anything in the street railway line.

The New York Strikes.

As we went to press with our March issue a strike of a most riotous character was in progress on the Dry Dock line in New York, and the Brooklyn roads of which William Richardson, Esq., is President. The determined stand taken by President Richardson and his associates was most gratifying to those concerned in the permanent prosperity of street railway interests. The demands made, nearly twenty in number, were so unreasonable and arbitary that the granting of them was entirely out of the question, and the prospect of a long and bitter fight between the two sides seemed inevitable. The organization of the men, known as the "Empire Association," was so complete, however, that on the third day they ordered a general strike on all the roads ou the ground of "sympathy with the menalready out," and every street car line in the city was "tied up," although they had just granted every demand of their men. The inconvenience and damage to the public was so great and the public demand for service on the several roads by their patrons so urgent that the road managers concluded to satisfy the men and end the trouble at ouce. They therefore granted the coucessions as to wages and hours and left the remainder of the matters to be arbitrated upon by State Railway Commissioner O'Donnell, There is no doubt if the companies had held out long enough for the public to have ascertained the real causes of their inconvenience, the blame would have been put where it belonged, on the men, and the backbone of the strike broken. The folly of compromising or granting any concessions during a strike that would not be be granted withont that pressure has been most completely illustrated in these cases, for the very road that as we understand "weakened" first in the above "tic-up," the Third avenue road, is now in the throes of the most extended street railway strike experienced in that city yet.

It seems that the company have in its employ seven men who have served them faithfully from seven to twelve years; and the Empire Association, the street railway men's branch of the Knights of Labor, finshed with their complete and easily won series of victories, demanded that these seven tried and trusted servants of the company should be discharged, because they were not Knights. Of course the company could not listen to such an insulting proposition without acknowledging that the entire management of its affairs was vested in its conductors and drivers. They uuequivocally refused, and a committee of the association ordered a strike on their road. Every conductor and driver, stablemeu, etc. stopped but the seven proscribed men. Still the company did not weaken. On the contrary they called on the police for protection, advertised for more men, announced their position plainly to the public, and their purpose to fight the matter out to a fiuish.

The Knights as in the previous strikes call-

ed upon the State Railroad Commissioners to bring the directors to terms, but received a chilly disappointment when the commissioners informed them that they could only demand that the road do all in its power consistent with public safety to carry out the requirements of its charter. That they had was clearly established by the evidence of Supt. Mnrray and Inspector Steers. Foiled hcre another general "tie up" was ordered and every road in New York excepting the Eighth aud Ninth avenue lines was stopped on April 19th,

On that day the Third avenue road attempted to run its cars, resulting in riot and bloodshed, a driver and conductor, two policemen, and six of the mob receiving serious injury. The sturdy fight made by the police though finally overcame the mob and the cars were ruu into the stables for the day. During the day and night many hours were spent by the Railroad Commissioners in trying to bring the two sides to an understanding. The company would agree to no compromise until the strike was declared off and that all men engaged during the strike would be retained, the company agreeing to fill vacancies with former employees. They also agreed to leave all questious referring to money and hours to the Railroad Commissioners. The Empire Association then offered to leave the entire affair to arbirtation, but the road refused to allow any arbitration or dictatiou as to its right to employ or discharge its help as its own best interests demand.

The public were so much inconvenienced and the cause of the association was so manifestly weak that popular sentiment was setting strongly in the road's favor, and the general tie up was ordered off. Further efforts at conciliation resulted on the fourth day in the company's ultimatum that '' it would discharge no men who had been employed during the strike and would not receive its old employees back in a body. They must come singly and apply for work as individuals or not at all."

Both sides have settled down to the fight with a determination that bodes a long battle. Since the riot above noted the strikers have committed few overtacts, but propose to winby buying off the company's new men, running opposition stages, "boycotting," etc. They claim to have plenty of money, are paying heavy relief money and have contracted for one hundred free stages to rnn from City Hall to Harlem.

On the other hand the road is constantly increasing its force, has a full complement of inside, stable, shop, and blacksmith help, etc., and is running cars nuder five minute headway during the day.

At this writing, (May 1) the road has nearly a full complement of help, is running its cars on the old schedulc time during the day and reiterates its determination not to give in. The strikers are trying at Albany to obtain a charter for their stage line, and about a dozen strikers are under bond for trial, for conspiring to injure the road's business, etc. Now that the issue has come we trust that it will be settled once for all.

Street Railway Construction and Management.

A few months ago the citizens of a small town in Indiaua concluded that they needed a street railway. In order that they might work understandingly, and profit by the successes and mistakes of established roads, they issued a circular to some nivety or a hundred companies, nearly all of which responded. The Secretary has very courteously loaned ns the answers and in the following paragraphs we condense the iuformation they coutain. Being grounded on actual experience it is particularly worthy of the attention of those intendiug to euter the field of street railway enterprise.

The questious asked were as to length of track, gange, weight of rail, nnmber aud kind of cars and number of horses or mules. As to management how often they run their cars; if snburbau traffic was profitable, and how far; if freight was handled; rates of fare; systems of collecting and registering and what if any inducements were offered to increase travel; how late and early they run cars and what if any extra charges were collected after certain honrs; the average cost of running one and two horse cars, and any other suggestions that were thought valuable.

In the returns from towns under 5000 population, the standard gauge and a light rail are endorsed. The average length of road is three miles and the cars required are eight to ten. From twenty to twenty. five horses or mules are needed. Most of these roads use one-horse cars with three or four open cars. The cars average about fifteeu minutes headway, ten minutes time being the lowest reported in this size o towu. One road with a park in the sub^f urbs reported suburban traffic profitable Another says no. The general opiuion expressed is that if the route is not over 31 miles, and fairly populous, it pays aud with any attraction like parks, ball grounds, summer gardens, etc., it is very profitable.

Freight traffic is almost nuiversally con demned as nnprofitable. The fare iu all but one instance is five cents. Tickets are sold at a reduction if taken in quantities, varying from 10 to 24 per cent. according to quantity. Most of these roads use fare boxes. The cause of increased travel in a few instances was fairs, amusements and summer gardens. Running on schedule time, clean cars, good stock, polite employees were the most general and successful means to this end. 5.30 in the morning and 10 o'clock at night seems to be the average hours of running, and all roads reporting, bnt one, charge extra after 9 or 10 p. M. As to the difference in running expenses of one or two horse cars the prices range from \$1.60, \$2.50, \$3.50 per day for one horse and \$1.85, \$5.00 \$7.00, for two horse. The difference in these returns from different roads is that some reckou only the drivers wages and shoeing bill, others include feed. others include all expenses of live and rolling stock departments added together and divided equally between the cars. The difference in cost of running the two kinds

averages about one-third more on all the roads of this size for two horse cars. One road in addition to the above questions said that "if grades are light one horse cau handle a ten foot car with ease, Our grades are from five to eight feet in a hundred and we find an eight foot car heavy enough for two horses. However, one double platform car will carry thirty to forty passengers and the ten foot 'bob-tail' wonld take no more. We have in this city from ten to eleven miles of track, a part of which forms a beltline around on the suburbs of the city, It doesn't pay operating expenses. For a city comparatively level, with cars to be operated by one horse, I would prefer a three foot gauge to the standard gauge,"

The returns from towus of five to fifteen thousand iuhabitants show an average length of five aud one-half miles. The gauge is almost uniformly the standard. The T and center bearing steel rail predominate. A few roads nse light rails but most have forty pound or heavier, the traffic of other vehicles in cities of this size reudering it necessary that the rail should be more substantial. Only two roads of this class report the use of one-horse cars. The number of cars averages about three to a mile though one road runs five to the mile and one seven. Four horses and five mules to each car is about the average, a four mile road requiring twelve cars and forty-eight or fifty horses or sixty mules. Roads in this size of town seem to average about fifteen minutes headway. One road in Illinois, five miles with sixteen cars and seven horses and two steam motors, ruu under thirty minutes headway. No road reports less than ten minntes headway. Those that run into the suburbs report the traffic profitable, the places of this population naturally spreading over considerable ground, not packing so close as is the rule in larger places. None handle freight except in a few instances where trunks are carried for passengers. Average fare five cents; some special fares over four mile routes in Michigau and Illinois, teu cents. Nearly all roads sell tickets at a reduction. Some roads sell season tickets, man and wife for \$30, single tickets \$20. One road sells twenty-five tickets for a dollar, another thirty-three. No road in this grade reports any special or extra feature to induce increase in travel but several say "clean cars warm in winter, open in summer, with polite and attentive employees." Most cars stop at 11 P. M. One runs one car an hour all night. Sixty per cent, of these roads nse registers, one uses fare boxes and one has discarded both and relies ou its conductors and inspectors. The cost of ruuning cars in towns of this size is somewhat more than in the smaller places. One road gives " bob-tails" \$4.50, "double-enders \$6.50," another "two-horse \$5.25." A road in central New York reports average cost of runuing cars for 1884 and to April, 1885. \$4.59 each. Another says: "The average cost of running a car is a difficult question to reply to as it depends largely on whether a company has a floating or fixed debt. Our average daily expense for operating | for by the different methods of book keep-

the road is abont \$4.00 per car, which includes taxes, insurance, interest on floating debt; in fact everything that costs." This is, of course, a fair way to figure cost of running a car, but for the purposes of this article, we would want the legitimate running expenses, which would count outseveral items he includes that are more correctly chargeable to the plant or improvement account.

Auother roadsays: "We are using twelve foot cars; takes no more stock to pull them than a teu foot car, as we have some hills to climb. In a rush of traffic we can handle it better in large cars. Six mules to a car; cost of ruuning two horse cars abont fonr dollars a day."

Another says: "If your city is hilly and streets crooked use two-horse cars, If level and streets straight make your gauge three feet three inches, and run one horse cars, One-horse cars are not run much cheaper than two-horse, because the lighter team for a two-horse car cost only fifty to seventy-five dollars more than the heavier single horse for the short car and the single horse will consume eight pounds more grain a day than the small horses."

A road in Wisconsin reports; "13,000 population, 3³/₄ mile track, three feet six iuch gange, twenty-seven ponnd steel rail and ten 'bob-tail' cars, which are run on ten minntes time from 6 A. M. to 10.30 P. M. Rates of fare five cents; tickets in quantities at reduced rates. Suburban lines profitable to extent of two miles where thickly settled. Average cost of running onehorse car \$3.50 a day, two-horse \$4.75 a Use fare boxes on both kinds, day. Would uot advise nse of donble end cars. Would enclose front platform with guards. for reason that getting on and off frightens inexperienced horses more or less, and accidents to passengers thereby are frequent, deplorable, and expensive,"

The cities of 15,000 to 50,000 report about same average length, number of cars per mile and horses per car as the next smaller towns. Three run on five minntes headway, two seven minutes, two eight and the average is about nine minutes for the class. More report from these places that suburban traffic is not profitable than from all the others. Where roads run from one place to another or a city to a village, or through well-settled subnrbs, the traffic is good and pays. Otherwise it is uccessary to provide attractions at the end of the line to make it profitable. In the summer months this cau be made very profitable. Fare in every iustauce but one is five cents, that one six, Most of the roads make discount for tickets in quantities, 21 for \$1, 225 for \$10, 22 for \$1, 1000 for \$38, etc. The same inducements to increase travel as mentioned before. Most of them run till 11.30 o'clock or midnight.

Two-horse cars cost to run per day \$5.50 to \$6, \$10, \$5, \$4.50, \$3, \$2.10, \$1.75, \$6, 30 cents a mile, etc.; aud oue-horse cars \$3, \$5, \$2.95, \$2.50, \$1.95, \$5.10, 20 cents a mile, etc. Here is a wide difference in prices, which will probably be accounted

[MAY, 1886.

ing. We note though that where the two kinds of cars are estimated on by one company the proportion of expense is about as \$4 for one horse to \$5.75 for two horse; and the grades of streets have much to do with this item, by the necessary increase of stock they entail.

An Indiana road says: "Our gauge of track is five feet full; we use both tram and T rail. The 20 lb. T rail is the hest and easiest for a short distance, provided the city will permit them to be put down. Mules are best for street railway business as they are not so liable to be stove up or sick as horses. For single cars use five mules a day, double cars six mules. Freight on street roads is not profitable, unless travel is very light. It takes up room, makes cars look untidy, and is very object tionable to passengers, especially ladies. A good fare box and lively superinteudent arthe best collectors with fairly honest drivers. Tickets are sold at twenty per cent. discount to induce travel, but polite employees and cleanliness are the best inducement that can be offered. Cost of operating (driver's wages \$1.20, and feed of stock five head at eighteen cents a day) \$2.10. Use revolving brooms to keep track clean of snow and dirt. They cost about \$65 a set and your blacksmith cau adjust them to any car. We salt for sleet and ice by removing wheel house in car and inserting a three and onehalf foot sheet-iron shoot. My road paus."

Nearly all these roads have the Day or other plows. A few use scrapers of a primitive nature made in their own shop. We shall illustrate a very efficient and inexpensivo homemade scraper in a later issue. One road in a very populous city uses men and shovels alone to keep the track clear.

The larger cities, 50,000 to half a million people, report much louger lines, the average being about thirty miles; cars average about same to a mile, hut they run more horses to a car, the average being six. The headway runs from one-half minute to fifteen, the average being three and oue-half minutes. Suburban lines of these large cities are invariably reported profitable. None of them handle freight. All but one uso the five cent cash fare system. That one sells six tickets for a quarter.

The cost of operating one and two-horse cars is considerably higher but the proportion is the same as in the other cities. One report from Indiana says: "Two small mules cost less than one horse on a bobtail car." Nearly all have amusements or other attractions at cud of ronte to stimu. late travel. Most of them run night cars. To keep track clear, they all answer snow plow, sweepers and salt.

The larger cities use pretty generally the heavy 50 to 65 pounds center bearing steep rail. These ninety roads in their different reports very strongly endorse different manufacturers of rails, cars, fare boxes, and registers. We do not print their comments here but would uote that every one mentioned are represented in other pages of this paper, and the voluntary testimonials from all parts of the country are an assurance that their dealing will be found more than satisfactory by our readers.

Street Railway Strikes.

We last month gave numerous answers to the question "What in your opinion is the best way to prevent and cure strikes among street railway employees," from prominent companies. We have received answers from nearly two hundred roads but can find room for only a few in this issue, ou account of the pressure on our space.

The names of the companies are withheld as most of them request it, but all are representative men in the street railway iuterests.

The President of a road on the Pacific coast says "We have never had any experience in the matter. Have never had any strikes, and are uot aware of any organization among street railway meu. On this coast probably not three per cent of the drivers or conductors enter the business with any idea of remaining in it for any length of time. It is only as a makeshift. The good meu make acquaintauces and soon drop out into other business, and their ranks are recruited by new comers. Thus where the *personnel* is so constantly changing it would be difficult to maintain au organization among them."

The Superintendent of a Canadian road writes as follows.' We hardly think that his very commendable views, in conjunction with the wages and hours on his road, would satisfy the average driver and conductor in the States: "To prevent strikes use men like men. Give them a good day's pay, and havo some regard' for the men in the employ of the company. We should take into consideration that street ear men are exposed to all kinds of weather, and have very little time that they can call their own. We should have a tender regard for all in the employ of the company."

A Texas Superintendent says: "To have as little to do' with labor organizations as possible, and when they strike starve them ont and give preference to nnorganized labor, or cease running cars."

Another, manager of one of the most successful roads in the middle states, who lives up to his doctriue and yet is reported to be on the ragged edge of a strike, writes as follows : "Treat your men kindly, so that none will hesitate to approach you. Grant their small requests when 'it will result in mutual convenience to them and no detriment to you. Make reasonable and practical rules. Govern with strict impartiality, aud sustain your men iu carrying out your own orders. Pay \$2 per day for twelve hours' work, if you can afford to do so, and do not resort to tricks or quibbles to reduce the pay of a few men. Give the best places to men longest in your service, and let the balance stand in regular order for promotion. Discharge men only for just cause, and tell them the reason."

A New York President who has just been through the trial says: "Having conceded everything which could be reasonably asked, if the employees, intoxicated by their partial success, make still further demands, they will alienate public sympathy and hoist themselves by their own petard. The 'Knights' will go to pieces of their own weight."

A Massachusetts Superintendent says: "Treat the men fairly, and as well in regard to wages as can be doue consistently with the general interests of the business of the road, and protect them against the caprices, personal spites, and arbitrary treatment of starters, foremen, etc."

An Ohio President who has since practically succeeded in his fight, says: "The Lord only knows. I am in the midst of one now, and I have been stopped for a week to-day. The Louisville system, however, in my judgment is the best.

The following are from Illinois, Missouri, Pennsylvania and Texas: "Pay the men more than they ask. Let them run your business, and make up deficiencies out of your own pocket."

"Do away as much as possible with uniou men."

"Do not believe in street railways ever yielding to the strikers."

"We employ no union meu. I would favor judicial arbitratiou."

The replies to the question should labor unious be recognized and treated with by street railway companies are almost unanimously in the negative. We give below all we have space for, without comment. They come from all parts of the country.

"It looks to me as though labor nuions would have to he recognized hy street railway companies and everybody else. I can not see now any objection to treating with them. No street railway will pay more than they can afford to, and I suppose the labor unions will not demand more."

"No. No corporation, company, or individual should be compelled to call in a second party or employees to manage their affairs."

"It can not be disputed or denied that any class of persons have as much right to organize and co-operate for their own protection as have corporations and individuals to 'pool' for the same purposes. The present system of labor unions, however, as they now exist, is detrimental to both members and employers of such members as a rule."

"I think not. I uever permit unions or employees to dictate terms."

"Can't help it."

"I think not, but you cannot always help it."

"No. Don't allow yourself to he forced to it. If there is any danger, anticipate it by some concessions, unsolicited, and thereby make better terms for yourself than they will."

"Decidedly no. While the right to organize among themselves in each stable might not be objectionable, their pledge to abide by and obey the orders of an outside committee is what makes the trouble."

"No. Treat with men individually, and with no committees or organizations."

"I do not believe in labor unions nor strikes."

"I helieve it against the interest of street,

railway companies to recognize labor unions, but believe it fair to treat with employoes to the extent of giving their grievances complained of a careful consideration and to meet them where just as far as the circumstances and financial ability of the company will permit."

"I can see no reason for officially recognizing the labor unions, and it seems to me that no good can come from so doing. It seems to me to be the only true principle to hold each individual employee accountable for his work; and to relinquish the right to discharge an employee if he does not discharge his duty satisfactorily, or to even refer the matter to arbitration, would seem to me suicidal."

"It would not be necessary."

"I think not. Companies may have to yield to the pressure when it comes, but should never be ruled by mob law."

"No; especially outside organizations."

"Yes, and with respect."

"Labor unions should be recognized."

"I think not."

"I think all trouble should be settled by the men and company without ontside interference."

"Companies must recognize unions, as public feeling seoms to point that men have a right to organize."

"We have to recognize the union."

"I don't think labor unions should be recognized at all in connection with street railways,"

"We can regulate labor if our property is protected."

Notes and Items.

Asbury Park, N. J.

The Asbnry Park road is having considerable opposition in getting nuder way. The road will be built; the people want it, but like all enterprises of this kind, there is a lot of kickers somewhat like the dog in the manger.

Aurora, Ill.

THE AURORA CITY RAILWAY Co. will build an extension one mile long, and expend \$9,000 in cars, mnles and other improvements.

Baltimore, Md.

The Midnight Assembly of Car Drivers held a meeting April 24, which continned until after sunrise. The drivers on the Frick lines determined to hold out. New drivers are on the cars and most of them are running. The company will make no concession and in a few days all the lines will be supplied with new men, there being plenty of applicants for the places.

Boston, Mass.

The Board of Aldermen of the city of Boston gave hearings Monday, April 5, to various parties desiring to head off the Cable Railroad Company having designs on Beacon street. This street is the only one leading out of the city which is not taken up by horse-car lines. At the meeting referred to, the Cable Company asked to have the matter referred to a committee. Then in order followed Pres. Hersey of the Sonth Boston Horse Railroad Company;

Pres. Richards, of the Metropolitan; Pres. Merrill, of the Highland; and Pres. Powers, of the Middlesex. The petitions were that the Board of Aldermen grant them the right to use cable or electric motors as motive power in place of horses. It was objected that on account of drawbridges a part of the roads could not use cables, and that the crowded condition of many of the streets, necessitating low rate of speed. would be the cause of excessive wear on cables, which at best aro short-lived and exceedingly expensive. It was admitted that for the crowded soctions of Boston many improvements and inventions would be needed to make a cable system feasible and snccessful. The streets in the business portion of Boston abound in curves and turns to a dogree hard to be realized by those who have had to do only with cities laid ont with streets running at right angles.

Beaver Falls, Pa.

THE BEAVER VALLEY STREET RAILWAY Co. have ordered three new cars, and will put down three new sidings and buy ten horses this month.

Brooklyn, N. Y.

THE BROOKLYN CITY RAILROAD COMPANY has granted permission to a New York firm to put electric lights in several street cars. The battery which will supply the electricity will be placed under the seats.

Chief Engineer John Y. Culyer reports npon the cost of a proposed tunnel road on Atlantic avenue, from South Ferry to the city line. Distance five miles and the total cost \$8,976,000. He thinks such a road should be completed in 18 months.

THE BROOKLYN ELEVATED RAILROAD COMpany's plans for an elevated road in Myrtle avcnne were approved April 20, and work will be begun immediately.

Buffalo, N. Y.

The Buffalo street railway companies have given their men an extra swing day, reducing the actual working time about oneninth. The old system gave four days' work, then a swing, three days' work and a swing, making two swing days in nine. The new system gives three days' work, then a swing, two days' work and another swing, thus giving two swings in seven days. The swings have been arranged differently, making the hours for working on those days much more convenient for the men than formerly. Instead of working three times a day as formerly, one section will swing for breakfast and dinner, and anothor section for snpper.

Chicago, Ill.

THE ARCADE RAPID TRANSIT COMPANY has been incorporated. Capital stock, \$5,000,-000. Samnel I. Whipple and others are incorporators.

THE NORTH CHICAGO STREET CAR men are in doubt about the proposition of President Yerkes to present them with a beneficial organization which shall be self-supporting and cost nothing to belong to. The plan was first broached to a committee of two from each line, whose account of the offer was received with incredulity, but on

the 29th, the elaborate plan was issued in writing, one copy being sent to each of the barns. As far as can be learned the plan imposes but one condition npon the employee-that he shall not belong to the Knights of Labor. To any one who belongs to no trades organization and who is rendered eligible for membership under certain nenal restrictions, is to be given onethird of his full pay during any sickness exceeding one week and less than three months in extent, while at death his dependent relatives shall receive a snm varying from \$300 to \$500, according to the class to which he belonged. The pertinence of the proposition is said to be owing to the fact that on Snuday last an assembly of the Knights of Labor was formed, with 250 members, and that a majority of the other employees were expected to join.

Cairo, Ill.

CAIRO STREET RY. Co. expect to extend their track a third of a mile this spring and add three horsos and one car, these improvements costing \$3,000.

Chattanooga, Tenn.

CHATTANOOGA STREET R. R. Co.'s improvements consist of four or five miles of track and twelve to fifteen cars.

Denver, Col.

The first successful attempt at trial trips of the new cable car has been made over a portion of the track of the Denver Electric and Cable Railroad Company, on Fifteenth street. The car ran a considerable distance, and at the satisfactory rate of eight miles per hour. A dynamo 20 horsepowor furnishes the motive power for the car. The company hope to get their cars running in six weeks or a month. The car which is now being used in making trial trips is shaped and fitted up very much like an ordinary street car, and is fully as handsome it its style and appointments as any street car in Denver.

Suit has been commonced in the Snperior Court, at Denver, Col., by the Denver Electric and Cable Railway Company against the Denver City Railway Company for the right of way to cross Fifteenth and Holladay streets and also for a crossing 150 feet south of the bridge across the Platte river on Fifteenth street.

Denison, Tex.

THE DENISON STREET Rr. Co. will build an additional mile of track this snmmer to cost \$4,500 to \$5,000.

Galveston, Tex.

THE GULF CITY STREET RY. & Real Estate Co. are extending their lines on about eight miles of street and adding twenty new cars and seventy mules to their stock equipment. It will take over \$70,000 to pay for these improvements.

Grand Rapids, Mich.

THE STREET RAILWAY COMPANY of Grand Rapids will buy six opon cars and thirty horses this month.

Havana, Cuba.

During the past year, the street car company of Havana transported 5,022,322 passengers, whose faros amounted to \$729,-363.15 in bank bills, and the number of persons, members of the company, of the police and other persons that traveled gratis on same, amounted to 99,094. Helena, Montana,

A new road will be built here this season. Kalamazoo, Mich:

THE MAIN STREET horse railway will be extended this spring.

Kansas City, Mo.

Robert Gillham has been tendered the position of Chief Engineer of the Grand Avenue Cable Railway Co., and refused the position because of the demands on his time by the elevated road of which he is Chief Engineer, and other professional engagements.

Knoxville, Tenn.

KNOXVILLE STREET RAILWAY CO. will extend their track about a mile and add to live and rolling stock this season.

THE MARKET SQUARE AND ASYLUM STREET Rr. Co. is now operating their new road. Pres., Peter Kern; Sec., W. H. Simmonds.

THE MABRY, BELL AVENUE, AND HARDEE STREET Ry. Co. have got their new road in operation with R. N. Hood, President, and B. L. Smith, Secretary.

Lynn, Mass.

THE LYNN AND BOSTON HORSE RAILROAD will extend its tracks in Sangus. Edwin C. Foster, Superintendent, Chelsea. Mankato, Minn.

Ground will soon be broken for a new road here, to be finished this fall.

Middletown, Ohio.

THE MIDDLETOWN HORSE RAILWAY CO. will double-track the main street of that place this summer. Have just pnrchased six horses.

Montgomery, Ala.

THE ELECTRIC STREET RAILWAY is a success, that is settled. The cars on the Court street line commenced running by the electric motor system at 10 o'clock yesterday morning and continued through the day. Everything went smoothly, and the success of the enterprise has now been demonstrated beyond all question. The electric motor system is the invention of Mr. Charles Van Depoele, the celebrated and successful electrician and scientist .---Montgomery Advertiser, April 16.

Mobile, Ala.

THE DAUPHIN & LAFAYETTE STREET RY. Co. will buy two new cars soon.

Miancapolis, Minn.

THE MINNEAPOLIS STREET RX. Co. will build ten miles of track, forty cars, and add 350 horses to their equipment, all to cost over \$175,000.

Nashville, Tenn.

MCGAVOCK AND MT. VERNON HORSE RAIL-ROAD Co. has purchased the thirty-eightpound Johnson rail.

Several months ago, a charter was secured for the Summer Street and West Nashville Street Railroad Company. The stockholders held a meeting and elected directors, a president, secretary and other officers. They raised capital stock and went ahead in the matter of arranging for the immediate construction of the line. In the meanwhile however, the directors of this projected road and of the Church, Spruce, Broad and

West End Street Railroad Company began to discuss the affairs of the two roads amongst themselves and finally hit upon plans which have since resulted in a consolidation of interests and objects. An incorporated company will take the old fair grounds in charge, beautify and adorn them and make the park a resort of which all may, indeed, be proud. A fine double-track road will be built from the Maxwell House out Church and Spruce, through Broad street and West End avenue past Vanderbilt University to the Park and Fair Grounds. The new company will also run a track from Broad street out McNairy to Division, or Laurel street, thence probably to Belmont avenue. In the other direction, a track will be exten led out North McNairy to the penitentiary. Separate cars will be run from the terminus of each of these lines to the Public Square and return. It is intended to stint no expenditure to make the enterpiise first-class in every respect.

Natick, Mass.

NATICK & COCHITUATE STREET Ry, reports three miles of 35 lb. rail, 4 feet $8\frac{1}{2}$ inch gauge, 6 cars, and 17 horses. Have added 30x76 feet to their car sheds, and 28x31 feet to their horse barn, and have one new open car; the cost of these improvements being \$800. Geo. F. Keep is Superintendent. Newark, N. J.

The Combined Horse Railroad Co. are making some alterations and improvements, building double track where single track with turnonts have been in use heretotore, re-bnilding other portions of their routes, using a heavy steel rail. The company are re-building their stables and car-houses, adding a large number of new cars and horses to their already well equipped roads and with their live practical President, Mr. S. S. Battin, the company are on the snre read to success.

NEWARK & IRVINGTON STREET RY. Co. report a new car house, 40x300 feet, costing \$7,000. Have 7 miles of 47 lb. track, 5 feet 24 inch gauge, 28 cars and 130 horses. New York City.

THE CHAMBERS STREET RY. Co.'s new cars, twenty in all, were built at the factory of the John Stephenson Company. They are very dressy looking cars with all the latest improvements. We note that the lettering is very plain and easily distingnishable at a distance, a very desirable feature in car painting.

One of the cables on the Tenth Ave. cable road was cut on the 5th inst. by an inexperieuced grip man employed in place of a striker. The two ends were drawn in the depot and preparations made to splice the cable on the following day. Superintendent Lyon (brother of the President) said the accident occurred in the forenoon and it was half an hour before the second rope was put in operation and traffic resumed. We are told that this is the first detention to traffic caused by the motive power since the starting of the road last August.

The amendments which Gov. Hill insists upon having added to the Ar. ade Railroad bill are, first, an indemnity bond of \$3,000,-

along the line of the road, and second, a guarantee that 3 per cent. of the gross receipts shall he paid yearly into the city reasury. This practically kills the bill.

THE KINGSBRIDGE CABLE RAILWAY CO. made application to the Board of Aldermen April 20, to construct and operate a street surface railroad from the Boulevard and Fifty-ninth street and Eighth avenne, along the Boulevard to Sixty-fifth street, in Ninth aveune to One Hundred and Sixth street, to New avenue, to St. Nicholas avenue, to the Kingsbridge road. The matter was referred to the Committee on Railroads.

THE JOHN STEPHENSON Co. are building ninety summer cars for St. Louis, Mo., thirty for Brooklyn and one for San Diego, Cal. They are also shipping to Buenos Ayres, Auckland, N. Z., Mexico and Ecuador. Twenty very handsome cars for the St. Paul City Railway Co. are going out of their factory also.

JOSEPHINE D. SMITH'S establishment is furnishing 40 new-style double lamps for the Tenth Avenue Cable Road cars now huilding

THE THIRD AVENUE R. R. Co. have contracted with the Jonson Foundry & Machine Co., 118th street and Harlem River, for the building of a cable railroad along 125th street from the East River to Fort Lee Ferry. The Jonson Foundry & Machine Co. are to supply every requisite, ready for the running of the road. Work is to be commenced at once.

Gov. Hill signed the bill to annul the charter of the Broadway road, and the bill to sell the consents of the propertyowners along the line of the road, May 4. The third bill, for the winding np of defnnet corporations, which was withdrawn from the Executive for the purpose of correcting several engrossing errors, was corrected, re-engrossed and pass d by the Senate.

Ottawa, Ill.

A new street railway is being talked up. Philndelphia, Pa.

The Arbitration Board of the Car Drivers and Conductors' Assembly had a conference with President Parsons at the People's Line depot, Eighth and Dauphin streets, April 24th, in reference to the complaints of the gricvanee committee of the Green and Coates Streets Linc that some of the men were compelled to work thirteen hours. The men work on the swing system and every third week a conductor works thirteen hours and seven minutes a day. The other two weeks he works about eleven honrs and a half. A complaint that the road was also violating the rules of the assembly on the Lombard and South was also submitted. It was explained that on Snudays the one-horse cars on the West End Railway, on account of heavy and late travel, are furnished with conductors, who work sixteen hours per day, for which they are paid \$3. As this is only done one day in the week, extra men have to be seeured to run the cars, and twenty-one men are thereby given a day's work.

The board also made inquiry about 000 to secure protection to property-owners | several men who have recently been dis -

charged by the company. It was shown that the men were discharged for cause and the board expressed themselves satisfied with the explanations.

LYNN & PETTIF, extensive manufacturers of cocoa chain car mats, are very busy, their trade for these goods having exceeded all previous years. For cleanliness and convenience these mats are highly recommended.

J. G. Brill & Co. have just shipped six light cars, three open and three closed, eight footbody, five seats, reversible backs, etc. One of these was a "directors' car," and very handsomely fitted up, having inlaid panels, veneers, leather seats and backs, and all modern improvements. The Brill equalizing gear, which has been in use a year and proven very successful, was put on these cars and with the order went tweety sets of gears for the cars now in use on the road. They have also constructed three closed eight wheel and three open eight wheel and four four wheel cars for the Elvton Land Company of Birmingham, Ala., and Seneca Falls & Waterloo (N. Y.) Company. Six cars are just completed for Chili and several new orders are in from that country; also from Lima. Several steam (motor) cars are in process of construction for the Bushwick Railway Co. of Brooklyn.

Pittsburg, Pa.

THE SOUTH SIDE PASSENGER R. R. Co. will build a half mile of double track to cost about \$10,000.

Portland, Ore.

PORTLAND STREET RY. Co. have com-pleted an addition of three-eighths of a mile of track, and put on a car to operate the same; are building two cars and au addition to the car shed; and have added five horses; these improvements costing \$4,000.

TRANSCONTINENTAL STREET RY. Co. will build a branch line this summer.

Richmond, Va.

THE RICHMOND & MANCHESTER RAILWAY and Improvement Company is a new corporation with a single track road two and a half miles long, running four cars and twenty-six head of stock. B. N. Selden, Superintendent.

Sherman, Texas.

THE SHERMAN CITY RY. Co. are building a mile and a quarter of new track, and have bought two new cars and twelve mules. Cost of improvements and additions \$4,-500.

St. Lonis, Mo.

St. Louis's first cable road was opened for business April 15. The line runs from the corner of Sixth and Locust streets to The line runs from the northwestern suburbs.

Withers, of the street car dynamiters, is ou trial. He is the man who is said to have gone to Louisville and purchased the dynamite at the time of the strike.

St. Paul,'Minn.

THE ST. PAUL CITY RAILWAY Co. will add forty-two cars and one hundred and fifty horses to their equipment and build eleven miles of new track, at an expense of about \$150,000.

Streator, Ill.

Has a road on paper. Some of its solid men are pushing the scheme and it may mature this summer.

Springfield, Mo.

It is rumored that some partics will ask the new City Conncil for a franchise to build a road on Walnut street. Springfield, Mass.

THE BEMIS CAR BOX COMPANY are shipping fifty of their patent carboxes and gear to the Minneapolis Street Railway Co., making 100 sets in all now in use on that line, with thirty ou the St. Paul road. They are also sending twelve sets to St. Paul Street Railway Company to be placed under their old cars. They recently shipped twentyfive sets to Mobile, and made shipments to Buffalo, Providence, San Antonio, twenty scts to Denver, also to Salem and Danvers road, and six sets to the Houston Street Railway Co., Houston, Texas, also to Worcester, Citizens of Pittsburgh, Gloucester Street Railway Company Cream City Street Railway Company and Milwaukee. The gear seems to be giving abundant satisfaction as is shown by their order book showing duplicate orders from several lines where the box has been subjected to severe tests.

San Francisco, Cal.

H. D. Morton, Esq., formerly Superin-tendent of the Geary Street, Park & Ocean R. R., has been Superintendent of the Market Street Cable Railway system during the past year.

St. Louis, Mo.

A new road is asking for a charter to run from the Union Depot to the Fair Ground. Taunton, Mass.

THE CENTRAL STREET RAILWAY COMPANY having secured their franchise, and the location from the Board of Aldermen for a mile of track; will be ready to build as soon as the City Government determines the grade of Cohaunet street, which will probably be fixed in a week or ten days. Tt. will be a single track from City Hall to Old Colony Railroad Station, 3000 feet, with loop for turning at the City Hall the curve representing a half circle of about seventy-five feet radius, making say 175 to 200 feet additional. This portion will have three turnouts, and the street is now macadamized. Cohannet street will probably be raised some three feet, in which case about 350 feet will be laid on the filling, when the Street Department is finishing the grading. From the Railroad Station at the corner of High aud Oak streets, to present terminus at toot of Agricultural avenue, 2000 feet, (and one turnout) the street is graveled. The entire track will be paved inside the rail with round stone, and the graveled portion i. e., from High street to Agricultural avenue, will have a rim-row outside the rail. The road will use steel rails about thirty-five pounds, new cars, and all its equipment will be first class in every respect.

Toledo, O.

THE TOLEDO CONSOLIDATED STREET RAILway Co. will change $2\frac{1}{2}$ miles of 3 feet 6 inch gauge track to 4 feet 8 inch gauge, about one-fifth of which will be double track, and will use $42\frac{1}{2}$ lb. steel rail. The whole will be paved with Medinaand boulder stone. They will also remove from the side to the center of the street $1\frac{1}{2}$ miles of T rail track and relay the same with $42\frac{1}{2}$ lb. steel rail and pave the same with stone as above, also pave a portion of their track not now paved and may build some new track. Will add 6 new cars and rebuild 5 or 6 others. Will add 50 more horses and enlarge two car-houses and stables and make other improvements, at a total cost of \$60,-000.

Trenton, N. J.

THE TRENTON HORSE R. R. Co. will extend their road iuto Chambersburgh soon, running the entire length of Clinton street. This road a few years ago was a poor one horse affair, but under the management of Gen. Lewis Perrine, the President, it is in a fair way of being a good paying road. It was first built with one track with turnouts and was always unsatisfactory and incon-

venient to the public and nnprofitable to the company. A few years ago Mr. Wm. P. Craig of New York ehanged nearly the whole route into double track and it has been improving ever since.

CITY Ry. Co. have added two miles of track this year, also three new cars and thirtyfive horses, and bnilt a new stable for sixty horses; the cost of the improvements being \$50.250.

Vicksburg, Miss. The Vicksburg Street Railroad Co. is laying track on Washington street.

Washington, D. C.

THE WASHINGTON & GEORGETOWN R. R. Co. are extending one of their stables to accommodate fifty-six more horses. They will increase their live stock by the purchase of one hundred horses and add six cars to their rolling stock. T of improvements over \$30,000. Total expense

CAPITAL CITY, No. O ST. & So. WASHING-TON R. R. are making alterations in their stables at Third and B streets for the purpose of workshops, storage, etc., at an expense of \$10,000.

As a token of their gratitude for the action of the directors in reducing the hours of labor after May 1, to twelve per day, the employees of the Washington & Georgetown Railroad, presented President Hnrt with an elegant goldheaded cane on the 30th ult. After thanking them Mr. Hurt asked the spokesman to wait a moment, when he stepped to his desk and drew up a check for \$500, payable to the order of the committee, this action being greeted by a perfect storm of cheers from the sixty men waiting outside. Superintendent Sailer was then presented with a fine set of harness by the men. On the 1st of May the three cent cars were taken off of Pennsylvania avenue altogether, and twenty-nine more large cars added. An increase from 280 to 414 has been made in the number of trips of the avenue cars, and those of Seventh street from 220 to 408. The "bobs" will be taken off from the avenue. It is proposed to use the \$500 check preseuted to the men as the nucleus of a disability fund.

Waterloo, Iowa.

THE WATERLOO STREET RAILWAY is a new institution just started. The road is now in operation, we are informed.

Wilmington, Del.

WILMINGTON CITY Ry. Co. will lay 1,500 feet of steel rail to replace worn-ont iron rail, will build four new cars and repair ten old ones.

Windsor, Canada,

An electric railway is being built from Windsor to Walkerville.

Owing to the activity manifested in cable railways at the present time, we feel justi-fied in dropping a few precautionary words to those preparing to build.

It should be borne in mind that a mistake is not discovered until after it is made, and the managers of nearly all cable roads yet constructed have far exceeded their estimates of cost in building the same.

This is occasioned by starting with the construction before the entire cost of finishing is ascertained, and to avoid this embarrassment it would be advisable to have contracts drawn covering every detail, on which accurate estimates can be obtained from rehable firms, and this can be done prior to making any contracts, thereby insuring the company against excessive expenditure. Bills for extra work and materials will accrue in proportion to the defects in specifications embodied in the contract. The good or bad management at the start will be developed and made manifest in the quality of work and the expense account at the completion of the road.

The Miller Grip.

The cable grip* illustrated is the oue intended for use upon the Kingsbridge R. R. It consists of a strong frame work of wrought iron bolted through the slotted holes in the yoke to the framing of the car. The lower portion is stationary and is supported by the outside bars shown in the cut. It carries the right portion of the grip and also the sheaves at each end over which the cable is to lay. The journals of these sheaves are supported on springs so that when the eable is relieved they lift it from elose contact with the lower grip. crosshead by two plate irons $\frac{1}{4}$ inch by $6\frac{1}{2}$ iuches. The shaft, crank, link aud cam are made of good steel. The crosshead is of east iron fitted with uot more than 1-32 inch play.

°J. D. Miller, 234 Broadway, N. Y.

Steam Street Railway Motor.

Among the numerous devices that have been put upon the market for the propulsiou of street cars without the aid of horses, steam has of course played a prominent part as being the first in the field. In 1876 the Baldwin Locomotive Works built a motor After the pavement is left behind the road ruus over a sandy country road. Walking in this road is a most laborious piece of work, as at each step the foot sinks deep into the soft red sand. Passing wagons and carriages carry the dust and sharp gritty sand upon the rails, and the engine and cars keep it well stirred up. The cars in use upon this line are of the ordinary double bogie truck description and have a seating caracity for about fifty persons. From two to four of these cars form a train for a single motor.

Inquiring into the the efficiency of the motors we were surprised at the good reports given of their wearing qualities. The journals and other working parts are so thoroughly protected from the sand and dirt that the wear is very slight, and the economy is demonstrated for this particular line, by the very fact of their continued use by a company that is most distinctively a horse railroad company. The cyl.

A A A A

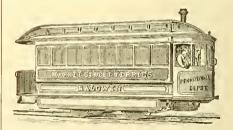
As the grip is intended for use upon the double cable system some provision had to be made for throwing the cable on and off the sheaves. This is done by the uprights at the ends of the mechanism, which are given a lateral motion by levers connected with the bell crank shown in the center at the bottom. This in turu receives its motion from the narrow bar in the center.

The movable jaw is operated by the broad intermediate vertical bars, attached to the cross bar near the top. This cross bur slides in grooves in the yoke and is counected by a toggle joint to the crank shaft at the top. Wear of the jaws is taken up at the connection between the crank and the toggle lever. The pin i put in a small cam that cau be turned toward the end of the crank, thus lengthening the connection and thus compensating for alf wear.

The material and workmanship of these grips is first class in overy particular. The suspender bars connecting the stationary jaw to the yoke are made of spring steel 3 iuch by three inches made in two pieces and held together by splice bars so arranged that the upper section can be replaced as it wears, this woar being caused by their coming in contact with the slot rail. The movable jaw is attached to the sliding car of which we give an illustration. This car was run on the Market Street Railroad in Philadelphia for about four months during the Centennial Exhibition with good results. Experiments with the car led to various improvements, and finally to the adoption of a separate motor for drawing tho cars, as shown in our engraving. We recently had an opportunity to examine into the construction and working of some or these motors npon the Fort Hamilton line of the Brooklyn City R. R.

These motors are fnrnished with a boiler of the regular locomotive type, stauding on four wheels, and run with equal facility in either direction, the throttle valve and reverse lever being so located that the view from the engineer's position is unobstructed iu either direction. The road over which these motors run presents almost every conceivable type of badness. Starting from the poorly paved quarter west of Greenwood cemetery, where the streets, originally paved with cobble stoues, are broken and rough so as to be impassable by wagons except upon a walk, and entering this strip of road from a cross street on a curve of not more that thirty feet radius, they are run over this rough, dirty street for several miles to the outskirts of the city,

iuders are outside, 10" in diameter and 14" stroke, with a wheel base of seven feet, and weigh in working order about eleven tons. They are equipped with all of the appliances of a regular locomotive in the way of cylinder lnbricators, injectors, etc., carry their own fuel and water, are readily stopped and started. On the road under consideration they are equipped with the Eames vacuum brake. The wheels are steel tired and connected by side rods like an ordinary engine. The noise of escaping steam is deadened by the use of mnt-



flers upon the exhanst, cylinder cocks and safety valves so that in ordinary working nothing is heard from this cause. Smoke is abated by the use of coke or anthracite coal, so that little or noue appears. It will be seen that by tho use of the short wheel base, so little in excess of the ordinary street car, that ordinary street curves may be passed with great facility, the engine ronnding those of twenty-five feet radius with perfect ease.

The speed is easily regulated, and depends more on the condition of the track and the traffic of the street than upon the engine. The latter, however, with an ordinary train, quickly attains a speed of twelve or fifteen miles an honr, and this may be maintained or any other speed down to that of a slow walk. The cost of operation and maintenance is estimated at about eight lbs. of coke or coal per mile, \$1.25 per day for oil, waste, tallow, repairs and incidentals, and the wages of an engineer and fireman at ruling prices.

Personal.

Mr. Edward Brill, of the firm of J. G. Brill & Co., recently returned from an extended trip South and West. He reports business good, and that his firm have all the orders they ean well attend to. Foreign orders are looking up.

Mr. F. T. Lerned, General Agent for Andrews & Clooney, left St. Louis on the 24th for a trip to San Francisco, and through the Pacific Slope.

A letter from Augustine W. Wright advises us of his resignation as engineer of the North Chicago R. R. Co., and of his connection with the Wright Construction Co.

Mr. Landgrave, of the San Francisco house of Willis & Landgrave, is on an Eastern trip arranging for the manufacture and sale of their improved Fare-box, Change Gate, Safety Brake, etc.

The late J. B. Slawson had a life policy for twenty thousand dollars in the Equitable Life Insurance Co.

William Richardson has obtained the consent of the majority of the property owners to construct a cable road on the streets now occupied by the Vanderbilt Avenue Line of horse cars.

Timber Track vs. Metallic Way, Again.

EDITORS STREET RAILWAY JOURNAL:-

In adding a few words to what has been said in the columns of the JOURNAL, by Mr. Gibbon and myself in relation to the comparative merits of the stringer track and the patent metallic way for street railroads, I wish it understood that it is not and has not been my purp use to decry at y man's invention, but simply to present the claims of that which I believe to be the best method of construction.

There are some commendable points in all the patent tracks that have been introduced, especially that of Mr. Longstreet, but these new devices have not yet been sufficiently perfected and freed from objectionable features to enable any of them to take the place of our stringer track.

In adopting a style of track a railway company takes into consideration the various items of first expenditure, cost of maintenance, convenience of making connections, curves, switches, turn-outs, etc., facility of taking up, relaying and making general repairs with the last obstruction of street, adaptability to paving, durability of pavement and cost of repairing it, and so on; and it is my belief that in almost all, if not quite all of these items the advantage lies with the stringer track as compared with any metallic way that has yet been introduced.

Another important item to be taken into account is the supply of materials that may subsequently be needed for extensions, alterations and repairs. It is generally desirable, for obvions reasons, to be able to purchaseneeded supplies in an open and competing market, and not to be obliged to send to a particular place and purchase them of a particular party who, having a monopoly of the business, can fix his own price, and whom some unforeseen contingency may render incapable of promptly filling orders. This objection applies more or less to all patented articles; and while it is true that a great many articles so protected have enough merit to secure their adoption, notwithstanding that embarrassment, yet it is well not to forget this point when considering the question of the adoption of a device the merits of which are not so clear. I have had some unpleasant experience in the way of obtaining supplies of articles that were monopolized by a single manufacturer.

As to the incompatibility of iron and timber when placed in contact, that idea, so far as their use in railway tracks is concerned, is a fallacy. But the manner in which they are joined is important.

We have estimated the life of timber at twenty years, under very adverse circumstances, one of which is the light iron that has been used. Good yellow pine timber will last about twice as long under a 60 pound rail as it will under a 35 pound rail. The lighter the rail the more difficult it is to keep it spiked firmly to the stringer, and when the rail becomes loose the stringer is much sconer worn out than it otherwise would be. A light rail has often been adopted by railway companies at first because the first cost is less, but experience has taught them that the heavy rail is the most economical in the end. It is about as difficult to give the life of yellow pine in the ground under favorable conditions as it is to give the life of iron in the ground, but I feel quite ceitain that the metal will not last enough longer than the wood to offset the difference in ccst.

Without going into an examination of the figures by which my friend tries to show the superior economy of his longitudinal iron sleepers, I wish to be understood as no more endorsing them thau the conclusion he arrives at, especially the sinking fund of expense saved that is to defray all cost of mainterance after a certain time!

The longitudinal iron sleeper is ideally very pretty, and if we could have an ideal road bel, and oue which would not be subject to disturbance from rains, drainage, and excavations for laying and repairing water pipes, gas pipes, telegraph wires and sewers, it might work very well, but under the existing conditions the wooden stringer will be found more reliable, more easily protected from disturbances of the road bed, and possibly more durable.

During my twenty-five years experience in the construction and repair of street railways, I have found that the companies for whom I worked did not generally consider the cost so much as the quality of the work; they wanted to get the best roads; and I have had ample opportunity to test different methods and determine which were in my judgment the best.

If I were going to put what little I possess into a street railway, to build, hold and operate it, I would use a sixty pound center bearing steel rail, five by seven Florida pine stringers and ties, placing the tics five feet from center to center, two and a half, four and five pound cast knees, four to each tie, channel joint plates well fitted to the stringer and set in tar, with the necessary spikes, etc., to make a first class track.

sary spikes, etc., to make a first class track. With all due respect for the eminent authorities quoted by my friend, I question whether any of them excepting Mr. Longstreet have had much experience either in the construction or maintenance of street railways. Furthermore, their testimony seems to be only in respect to iron sleepers, as used in Europe and Asia, and is not wholly pertinent to the question under discussion. WM. P. CRAIG.

Single vs. Duplicate Cables.

EDITORS STREET RAILWAY JOURNAL: In reply to the criticisms of the Duplicate Cable System in your April issue,

cate Cable System in your April Issue, 1st. The writer states that delays for repairing a stranded rope last from ten to thirty minutes, except on rare occasions, and refers to records on cable roads to sust in the statement.

Will he please state where a copy of said rec.rds can be obtained? If there are such to which one can refer they should be given publicity. A straid may be cut from the cable in from ten to thirty minutes, but it is very detrimental to the cable to operate it in such condition as it will surely lose its normal shape. After several hours use if the sixth strand is replaced, the strain will in all probability be unequally distributed, either asstmed by the five strands, or bone by the new one inserted. The section of clable so treated would le totally ruined or very seriously damaged, furthermore, this method is not universally practiced.

The grip men on the 10th Avenue Cable Road (some of whom emigrated from the Golden City) are possessed of average intelligence, but it is impossible to ascertain which cable is in use without seeing the interior of conduit or the operating room, except at terminus of the road, where close inspection would reveal the elevating sheave in operation.

Where duplicate cables are in nse, the ropes can be changed at any time without grip men, conductors, or passengers being awarc of the same.

2nd. I did not misrepresent facts and the Kansas City correspondent makes a serious mistake in so accusing me. My statements in your March issue were correct and the information was obtained from the President of the road. Mr. L. says "the duplicate cable was not damaged on the curve," but I learned from an official of the road daring the summer of '85 that it was.

It was. Mr. L. asserts that the running rope will Lot "retain its uormal line." In October 1885 an inspection of the Kansas City Cable Road revealed the fact that the carrying pulleys were placed zig-zag, or rail fence fa-hion, some on one side of the slot, and some on the other, and under such conditic ns the cables would nudoubtedly chafe. It is doubtful whether the second or even the first rope could be operated economically under the circumstances.

3rd. The second rope retaining grit. Mr. L. refers to his experience. By reference to remarks in other places this proves to have been very limited with the dnplicate system, as in his March letter he says, the road was not operated until June 1885, and the dnplicate cable was taken out in July 1885.

4th. A splicer must be retained by a single rope road but his services can be in a measure dispensed with by the duplicate system as when one rope needs splicing the second can be put to immediate service and a splicer from a single rope road can be called. We obtained the splicer from Chicago last August, and have required none since last September. So long as the single rope roads retain these men at a steady salary and the duplicate roads can secure their services when actually needed, we have no reason to complain.

In regard to a stranded rope, see remarks in this letter under 1st. The Kansas City correspondent states that the road was started in June and only gives the number of stops from December, since which time new cables have been in operation, consequently there should unquestionably be a good showing, for the difficulty with a cable is in the latter half of its use. He states that the road has stopped four times, once forty minutes, two stops of one hour each, and one o. twenty-five minutes. These four

detentions occurred juside of ninety days. While this is not so bad as is might be, for a single rope road, it is inconveniencing the public altogether too much, and when the cable becomes worn, the stops will be more frequent. Stoppage must be made for repairs to both machinery and cables. A slight and hasty inspection may be made during the night, but it cannot be thorough owing to the limited amonut of time. The machinery should be stopped for several days in succession to allow the examination of every bolt, nut and bearing, as well as other parts of the motive power. With single rope roads, where such stops are not al-lowed, we find the machinery has literally torn itself to pieces for the want of this

care. In reference to the last three paragraphs of the Kansas City letter in the April issne, will say, withont in anyway disparaging Mr. L.'s abilities, that the failure of the second rope in Kansas City was wholly due to bad management, and this assertion can be substantiated by facts. The operating ex-penses per mile of a duplicate cable road are less than those of a single rope road. I wish to emphatically reiterate my previons statements that the duplicate system is a complete success. It does and will work satisfactorily, much more so than a single rope road, if details are properly carried ont.

The officials of the Third Avenue R. R. Co. say that they would not advise the con-struction of a cable road unless two ropes were used.

We intended to illustrate the grip in the March issue, but the artist failed to prepare the work in time. The cut was in possession of the STREET RAILWAY JOURNAL in season for the April issue, and it was not the fault of the writer that it failed to appear. Mr. L. takes the same stand as many others, viz: that every new road must be the same as roads in the west,

Nearly every cable railroad company of San Francisco is either directly or indirectly interested in the San Francisco patents, and they denounce every improvement made cast of the Rocky Monntains.

The Teuth Avenue Cable Road of New York City is superior in every detail to other cable roads.

The road b d, conduit and drainage, carrying pulleys, switches, wheel vaults, enrves, driving machinery and steam power far surpasses anything of the kind yet constructed, and it has cost less than any road of its leagth of which we have any knowledge. Those who have already constructed cable roads would hesitate, if building another, to repeat in every detail their former plans, consequently the duplicate system must be acknowledged as the only complete system of cable roads in existence.

There seems to be one point on which Mr. L. and myself are in unison, and that is, the inadvisability of experimental work at the expense of other people merely to advance personal interests, although we may possibly differ as to the application of tho remark.

When criticising the superintendence of the Kansas City road, I was not aware that our western friend had any jurisdiction over the motive power, and no personality was intended, although from the malevolence manifested in the last communication, I should judge great umbrage was taken, and am extremely sorry that any one should imagine me capable of such incivility.

In the March letter, Mr. L. writes that "as evidence of the excellence of this (Kansas City) plant it may be here stated that not one minute's delay has been occasioned on its account since the starting of the road." Mr. L. will please accept my heartfelt thanks for this kindly commendation of the motive power.

D. J. MILLER,



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

ABREVIATIONS-m, milles; 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.

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

AKRON, O.-Akron St. Ry. & Herdic Co. 2% m. 66, 31 h. Pres. Ira. Miller, V. Pres. James Christy: Treas. B. L. Dodge, Sec. F. M. Atterholt, Supt. Joint T. Metilm.
 ALBANY, N.Y.-Watervilet Turnpike R.R. Co. 74 m, 2645 lbt, 27 c, 143 h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster.
 The Albany Ry. Joint, 4.6% g, 33-47 lb T, 51 c. 194 h. Pres., Supt. and Treas. Joint W. McNamara, Sec. & Treas. P. Way, Supt. M. C. Foster.
 The Albany RY. Joint, 4.6% g, 33-47 lb T, 51 c. 194 h. Pres., Supt. and Treas. Joint W. McNamara, Sec. & Treas. L. Maning. Offices 2 dots. Press. & Science 1649 (2014)
 ALLENTOWN, P.A.-Alentown Pass. R.R. Co. 354 m, 6 c, 28 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balliet, Supt. Russel A. Thayer.
 ALTOONA, P.A.-City Pass. Ry. (o. of Altoona. 347 m, 5-39, 4810 r, 17 c, 38 h. Pres. John P. Levan, Sec. & Treas. L. B. Refisneider. Supt. John J. Buch.
 AMSTERDANJ, N. Y.-Amsterdam St. Ry. Co. 154 m, 4-85 g, 50 lb r, 5 c, 10 h. Pres. Menry Herick, Treas. David Cady, Scc. M. L. Stover. President: office 112 Front St., L. Island City, N. Y.
 APPIETON, WIS.-Appleton Electric St. Ry. ASHITABULA, O.-Ashtabula City Ry. Co. 4 m, 4-85 g, 20 lb r, 9c, 60 h. Ovner & Prop.Jno.N.Stewart. ATCHISON, KAN.-Atchison St. Ry. Co. 554 m, 4-85 g, 20-20 lb r, 19 c, 60 h. Pres. & Gen. Man. J. Beeson, Treas. II. M. Jackson, Sec. J. P. Adams. Gate City St. R.R. Co. 22 m, 4-85 g, 20 lb r, 7c, 55 h. Pres. L. B. Nelson, V. Pres. L. BeGYer, Sec. & Treas, So hn Stephens, Solicitor, A. Remharat. Metropolitan St. R.R. Co. 21 m, 4-85 g, 42 lb C. B. rall, 40 two h cars, 160 horses. North Atlanta the 1 m. Decatur St. Line 1.50 m. Metropolitan St. R.R. Co. 14 m, 4-85 g, 50 lb r, 6 c, 25 m. Pres. Jon. 14 m, 4-85 g, 50 lb r, 6 c, 25 m. Pres. Jon. McDonough St. Line 1.50 m. Metropolitan St. R.R. Co. 14 m, 4-84 g, 40 kb r, 8 c, 50 m. McDonough St. Line 1.50 m. Metropolitan St. R.R. Co. 20 M, Metropolitan St. R.R. Co. 14 m, 4-84

BATTLE CREEK, MICH.-Battle Creek Ry. Co.

York Road R.R. Co.
BATTLE CREEK, MICH. --Battle Creek Ry. Co.
BATTLE CREEK, MICH. --Battle Creek Ry. Co.
J. White, V. Pres, H. H. Browu, See. Chas. Thomas.
Supt. John A. White, Gen. Man. J. W. Hahn.
BAY CITY, MICH. --Bay City St. Ry. Co. 7½
m, 4-S¹₂, g. 81 br, 13 c, 35 h. Pres. James Clements,
Treas, Wn. Clements, See. Edgar A. Cooley.
BEAVER FALLS, P.A. --Beaver Valley St. Ry. Co.
74. W. Clements, See. & Treas. J. F. Merriman, Supt. L. Richardson.
BELLAIRE, O. --Belaire St. R.R. Co.
BELLEVILLE, ONT., CAN. --Belleville St. R.R. R.
BELLEVILLE, ONT., CAN. --Belleville St. R.R. A Alexander, Nan. & Treas. H. A Alexander, See. J. F. Thomas.
BERE, O. --Berea St. Ry. Co. 1½ m, 3-6 g, 28 lbr, 2 c, 24. Pres. C. Miller, V. Pres, Co. M. Miler, V. Pres, T. Chinchward
State Asylum R.R. Co. 4½ m. 4g, 16-55 lbr, 13 c, 23 h. Pres. R. H. Meagley, V. Pres. Geo. Whitney, see.
J. J. Magiley, Treas, F. E. Ross.
Binghamton Central R.R. Co. 3½ m (2½ laid), 3 g, 28 lbr, 6 e (not in operation). Pres. Geo. L. Crand. al, V. Pres. Neison Stow, See. & Stute Asylum R.R. Co.

Blnghamton & Port Dickinson R.R. Co. 5 m, 4-8% 20-30 lb r, -c, -h, Pres. Harvey Westcott, Sec. & Binglamber 2 of the bickhost R.R. Co. 5 m, 4-5 \times 7 meas G. M. Harris, Supt. N. L. Osborn. (Leased to Mr. Osborn). Offices 112 state St. Main, Court & Chenango St. R.R. 5 m, 4-8 g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St.

Washington St.
BHAUINGHAM, ALA. —Birmingham St. Ry. Co.
5½ m, 4-8 g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris,
Supt., Sec. & Treas. W. H. Morris.
Highland Avenue R. R. 6½ m, 4-8½ g, 30 lb r, 9 c,
28 h. Pres. H. M. C ldwell, Supt. W. J. Allner, Owners
The Elyton Land Co.
Birmingham & Pratt Mines St. R. R. Pres. J. A.

BLOOMFIELD, N. J.-Newark & Bloomfield R.

28. h. PTCS, H. M. C. RIWEI, SUPL W. J. Allinet, Owners The Elyton Land Co.
 Birmingham & Pratt Mines St. R. R. Pres, J. A. Van Hoose.
 BLOONIFIELD, N. J.-Newark & Bloomfield R. R.
 BLOONIF, IA.-Boone & Boonsboro St. Ry. Co. 13 (m. 3 g, 2010 r, 3 c, 10 h. Press. L. W. Reynolds Treas. Ir a B. Hodges, Sec. and Supt. A. B. Hodges, Sec. St. R. Huntsinger.
 BOONSBORO, IA.-Twin City & Des Moines River Motor St. Ry. Co. 3 m, 3 c, 9 res. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. Sc. K. Huntsinger.
 BOSTON, MASS.-Highland St. Ry. Co. 19 m, 4-5% g, 4 b f, 157 c, 1000 h. Pres. Moody Merrill, Cierk R. B. Farboirn, Treas. Samuel Little, Supt. J. E. Rugg.
 Lynn & Boston. 34% m, 4-5% g, 25-48 lb r, 114 c, 514 h. Pres. Annos F. Breed, Treas. & Sec. E. Francis Olver, Supt. Edwin C. Foster.
 Metropolitan R. R. Co. 80 m, 4-5 g, 50 lb r, 150 c, 700 h. Pres. C. A. Aldhards, Sec. H. R. Harding, Treas. Chas. E. Prewers, Treas. J. H. Studley, Jr., Supt. John H. Studley. Address, 27 Tremont Row, So. Boston Ry. Co. 13 m. 4-5% g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersej, V. Pres. Jas. C. Davis, Sec. Nr. Reed, Supt. Danlel Coolide.
 BRADFORD, PA.-Bradiord & Kendall R.R. Co. 14 m, 4-5% g, 32 lb r, 130 c, 02 m, 4-5% g, 32 lb r, 32 c, 410 r, 16 c, 50 h. Pres. Albertham St. Ry. Co. 2 m, 4-5% g, 35 lb r, 32 c, 410 r, 16 c, 50 h. Pres. Albertham St. Ry. Co. 2 m, 4-5% g, 32 lb r, 32 c, 50 h. Pres. Chas. F. Hurd, Supt. B. F. Lashar, Supt. HAM, TEX.-Bronham St. Ry. Co. 2 m, 4-5% g, 35 lb r, 32 c, 150 h. Pres. W. W. Cross, Treas. Zup. King, Jub. H. B. Coston, S. K. S. Halbourd, Supt. B. F. Lashar, BROOKLON, N. MASS.-BROCKLONS, M.Y. C. DIM, S. BROOKLONS, Ky. C. MIM, TANDER, J. Schlam, The Brodestand owned. 4-8% g, 90 h r, 32 c, 250 h. Pres. Hurd, Supt. D.

so 10 r, 72 c, 30 n. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First St. Grand Street, Prospect Park & Flatbush R.R. Co. 4% m, 4-8% g, 50 lb r, 75 c, 244 h. Pres. Louis Fliz-gerald, 120 Broadway, N. Y., Sec, & Treas. Duncan B. Cannon, Supt. Jno. L. Heins. Offices Franklin Avc. and Prospect Place. Greenpoint & Lorimer St. Pro-peet Park & Coney Island R.R. Co. 4 7-10 m, 45-50 lb r, 4-8% g, 69 c, 214 h. Pres. A. R. Cuiver, Treas. A. C. Washington, Sec. George H. Smith, Erg. Supt. R. Schermerhorn, supt. Robert Attlesey. Offices Ninth Ave., 19th & 20th Sts. (Leased to At-lautic Ave. R. R. Co. Prospect Park & Flatbush R.R. 1% m, 4-8% g, 34 Dr. 70 c, 300 h. Pres. Loftis Wood. Sec. & Treas. Santi Parkhill, Supt. Loftis Wood. South Brooklyn Central R.R. Co. 7 m (4% m laid), 4 8% g, 60 lb r, 42 c, 192 h. Pres. Wm. Richardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Ruddy. The New Williamsburgh & Flatbush R. R. Co. 6%m, 4-8% g, 47-50 lb r, 74 c, 25 h. Pres. Geo. W. Van Alten, 54 Ann St., New York, Sec. W. B. Waltt, 34th St. x 9th Ave., New York, Treas. C. B. Cottrell, 8 Spruce St., N. 7. (Dity, Supt. Chas. E. Harris, Nost-rand Ave. & Carroll St., Brooklyn. The Union Railway Co. of the City of Brooklyn (not In operation). Van Brunt St. & Erle Basin R.R. Co. 1% m, 4-8%g, 45 br, 7 c, 24 h. Pres. John Cunningham, Sec. %, Treas. Edmund Terry.

BRUNSWICK, GA. Brunswick St. R.R. Co.
BUFFALO, ILL. See Mechanicsburg, II.
BUFFALO, N. Y. Buffalo St. R.R. Co. 17% m, 48% 501b f; 96 c; 510 h. Pres. Henry M. Watson, V. Pres. P. P. Pratt, Sec. S. S. Spaulding, Treas. W.
H. Watson, Supt. Edward Edwards.
Buffalo East Side St. R.R. Co. 24 4.5 m, 4.8% g, 42 1b r, 47 c, 218 h. Pres. S. S. Spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Wat-son, Supt. Edward Edwards.
BURHINGTON, I.A. Burlington City R.R. Co. 24 m, 4.5% g, 22 1b r, 9 c, 30 h. Pres. John Patterson, sec. & Man. C. T. Patterson.
Union St. Ry. Co. 8% m, 4.8% g, various r, 19 c, 85 h. Pres. Geo. E. Rust, Sec. A. Supt. F. G. Jones.
CAHRO, HLL. Calro St. Ry. Co. 2 m, 3-6 g, 25 1b r, 3 c, 9 h. Pres. J. A. Goldstine, V-Pres. H. Bioms, supt. 87 (2000).
Supt. 87 (2000).
M. Speiman, P. Cummings, O. S. Brown, Clerk of Di-rectors, O. S. Brown, Supt. Wm. A. Bacroft. Charles River St. Ry. Co. 12,158 m, 4-8% g, 50 br. 7 condens. Chas. E. Raymond, Corp. Clerk of Di-rectors, O. S. Brown, Supt. Wm. A. Bacroft. Charles River St. Ry. Co. 12,158 m, 4-8% g, 50 br. 7 conden Horse R.R. Co. 9m, 5-1 g, 35-47 lb r, 26 c, 85 h. Pres. Chas. C. Raymond, Corp. Clerk of Di-rectors, O. S. Brown, Supt. Wm. A. Bacroft. Charles River St. Ry. Co. 12,158 m, 4-8% g, 10 b r, 60 c, 356 h. Pres. Chas. C. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlin, Supt. John N. Akarman.
CAMDEN, N. J.-Camden & Atlantic St. Ry. Camden Horse R.R. Co. 9m, 5-1 g, 35-47 lb r, 26 c, 85 h. Pres. Chas. A. Wilson, Sec. Wibur F. Rose, Treas. & Supt. John Hood.
CARTHAGE, MO.-CEDAR RAPIDS, 1A.-Cedar Rapids & Marion St. Pass. Ry. Co.
CHAMPAIGN, ILL.-Champaign R.R. Co.
CHAMPAIGN, ILL.-Champaign R.R. Co.
Urbana & Champaign St. R.R. Co. (See Urbana.)

Landing Horse K. R. CARTHAGE, MO.– CEDAR RAPIDS, IA.–Cedar Rapids & Marion St. Pass. Ry. Co. CHAMPAIGN, ILL.–Champaign R.R. Co. Urbana & Champaign St. R.R. Co. (See Urbana.) CHARLESTON, S. C.–Charleston City Ry. Co. 8 χ m, 48 χ g, 38-42 lb r, 22 c, 84 h. Pres. Jno. S. Riggs, Treas. Evan Edwards, Sec. Frank Wheiden, Supt. Jno. Mohlenhoff. Enterprise R.R. Co. 12 m, 5 g, 42 lb r. 14 c, 51 h. Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. T. W. Passaitaigere. Middle Street Sulivan Island Ry. Co. 2 m, 6 c, 12 mu. Pres. B. Caliaghan, Sec. & Treas. Frank F. Whid-den, Supt. B. Buckley. CHATTANOOGA, TENN.–Chattanooga St. R. R. Co. 5 χ m, 4-5 χ g, 25-45 lb r, 12 c, 54 h. Pres. and Treas. J. H. Warner, Sec. C. R. Gaskill. CHESTER, PA.–Chester St. Ry. Co. 57 m, 4-5 χ g, 47 lh r, 14 c, 66 h. Pres. Richard Peters. Jr., Treas. Sam'l H. Seeds, Sec. & Manager, E. M. Cornell. CHICAGO, ILL.–Chicago City Ry. Co. 87 m, 4-5 χ g, 45 lb r, 567 c, 1,416 h. cable doing work of 2,509 h. Pres. C. B. Holmes, Sec. H. H. Windsor, Treas. T. C Pennington, Supt. C. B. Holmes. Chicago West Division Ry. Co. 40 m, 4-8 χ g, 46 lb r, 620 c, 3,425 h. Pres. J. K. Jones, Sec. George L. Webh, Supt. Jas. K. Lake. Chicago & Hyde Park St. – m, – g, – lh r, – c, h. Pres. Couglas S. Clarke. North Chicago City Ry. Co. 35 m, 4-8 χ g, 54 Sh r, Supt. Free, J. Threes, χ H. Jones, Sec. Henry, V. Pres. Chas. T. Verkes, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Jast. Supt. Freel J. Threedy, Supt. Horse Dept. Robt. Atkins, Purch. Agt. John W. Roach, Master Mechanic J. Miller. CHILLCOTHE, O.–Chillicothe St. R.R. Co. 1 χ m, 3 g, 16 lh r, 7 c, 10 h. Pres, E. P. Safford sec. A. E. Wenis, Treas. William Polanel, Supt. Eveel Medhartin. CINCINNATI, O.–Checinnati Incimed Plane Ry. Co. 3 m, 5-2 χ g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith. Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill Cincunnati St. Ry. Co. Pres. Jon. Kilgour, V. Pres. Hineri G. Clark, Treas. S. A. Dun

Co. 5 m, 5-2½ g, 43 lb r, 24 c, 150 h. Pres. (seo. Å. Smith. Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill Cincmnati St. Ry, Co. Pres. Jno. Kligour, V. Pres. Alhert 6. Clark, Treas. R. A. Duniap, Sec. & Audi-tor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B F. Haughton. Columhia & Cincinnati St. R.R. Co. 3½ m, 3 g, 35 th r, 3 c, 6 dummy .. Pres. C. H. Kligour, V. Pres. John Kilgour, Treas. B. F. Branman, Sec. A. H. Meler, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O. Mt. Adams & Eden Park Inclined R.R. Co. 3½ m, So. Covington & Cincinnati. (See Covington, Ky.) CLEVELAND, O.-The Brooklyn St. R.R. Co. 8½ m, 48% g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoefgen, Treas. John McConnell, Supt. A. L. Johnson. Broadway & Newburg St. R.R. Co. 6 m, 4-8% g, 10 c, 160 h. Pres. & Supt, Joseph Stanley, V. Pres. Superlor St. R.R. Co. 15 m, 4-8% g, 45 lb r, 46 c, 225 h. Pres. Frank De H. Robison, J. The East Cleveland R.R. Co. 20 m, 4-8% g, 55-40 lb Steel r, 103 c, 520 h, 1 electric motor. Pres. A. Erreast, H. A. Everett, Supt. E. Duty. Offices, 1154 & Treas, J. 4. Kreet, Supt. E. Duty. Offices, 1154 & Treas, J. 4. Hoefgen. Superlor St. R.R. Co. 39 kn, 3 g, 40 lb r, 8 c, 60 m, 4-8% g, 4-3 lb r, 124 c, 555 h. Pres. A. Hanna, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mullern. South Slde St. R. R. Co. 3% m, 3 g, 40 lb r, 8 c, 60 m. Pres. Tom L. Johnson, Supt. A. L. Johnson, Sec. & Treas. J. B. Hoefgen. St. Clair Street RY. Co.-m-g,-lbr-c,-Pres. Chas Hathaway. West Side R.R. Co. CLINON, IA.-Lyons & Clinton Horse R.R. Co.

St. Clar Street Ry, Co. - III - g, - 101 - c, - 11 Co. Child Hathaway. West Side R. R. Co. CLINTON, IA. - Lyons & Clinton Horse R. R. Co.

(See Lyons.) 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. Curtls, Supt. J. A. Ga-bourge

bourgh. COLUMBUS, O. - Columbus Consolidated St. R.R. Co. 19 m, 5-2 g, 30-46 lb r, 83 c, 350 h. Pres. A. Rodg-ers, 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 Ib r, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. R. Rikkly, Treus. S. S. Rickly, Supt. Jonas Willcox.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moscs llumphrey, Treas. H. J. Crippia, Clerk E. C. Hoag. CORTLAND, N. Y.—Cortland & Homer Horse Ry. Co. 4 m (24) laid), 4-8/2 g, 25-30 lb r. Pres. Chas. II. Garrisou, Troy, N. Y. Sc. J. M. Milne, Treas. S. E. Weich, Supt. Sol. No. Mercer St. CoUNCIL BLUFFS, IA.—Council Bluffs St. R.R. COUNCIL St. Sc. J. C. Aldrey, Sec. J. M. Abbott, Sec. J. C. Benton, Treas. G. M. Abbott, Sec. J. C. Aldrey, Sec., Trea. & Man. H. W. Keiler.
DANVILLE, HLL.—CItizens' St. Ry. Co. 4 m, 4 S. 20 lb r, 5 c, 24 mu. Pres. A. C. Ardrey, Sec., Trea. & Man. H. W. Keiler.
DANVILLE, MIL.—CItizens' St. Ry. Co. 4 m, 4 S. 20 lb r, 5 c, 32 mu. Pres. Wm. P. Cannon, V. Pres. & Gen. Man. Wm. Stewart, Sec. & Treas. Adam R. Samuel.
DAVENPORT, IA.—Davenport Central St. R.R.

Samuel.
DAVENPORT, IA. - Davenport Central St. R.R. 2% m. 4-8% g. 20 lb r, 12 c, 36 h. Pres. James Grant, V. Pres. W. L. Atlen, Treas. J. B. Fidler, Supt. B. Rumsey, Sec. O. S. McNeil.
Davenport City Ry. Co. 11. Schuitger, Lessee.
DAYTON, KY.--Newport & Dayton St. Ry. Co. 2 m, 5-2% g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

Bean

DATION, **R1**. Solve of the Daty of A. Supt. W. W. Bean. **DATTON**, **O**.—Dayton St. R.R. Co. $7\frac{1}{2}$ m, $4-8\frac{1}{2}$ g, 44 lb r, 24 c, 30 h and mu. Pres. J. W. stoddard, V. Pres. H. S. Williams, Sec. C. A. Craighead, supt. A. W. Anderson. Oakwood St. Ry. Co. 6 m, $4-8\frac{1}{2}$ g, 38 lb r, 14 c, 6h. Pres. Charles B. Clegg, Sec. H. V. Perrine. The Wayne & Firth St. R.R. Co. $3\frac{1}{2}$ m, $4-8\frac{1}{2}$ g, 3428 lb r, 5c. 30 h. Pr s. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. N. Routzahn. **DECATUR**, **ILL**.—Decatur Horse Ry. Co. Citizens' street R.R. Co. 2m, $4-8\frac{1}{2}$ g, 20 lh T, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. Kinney. **DENISON**, **TEX**.—Denison St. Ry. Co. 3 m 3-6 g, 16 ib r, 5c, 22 mu. Pres. C. A. Walterhouse, supt. S. A. Robinson. **DENVER**, **COL**.—Denver City Ry. Co. 16 m, 3-6g, 16 ib r, 5bc, 250 h. Pres. Geo. H. Holt, 10 Wall St., New York City, Treas. & Man. G. E. Kandojnh. **DES MOINES**, **IA**.—Des Moines St. Ry. Co. 10 m, 3g, 25-30-35-52 lb r, 18c, 100 h. Pres. M. P. Tur-ner, Sec. M. A. Turner. Des Moines & x bebastopol St. Ry. Co. **DETROIT**, MICH.—Fort Wayne & Einwood Ry. Co. 6 m **AS** (x fb h. Pres. Que a b. Pres.

her, Séc. M. A. Turner.
bes Moines & Sebastopol St. Ry. Co.
DETROIT, MUCH.-Fort Wayne & Elmwood Ry.
Co. 6 m, 4.8½ g, 45 lb r, 30 c, 180 h. Pres. H. B.
Brown, V. Pres. Edward Kanter, Treas, George B.
Pease, Sec. N. W. Goodwin, Supt. Geo. S. Hazard,
Detroit City Ry. 30 m, 4.8½ g, 40-43½ lb r, 180 c,
Too h. Includes Jefferson Ave. line, Woodward Ave.
line, Cass Ave. line, Congress & Baker Ine. Pres.
Sidney D. Miller, Treas. George Hendrie, Sec. James
Heugh, Gen. Supt. Robert Eel, Mast. Mech. John Willis

Heugh, Gen. Supt. Robert Eell, Mast. Mech. John Willis.
Grand River St. Ry. Co. 2% m, 4-8% g, 43 lb r, 13 c, 10 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. C. M. Dalley.
DOVER, N. H.-Dover Horse R.R. Co. 5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingfor, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. J. Comput. J. Lineham, Supt. J. A. Rhonberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Lineham.
DULUTH, MINN.-Duiuth St. Ry. Co. 5 m, 3-6 g, 33-51 lb r, 17 c, 90 h and mu. Pres. Sam'l Hill, V. Pres. Thos. Lowry, Sec. & Treas. A. S. Chase, Man. & Supt. T. W. Hoopes.
EAST SAGINAW, MICH.-Street R. R. Co. of East Saginaw. -m, 4-8% g, 30 lb r, 14 c, 35 h. Pres. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.
EAST ST. LOUIS, LL.-Fast St. Louis St. P. P.

EAST ST. LOUIS, ILL.-East St. Louis St. R.R.

Peter.
EAST ST. LOUIS, ILL.-East St. Louis St. R.R. Co.
EAST ON, 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.
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. Elisha Burwell, So. Easton.
EAU CLAIR, WIS.-Eau Clair City Ry. Co.
ELGIN, ILL.-Eigin City Ry, Co. 2 c. Pres. Soc. Treas. Supt. & Owner, B. C. Payne.
ELIZABETH, N. J.-Elizaheth & Newark Horse ELIXABETH, N.J.-Citizens' Ry. Co. 3½ m, 48½ g, 30 lb r, 6 c, 30 h. Pres. F. W. Miller, V. Pres. G. C. Johnson, Sec. E. C. Bickel, Treas. A. R. Burns.
ELWHARA, N. Y.-The Elmira & Horseheads Ry.
Co. 92-3 m, 4-8½ g, 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.
E. E. PASO, TEX.- El Paso St. Ry. Co. 2½ m, 4-8% g, 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magoffice, Sec. & Supt. I. A. Tays.
EMPORIA, KAN.-Emporia City Ry. Co. 3½ m, 5 g, 20 lb r, 6 c, 32 m. Pres. Van B. Holmes, Treas.

A. KIOCKALEI, HEAS, F. Magoinec, Sec. & Supt. I, A. Tays.
 EMPORIA, KAN. – Emporia City Ry. Co. 3½ m, Sg. 20 ht, 6 c, 23 m. Pres. Van R. Hoimes, Treas. A. F. Crowe, Sec. & Man. J. D. Holden.
 ENTERPRISE, MISS. – Enterprise St. Ry. Co. 124 m, 3-6 g, 24 ht 7; 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston. Sec. & Treas. J. W. Gaston.
 ERIE, PA. – Erie City Passenger Ry. Co. 5% m, 4-8½ g, 30-40 45 ht 7; 20 c, 85 h. Pres. Wim. W. Reed, Treas. Wim. Spencer, Sec. W. A. Demorest, Supt. Jacob Berst.
 EUREKA SPRINGS, ARK. – Eureka Springs City Ry. Co.

EVANSVILLE, IND. -Evansville St. Ry. Co. 12 in, 18 g, 28 (b r, 31 c, 19) inu. Pres. John Gilbert, Sec. P. W. Kaleigh, Treas. John Gilbert, Supt. W. Bahr.
FALL RIVER, MASS. -Globe St. Ry. Co. 12 m, 4-8/2 g, 40-46-47 (b r, 40 c, 160 h. Pres. Frank S. Stev-ens, Treas. F. W. Erightman, Sec. M. G. B. Swift, Supt. John II. Bowker, Jr.
FORT SCOTT, KAN. -Eourbon County St. Ry. Co. 1 m, 4g, 32 (b r, 2 c, 4 m. Pres. Isaac stadden, V. Pres. Eenj. Files, Sec. Win. Perry, Treas. J. H. Randolph.
FORT SMITH, APK - Fort County Construction

255

Y. Pres. Ech. Files, Sec. with Perry, Fields. J. H. Randolph.
FORT SMHTH, ARK.—Fort Smith St. Ry. Co. 2008, 25 (2008)
FORT WAYNE, IND.—Chizens' St. R.R. Co. FORT WORTH, TEX.—Fort Worth St. Ry. Co. 73/2 m, 4 g, 25-38 ib r, 16 c, 73 m. Pres, K. M. Vanzandt, Treas, W. A. Huffman, Acting Sec. & Gen. Man. S. Mims, Supt. J. T. Payne.
FRANKFORT, N. Y.—Frankfort & Hion Street Ry. Co. 23/2 m, 5 g, 4 c. Pres, A. C. McGowan, Frankfort, Sec. D. Lewis, Hion, Treas. P. Remington, Hion, Supt. Fred. Gates, Frankfort.
FREDONIA, N. Y.—Dunkirk & Fredonia R.R.Co. 33/2 m, 4 10 g, 25 lb 7, 5 c, 8 h. Pres. Wm. M. McClastry, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.

Wheelook.
(AINSVILLE, FLA.—Gainsville St. Ry.
(AINSVILLE, FLA.—Gainsville St. Ry. Co. 2½
m, 2-6 g, 17 lb r, 4 c, 12 h. Pres. C. N. Stevens, V.
Pres, J. T. Harris, Sec. & Treas. F. R. Sherwood.
(ALESURG, ILL.—College City St. Ry. Co. 3
m, 4-½ g, 18-20-48 ib r, 4 c, 16 h. supt. Geo. S, Clayton.
(GALVESTON, TEX.—Gaivestion City St. Ry. Co. 18 m, 4-8½ g, 30 ib r, 68 c, 169 mu. Pres. Wm. H. Sincalr, Sec. & Treas. F. D. Merrit, Supt. M. J. Keenan.
Gulf City St. Ry. & Real Estate Co. 15 m, 4 g, 20-30
lb r, 30 c, 90 mu. Pres. J. H. Burnett, Sec. & Treas.
F. D. Allen.
(GUCESTER MASS. Convector City D. B.

F. D. Anen. GLOUCESTER, MASS.—Gloucester Clty R.R. Gloucester St. Ry. Co. Pres. & Supt. Morris C. Fitch, V. Pres. Walter A Jones, Treas. Francis W. Homans, Sec. David S. Presson.

Fitch, V. Pres. Walter A Jones, Treas. Francis W. Homans, Sec. David S. Presson. GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 14½ m, 4-8½ g. 25-40 ln r, 29 c, 100 h. Pres. C. A. otts, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. C. G. Swensberg, Grand Rapids, Sec I. M. Weston, Grand Rapids, Supt. A. Bevier, Grand Rapids. GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8½ g, 23 lh r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.

GREEN CASTLE, IND. -Green Castle CUP Signer, Co. 2 m. 45% g. 23 hr. 3 c. 12h. Pres. & Supt. By Co. 4 m. 53 g. - lb r, 5 c. 20 h. Proprietors, Glucath & Harris, Harris, Treas. H. L. Morey, Supt. J. C. Bigelow, HANNIP (L, B. C. -Hne Hamilton St. Jy, Co. 4 m. 3 g. 28 lb r, 11 c. 12 h. Pres. James F. Griffin, Sec. 0.
 V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow, HANNIP (L, MO. -Hannihal St. Ry. Co. 2 m. 4-85g. 36 lb r, 6 c. 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O'Herr.
 HARLISBURG, PA. -Harrishurg CUP Passenger Ky. Co. 5 m. 5-2% g. 42-47 lb r, 26 c. 65 h. Pres. J. A. Keiker, V. Pres. Janiel Epply, Sec. John T. Ensminger, Treas. R. F. Keiker, Supt. S. B. Reed. HARTFORD, CONN. -Hartford & Wethersfield Horse K. R. Co. 12 m. 4-8% g. 45 lb r, 49 c. 250 h. Pres. & Treas. E. S. Goodrich, Sec. Geo. Sexton.
 HAVERHIHLI, MASS. -Haverhill & Groveland St. Ry. Co. 4% m. 4-4% g. 30 lb r, 12 c. 20 h. Pres. & Gen. Man. Jas. D. White, Treas. John A. Colby Haverhill St. Ry. Co. 14 m. 4-4% g. 30 lb r, 12 c. 30 h. Pres. J. M. Ansmen, Sec. Joab Small, Treas. H. D. Alexander.
 HOBKEN, N. J. - North Hudson County Ry. Co. 16 m. M. S. J. Mallory, Treas, Fredk, Mickel, Union, Supt. Nicholas Goetz, Union.
 HOT SPRINGS, ARK. -Hot Springs R.R. Co. 16 Marth, S. 26 h. Pres. S. W. Achase, Treas. C. Maurice, Supt. J. L. Butterfield.
 HOT SPRINGS, ARK. -Hot Springs R.R. Co. 16 Martholog, S. 26 h. Pres. K. M. Con. 14 M. 458 g. 20 lb r, 16 c. 630 h. Pres. Ym. H. Shichart, Galveston, V. Pres & Gen. Man. H. F. MacGregor, Houston, Supt. Henry Freud, Houston, Sec. C. Maurice, Supt. J. L. Butterfield.
 HOT SPRINGS, ARK. -Hot Springs R.R. Co. 15 M. St. St. Dr. Co. 16 Martholog, St. Pres. A. Chase, Treas. C. Maurice, Supt. J. L. Butterfield.
 HOT SPRINGS, ARK. -Hot Springs R.R. Co. 16 Martholog, St. St. St. Co. 17 Martholog, St. St. St. Co. 17 Martholog, St. Pres. A. M. Godowan, Sec. C. Lewits, Treas. F. Remington, Supt. Frederick

JOHNSTOWN, N. Y. -The Johnstown, Glovershie & Kingsboro Horse R.R. Co. 5% m, 4% g, 26 h
 JOHNSTOWN, PA. -Johnstown Pass. R.R. Co. 7% m, 5% g, 41-48 lb r,13 c, 73 h. Pres. James MCMI JOHNSTOWN, PA. -Johnstown Pass. R.R. Co. 7% m, 5% g, 41-48 lb r,13 c, 73 h. Pres. James MCMI JOHNSTOWN, PA. -Johnstown Pass. R.R. Co. 7% m, 5% g, 41-48 lb r,13 c, 73 h. Pres. James MCMI JOHNSTOWN, PA. H. Corent, J. A. HENRY, A. Bachman, Cash. J. E. HENRY.
 JOPLIN, MO. KANAS CITY, MO.-Kansas City Calle R.Y. Co. 20 m, 45% g, 35 lb r, 25 c, 80 h. Pres. Fred Bush, Sec. W. Boynion. Treas. F. H. Brown.
 Corrigancosoliduded St. Ry. Co. 20 m, 41 g, 30 br, 90 c, 30 h. Pres. Henard Corrigan, Gen. Man. Toso. Corrigan, Sec. Jas. T. Kelley.
 Jockson County Horse R. R. Co. 20 m, 41 g, 30 br, 90 c, 30 h. Pres. Bernard Corrigan, Gen. Man. Toso. Corrigan, Sec. Jas. T. Kelley.
 Tackson County Horse R. R. Co. 20 m, 41 g, 30 br, 90 c, 30 h. Pres. Bernard Corrigan, Gen. Man. Toso. Corrigan, Sec. Jas. T. Kelley.
 Takeson County Horse R. R. Co. 20 m, 44 g, 40 br, 91 c, 36 h. James Anderson, Y. Pres. Jas. H. Anderson, Y. Pres. Jas. H. Anderson, Y. Pres. Jas. G. Anderson, Sec. K. James Anderson, Treas. & Supt. W. E. A. Corrigan. Sec. Jas. T. Kelley.
 Takeson County Horse R. R., Co. 100 St. R. R. Co. 21 m, 45% g, 22 lb r, 5 c. 2 hacks, 30 h. Pres. W. P. Chamberlan, Sec. Treas. & Supt. T. L. Beanna. Multian Wilson M. Korrigan, Sec. Jas. Supt. T. L. Beanna. M. Mod. Sci. R. Roo. 70 m, 45% g, 22 lb r, 5 c. 2 hacks, 30 h. Pres. N. N. Hod, Sec. B. Santis.
 Taket S.G. & Anderson, Sec. K. Lake Yillager Horse Mets. Man. Man. Sci. R. Roo. 71 m, 84% g, 92 lb r, 5 c. 10 h. Star Mar. Mat. Sci. 70 m, 72 m, 72

256

City, Sec. Geo. S. Grawbord, Browkyn, W. N. Hensel Patrick J. Gleason, Supt. Michael Conway. Officers 112 Front St.
LONG VIEW, TEX.-Lougview & Junetion St. R. M. 3-6 g, 2 e, 4 h. Pros. F. T. Rembert, Sec. R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth, LOS ANGELES, CAL.-Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Feruando St. R.R. Co. 7 m, 3-6 g, 161b r, 13 c. - h. Pres. E. T' Spencer, Sec. F. X. Palmer, Supt. J. A. Fairchild. City R.R. of Los Angeles. 4% m, 4-8% g, 361b r, 9 e, 75 h. Pres. I. M. Heilman, Y. Pres. W. J. Brod-rich, Sec. John O. Wheeler, Supt. W. H. Hawks, Los Angeles & Allso Ave. St. R.R. Co. Main St. & Agricultural Park R.R.
LOUISVILLE, KY.-Kentucky St. Ry. Co. 5 m, See g. - Dir, 22 e, -h. Pres. T. J. Minary, Sec. & Treas. Thos. Donigan. Central Pass. R.R. Co. -m, -g, -lbr, -c, -h, Pres. -, Y. Pres. Thos. J. Minery, Crescent Hill Ry. Co. Louisville City Ry. Co. 65 m, 5 g, 58 lb r, 214 c, 1300 mu. Pres. Maj. Alexander Henry Davis, Syracuse, N

Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. II. H. Littell.
Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. II. H. Littell.
Y. WEL L., MASS.—Lowell Horse R.R. Co. 6 m, By g. 28:47 lb r, 28 c, 100 h. Pres. Wm. E. Living-ton, Gen. Man. J. A. Chase.
LYNCHIBURG, VA. — Lynchburg St. R.R. Co. 2m, 5 1 g, 26 lb r, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne.
LYONS, I.A.—Clinton & Lyons Horse Ry. Co. 4% m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Rand.
MACON, GA.—Macon & Suburhan St. R. Co.5 m 4 Syd g, 20 lb T r, 12 c, 60 h & mu. Pres. J. S. Brans-ford Sec. & Supt. Jno. T. Voss. Office, 151 Second St. MADISON, IND.—Madison St. Ry. Co. 2% m, 4 (j. 15 lb r, c, 28, h. 0 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenlius, Supt. & Treas. Chas. F. Tuttle. MADISON, WIS.—Madison St. Ry. Co. 2% m, 3 g, 23 lb r, 6 c, 24 h. Pres. E. W. Keyes, V. Pres. Sec. & Treas. D. K. Tenner, Supt. G. W. Carse.
MANCHESTER, N. H., —Manchester Horse R. R. 5% m, 3-% g, 27-34 lb r, 14 c, 55 h. Pres. S. N. Bell, 17 reas. F. Smyth, Clerk J. A. Weston, Supt. A. Q. Gage. MARSHALLTOWN, IA.—3 m, 4 g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gillman, Supt. A. E. Shorthnil.
MARYSVILLE, CAL.—City Pass, R.R. Co. (No returns.)

MARY SYILLE, KY.—Maysville St. Ry. & T. Co. MAYSVILLE, KY.—Maysville St. Ry. & T. Co. 3 m, 20 lb r, 4-8% g, 6c, 32 mu. Pres. L. W. Robertson, Sec. & Treas. W. S. Frank. 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.

J. N. Fullenweider, Treas. A. T. Thompson, Sec. D. Thompson, TENN, - M. mphis Clty R.R. Co. 18 m, 5g, 38-40 lb r, 66 c, 320 h, Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Supt. W. F. Shippey, **MERIDIAN, MISS.** – Meridian St. Ry. Co. 2 m, 4-8 g, 16 lb T r, 5 c, 11 mu, Pres. Geo. S. Conant, V. Pres. and Sup. J. L. Handley, Treas. J. A. Kelly, Sec. R. M. Houston

ouston. MIDDLETOWN, O.—Middletown llorse R.R.Co. res. John M. Douglas, Sec. & Treas, Jas. K. Guy. MILLERSVILLE, PA.—Lancaster & Millersville Pr

Pres. John M. Douglas, Sec. & Treas, Jas. K. Guy, MILLERSVILLE, PA.—Lancaster & Millersville
St. R. R. Co.
MILWAUKEE, WIS.—Cream City R.R. Co. 8 1-6 m, 4-8½ g, 27-38 lb r, 74 c, 307 m, 2 h. Pres. Winfield
smith, V. Pres. Christian Preusser, Treas. Ferdinand Knehn Sec. Wm. Damkoehler, Geu. Man. D. Atwood,
Supt. H. J. C. Berg.
Milwaukee City Ry. Co. 30 m, 4-8½ g, 27 lb fron & 45 lb steel r, 50 c, 450 h. Pres. Peter Moscoch, Sec. & Treas, Geo. O. Wheatcroft.
West Side St. Ry. Co. Owner & Manager, Wash-ington Becker, Supt. — McNaughton.
MINWAUKE CIty S, MINN.—Minneapolls St. Ry. Co. 62 m, 3-6 g, 27-35-45 lb r, 186 c, 1050 h and nu. Pres. Thos. Lowrry, V. Pres. C. Morrison, Treas. W. W. Herrick, Sec. C. G. Goodrich, Supt. D. W. Sharp.
MOBILE, ALA.—City R.R. Co. 17½ m, 5-2 g, 55 lb 7-r, 68 c, 240 h. Pres. Jan. Maguire, Sec. I.
Strausse, Treas, Myer I. Goldsmith, Supt. A. Moog. Dauphin & Lafayette Ry. Co. 2 m, 5-2½ g, 35 lb r, 0. Overall, Treas. & Acting Sec. Jas. W. Gray, Pur. Agt. & Man. J. B. Robertson.
Mobile & Spring Hill R.R. Co. 8 m, 5-2½ g, 35 lb r, 15 c, 35 h, 1 dummy. Pres. Danlei McNeill, Sec. & Treas, C. F. Sheldon, Man. F, Ingate.
MOLINE, H.L., MOhawk & Hion R.R. Co. 19⁴, m, 4-8½ g, 30 lb r, 4 c (contract for motive power), Pres. O. W. Bronson, V. Pres. J. Bonder, Sc. R. Jolexa ander, Treas. R. M. Devendorff, Supt. O. W. Bronsou.
MOLINE, H.L., Moline Central St. Ry, Co. 19⁴, m, 4-8½ g, 30 lb r, 3 c, 10 h. Pres. S. H. Velte, V.
Pres. P. H. Wessel, Sec. W. R. Moore, Treas. C. F. Heneuway.
Moline & Kakiandst. Ry. Co. 5 m, 4-8½ g, 20 lb 13 c, 4 b. Pres. J. Unitoon Sec. V. Weitord

Pres. P. H. Wessel, Sec. W. R. Moore, Treas. C. F. Hemeuway. Mollne & Rock Island St. Ry. Co. 5 m, 4-8% g. 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Butord, Treas. C. Lyons, Supt. Win. Gamble. MONTGOMERY, ALA.-Capital City St. Ry. Co. Electric pattern.

Co. Electric motor. MONTREAL, CAN.-Montreal City Pass. Co. 21 m, 4-8% g., 1b r, 76 c, 465 h. Prcs. Jesse Joseph, V. Pres. Alex, Murray Sec. & Man. Ed. Lusher, Supt. T.

MOULTRIEVILLE, S. C.- Middle St. & Sulh-

MOULTRIEVILLE, S. C.- Middle St. & Sulhvau's Landing Ry.
 MUSCATINE, IA.-Muscatine Cit⁻ Ry. Co. 3¹/₂
 m, 3-6 g, 2110 r, 7 c, 19 h. Pres. Peter Mus-er, V.
 Pres. D. C. Richman, See, T. R. Fitzgerald, Treas.
 S. M. Hughes, Supt. O. J. Chapman.
 MUSKEGON, MICH.-Muskegon Ry. Co. 4¹/₄ m,
 Sefg, 201h r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V.
 Pres. Chas. Merriam, Boston, Mass., Sec. Thomas
 MUSKEGON, MICH.-Muskegon Ry. Co. 4¹/₄ m,
 Sefg, 201h r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V.
 Pres. Chas. Merriam, Boston, Mass., Sec. Thomas
 Munroe Treas. G. R. Sherman, Supt. C. H. Newell,
 NASHULLE, TENN.-Mashville & Edgefield
 R. R. Co. Fatherland Street Rallway Co. North Edgefield and Nashville St. R.R. Co. one management.
 Sm, 5g, 16-20-321b r, 21 c, 100 mu Pres. Jno. P. White,
 Sec. & Treas. H. B. Stubblefield, Supt. Dalagerfield
 McGavock & Mt. Vernon Horse R.R. Co. 7½ m. 5 g,
 16-20-2-321b r, 25 c, 140 b & mu. Pres. Johu P White,
 South Nashville St. R.R. Co. 4½ m, 5 g,
 16-20-2-321b r, 25 c, 140 b & mu. Pres. Johu P. White,
 South Nashville St. R.R. Co. 4½ m, 5 g,
 16-20-2-32 b r, 25 c, 140 b & mu. Pres. Johu P. White,
 South Nashville St. R.R. Co. 4½ m, 5 g,
 16-20-10 k, mashville St. R.R. Co. 4½ m, 5 g,
 16-20-10 k, mashville St. R.R. Co. 4½ m, 5 g,
 16-20 Nashville St. R.R. Co. 4½ m, 5 g,
 16-20 Nashville St. R.R. Co. 4½ m, 5 g,
 16-20 Here.
 Nather St. R.R. Co. 4½ m, 5 g,
 16-20 Here.

10 c, os h. Pres. w. M. Dunein, Sec., Frens. & Supt. C. L. Fuller. NATICK, MASS.—Natlek & Cochituate St. Ry. 8 m, 4.8½ c, 35 lb r, 6 c, 17 h. Supt. Geo. F. Keep. NEW ALBANY, IND.—New Albany St. Ry. Co. 6 m, 4-11½ g, 25 lb r, 15 c, 55 h. & mu. Pres. Geo. T. Vance, Treas. Lettila V. Vredenburgh, Supt. & Pur. Agt. Wm. L. Timberlake. NEWARK, N.J.—The Newark & Bloomfield St. R.R. Co. 7 m, 5-2½ g, 47 lb r, 22 c, 140 h. Fres. S. S. Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Con-solidated with Essex Pass. Ry. Co. Broad St. R.R. Newark & Irvington St. Ry. Co., 7 m, 5-24, g, 47 lb r, 28 upt. H. F. Totten.

upt. H. F. Totten. **NEW BEDFORD, MASS.**—New Bedford & Falr-aren St. Ry. Co. 7½ m, 4-8½ g, 35-45-50 lb r, 428 c, 140 . Pres. Warreu Ladd, Treas. & Clerk, A. G. Pierce, Acushnet St. R.R. Co., 6 m, 4-8½ g, 35 lb r, 23 e, 103

[MAY, 1886.

h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith. NEWBURGH, N. Y.-Newburgh St. R. R. Co-Pres. D. S. Haines, Sandy Hill. NEWBURYPORT, MASS.-Newburyport & Amesbury Horse R.R. Co. 6 1-3 m, 12 c, 54 h. Pres-W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens, Lessee, E. P. Shaw. NEW HAVEN, CONN.-Fair Haven & Westville R.R. Co. 7 m, 4½ g, 42 ib r, 23 c, 150 h. Pres. H. B. Ives, Sec. & Treas. L. Candee, Supt. Walter A. Graham.

M. A. Johnson, Treas. M. H. Shepard, See Geo. H.
 Stevens. Lessee, E. P. Shaw.
 NEW UAYEN, CONN. – Fair Haven & Westville R.R. Co. 7 m, 4½ g, 42 ub r, 32 c, 150 h. Pres, H. B.
 Ives, See, & Treas. L. Candec, Supt. Walter A.
 Graham.
 New Haven & Centreville Horse R.R. Co. 2½ m, 43½ g, 42 lb r, 4c, 30 h. Trustee Cornelius Pierpont.
 State Street Horse R.R. Co. 2½ m, 4.8 g, 43 lb r, 4c, 40 h. Pres. C. A. Warren, See, & Treas. C. C. Blatcheu.
 The Whitney Ave. Horse RY. 2½ m, 4.8 g, 43 lb r, 4c, 40 h. Pres. C. A. Warren, See, & Treas. C. C. Blatcheu.
 The Whitney Ave. Horse RY. 2½ m, 4.8 g, 43 lb r, 90 e, 400 h. Pres. Geo. H. Watrous, See, George D.
 Watrous, Treas. EH Whitney, r.
 NEW ORLELNS, LA. – Canal & Claiborne St. R.K. Co. 18 m, 5-2½ g, 37 lb r, 40 e, 200 h. Pres. E. J.
 Hart, See, & Supt. Jo S H. DeGrange.
 Crescent City R.R. Co. 26 m, 5-2½ g, 35 ds lb r, 90 e, 400 h. Pres. Frank Roder, See, & Treas. Jno. J. Ju-den, Supt. A. V. Smith.
 New Orleans SU. R.R. Co.
 Orleans R.R. Co. - m, -g, - lb r, 32 c, 140 h.
 & mu. Pres. & Supt. Jole Haltenary Ests.
 St Charles SU. R.R. Co.
 Mers. See, Chreas. Jno. J. Ju-den, Supt. A Usen Mich.
 New Orleans & Carroulton R.R. Co. S m, 4.8½ g, 30-45 lb r, 65 c, 200 h. 19 engines. Pres. Wm. Beuthury-sen, See, Walter F. Crouch, Supt. C. V. Hall.
 New Orleans & Carroulton R.R. Co. 6 4 m, 5-22 g, 46-40 lb r, 50 c, 350 h. Pres. June, T.W.
 New Orleans & Carroulton R.R. Co. 6 4 m, 5-23 g, 57 lb r, 45-64 0 lb r, 180 c, 39 coaches, dummy engines, 1050 mu.
 Pres.J.A. Watker, Src. W. E. Leverich, Supt. F. Witz.
 NEW YORK, N.Y. – Ninth Ave. R.R. Co. 7 m, 48½ g, 47-60 lb r, 180 c, 350 h. Pres. Junes. W. Hays, See, & Treas. James Affleck, Supt. Hemanfl. Wilson. Offi-ees, Ninth. Ave., ox. 54 hst.
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Attert J. Edas, Supt. Chas H. Meeks. Office 20 Whilehall St. The Second Ave. R.R. Co. 13 m, 4 8½ g, 60 lb r, 316 Cars, 1750 h. Pres. W. Thorn, V. Pres. J. Wadsworth, Sec. & Treas. J. B. Underhilt. Office Second Ave. cor. 96th st. The Third Ave. R. R. Co. 16 m main line, 6½ m 10th Ave, cable line, 4 m 125th street cable line, 4 8½ g, 60 & 74 lb 1, 318 c, 2150 h. Pres. Lewis Lyon, 739 Madison ave., V. Pres. Henry Hart, 110 Tribune Building, Sec. Alfred Lazarus, 436 W. 61st st., Treas. John Beaver, 211 E. 112th st., Supt. John H. Robert-son, 307 E. 85th st. Twenty-third st. R.R. Co. 7 m, 4-8½ g, 54 lb r, 102 c, 629 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Treas. Lewis May, Act-Supt. George Ferry. Office 621 West 23d St. NIAGARA FALLS, N. Y.-Nlagara Falls & Suc.

621 West 23d St. NIACARA FALLS, N. Y.—Nlagara Falls & Sus-pension Br dgc Ry, Co. 2% m, 4-8% g, 38-42 ib r, 8 c, 36 h, Pres, Benj. Flagler, Scc. W. J. Mackay, Treas, A. Scherfillant

A. Scheellkopt. NORFOLK, VA. – Norfolk & City R.R. Co. 3½m, 5-2 g, 44 lb r, 18 c, 65 h. Pres. John B. Whitehe ad Treas, H. C. Whitehead, Supt. E. W. Savage. NORTHAMPTON, MANS. – Northampton St. Ry. Co. 3½ m, 4-8½ g, 32 lb r, 7 c, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas, & Sup. E. C. Clark

Clark.
NORWALK, CONN.—Norwalk Horse R.R. Co.
Y. Pres, & Sec. Edwin G. Hoyt, Sup. James W. Hyatt,
V. Pres, & Sec. Edwin G. Hoyt, Sup. James W. Hyatt,
NORWICH, CONN.—Norwich Horse R.R. Co.
OAKLAND, CAL.—Alameda, Oakland & Piedmont R.R.
Berkley Villa R.R.
Broadway & Piedmont St. R.R. Co.
Fourteenth St. R.R. Co. 6 m. 5 g, 20-20 lb r, 6 c, —
A. Fres, & Supt. Walter Blair, Sec. P. J. Van Lobeu.
Oakland R.R. Co.
OGDEN CITY, UTAH.—Ogden City Ry. Co.

3 m, 4.8% g, 20 lb r, 4 c, 21 h. Pres, L. W. Shurtle ogden City, V. P. & Supt. O. P. Arnold, Salt La City, Sec. & Treas. H. S. Young, Ogden City. OLEAN, N.Y.-Olean St. Ry. Co. 11-10 m, 3-6 g, 25 lh r, 3 c, Sh. Pres. M. B. Fobes, Sec. & Treas. M. W. Bar

OMAILA, NEB.—Omaha Horse Ry. Co. 15 m, 8½ g, 35 lb r, 40 c, 300 h. Pres. Frank Murphy, V. res. Guy C. Barton, Treas. W. W. Marsh, Supt. W.

A. Smith.
ONEIDA VILLAGE, N. V.—Oneida Ry. Co. 2 m, 4-8½ g, 47 lb r, 3 c, 6 h. Pres. Jerome Hickox, sec. & Treas. W. F. Northrup, Supt. Chas. Bonta. OSHKOSH, WIS.—OshKosh St. R. Co. 3½ m, 4-8½ g, 27 lb r, 9 c, 24 h. Pres. Leander Choate, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.
Description N. Y. Oswero St. By Co. 2 m, 487

4-5% g. 27 lb r, 9c. 24 h. Pres. Leander Choute, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.
OSWEGO, N.Y., OSwego St. Ry. Co. 2 m, 4-8% g. 45 lb r, 3 c. 23 h. Pres. Jas. F. Johnson, V. Pres. R. J. Ollpbant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor.
OTTAWA, ONT. – Ottawa City Passenger Ry. Co. 3 m, 4-5% g. 30 lb r, 9 c, 40 h. Pres. Thomas C. Keefer, V. Fres. R. Backburn, Sec. James D. Fraser.
OTTUMWA, IA. – Ottumwa St. R.R. Co. 2 m, 3-6 g. 27 lb r, 4 c, 2 h. Jtm., Sec. James D. Fraser.
OTTUMWA, IA. – Ottumwa St. R.R. Co. 2 m, 3-6 g. 27 lb r, 4 c, 2 h. Jtm., Str. Y. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. John J. Brown, Sec. F. S. Brown, Man. & Pur. Agt. John J. Brown, Sec. F. S. Brown, Man. & Pur. Agt. Ambrose T. King, Supt. M. O. Rourke. Paterson City R.R. Co. 64 m, 4-8% g. 35 lb r, 12 c, 31 h. Pres. Garrett Planteu, Treas. Helmas Romaine, Sec. M. Pfieffer, Treas. Elliot Callender, Supt. John Strong.
Fort Ciark Horse Ry. Co. -m, -g, -lb r, -c, -h. - Pres. J. H. All.
PetersBURGH, VA. - Petershurgh St. Ry. Co. 23 m, 4-5% g, 40 lb r, 63 c, 140 h. Pres. H. Hall. Contral City Horse Ry. Co. 4% m, 4-5% g, 40 lb r, 63 c, 140 h. Pres. H. Hall.
PetersBURGH, VA. - Petershurgh St. Ry. Co. 152 m. Pres. J. H. All.
PetersBURGH, VA. - Petershurgh St. Ry. Co. 152 m. Pres. J. H. All.
PetersBURGH, YA. - Pres. John M. Corge Beadle, Pro- Pres. J. H. Ball.
PetersBURGH, VA. - Petershurgh St. Ry. Co. 152 m. 5-2 g, 47 lb r, 9c c, 40 h. Pres. H. Strong.
PetersBURGH, VA. - Petershurgh St. Ry. Co. 164 m. 5-2 g, 47 lb r, 9c c, 40 h. Pres. Jam. Mc. Co. 174 m. 4-5% g, 40 lb r, 63 c, 174 h. Pres. J. J. Adams, Sup. Sam'l Cline. Frankford & south-wark Filla. Clity Pass. R. R. Co. 184 m. 5-2 g, 44 lb r, 90

18 m, 5-2 g, 4 10 r, 10 c, 5 dufinity C, 618 n. Pres. Attred Smith, Sec. & Treas. Geo. S. Gandy, Supt. W. H. Jancey. Hestonville, Mantua & Fairmount Pass, R.R. Co. 20 m, 5-2 g, 43 lh r, 50 c, 480 h. Pres. Charles F. Laffer-ty, Sec. & Treas. Vol. Co. Pres. John Lamon, Sec. Chas, A. Porter, Treas. John L. Hill, [Track not laid,] Lomhard & South Sts. Pass. Ky. Co. -m, 5-2 g, 43 lh r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas. Francis Hazelhurst Supt. Jon. M. Gaughen. People's Pass, Ky. Co. 44 m, 5-2g, 47 lh r, 125 c, 1,080 h. Pres. C. J. Harrah, V. Pres. C. J. Harrah, Jr., Sec. & Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiler. Philadelphia City Pass. Ky. Co. 7 m, 5-234 g, 477 lh r, -p. - h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. (Leased to Phila. Traction Co.) Philadelphia Traction Co. 109 m, 5-24 g, 45-78 lh r, 594 c, 204 h. Pres. W. H. Kemble, V. Pres. P. A. B. Widener & W. L. Elkins, Treas. D. W. Dickson Philadelphia & Gray's Ferry Pass. R.R. Co. 10 1.3 m, 40 c, 200 h. Pres. Ry. Co. 14 m, 5-2 g, 47 lh r, 59 dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-ett. Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 55

Pinladeipinia & Gray's Ferly Fass, R.R. Co., 10, 50
 m, 40 c, 200 h. Press, Matthew Brooks, Treas, J. C. Dawes, See, J. Crawford Dawes, Supt. Patrick Lovett.
 Ridge Avenuc Pass, Ry. Co., 14 m, 5-2 g, 47 lb r, 55
 c, 352 h. Pres, E. B. Edwards, V. Pres, John Lamhert, See, & Treas, Win, S. Blight, Supt. Muller, Sec. & Treas, Willsam F. Miller, Sec. C. Charles D. Matlack, Supt. David W. Stevens.
 Sevende at the Nex, Treas. william F. Miller, Sec. C. Charles D. Matlack, Supt. David W. Stevens.
 Seventeenth & Nineteenth sts. Pass. Ry. Co. 75 m.
 Pres, Alexander M. Fox, Treas. William F. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens.
 Seventeenth & Nineteenth sts. Pass. Ry. Co. 75 m.
 Press. Matthew S. Quay, Sec. & Treas. John B. Peddile. [1.eased to Philada. Traction Co.]
 Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-3
 g, 431 br. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas. Thos. S. Harris, Supt. Wum. B. Cooper.
 Union Pass. Ry. Co. 70 m, 348 c, 1,724 h. Pres.
 Wm. H. Kemble, Sec. & Treas. John B. Peddie, Supt. Jacob C. Petty. (Leased to Phila. Traction Co.)
 West Philadelphila Pass. Ry. Co. 18% m, 122 c, 646
 h. Pres. Peter A. B. Widener, Sec. & Treas. D. W. Dickson. (Leased by the Phila. Traction Co.)
 PHILLIPSBURGHI, N. J. –Phillipshurgh Horse Car Ry. Co. 24% m, 48 g, 351 br. 4 c, 13 h. Pres. Daniel Huukle, Sec. & Treas. James W. Long.
 PHTTSBURGHI, PA. – Central Pass R.K. Co. 3m, 16 c, 95 h. Pres, J F. Chuley, Sec. F. L. Stepnenson, Treas. F. Jones, Supt. R. G. He ron. Beaver Falls & New Brighton Ry. Co. 26 m, 5-2% g, 46 50 hhr. 20 c, 154 h. Pres. Wrm. H. Creery, Supt. Murry Verner.
 Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, 5-2% g, 46 50 hhr. 20 c, 154 h. Pres. James Boyle, Supt. Wm. J. Crozler, Allegheny City.
 Probaley Park Pass. Ry. Co. 2 m, 5-2% g, 45 hh

City. Pittshurgh, Alle : heny & Manchester Pass Ry. Co. 5 m, 5-2% g, 46 fbr. 40 c. 275 h. Pres. Chas, Atwell, Sec. & Treas. Chas. Seibert, Supt. James C. Cotton. Manager J. P. Sper. Pittsburgh, Oakland & East Liberty Pass. Ry. Co. 11 m, 5-4% g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T. Gordon, Sec. John G. Traggardh, Treas. A. W. Mellon, Supt. H. M. Cherry. Pittsburgh Union Pass, R.R. Co. 5 m, 5-2% g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas. Chas. Selbert, Cash. Saml. C. Hunter.

Hunter

Pittsburgh & Birmingham Pass. R.R. Co. 3½ m, 5-2½ g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec. D. F. Agnew, Treas. John G. Holmes.

THE STREET RAILWAY JOURNAL.

THE STREET RAILWAY JOURNAL.
SPIttsburgh & West End Pass, Ry. Co. 3% m, 5-2 g, T hb r, 13 c, 75 h. Pres, John C. Relly, Séc. & Treas. homas S. Bigelow, Supt. William J. Burns. Putsburgh & Wilkinsburg St. Ry. Co. 3% m, 5-2% g, 47 lb r, Sc, 60 h. Press. Geo. Fawcett, Sec. Jas. F. Fawcett, Treas W. J. Fawcett.
South Side Pass, R.R. Co. 2% m, 5-2% g, 45 lh r, 19 c, 80 h. Press. C. D. Brickell, Sec. Jas. F. Fawcett, Treas W. J. Fawcett.
Press C. L. Macce, V. Press. C. F. Kioprer, Sec. 4 Treas. Wm. R. Ford, Supt. Miller Elifor.
PHTSTON, P.A. –Pittston St. R.R. Co. 1% m, 3 c, 5 h. Press. Thomas Griffith, Treas. M. W. Mortis.
Sec William Allen.
PORT HURON, MICH.—Port Huron St. Ry. Co. 6% m, 45% g, 7, 0; 20 h. Press. Jon. P. Sanborn, V. Pres Frank A. Beard, Sec. Treas. & Man. J. R. Wastell.
PORT HURON, MICH.—Port Huron St. Ry. Co. 74 h. Press. H. J. Libby, Treas. & Gen. Man. E. A. Newman, Supt. Geo. W. Soule.
PORTIAND, ORE.—Portland St. Ry. Co. 2 m 36 g, 25-421b r, 11 c, 40 h. Press.D. P. Thompson, Sec. & Supt. Ct. Harbaugh.
Muthomah St. Ry. Co. 21% m, 3-6 g, 30 lb r, 19 c, 51.
PORTSMOUTH, O.—Portsmouth St. R. R. Co. 2 m, 3-6 g, 18 hr, 4 c, 10 h. Pres. James Skeiton, Treas. Sec. & Supt. Chanse St. R.K. Co. O 2 m, 3-6 g, 18 hr, 4 c, 10 h. Pres. James Skeiton, Treas. Sec. & Supt. Chanse Rel.
POTTSVILLE, P.A.—Peopters Ry. Co. 9½ m, 16c, 56h.
POUSHOUNCE, R. I.—Union R.R. Co. 53 m, 4-8% 94, 47-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 47-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94, 77-54 lb r, 230 c, 1,300 h. Pros. Jesse Metealf, 94,

Sec. & Treas. waren Kudu, Mari, C. M. Bohon, Super Charles Seiden. Richmond & Manchester Ry. & Imp. Co., 2½ m, 26 h, 4 c. Supt. B. R. Seiden.

Charles Selden.
Richmond & Manchester Ry. & Imp. Co., 2½ m, 26 h,
4 c. Supt. B. R. Selden.
ROCHESTER, N. Y. – Rochester City & Brighton
R.R. Co. 37 m, 48½ g, 25-30-45 lh r, 142 c, 596 h.
Pres. Patrick Barry, Sec. C. C. Woodworth, Treas.
C. B. Woodworth, Supt. Thomas J. Brower.
Citizens' St. Ry. Co. Pres. Wm, H. Jones, Sec. &
Treas. J E. Pierpont, Supt. S. A. Green.
ROCKFORD, ILL. – Rockford St. Ry. Co. 6 2-5 m, 4-8½ g, 30 lb r, 13 c, 52 h, 16 m. Pres. Anthony
Halnes, V. Pres. L. Rhodes, Sec. Miss A. C. Anold, Treas. N. E. Lyman, Supt. Fred. Halnes.
ROCK ISLAND, ILL. – Rock Island & Milan St.
ROCK 1SLAND, ILL. – Rock Island & Milan St.
ROCK 1SLAND, ILL. – Rock Island & Milan St.
ROOK 1SLAND, ILL. – Rock Island & Milan St.
RONDUTT, N. Y. – Kingston City R. R. Co. 24-5 m, 48½ g, 40 lb r, 10 c, 40. Pres. James G. Lindsicy, V. Pres. S. D. Coykendoll, Sec. & Treas. John C.
RORAMENTO. CAL. – Sacramento City St.R. R.
Co. ANDENTO, CAL. – Sacramento City St.R. R.

Romeyee, Supt. Wm. H. DeGarmo. SACRAMENTO. CAL.—Sacramento City St.R.R. Co. SACRAMENTO. CAL.—Sacramento City St.R.R. Co. 2M m, 48% g, 42 hr, 10 c, 50 h. Pres. David H. Jerome, V. Pres. Geo, F. Williams, Sec. & Treas. Geo. L. Burrows, Supt. Fred G. Benjamin. SALEM, MASS.—Salem & Danvers St. Ry. Co. 6 m, 48% g, 35-47 ib r, 15 c, 45 h. Pres. Bonj. W. Rus-sell, Sec. G. A. Vickery, Treas. Geo. W. Williams, Supt. W. B. Furgurson, Asst. Supt. David N. Cook. Naumkeag St. Ry. Co. — m. 48% g, 30-35 45 ib r, 50 c, 140h. Pres. Chas. Odeli, Clerk Joseph F. Hickey, Treas. Henry Wheatland, Supt. Willard B. Ferguson. SALT LAKE CITY, UTAH.—Salt Lake City RR Co. 13 m, 4-3% g, 20 hr, 20 c, 115 mu. Pres. John Taylor, Sec. David McKenzle, Treas. James Jack, Supt. Orson P. Arnold. SAN ANTONIO, TEX.—San Anionio St. Ry. Co. 15 m, 4 g, 30 ib r, 38 c, 125 mi. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas I. Withers, San Antonio, Sec. E. R. Norton, Supt John Robh. Prospect.Hill St. Ry. Co. SAN DUSKY, O.—Sandnisky St. Ry. Co. 2 m, — SANDUSKY, O.—Sandnisky St. Ry. Co. 2 m, — SAN FRANCISCO, CAL.—California St. R. Co Central R. R. Co. 12 m, 5 g, 45 lb r, 31 c, 290 h Pres. Chas; Math, V. Pres, S. C. Bigclow, Treas, A J. Gunnison, Sec. C. P. LeBreton, Supt. J. F. Clark. Clay St. Hill R.R. Co. 1 m, 3-6 g, 30 lb r, 11 c, 12

257

dummy cars. Pres. Joseph Britton, V. Pres. James Mofit, Treas. Henry L. Davis, Sec. Chas. P. Camp-bell, Supt. Joseph Britton. Clay St. Park & Ocean R.R. Co. Market St. Cable Ry. Co. 10 9-10 m, 4-8½ lb r, 137 c, 2 motors, 73 h. Pres. Leiand Stanford, V. Pres. Chas. F. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt. Controller J. T. Fairbanks. North Beach & Mission R.R. Co. 8 m, 5 g, 46 c, 400 b. Pres. Carl Abpel, Sec. H. W. Hathorne, Treas. Wim, Alvord, Supt. M. Skelly. Omnibus R.R. & Cable Co. 8½ m, 5 g, 25-45 lb r, 50 c, 364 h. Pres. Leiand Stanford, V. Pres. Chas. Scocker, Treas. N. T. Smith, Sec. J. L. Willout. Sutter St. R.R. Co. 1½ m, 5 g, 25 lb r, 20 c, 64 h. Pres. Leiand Stanford, V. Pres. Chas. Crocker, Treas. N. T. Smith, Sec. 4. L. Willout. Sutter St. R.R. Co. 5½ m, 4-11 g, 35-45 lb r, 40 c, 180 h. Pres. R. F. Morrow, Sec. A. K. Stevens, Treas. M. Schmitt, Supt. James McCord. Telegraph IIIII R.R. Co. 1,700 ft, 4-11 g, 36 lb r, 2 c, - h. Pres. Gustave Sutro, V. Pres. C. Kohler. Sec. & Supt. Chas. J. Werner. The City R.R. Co. 11 m, 5 g, 45 lb r, 72 c, 280 h. Pres. R. B. Woodward, V. Pres. Ce. E. Raum, Sec. M. E. Willis, Treas, Jas. H. Goodman, Supt. William Woodward.

M. E. Willis, Treas, Jas. H. Ostavara, Santa Clara R.R.Co. SAN JOSE, CAL. — San Jose & Santa Clara R.R.Co. First St. & San Pedro St. Depot R.R. Co. Market St. & Willow Glen R.R. Co. North Side R.R. Co.

North Side R.R. Co. People's R.R. Co. SANTA BARBARA, CAL.—Santa Barbara St. R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPhail. SARNIA, CAN.—Sannia St. Ry. Co. 2½m, 4-8 g, 32 lbr, 2 c, 9 h. Pres. J. F. Lister, Sec. & Treas. Thos. Symington, Supt. Henry W. Mills. SAUGATUCK, CONN.—Westport & Saugatuck Horse R.R.

Symington, Supt. Henry W. Mins.
SAUGATUCK, CONN.-Westport & Saugatuck Horse R.R.
SAVANNAH, GA.-City & Suburban Ry. Co. 18½ m, 5 g, 16-30 br, 49 c, 110 h, 3 engines. Pres. J. H. Johnson, Asst. J. W. Alley. Treas. E. Schmidt. Coast Line R.R. Co. 7 m, 5 g, 30 br, 17 c, 37 h. Pres. Geo. Parsons, New York, Sec., Treas. & Gen. Man. R. E. Cobb, Savannah.
SAYKE, PA.-Sayre St. Ry. Co. Pres. Howard Emer (organization not completed).
SCRANTON, PA.-People's St. Ry. Co. 9½ m, 4-8½ g, 25-52 lb r, 19 c, 70 h. Pres. Wm. Matthews, Sec. & Treas. J. C. Platt.
SEARTCY, ARK.-Searcy & West Point R.K. Co, 8 m, 4-8½ g, 20 lb r, 7 c, 6 mu. Pres. A. W. Yarnell.
SEARTLE, W. T.-Seattle St. Ry. Co. 3½ m, 4-8½ g, 35 lb 1, 5 c, 20 h. Pres. F. H. Osgood. Sec. Geo. Kinnear.
SEDALIA, MO.-Sedalia St. Ry. Co. 2½ m, 4-10 (9, 22 lb 7 c 6 25 h. Pres. Joseph D. Sicher, V. Pres, Louis Deutsch, Treas. F. H. Guenther, Sec. Chas. S, Conrad.

. Conrad. SELMA, ALA.—Selma St. R.R. 2% m, 18 lb r, 5 8 h. Pres. E. Gliman, Sec. & Treas. J. H. Hollis,

S. Conrau. SELMA, ALA.—Selma St. R.R. $2\frac{1}{2}$ m, 18 lb r, 5 c, 8 h. Pres, E. Gilman, Sec. & Treas. J. H. Hollis, Supt. W. Bohlia. SENECA FALLS, N.Y.—Seneca Falls & Waterloo Ry, Co, 7 m, $4\frac{3}{2}$ g, 40 lb r, 4 c, dummies. SHERMAN, TEX.—Sherman City R.R. Co. $3\frac{1}{2}$ m, 5-2 g, 20 lh r, 7 c, 32 mu. Pres. C. W. Batsell, Treas. J. M. Batsell, Sec. C. W. Batsell, Jr. SHEREVEPORT, LA.—Shreveport City R.R. Co. 13/4 m, 4-4 g, 46 lb r, 6 c. 14 b. Pres. Peter Yource. SILVER CLIFF, COL.—Sliver Citff St. R.R. Co. SILVER CLIFF, COL.—Sliver Citff St. R.R. Co. SOUTH CITY, IA.—Slow City St. Ry, Co. 3 m, 4 g, -r, 8 c, 52 mu. Pres. Fred. T. Evans, V. Prez D. A. Magee, Sec. & Treas. Fred. T. Evans, V. Prez D. Huff, Treas. A. C. Calkins, Sec. E. R. Bliss. [Not in operation.] South Chicago City Ry. Co, 4 c, 8 h. Pres. An-drew Rehm, Sec. & Supt. A. Krimbill, Treas H. Shearer. SOUTH PUEBLO, COL.—Pueblo St. R.R. Co.

South Chicago City Ry. Co, 4 c, 8 n. Pres. Andrew Rehm, Sec. & Supt. A. Krimbill, Treas H. Shearrer.
 SOUTH PUEBLO, COL.—Pueblo St. R.R. Co. SPRINGFIELD, ILL.—Citizens' St. R.R. Co. 9% m, 3 6 g, 20-36 lh r, 23 c, 100 h. Pres. J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman. Springfield City Ry. Co.'
 SPRINGFIELD, MASS.—Springfield St. Rr. Co. 4.8% g, 33-40 lh r, 30 c, 120 h. Pres. John Olmstead, Anditor L. E. Ladd. Clerk Gldeon Wells, Treas. A. E. Smith, Supt. F. E. King.
 SPRINGFIELD, MO.—The People's Ry. Co. of springfield, Mo. 3% m, 410 g, 33 lb r, 5 c, 30 h. Pres. J' C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Sheppard, Supt. H. F. Denton.
 Springfield R.R. Co. 2 m, 30-40 lb r, 4-SM g, 7 c, 19 h. 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart. Supt. J. A. Stoughton, No. Springfield, Suparking J. M. Strudt, V. Pres. A. Shushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hanford.
 STATEN ISLAND, N. Y.—Staten Island Shore Ry. Co.

Seć, Z. Treas, Arthur Kirkpatrick, Supt. John F. Mer Iam.
Frederick Ave, Ry, Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thos E. Toode, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas, Thos W. Evins, Sups. Rowen. St. Joseph & Lake St. R.K. Co.
ST. LOUIS, MO. Baden & St. Louis R.R. Co. 3% m, 4-10 g, -ibr, 7 c, 21 h. Pres. George S, Case, V. Pres. William Z. Coleman, Supt. J. H. Archer. Benton & Bellefontaine Ry, Co. 7% m, 4-10 g, 45 lb r, 29 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas. Parsous, see, & Treas. Robert McCulloch.
Cass Avenue & Fair Grounds Ry, Co. 8% m, 4-10 g, 38 lb r, 39 c, 285h. Pres. W. R. Allen, V. Pres. Geo, W. Allen, Sec, & Treas. J. W. Wallace, Supt. G. G. Gibson, Cashier O. H. Williams.
Citizen's Ry, Co. -m, -g, -lb r, -c, -h. Pres. Julius S, Walsh, V. Pres. J. P. Helfenstine.

Forest Park, Laclede & Fourth St. Ry. Co. Pres. Chas. H. Turner, Sec. H. B. Davis. Jefferson Ave. Ry. Co. Pres. John M. Gelkeson, Gen. Man. John Scullin, Sec. C. K. Dickson. Lindell Ry. Co. 13½ m, -g, -r, 65 c, 475 h. Pies John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas, Geo, W. Baumhoff, Supt. Jos. C. Llewellyn. Northern Central. Missouri R.R. Co. -m, -g, -lb r, -c, -h. Pres. P. C. Maffit, Sec. W. D. Henry. Mound Clty R.R. Co. Pres. John. Scullin, Sec. & Treas, C. M. Seaman, Supt. Jas. Sullivan. People's Line. Pres. Chas. Green, Sec. John Ma-honey. Supt. Patrick Shea. Southern Ry. Co. 74-5 m, 410 g, 35-52 lb r, 49 c, 250 h. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson.
St. Louis R.R. Co. 11 m, 4-10 g, 35-44 lb r, 58 c, 375 h. Pres. C. Peper, Sec. & Treas. K. B. Jennings, Supt. Chas, Ischer.
Tower Grove & Lafayetter Ry. Co. Pres. M. A. Downing, V. Pres. F. M. Colburn, Sec. & Treas. E. F. Claypool, Man. Geo. F, Branham.
Tower Grove & Lafayetter Ry. Pres. Chas. Green, Sc. John Mahoney, Supt. Patrick Shea.
Union Depot R.R. Co. -m, -g, -lb r, -c, -h. Pres. John Scullin, V. Pres. & Treas. C. M. Seaman, Supt. Jas. H. Hoach.
Tower Havie, Sculin, S. Waish, V. Pres. J. P. Heifenstine, Sec. & Treas. M. J. Moran, Supt. Michael Moran.
STONEHAM, MASS.-Stoneham St. R.R. Co.

Heitenstine, Sec. & Treas, M. J. Moran, Supt. Michael Moran.
STONEHAM, MASS.—Stoneham St. R.R. Co. 2% m, 4-8% g, 33 lb r, 10 c, 28 h Pres, A. V. Lynde, Mei-rose, Treas, & Clerk Lyman Dyke, Supt. Jobn Hill.
ST. PAUL, MINN.—St. Paul City Ky. Co. 37 m, 4-8% g, 4-554 lb f, 38c, 640 h. Å mu. Pres, Thos. Lowry, V. Pres, C. G. Goodrich, Sec. A. Z. Levering, Treas.
Clinton Morrison, Supt. A. L. Scott.
STHLLWATER, N. Y.—Stillwater & Mechanics ville St. Hy. Co. 4½ m, 4-8½ g, 25-30 lb r, 3 c, 6 h.
Pres, S. Rowley, V. Pres, W. L. Denison, Sec. Edw.
I. Wood, Treas, E. H. Smith.
STROUSE, N.Y.—Studbuser.
STROUBS URGHI, PA.—Stroudsburgh Passen ger R.R. Co. 14-5 m, 4 8½ g, 28-30 lb r, 3 c, 9 h. Pres & Treas, J. Lantz, Sec. Jacob Houser.
SYRACUSE, N.Y.—Syracuse & Onondaga R.R.
Co. 23.5 m, 4-8 g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas, Lyman C. Smith, Supt. W. B. Thompson.

Co. 23.5 m, 4-8 g, 28-47 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smlth, Supt. W. B. Thompson.
Central City Ry. Co. 24 m, 4-84 g, 40 lb r, 12 c, 37 h. Pres. Danlel Pratt, V. Pres. Jonathan C. Chase, Sec. & Treas. James Barnes, Supt. George Crampton.
4 Syrncuse Savings Bank Building. Fifth Ward R.R. Co. 2½ m, 4-8½ g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Pot-ter, Supt. Hugh Purnell. Office W. Washington St. Codder St. Px. Co.

ber, Supt. Hugh Purnell. Office W. Washington St. Geddes St. Ry. Co.
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Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardiner, Supt. W. J. Hart. Onondaga SavIngs Bank Bullding New Brigbton & Onondaga Valley R.R. Co. 17 m, 48 g, 16-35 lb r, 2 c, 6 h. 1 dummy. Pres. Matthias Britton, Sec. T. W. Meacham, Treas. J. II. Anderson.
Seventh Ward Ry. Co. 2 in, 4-8½ g, 35-45 lb r, 10 c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasselas A. Bonta, Supt. Win. J. Hart.
Third Ward Ry. Co. Pres. W. B. Cogswell, Sec. & Treas. W. S. Wales.

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Page

Directory of Manufacturers and Dealers in Street Railway

Appliances, and Index to Advertisers.

AUTOMATIC SWITCHES

Andrews & Clooney, 545 W. 33d St., N. Y 276 277 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...2.8 Wm. P. Craig, 95 Liberty st., N. Y..... 261

AXLES.

260

Wm. Wharton, Jr., & Co., Limited, Phila., Pa...268

BEARINGS.

Andrews & Clooney, 545 W 33d st., N. Y 276-277 Ceaplin M'f'g. Co., Bridgrport..... 264

BOXES, JOURNAL.

Andrews & Clooney, 545 W. 33d St., N. Y..... 276-277 Chaplin M'f'g. Co., Brldgeport..... 24 BRAKE RODS.

Lewls & Fowler, Brooklyn, N Y Wm. Wharton, Jr., & Co., Limited, Phila., Pa...263 BRAKE SHOES.

Andrews & Clooney, 545 W. 33d St., N. Y.....276-277 Wm. Wharton, Jr., & Co., Limited, Phila., Pa., 268

BRAKE CHAINS.

CARS, NEW.

CARS, SECOND HAND.

CAR STARTERS.

C. B. Broadwell, 169 Laurel st., New Orleans, La. 261 CAR LAMPS.

Josephine D. Smith, 350 & 352 Pearl St., N. Y..... 262

CAR WHEELS.

A. Whitney & Sons, Philadelphia, Pa..... Pugh & Russell, Stewart Buliding, New York ... 265 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...2(8

CAR WHEEL PRESSES.

Watson & Stilliman, 471 S. Grand St., N.Y.......261 CAR SPRINGS.

Richard Vose, 13 Barclay St., N.Y.. Pugh & Russell, Stewart Building, New York ... 265

CAR SEATS.

Hale & Kilburn Mfg. Co., 48 & 50 N. 6th Str.,

Phliadelphia, Pa..... Gardner & Co., 643 to 657 W. 48th st., N.Y..... 207

CAR SASH. Lewis & Fowler Mfg. Co., Brooklyn, N.Y... 274-275

CAR CEILINGS.

COUPLING PINS.

Lewis & Fowler Mfg. Co., Brooklyn, N.Y....274-275 CAPS, UNIFORM.

P. Goldmann, 133 Grand & 19 & 20 Crosby, N. Y. 252 CASTINGS.

Bowler & Co., Cleveland, O.....
 Wm. P. Cridg, 95 Liberty St., N.Y.
 263

 A. Ayres, 625 Tenth Ave., N.Y.
 263

 Andrews & Clooney, 545 W. 33d St., N.Y.
 276-277
 Wm. Wharton, Jr., & Co., Limited, Phila., Pa., 268

Page CURRY COMBS.

Lewis & Fowler Mfg. Co., Brooklyn, N. Y. .. . 274 275 URVED RAILS.

Andrews & Clooney, 545 W. 33d St., N. Y 276 277 Pugh & Russell, Stewart Building, New York ... 265 Wm. P. Craig, 95 Liberty st., N. Y.......23 CROSSINGS.

Andrews & Clooney, 545 W. 33d St., N. Y 276-277 CHANNEL PLATES

Andrews & Clooney, 545 W. 33d St., N. Y 276-277 Wm. P. Cralg, 95 Liberty st., N. Y..... 2.3 CABLE ROADS.

D. J. Miller, 234 Broadway, N. Y...... 259 Andrews & Clooney, 515 W. 33d St., N. Y....276-277 Poole & Hunt, Boltimore..... Wm. Wharton, Jr., & Co., Limited, Phila., Pa...268 ELECTRIC RAILWAYS.

FROGS.

Wm. Wnarton, Jr., & Co., Limited, Phila., Pa...268 FARE BOXE .

Wales Manuf. Co., 76 and 78 East Water St., FARE REGISTERS, STATIONARY, Lewis & Fowler Mfg. Co., Brooklyn, N. Y...274 275

Standard Index and Register Co, 138 Fulton St.

FARE COLLECTORS. Lewis & Fowler Mfg. Co., Brooklyn, N. Y 274 275 FEED CUTTERS.

GUTTERS.

Bowler & Co., Cleveland, O. Wm. Wharton, Jr., & Co., Limited, Phila., Pa...268 GROOVED CURVES.

O. W. Meysenburg & Co., 185 Dearborn st., Chle 261

HAMES.

U. S. Harness Co., Chleago, Ill..... 262 HARNESS.

HYDRAULIC JACKS.

Watson & Stillman, 471 S. Grand st., N. Y......261 HORSE SHOES.

The Goodenough Company, 156 and 158 E. 25th

Wm. P. Cralg, 95 Liberty st., N. Y...... 263 KNEES.

Andrews & Clooney, 545 West 33d st., N. Y., 276-277 Wm. P. Craig, 95 Liberty Street, New York 263 Pugh & Russeil, Stewart Building, New York ... 265 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...268 LUBRICANTS.

The Lieb Lubricating Co., 196 Chicago Street. Baffaio. 963

METALLIC RAILWAY,

D. F.Longstreet, Providence, R. I...... 262 MA TTING.

MOTORS-Steam.

H. K. Porter & Co., Pittsburg, Pa......262

Page MOTORS-Electric .

Van Depoele Electric Manufg.Co.,203 Van Buren PEDESTALS.

Andrews & Clooney, 545 West 33d St., N. Y., 274-275 Wm. Wharton, Jr., & Co., Limited, Phila., Pa... 268 PANELS

RAILS.

Humphreys & Sayce, 1 Broadway, N. Y......259

Pennsylvania Steel Co., 160 Broadway, N. Y 266

STEEL RAILS.

Pittsburgh Bessemer Steel Co., 48 Fifth Ave., Wm. Wharton, Jr., & Co., Limited, Phila., Pa ... 268 O. W. Meysenburg & Co., 185 Dearborn st., Chic 261 SEATS & SEAT SPRINGS.

Hale & Kliburn Manuf'g Co..... 259

SWITCHES.

Wm. Wharton, Jr., & Co., 25th St. & Wash-

Humphreys & Sayce, 1 Broadway, N. Y..... 259

STREET RAILWAY BUILDERS.

STREET RAILWAY SUPPLIES.

F. W. Jesup & Co., 67 Liberty st., N. Y..... 261 O. W. Meysenburg & Co., 204 No.3d. st, St. Louis.261 SNOW PLOWS.

Andrews & Clooney, 545 West 33rd st., N. Y 276-277 Augustus Day, Detrolt...... 264

SPONGES AND CHAMOIS.

J.B.Greenfelder & Co., 115 So. 4th St., St. Louis.258

TURNOUTS.

Wm. Wharton, Jr. & Co., 25 St. & Washing-

TURN TABLES.

Wm. Wharton, Jr., & Co., Limited, Phila., Pa. 268 O.W.Meysenburg & Co., 204 No.3d. st., St. Louis.261

TRACK CASTINGS.

VARNISHES.

WHEEL PRESSES.

Humphreys & Sayce, 1 Broadway, N. Y...... 259 Andrews & Clooney, 545 West 33rd st, N. Y.276 277

TRACK SCRAPERS. Andrews & Clooney, 545 W. 33d St., N.Y 276-277

John Babcock & Co., 2 Liberty sq., Boston Mass,258

Parrott Varnish Co., Bridgeport, Conn......262

Watson & Stillman, 471 S. Grand st., N. Y..... 261

Wm. Wharton, Jr., & Co., Limited, Phila., Pa., 268













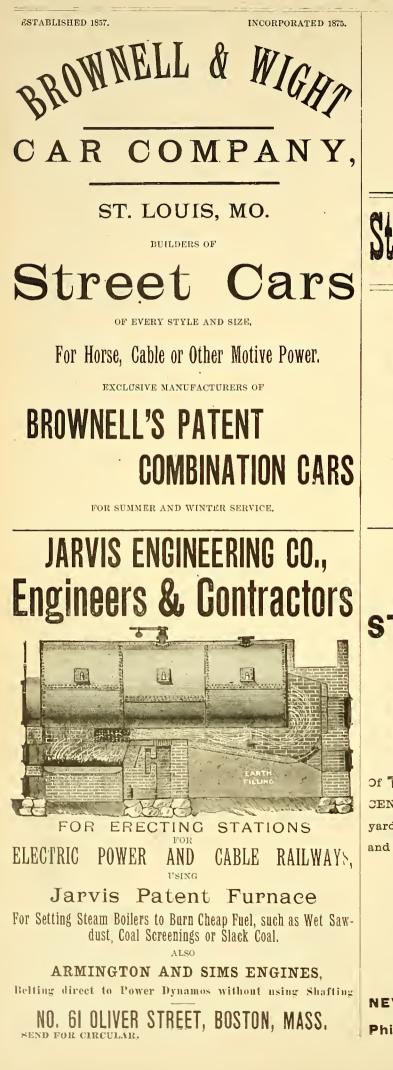
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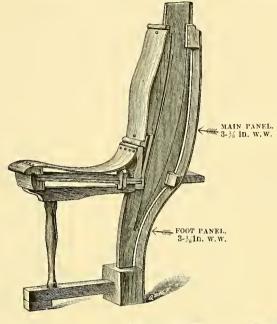
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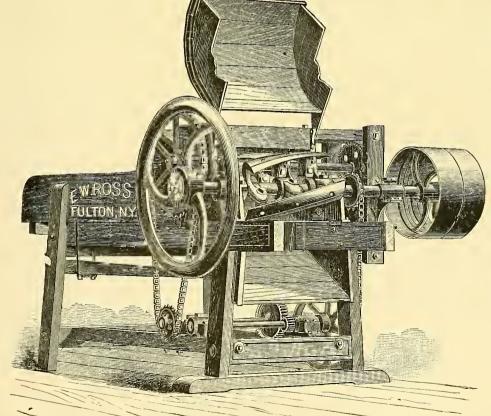
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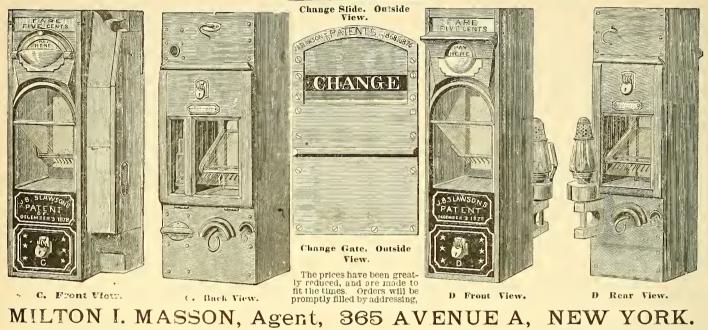
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Cable Railways, Grips, And All Appurtenances.

The Oldest and Largest Manufacturers of Street Railway Track Appliances in the World. Responsible parties contemplating Building, Renewals or Extensions will find it to their interest to correspond with us.



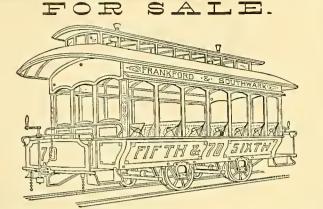
CAR WHEEL WORKS.

PHILADELPHIA, PENN.

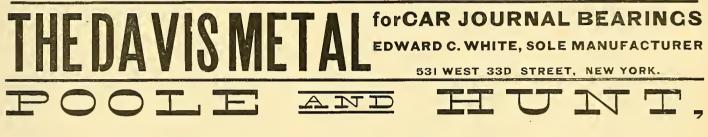
CAST CHILLED WHEELS.

FOR EVERY KIND OF SERVICE.

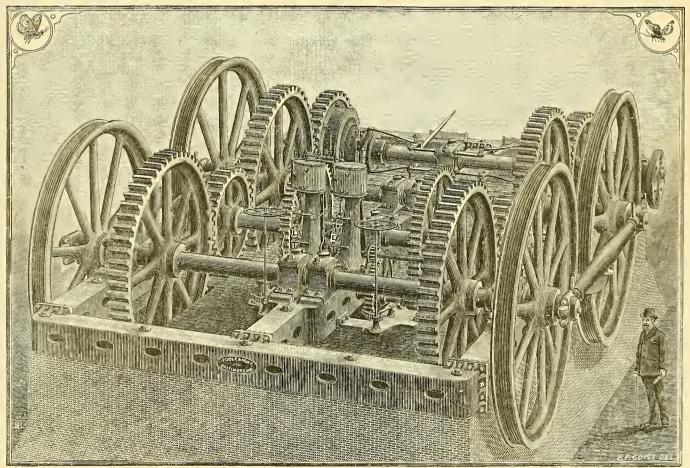
Street Railway Wheels of all Sizes.



Four Summer Cars, good as new, built in very best manner, perforated seats bronze trimmings, etc., centre aisle, seating room for 30. The company having discontinued the use of summer cars offer the same for sale on very reasonable terms. For description and price apply to FRANKFORD & SOUTHWARK R.R. CO., 2501 Kensington Ave., Philadelphia.

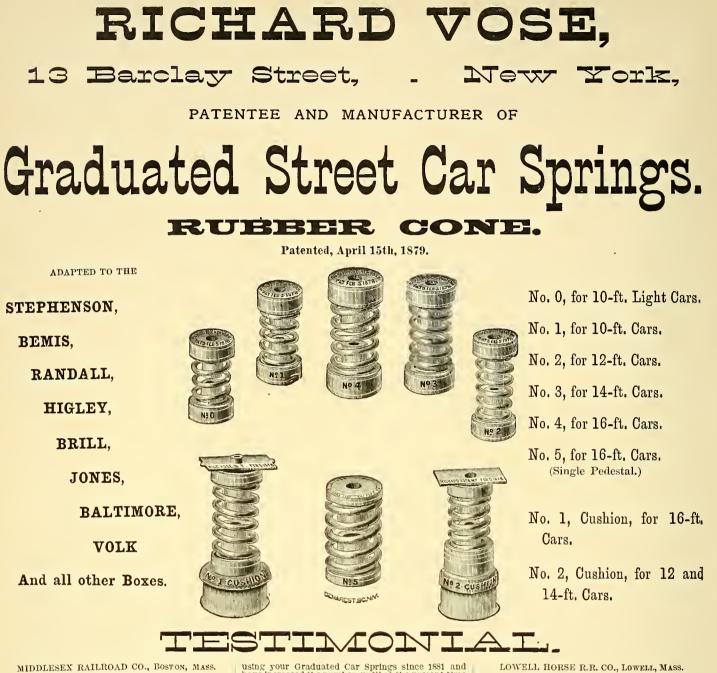


Baltimore, Md.



Manufacturers of Cable Railway Plant. Machine Moulded Gearing for Mills and Factories. CORRESPONDENCE SOLICITED.

MAY, 1886.



RICHARN VOSE. Dear Sir,—We have had in constant use upon this road for several years the "Vose Grad-uated Spring," and they have given very general satisfaction. So much so that we shall continue to order them. Very truly, CHAS. E. POWERS, Prest.

NO. CHICAGO CITY RY. CO., CDICAGO, ILL.

NO. CHICAGO CHT AT, Co., Chicad, and RICHARD YOST, ESQ. Dear Sir,—This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-taiuly all that we desire. Yours Respectfully, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARD VOSE. Dear Sir, —We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respfiy. J. W. Fosnay, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN, N. Y. RIGHARO VOSE, ESQ. Dear Sir,—Yours of May 27 to Mr. Hazzard, Prest., has heen referred to me for reply. And would say that we have now in use about 600 sets or your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly, A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICA00, ILL. RICHARD VOSE, ESQ. Dear Sir,-Replying to your favor of a recent date I beg to say that we have been using your Graduated Car Springs since 1881 and have increased the number, until at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt.

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

COL. RICHARN VOSE. Dear Sir, — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, — W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARN VOSE. Dear Sir,—Send us 6 more sets of your new pattern Car Spring, same as the lot we ordered of you last Sept. In every way. This is the best answer we can make to your question of "How we like them." Yours truly, J. M. DOUERTY, SUFL

LYNN & BOSTON R.R. CO., CHELSEA, MASS.

RICHARN VOSE, ESQ. Dear Sir, -All 1 can say in favor of the Vose Spring is that we continue to apply them to most of our new cars. Have about 60 cars equipped and think very well of them. If they could be produced for less money should think hetter of them. Very Respectfully Yours, E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentlemen.—Yours of May 28 at hand, with re-gard to your Car Springs. We find they are the hest in use. They come a little higher than the Barrel Spring, but they are much the better springs. Yours truly, H. J. C. BERG, Supt.

To WHOM IT MAY CONCERN: We have used the Rich and Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwil-ling to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

DAYTON STREET R.R., DAYTON, O.

MR. RICHARN VOSE. Sir,—We have eighteen cars equipped with your Patent Oraduated Spring, and will use your springs to replace all other kinds as fast as repairs are needed. Your springs give the best satisfaction to our company and *patrons* of any that we have ever tried. that we have ever traca. Yours Respectfully, A. W. ANNERSON, Supt.

FT. WAYNE & ELMWOOD RY. CO., DETROIT, MICH.

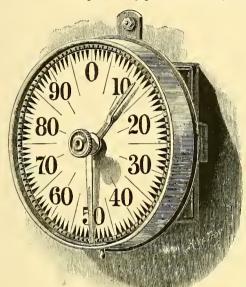
RICHARN VOSE, ESQ. Dear Sir,—For the past four years we have heen using your Graduated Springs on all of our cars (30). Our Superintendent says that none of them have ever had to be repaired and that they are the hest springs we ever used. Yours truly, N. W. GOODWIN, Seey.

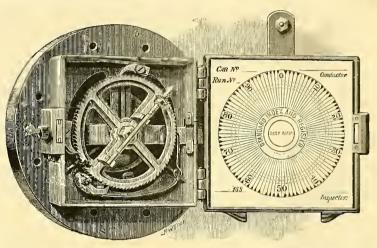
DETROIT CITY RY., DETROIT, MICN.

RICHARN VOSE, ESQ. Dear Sir,—I have your favor of the 20th ultimo. We have ahout 70 cars equipped with your springs. Our excerience is that they wear well and give general satisfaction. Yours truly, GEO. HENDRIE, Treas

ADOPTED BY THE LEADING RAILROADS IN THE UNITED STATES.

For Indelibly Recording upon paper the number of trips made, and passengers earried for each trip as well as for any numb of trips for any period of time, and sounding an alarm simultaneously with each registration made.





The recent decision of the U.S. Circuit Court in our favor after three years of litigatiou in which the Standard was involved, justifies us in accepting orders It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway com-

panies anxious to secure a correct report and record of trips made and fares collected, for the reason that, in addition to the visual dial and indicator, a permanent registration of each trip made, and the exact number of fares collected or passengers carried, is automatically made by mechanical means upon paper, by which the latter is punctured in a manner that prevents obliteration, and can be preserved in the office of the company for reference and comparison with fares turned in by the conductor, and for filing for future purposes.

TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY. PRESIDENT'S OFFICE. C. A. RICHARDS. 16 KILBY STREET, BOSTON, March 9, 1883.

Boston, March 9, 1883. ELI BALDWIN, Esq., Prest. Standard Index & Register Co., New York, N. Y., Dear Sir,—In answer to your inquiry of March 8 i would most respectfully state, that after a trial of some months of the two hundred odd registers that you have placed in our cars, I feel that I do no more than exact justice to your com-pany in giving you in the strongest and most unqualified manner my entire ap-proval of them. They are in every way all that you claimed, and all that you promised me they would prove to be. In short, I like them. They answer my purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen. Very respectfully yours, &c., President Metropolitan Rallroad Co.

C. A. RICHARDS, President Metropolitan Rallroad Co.

C. A. RICHARDS, President. CHAS. BOARDMAN, Treas. W. P. HARVEY, Secy. OFFICE OF

THE METROPOLITAN RAILROAD COMPANY,

NO. 16 KILBY STREET,

Boston, March 23, 1886. E. BALDWIN, Esq., Prest. Standard Index and Register Co.: Dear Sir,—We have now in daily use *four hundred and twenty-five* of your registers. They have by repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of four years we feel that we are justified in recommending them. Very respectfully yours, &c., C. A. RICHARDS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY. G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Secy. and Treas. W. N. A. Harris, Supt. OFFICE, 10TH AVENUE, 53D AND 54TH STREETS,

The Standard Index Register Instruments purchased from you about a year and a half ago have since that time been in constant use upon the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried by us. We believe from our experience that in their construction

and result they attain the object sought with accuracy and at the same time with a minimum liability to external tampering or dishonest manipulation. Very respectfully, C. DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Treas. Howard Scribner, Secy. W. N. A. Harris, Supt. TENTH AVENUE, 53D AND 54TH STREET,

TENTH AVENUE, 53D AND 54TH STREET, NEW YORK, MARCH 24, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co., 138 Ful:on Street, New York: My Dear Sir,—We have used about 150 of your "Standard Index Registers" for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inside paper dial are free from the danger of being tampered with. In a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you. Very sincerely yours, C. DENSMORE WYMAN, Vice President.

OFFICE OF THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY, COR. 7TH AVE. AND 50TH STREET,

COR. 7TH AVE. AND 50TH STREET, NEW YORK, March 25, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co: Dear Sir,—Concerning your inquiry as to the result of our experience in the use of the Standard Register furnished by your company and the satisfaction given I will state that after five years' test during which they have been in use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I cheerfully endorse them as the best registers that we have ever seen and have found them reliable and not easily put out of order. In short we would not be without them. The paper register or tablet upon which regis-trations are recorded of the number of passengers carried and trips made is an invaluable feature, producing as it does an infallible and indelible record of fares collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers on the cars of our roads at the present time. Very Truly Yours, J. W. FOSHAY, President.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

271

The Goodenough System

 \mathbf{OF}

HORSE-SHOEING.

The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the solc bars and frog of the horse's foot are never cut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

KEY-STONE OF THE ARCH.

The advantages of the Goodenough System are, first and foremost, SOUND HORSES; Secondly, CHEAP HORSE-SHOEING.

Horse railroads using the system in its entirely not only buy much less iron and pay for much less labor, but have also much more scrviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides fregs and Boston finds cobble stones."

To those who desire to read further upon the subject we will send upon application free of cost our pamphlets entitled,

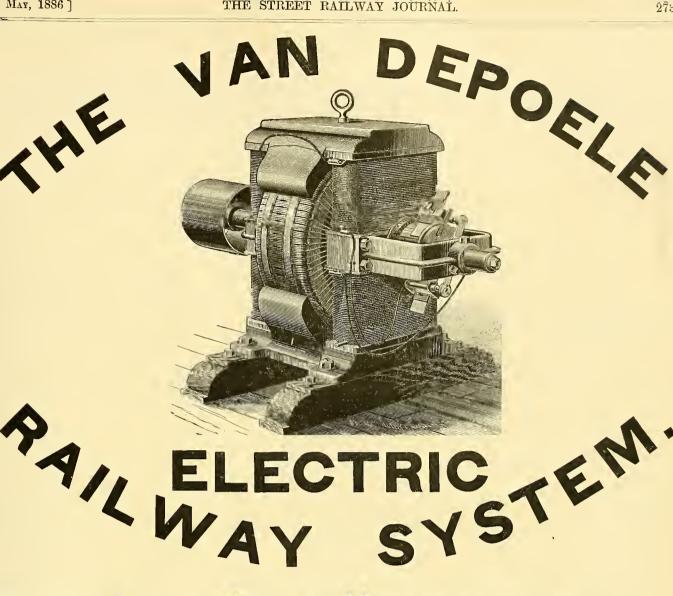
• "HORSE-SHOEING," and "FACTS FOR HORSE-OWNERS."

THE GOODENOUGH COMPANY,

156 and 158 East Twenty-Fifth Street,







The Van Depoele Electric Manufacturing Company,

NORTH CLINTON STREET, CHICAGO, ILL., 21

Owning the Van Depoele Patents for Electric Railways and for Van Depoele Motors, are prepared to equip railways with their Electric System.

We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

Van Depoele Electric Manufg. Co.

J. W. FOWLER, President.

DAN'L F. LEWIS, Treasurer

LEWIS & FOWLER M'F'G CO.,

P. O. BOX 102,

BROOKLYN, N. Y.

Brooklyn, N. Y., April 1st, 1886.

To the Managers of Street Railway Companies :

GENTLEMEN: We take pleasure in announcing to our friends, patrons, and the trade generally, that we have this day taken possession of, and will hereafter occupy, the extensive works (at the above address) formerly occupied by the late James Binns, of this city.

The establishment has been prominently and favorably known for the past forty years as one of the largest firmishers of Railway Castings in the country, the good will of which we have secured, and will continue the business on an enlarged scale.

The machine shops are large and complete, and in connection therewith are iron, brass, and wheel foundries, all of which we shall operate, and we trust in a manner that we shall be prepared to place before the trade the only full line of Street Railway Supplies ever offered by any one establishment, and which will embrace everything pertaining to the construction, equipment and maintenance of a street railroad.

The only complete Catalogue of Street Railway Supplies ever published will shortly follow this, which we feel will be a very material aid to railway companies in making purchases of supplies.

A cordial invitation is hereby extended to all to visit onr new works. An inspection of the same will be convincing that the facilities at our command will enable us to not only produce the goods referred to, but at first hands, and to sell the same at bottom figures.

We sincerely thank the trade for the earnest support given ns in our business in the past, and will deeply appreciate any encouragement we may receive in the future in our extended and new nudertaking.

Yours very truly,

The Lewis & Fowler Manfg. Co.

The Lewis & Fowler Manufg. Co., BROOKLYN, NEW YORK.

Notice of Removal.

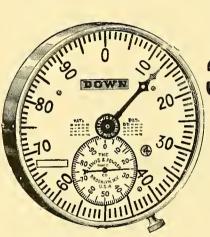


THE

Office and Works:

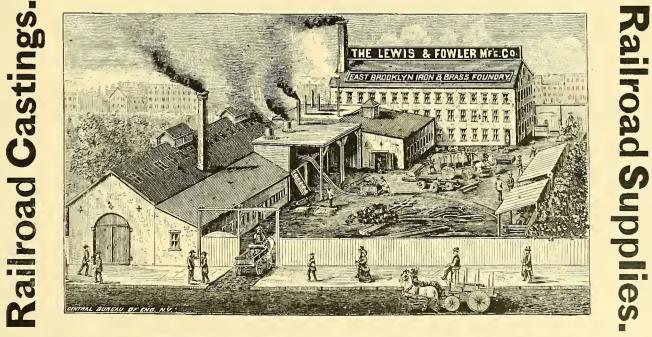
27 to 35

Walworth Street.



31 to 37 & 32 to 40 Sandford Street.

Fifteen Minutes from Brooklyn Bridge via Flushing avenue cars.



BROOKLYN, N. Y.

F. H. ANDREWS.

F. T. LERNED, Gen'l Agent.

B. A. CLOONEY.

R. G. MATTERN, Western Agent, Lakeside Building, Chicago.

ANDREWS & CLOONEY,

Manufacturers and Contractors for Constructing Street Railways.

THE BUILDING OF

CABLE ROADS,

AND FURNISHING MATERIALS FOR SAME, A SPECIALTY.

All kinds of Steel and Steel Grooved Rails, Straight or Bent to any Radius.

Knees, Fishplates, Spikes, Bolts, &c., &c.

MACHINERY:

Wheel Presses, Wheel Borers, Axle Lathes, Drills, &c.,

EITHER FOR STEAM OR HAND POWER.

Promptness and Reasonable Prices.

Send for Illustrated Catalogue.

F. H. ANDREWS.

F. T. LERNED, GEN'L AGT.

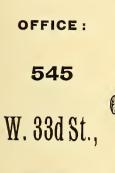
B. A. CLOONEY

ANDREWS & CLOONEY,

STREET CAR WHEELS

OF EVERY DESCRIPTION,

On Axles.



NEW YORK.

535 to 551 West 33d St., and 538 to 552 West 34th St., NEW YORK,

WORKS:

Manufacturers of

Elliptic, Spiral,

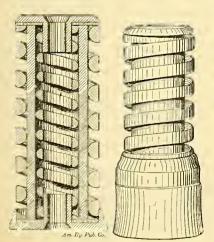
Volute, Car and

B

Engine

SPRINGS

Of Every Description.



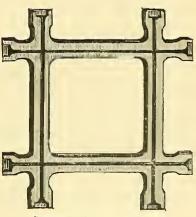
Improved Springs.



Street Railway Turn-table.

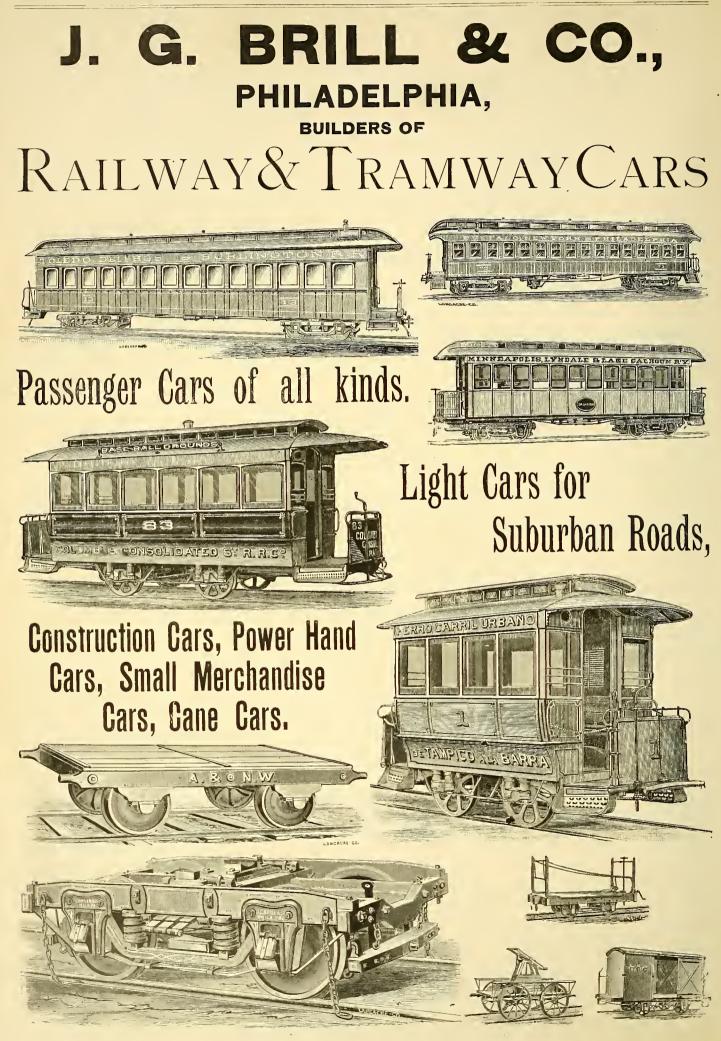
R. G. MATTERN, Western Agent, Lakeside Building, Chicago. Car Wheels, Axles, Brake Shoes, Pedestals, Boxes, Brass Bearings ______ Castings

of all Descriptions where great Strength is Required.

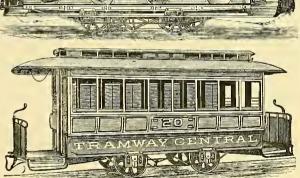


Street Railway Crossings.

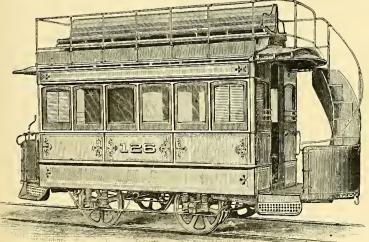
[MAY, 1886.

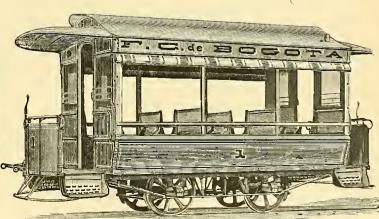






Gold Medal at New Orleans Exhibition of 1885, for Best Open Cars.





CAPIT

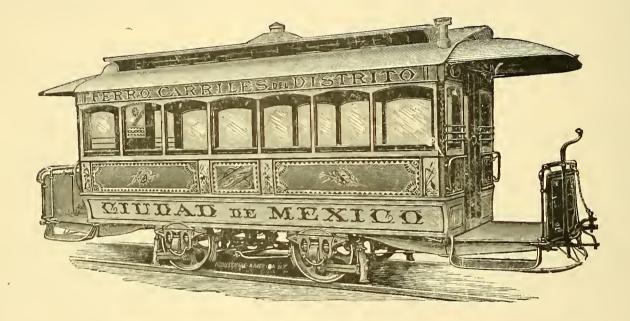
JOHN STEPHENSON COMPANY

(LIMITED),

New York.

TRAMWAY CARS

MEDAL OF FIRST CLASS, WORLD'S INDUSTRIAL COTTON EXPOSITION, NEW ORLEANS, 1885.



LIGHT ELEGANT, DURABLE.

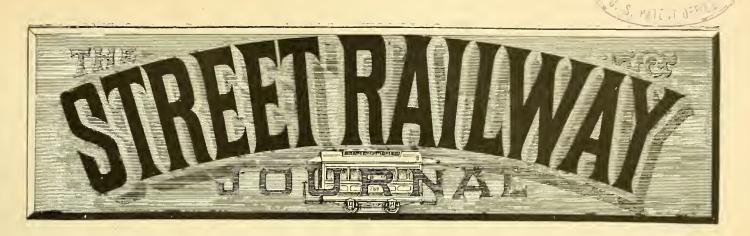
Every Description.

Best Materials.

Minimum Prices.

ORDERS QUICKLY FILLED. CAREFUL ATTENTION TO SHIPMENTS.

All Climates Suited.

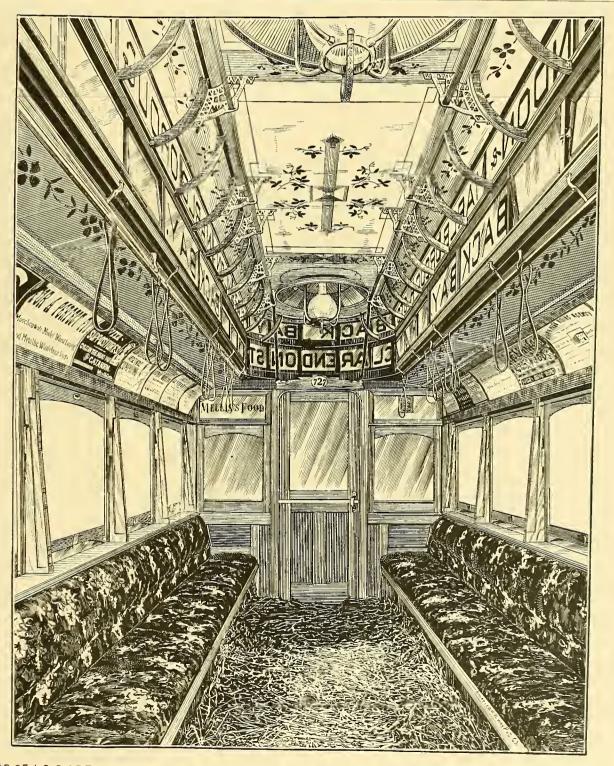


VOL. 11. NEW YORK: 32 Liberty Street.

JUNE, 1886.

(Lakeside Bailding.) No. 8.

0012 31



INTERIOR OF A CAR OF THE METROPOLITAN RAILROAD COMPANY, BOSTON, BUILT IN THEIR SHOPS FOR THE "BACK BAY" LINE.

A Boston" Back Bay" Car.

The accompanying illustration of the interior of a street car is from a photograph taken of a car belonging to the Metropolitan Street Ry. Co. of Boston and used upou their Back Bay line. These cars are patronized by the wealthier classes living on Commonwealth avenue and Beacon street and the company cater to their tastes and habits by putting cars upon that line that are somewhat superior in style and finish to the ordinary car. The company have been building their own cars for several years under the supervision of Mr. Randall. The car under consideration is of the closed pattern sixteen feet long in the body. The roof is the double deck pattern, and is supported by carlines springing from the plate to the bottom of the deck, then rising vertically to the top; here a cross carline is bolted fast to carry the deck roof. The roof is strengthened by a 1/ truss rod dropping down into the car and running from end to end just above and outside of the handrail and would not be noticed except by an eye trained to look for peculiarities.

The ceiling is finished with a painted cotton lining and tastefully decorated. Mr. Randall regards this method of finishing as superior both in appearance and economy to the natural wood that is now so almost universally in use. He claims it is cheaper in first cost, more easily repaired and just as durable.

Street car advertising has, however, become so extensive a business for those who have household wares and ladies' knickknacks to bring before the public, and at the same time affords so acceptable an income to many roads, that some improvement in the methods of exhibition was called for. The companies were unwilling to have their cars disfigured by signs miscellaneous in design and methods of application, so they have been in the habit of inserting them in small frames screwed to the sides of the car in the panels just above the windows, or to the carlines on the spring of the roof. This necessitates an expense on the part of the advertiscr, not ouly of the card and space, but of a frame and glass in which to enclose it. To save this expense and at the same time maintain a neat interior appearance, Mr. Randall has designed a rack that carries these advertisements, and from which they may be readily removed.

The general appearance is clearly shown in our engraving. It consists simply of two pieces of moulding running the length of the car, and placed about ten inches or a foot apart. Each has a small groove on the side facing the other, and it is into this that the oard is sprung. Its uatural stiffness holds it in position, while it is held smooth and at an even curvature by a eurved strip of three-ply veneer that runs the length of the car between the mouldings. This rack is universally used in Boston and is being rapidly and extensively introduced elsewhere.

The windows of these cars are large paror car style, there being only five on each

side. This gives the car a light and elegant finish that more elaborate work iu a differe.t direction could not attain. In the winter these windows are firmly secured in position by a board that is screwed against the bottom, holding it fast against the window cleats and effectually keeping out the cold, and what is perhaps more desirable still, stopping all rattling of the sash, so that the car runs as quietly in that respect as the cars of a steam surface road.

The seats are handsomely upholstered with curled hair and covered with moquet, so that the easiest possible seat seems to be obtained. The floor, which is shown to be covered with straw, is made of maple or other hard wood and so shaped that no matting is required. Good sound wood is used. The boards are rnn through a moulding machine, where they are tongued and grooved on the edges, and oue side is grooved to the depth of about three-quarters of an inch. The projecting tongnes between the grooves are rounded on the crown, and the groove has a similar shape at the bottom. These boards are laid lengthwise of the car and form the whole flooring of the aisle. When cleauing becomes necessary it is a very easy matter to sweep or wash everything to the door, and the trouble and expense incurred in the use of mats is entirely avoided.

The running gear of the cars varies to a certain extent though usually it is of the flexible type. One sittle detail in connection with the brakes is perhaps worth mentioning: the foot plate that carries the lower end of the brake shaft is a casting large enough to afford a bearing for the dog at the same time and the whole is firmly bolted to the end beam. The dog is held by a bolt that is shouldered so that however tight it may be screwed up, the dog is always loose and free.

The painting of the cars is handsomely done, and a profusion of lettering covers not only the usual available spaces on the exterior, but also the lights of the double deck. This is, it seems, rendered uccessary by the number of places to which every Boston car must go if it moves at all, for the changing names and directions of the the streets bring a confusion to the head of the stranger that is distracting. So the car companies come to his relief to the full extent of their ability and oover their cars with a profusion of names of the places that they pass; their conductors distinctly call the names of the streets that they cross and then they do not even collect the fare until the passenger has ridden far enongh to become reasonably well assured that he is upon the proper car. Indeed for the comfort and cleanliness of the cars, and the courtesy and spirit of accommodation of the employees, many managers might well study the methods of the Boston roads.

NAILS that have been under ground for 211 years have recently been dug up in Providence, R. I., and were found to be in good condition. This goes a long way toward establishing the durability of iron in this position.

The Allyn Sweeper.

We recently illustrated some of the details of the sweeper* (STREET RAILWAY JOURNAL, April, 1886,) of which we give a perspective view in this issue. The improvements referred to consisted of a jonrnal box for carrying the sweeper bearings, the strengthened pedestal and the method of bracing for the auxiliary broom. The machine is thoroughly built throughout, the framing being made of dry white oak, with a flooring of matched yellow pine. The sills are made of $4'' \times 10''$ stuff, and it is impossible, we are told, to buy these sizes in the New York market, the firm therefore does its buying in Connecticut, and is obliged to carry a considerable stock of its oak timber on haud.

The running gear is proportioned to the work required to be done. The wheels are thirty inches in diameter, set upon $3\frac{1}{4}$ " axles, with journals $2\frac{6}{5}$ " $\times 5$ ". The journal box fits snugly in the pedestal and carries the weight of the car through a stiff rubber spring. It has been found that it is desirable to put a spring of some kind under the car and yct one that is too easy hinders the proper action of the brooms.

Near one end of the axle and yet between the wheels a strong bevel gear is keyed, that meshes in with a pinion with the ratio of two to one. This pinion is hung on a square shaft with bearings running in a trame that is bolted solid to the oak framing of the car. This frame drops down and straddling the bevel gear already referred to, has two cast circular lugs that surround the axle and in the ordinary positions of the car are concentric with it. Upon these lngs the auxiliary frame in which the pinion is hung is swung. By this arrangement the frame may be raised or lowered and the pinion always remain in full mesh with the gear. The inner end of the pinion shaft terminates in an ordinary eve into which another similar eye is welded, the latter being attached to the broom shaft. This forms a complete toggle joint between the broom and the pinion allowing of irregular motions on the part of either without any interference with the other's action.

The outer end of the broom shaft is carried by the improved journal box already referred to. This in turn slides up and down on the vertical shaft shown at the side of the car, and is moved and held in position by the levers shown over the platform in the engraving. These levers are coupled together at the center so that both ends of the broom are lifted at the same time and to the same extent so that it is always square with the truck. This does away with the difficulty experienced by one end wearing off before the other. The motion that can be given the broom vertically is sufficient so that when new it can be lifted several inches clear of the rails and yet brought down so that the rattans can be worn off to within six inches of the head.

The brooms are made of four pieces of white oak beveled to fit, turned to an outside diameter of ninc inches, held together by iron bands, and drilled to receive twenty-

After the holes four rows of rattan canes. are drilled the pieces are placed in a bath of linseed oil and thoroughly soaked in order that they may be protected from the effects of the water and atmospheric action to which they will be subjected. The canes are then bent in at one hole and out at the next and held tight by a filling that is placed iu the hole formed through the center between the strips that form this center. The outside diameter of the rattans when new is 38" and as they rotate in an opposite direction with twice the rapidity of the car wheels they scrape the street at a velocity of over ten miles an hour when the car is moving only four. As this is sufficient to throw the snow or dirt some distance from the car and cause it to be a nnisance to passers on the street, heavy canvas curtains are hung in front and at the sides. The front cnrtain hangs from a semi-circular brace that runs from one side of the frame to the other and out to the eud of the drawbar. The side curtains are placed at those points where the brooms tend to throw the snow or dirt out.

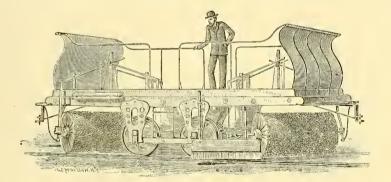
Although there are two brooms, one being driven by each axle, and though placed at an angle of 45° with the center

The Van Depoele Electric System.

In our April issue we gave a paper read by Mr. Charles J. Van Depoele at the Baltimore Electrical Convention, in which he mentioned some roads he had built or was equipping with his system. Following are some press comments on the Montgomery, Ala., and St. Paul, Minn., roads that indicate practical success. It seems to be a universal opinion that the car horse must go, ard the race is now mainly between cable and electric propulsion. The cable system has fully established its claim to merit and the day seems very near when electricity shall be as favorably recognized.

An Associated Press to the Times, Chicago, Friday, April 16, 1886, says: The cars of the Capital City Street Railway Company, Montgomery, Ala., commenced running today by electricity. The trips were regularly made and everything works perfectly.

The Montgomery Advertiser, Sunday, March 28, 1886, says: "At half past two o'clock this morning a car on the Conrt Street line of the Capital City Street Bailway made the round trip by the electric motor system. The car went round the



of the car, and in such a position that they completely sweep the track, it has been thought advisable to place a leveler filled with rattan 42" long outside the brooms on each end so that the work of the rear broom is considerably lightened. It has been impossible to get one broom to sweep both rails so the leading broom cleans the left hand rail, while the leveler and the following broom clean the right. The brooms are 4' 8" long and the shafts are about 7' 6' over all.

The platform stands about 3' 10" from the rail and is mounted by a ladder from the oak pedestal braces. The platform is 16' 6" long over the end sills, and is railed on either side by a round iron railing. The dashers are of the cutter style, about breast high and affording an efficient brace for the driver, while at the same time they leave plenty of room for the feet underneath.

Two sizes of this sweeper are built, the larger being somewhat heavier than the one we have described, which weighs about 5500 pounds. One of the larger size is now being built for the Nostrand avenue line in Brooklyn and will be put into service the coming winter.

*Brooklyn Ry. Supply Co., 37 Walworth street, Brooklyn, New York.

curve at Court Square without a halt or hitch, and then on up the hill. The new roller chain was uot received until eight o'clock last night. The engine and generating machinery were put iu motion about eleveu o'clock, but the car was not put on the track until one o'clock. The cog wheel that runs in connection was disordered by some dirt that lodged between the cogs: when that was finally removed the motor worked like a charm and the car ran over the track smoothly with a good load of passengers. Mr. Gaboury, the superinteudent, informed the Advertiser reporter that the cars will be running regularly by the electric motor system this week. The system is a success.

"Some people think that in the electric motor system for street railways there is a possibility of danger to passengers.

'It is all a mistake,' said a practical electrician to an Advertiser reporter yesterday afternoon. 'In fact, there can be no danger in the electric motor system. You might receive the entire current of electricity that will operate the cars on the Court Street hine and the shock would be comparatively light. There is really less danger in electric power than in steam power. It a car should jump the track no harm could result, because the motive power

ceases the moment the car wheels leave the rails. There are hundreds of people in Montgomery today who use electric light without a thought of danger, while in fact an electric light is a regular thunderbolt compared with the entrent sufficient to run a street car with the motors. There is more real danger, ten to one, in a Texas mule's heels than in all the electric motor system.'

"The Capital City Street Railway will soon have their cars running by electricity, and there are probably very few people in Montgomery who will not risk a ride."

The Montgomery Advertiser of Friday, April 16, 1886, says: "The electric street railway is a success, that is settled. The cars on the Court Street line commenced running by the electric motor system at ten o'clock yesterday morning and continued through the day. Everything went smoothly, and the success of the enterprise has now been demonstrated beyond all question. This new feature of progress and enterprise, places Montgomery in the front, as it is the first city in the South to adopt the system of electric street railways. It all goes to show that Montgomery is advancing and growing and can't help it with snch men as compose the Capital City Street Railway Company to do the pushing.

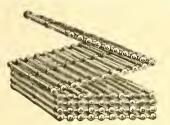
"The electric motor system is the invention of Mr. Charles Van Depoele, the celebrated and successful electrician and scientist, whose entire life has been a succession of studies and experiments in electricity and its application to light and power. Mr. Van Depoele has been in this city several weeks, and the work of putting the new system in operation was done under his personal supervision and directiou. He said from the onset that it should be a success, and so it is. The company is well pleased with it and so is the public. During yesterday the cars were constantly crowded with passengers, many of whom took a ride ou the lightning route, just because it is something new and novel. It is a big thing for Montgomery and sounds another loud note in the song of progress."

St. Paul Pioneer Press says : "The car was run np to Washington Avenue with only a few slight detentions caused by the partial disarrangement of some of the overhead wires. In the mean time the crowd of spectators increased until the sidewalks were literally filled from First to Fourth Street, while an open-air mass meeting was held at the corner of Washingtou Avenue. This motor was moved back and forth several times between Washingtou Avenue and First Street, the platform of the car being covered with spectators and with enterprising curiosity hunters hanging to every available projection. Here the electric motor remained, uutil the four o'clock train arrived from the lake. The latter went out ou its regular time, and after it had reached Third Street, Mr. Van Depoele crossed Washington Avenue and started in pursuit. The rate of speed on the ontgoing trip was about equal to that made by the regular train, the electric machinery passing the switch above Fourth Street without deten-

tion, and making the ascent at that point without apparent difficulty. As it passed out of sight toward the lake, the crowd of spectators dispersed, each having seen a car driven by electricity; a feat, which would have been considered utterly impracticable only a few years ago. That the electric motor will run at a fair rate of speed was sutisfactorily demonstrated yesterday, and the Van Depoele Electric Manufacturing Company will now undertake to show that their motor can also overcome another obstacle in the shape of heavily laden passenger cars, and it is hoped that this important experiment will be fully as successful as that made yesterday afternoon. If the lighter grade of passenger cars can be (pulled) moved by electricity and in such a manner as to meet all reasonable demands, it is safe to predict that great changes will be witnessed in Minneapolis and St. Paul within the next year."

Eureka Folding Mat.

The engraving shows a new design of this mat^{*} that possesses some points of superiority over those previously made. It is especially designed for street car use, and is made in sections so that it can be readily handled. Each mat consists, as ordinarily



made, of three sections each about one foot wide, and hinged so that the whole is readily folded together. The mat proper is composed of round hard-wood rods about 11-16 inch iu diameter, and of a length but slightly less than the width of space to be covered. At the ceuter the rods pass through and are held by a light casting that holds them accurately in position and prevents warping and springing. The ends are driven solidly into a light casting that has a small tongue cast in. This tongue cuts a groove in the rod and prevents it from turning. The castings are made of light malleable iron tinued.

The advantages are that it may be readily handled and when washed may be partially folded and stood on end to dry. Then too if any rod breaks or becomes worn out, it may be replaced by simply drawing a couple of $\frac{5}{4}$ inch nails, knocking off one end casting and driving a new rod in to replace the old one.

*Beadle & Courtney, Mfrs., 423 Walnut st., Philadelphia, Pa.

A New York daily says: Members and connections of the Vanderbilt family are said to be unvesting a good deal of money in the street railways of the smaller cities all over the country.

On the 19th Mr. Plunkitt's cable traction bill was finally killed in the House, by a vote of 52 to 51.

Street Railway Mortgages.

The following decision recently rendered in the Maryland Courts is kindly furnished ns by Spencer C. Jones, Clerk of Courts. Our readers will find it of interest as it deals with a question now agitating the street railway circles of New York regarding the Broadway road.

J. DONALD CAMERON VS. JACOB TOME, TRUS-TEE, ET AL.

The franchises and property of the People's Passenger Railway Company weresold under foreclosure proceedings instituted by the second mortgage bondholders.

The sale was made subject to a first mortgage by the company to Jacob Tome Trustee to secure the payment of the principal and interest of \$100,000 coupon bouds, and John W. Hall became the purchaser. Hall subsequently conveyed the property to the *People's* Railway Company, a new and distinct corporation.

The appellant is the holder of certain *interest coupons of the first mortgage bonds* of the face value of \$2,745; and these coupons he claims are entitled to the lien of the first mortgage upou the property of the People's Passenger Railway Company. The auditor and master to whom the papers were referred to state an account was, upou the proof submitted to him, of the opinion, that the coupons held by the appellant were not entitled to the lien of the first mortgage; and that they were acquired by the appellant under such circumstances, as to entitle him only to a claim against the company for money loaned.

This appeal is taken from a *pro forma* decree ratifying the report of the auditor and master.

In support of the lien now claimed by him, the appellant contends that the coupons were purchased by him from the first mortgage bondholders, and constitute therefore a part of the mortgage debt. The appellees on the other hand contend that the coupons were presented by the holders thereof at the company's office for payment in pursuance of a notice published by the company in the newspapers that they would upon such presentation be paid that they were so paid by the proper officers of the company, and were accordingly delivered to him for retirement and cancellation, and not for assignment.

Is the appellant to be treated as a purchaser of the coupons in controversy? We thiuk uot. His owu admissions, the admissions of the company, and the proof before the auditor and master are all against any such contention. Tome, the Trusteein the first mortgage in the cross bill filed by him, expressly charges, that the company being without means to pay the interest coupons falling due first of January 1883. its president made an arrangement with the appellant whereby the latter was to advance the money to William H. Patterson (the secretary of the company) to take up said coupons, and which were to be delivered to the appellant to be held by him as his property, until the company should be able to raise the money to pay the same. He

further charges that in pursuance of this arrangementan advertisement was published signed by W. H. Patterson as secretary of the company notifying the holders of the first mortgage bonds to present their coupons at the company's office for payment; and that certain bondholders in iguorance of the arrangement made with the appellant presented and delivered their coupons to Patterson the secretary as they supposed for retirement and cancellation, receiving from him the money therefor. The bill theu charged that the whole arrangement was but a cloak to conceal the fact of a default having beeu made and to avoid the consequences thereof, and that it was in fraud of the rights of the first mortgage bondholders

The answer of the company to the crossbill of Tome admits the facts set forth in the bill, but denies that the arrangement was frauduleut. The answer of the appellaut admits also the facts stated except that it denies all fraud, combination or improper motive in respect to the coupons, and alleges "that the money which was paid by the officers of the defendant company to the bondholders who delivered to them coupons due January first 1883, was the money of the said J. D. Cameron, advanced by him to the company, and the said coupons are now held by him under the arrangement stated in the bill,"

In addition to these admissions on the part of the company and the appellant himself, the proof taken before the auditor and master shows beyond question, that the coupons were presented by the first mortgage bondholders at the company's office for payment, and that they were in fact paid by its secretary, and were delivered to him for retirement and cancellation. The Messrs. Hambleton in presenting \$660 of these coupols, notified the secretary of the company that they were presented for payment and cancellation by the company and not for sale, and that unless so paid by the compauy they would not be surrendered. To this Patterson replied "I am the secretary of the company, and advertised that I was paying the coupons which I am doing,'

There is not a particle of proof to show that the holders of these coupons ever sold or agreed to sell them to the appellant, or that they were delivered to him with their knowledge or assent. They were due and it was the duty of the company to pay them. They constituted so long as they remained unpaid a part of the mortgage debt, and an accumulation of unpaid interest would necessarily affect the value of the security held by the first mortgage bondholders. They had therefore a direct interest in having them paid and extinguished. The appellant advanced it is true the money to pay them, but he was a large holder of the second mortgage bonds, and was anxious to avoid a default on the part of the company, which might lead to a foreolosure and sale of the property of the company by the first mortgage bondholders. Besides the agreement was one made between him and the company, and was unknown to the holders of the coupons,

285

when they presented them for payment. This being so, we take the law to be well settled, that as against bondholders who presented their coupons for paymeut and uot for sale, and who had the right to assume that they were paid and extingnished, a person who advances the money to take them up under an undisclosed agreement with the company, that the coupons should be delivered to him uncancelled as security for his advances, is not entitled to an equal priority in the lien, or the proceeds of the mortgage by which the coupons are secured.

Union Trust Co. vs. Monticello & Port Jervis R. R., 63 N. Y., 313.

Haven vs. Grand Junction R. R., 109 Mass., 96. Ketchum vs. Dnncan, 96 U. S., 662.

But admitting this be so, it is further contended, that the proceedings in this case show that the first mortgage bondholders whose coupons were taken up by the company and the money advanced by the appellant, have for a good and sufficient consideration, ratified the transaction as a purchase and have agreed that he should hold them as unpaid coupons under the first mortgage. This contention is we think equally unfounded. From the filing of the bill for foreclosnre and sale by the second mortgage bondholders, to the sale made by the trustees under the final decree of the court, at each and every step of this protracted litigation, the lieu now claimed by the appellant has been resisted and denied by the first mortgage bondholders. Prior to the passing of the final decree, the papers were referred to Daniel M. Thomas, Esq., Auditor and Master, to state an account of all the liens and encumbrances resting upon the property. In stating this account the auditor and master says "the coupons for \$2,745 falling due January 1st, 1883, and held by J. D. Cameron, have not been treated as entitled to the lien of the first mortgage of the company because the evidence shows they were paid and held by the said Cameron under circumstances which only entitle him to a claim against the company for money loaned."

This report was ratified by the court except that portion of it relating to the lien of the coupons held by the appellant, which question was reserved for further consideration, and the trustees were then directed to sell the franchises and property of the company, subject to the first mortgage made to Tome, Trnstee, to secure the payment of the principal and interest of the \$100,000 coupon bonds. And when the property was offered for sale under this decree the trustees stated that in accordance with the terms of the decree reserving the question of Cameron's coupons for fntnre determination, the purchaser would have the right to contest the lien of said coupons. There is nothing certainly to be found in these proceedings from which it can be inferred that the bondholders acknowledged these coupons to be a lien on the property. Nor is there anything to be found in the agreement between the appellant and the trustees under the first and

second mortgage. It is merely an agreement between all parties, that the lien claimed by Cameron shall be considered and determined by the court, unaffected in any manner by the charge of combination and fraud alleged in the cross-bill filed by Tome. In other words it was a withdrawal of the charge of fraud thns made. The deed from the trustees to Hall the purchaser conveys the property and franchises of the company subject to the first mortgage to Tome "to the amount of one hundred thousand dollars for the principal of said mortgage and of three thousand dollars of interest thereon due on the first day of January 1883, and of a like amount of interest due on the first day of July 1883." And so does the deed from Hall to the People's Railway Company. But these deeds convey in precise terms, the property as decreed by the court, totidem verbis, and by the decree the question as to the appellaut's lien was expressly reserved for the further consideration of the court. So taking the deeds and decree together there is nothing to justify the inference that the parties thereto admitted the \$2,745 interest coupons of January 1st, 1885, now held by the appellant, were entitled to the lien of the first mortgage. In any aspect in which the case may be considered we are of opinion that these coupons are not a lien protected by the first mortgage.

Decree Affirmed.

Street Railway Practice.

The following is one man's street railway practice boiled down in answer to the blank we recently sent out : "To prevent strikes; do away as much as possible with union men. It cannot be disputed or denied any class of persons have as much right to organize and cooperate for their own protection, as well as corporations and individuals have to "pool" for the same phrposes. The present system of labor nuions however as they now exist is detrimental to both members and employers of such members as a rule. We pay our men teu to twelve and a half centsperhour. Out of thirty-one days drivers work twenty-five, averaging \$44 for the time they put in. We employ boys for conductors, pay them by the month. Do not run our cars ou the "swing system". Horses to weigh 900 to 1000 pounds and mules to weigh 700 to 800 pounds areabout right for our purposes. Teams make twenty-one miles per day, rate of four miles per hour, and last about six or seven years on our road. We feed corn in the ear, cracked or whole (soaked first), bran, cut feed, oats, prairie hay (commonly called wild grass.) Hay, grain and bedding cost us \$8.00 per day for forty head of stock, nineteen mules and twenty-one horses.

The JOURNAL'S coming is always looked forward to with much pleasure. Would like to see it a weekly.

" QUEEN CITY OF THE OZARKS."

IRON CAR WHEELS average about 40,000 miles while the life of the steel-tired is 200,000.

The Rider Compression Engine.

The engine^{*} illustrated in this issne is one that has been in use for some time for pumping purposes for street railway barns, water tanks, manufactories, private houses, etc., where a light power and one that demands little attendance is required. It is especially adapted for use in these places on account of the possibility of running it without attention other than that necessary to keep up the fire. And though it is called a pumping engine, it can be used for driving hay cutters, etc., when desired as a very small supply of water is sufficient to keep it in operation.

All parts of the engine are made interchangeable, so that when any piece is worn out it may be replaced by ordering direct by number from the factory. Fig. 1. is a longitudinal section of the engine from which a correct idea of its action may be obtained.

The fire is built in the fnrnace, and the engine placed in any position. It will be noticed that there are two cranks on the main shaft placed quartering with each other and connected with two pistons of the same diameter. The one at the left of the engraving carries, by means of a suitable connecting rod, the compression piston C. This piston compresses the air in the cylinder in which it runs to about one-third its normal volume. When this point is reached the power piston which is over the furnace begins to ascend and the compressed air passes over through the regenerator pipe II down the jacketing of the power cylinder into the space above the fnrnace. As it reaches this point it becomes heated, expands by this influence and raises the power piston. When this reaches the top, the compression piston is rising and the air is forced back through the regenerator pipe H and into the cylinder where it is cooled by the water jacket E, and the same process repeated.

It will be noticed that this is a single acting engine; that the two pistons are rising and falling at the same time during a portion of each revolution. The question has therefore been asked why it is, since there is at all times free communication between the cylinders, that the upward pressure does uot stop the engine with the two cranks at angles of forty-five degrees on either side of the upper center. The fact is, it does not stop there, and we take the liberty of offering an explanation of the reasons, and invite criticism from those who are interested.

We will suppose the compression piston to be at the lower extremity of its stroke. The uatural tendency of the air that is expanding under the influence of the furnace heat and its own tension is to raise both pistons, and this continues until the power piston has reached the upper limits of its stroke. Meanwhile a stream of air has been passing from the power to the compression cylinder, where it is cooled. The result is that in the latter cylinder we have air of a denser quality than in the power cylinder while at the same time it may have the same tension.

As the power crank passes the center and

[JUNE, 1886.

turns to come down the tendency of the air is to flow over to the compression cylinder for three reasons: the piston is rising giving more room for the air, the momentum of the power piston tends to force it in, and the current of hot air has a natural tendency to pass over to cocler quarters where actual condensation is taking place, and this last is the real reason why the engine does not stop near the upper centers.

From the time that the compression crank passes the upper center to that when the power crank passes the lower, or for one-quarter of a revolution, the engine is working under direct compression and resistance to both pistons, but during the remaining three-quarters of a revolution the air tends to drive the engine. the key as shown. The main part of the rod is made of gas pipe screwed into the butts. The lower butt is solid with a half brass to receive the upward thrust of the pistons.

With the engine there is a pump that should be meutioned in this connection. It is shown in Fig. 2. It is a double acting piston pump and is so constructed that the valves are easily reached. These are of the solid ball pattern, will run for a long time before they need regrinding. The pump is bolted on the outside of the cooling jacket of the compression cylinder and delivers water to this jacket through the cock G. The action and construction of the pump is clearly shown by the engraving.

*Sayer & Co., Agents, 34 Dey st., New York.

eral Term of the Supreme Court to confirm this report, which was strenuously opposed by various parties in the interest of corporations and private individuals. The motion was submitted to Judges Davis, Brady and Daniels, who compose the General Term of the Snpreme Conrt, in October last. Their decisions deny the motion. The opiuiou of the Court is by Jndge Daniels, who reviews the history of the Cable Railway Company and refers to the objections as made by property-owners and others in the different streets in which it was proposed to construct the railway. Iu referring to William street Judge Dauiels says that if cars were permitted to be run in that street, which is very narrow, it would practically render the street entirely useless for any other purpose.

Contiguous railways upon other streets east and west of William street already afford the means of transit to aud from this portion of the city. Like objections are

Auy leakage of air that may occur about the pistons or through the connections is supplied antomatically by the small valve at L. The main frame work of the engine is of cast iron. The connecting rods have a solid strap bored out on the outer portion to form a seat for the crankpin and with an oiler attached for lubrication. Below there is a recess for a brass

which is held in positiou and adjusted by

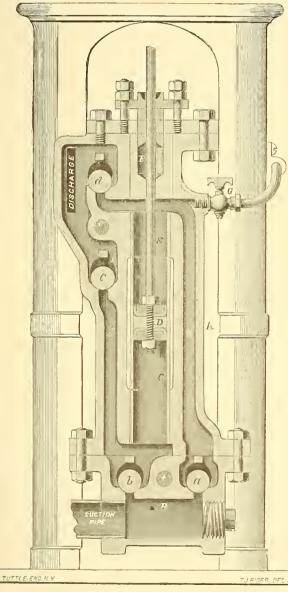
THE RIDER COMPRESSION ENGINE.

The Cable Railway Co. in New York.

The General Term of the Supreme Court has decided against the construction of the Cable Railway, the franchise for which was receutly granted by the Board of Aldermen. Three Commissioners appointed by the court recommended that the road should be constructed. The railway people, upon motion of its counsel, then asked the Gen-

equally applicable, the Judge says, to most of so much of Wall street as is included in route No. 1, to Liberty and Cortlandt streets and Maiden lane, and also the Chatham street route, the latter of which, he says, does not appear to be adopted to promote in any substantial degree the convenience of that part of the public having occasion to make use of this proposed route. The decision condemus double track cable roads, in the narrow down-town streets, but Judge Davis favors them in the up-town avenues.

THTTLE-NY



Street Railway Patents.

Cable tension device, T. W. Burt, Mineola, New York.

Car motor and brake, J. F. Morell, Philadelphia, Pa., and D. Goff, Millville, N. J., assignors to National CarStarter Manufacturing Co., of New Jersey.

Fare register, J. W. Meaker, assignor to Railway Register Co., Chicago, Ill.

Horse-boot, S. Taylor, Chicago, Ill. Electric railway system, F. J. Sprague,

New York, N. Y., assignor to Sprague Electric Railway and Motor Co.

Street conduit for electric aud cable railways, H. T. Clay, Philadelphia, Penn.

Conduit for electric and cable railways, E. E. Ries, assignor of one-half to A. H. Henderson, Baltimore, Maryland.

Safety collecting-box, O. Nielsen, Jersey City, N. J.

Street scraper and snow-plow, G. G. Gibson, St. Louis, Mo.

Car gong bell, J. Stephenson, New York, N. Y.

Harness buckle, G. P. Cramer and F. B. Langworthy, Indian Ford, Wis.

Harness buckle, S. U. Tarney, Auburn, Ind.

Harness, S. A. Prescott, Wilkinsville, Mass.

Harness breast collar or strap, A. J. Day, assignor of one-half to J. J. Parsons, Colebrook, N. H.

Hay-elevator, T. Temple, Hudson, Mich. Hay-elevator and carrier, C. E. Hunt, N. B. Helm, and H. L. Ferris, Harvard, Ill.

Horseshoe, E. P. Rogers, Hyde Park, N. Y.

Horseshoeing-stand, F. E. Cherrier, Francistown, N. H., assignor of one-half to G. H. Bixby, Boston, Mass.

Electric railway, T. A. Edison, Menlo Park, N. J.

Traction rope railway, J. H. Robertson and J. Jonson; said Jonson assignor to L. Lyon, New York, N. Y.

Tramway, A. G. Bierbach, assignor of one-half to H. Riggs, Milwaukee, Wis.

Car-gong-bell, John Stephenson, New York, N Y.

Car-brake, G. Fletcher, Brooklyn, N. Y. Car-brake, C. M. Sturgis, assignor to himself, T. M. De Earheart, aud A. O. Lane, Birmingham, Ala.

Car-coupling, W. H. Adams, J. D. Felthousen, and A. Lawtenslager, Albany, N. Y. Car-coupling, A. D. Babcock, assignor

to himself and E. A. Hubbell, Leon, N. Y. Car-coupling, J. Bradley, Newark, N. J.,

assignor to Bradley Automatic Coupler Co., of the city of New York.

Car-coupling, R. H. Dowling, assignor of one-half to C. H. Follet, Newark, Ohio. Car-coupling, T. P. Evans, Denver, Col. Car-coupling, R. D. Giles, Detroit, Mich. Car-coupling, P. McAleer, Altoona, and

J. K. Johnston, Jefferson Co., assignors of one-third to S. Simon, Philadelphia, Pa.

Car-coupling, J. Myers and G. L. Morrison, Springfield, Ohio.

Car-coupling, T. L. Rivers, Montclair, assignor of one-half to E. W. Gobble, Newark, N. J. Car-coupling, J. W. Thomason, Salado, Tex,

THE STREET RAILWAY JOURNAL.

Car-coupling, F. Yeiscr, Danville, Ky. Manufacture of car-coupling links, C. W. Hodgetts, Detroit, Michigan.

Safety-door for railway car platforms, F.

Lappin, Washington, Delaware, assignor to E. M. & G. W. Marter.

Platform-gate for railway cars, J. P. Harrison, Dauville, Virginia.

Railway ditching-machine, G. W. Dye, Washington, Iowa.

Locomotive exhaust-nozzle, H. M. Smith, St. Louis, Mo.

Motor attachment for locomotives, E. J. Strong, Laingsburg, Michigan.

Nut-lock, J. Hayes, Dover, New Hampshire.

Automatic railway switch and signal, E. Y. Knapp, assignor of one-half to G. W. B. Yocum, Arcata, Cal.

Automatic railway switch, W. A. Hicks aud H. Wilson, Johnstown, Pa.

Railway-tie, S. DeMott, Frenchtown, New Jersey.

Elevated railway track and car, A. Speer, Passaic, New Jersey.

Sharp-arrester, J. D. Connell, New Orleans, La.

Sharp-arrester, J. H. Elward, assignor to E. G. Brown, receiver, Stillwater, Minn.

Spark extinguisher, J. J Hoke, assignor of one-half to T. S. Jefferys, Yorkville, South Carolina.

Grip for cars for cable railways, T. Wright, Camden, New York.

Safety device for cable cars, R. Van Wagenan and L. Goddu, Winchester, Mass, assignor to Goddu Improvement Company, Portland, Maiue.

Rail for street railways, F. V. Greeue, New York, N. Y.

Switch for olectric railway, W. M. Schlesinger, Philadelphia, Pa.

Street washer, F. Chapman. Brooklyn, New York.

Cable car, C. Mousley, Philadelphia, Pa. Grip for cable[†]motor cars, H. B. Whittaker, Philadelphia, Pa.

Hame fastener, J. R. Kinsley, Cincinnati, Ohio.

Hame fastener, W. W. Pearce, Clanton, Alabama.

Metallic hame fastener, A. Z. Geer, Plymouth, Mich.

Traction device for cable railways, J. H. Pendleton, Brooklyn, assignor to himself, C. & A. H. Tiers, R. I. Gloan, L. Moss, New York, N. Y., and T. Nast, Morristown, N. J.

Melting Snow With Salt.

Science in speaking of the removal of snow from the streets says that melted snow exercises a destructive action upon the feet of horses, destroys the hoof, to say nothing of the attack which it makes npon the shoes and the nails by which it is fastened. It is the same with the foot wear of pedestrians, which gains nothing that can be regarded as a benefit by a splash in the mud and slush formed by the snow that has been melted with salt. This destructive influence of salt-melted snow is attributed to the formation of the hydrochlorate of ammonia, resulting from the action of the chloride of sodium upon the ammonia which is always present in the snow.

The Lewis & Fowler Manufacturing Company's New Shops,

THE LEWIS & FOWLER M'F'G Co. have recently moved to their new quarters at 27 to 35 Walworth street, Brooklyn, N. Y., and have now room to carry on their manufacturing without being cramped. The main building is a three story brick structure and contains the offices and machine shop. The heavy work is done upon the ground floor where there are the wheel presses and borers, lathes and other machinery. The second floor is devoted to the moderately heavy iron work, with a room for emery wheels and burnishers. The work for the fare register is done on the third floor, and the machinery consists of light lathes, drill presses and gear cutters. Back of the main building is the blacksmith shop and engine room, and back of this still are the foundries. The iron foundry is 50 feet by 125 feet with two cupolas and the ordinary facilities for handling the iron. The brass foundry consists of four furnaces with the necessary equipments. The yard in the rear affords ample facility for the storage of coal and iron and furnishes a spacious space for the erection of switches and other out of door work. Heats are taken in the foundries every day, the usual output of iron being from five to six tous. The machinery in the establishment is sufficient to do all the work connected with the supply trade, including brass car furnishings, such as bell straps, guides, door handles, trucks and catches, window buttons, sash pivots, bells and lamp holders, the castings for pedestals, housings and brakes, switches, frogs and crossovers, and indeed almost everything from the wheels to a lamp chimney that that may be required about a car. They have a powerful rail bender in the yard so that curves of any radius may be made, and in fact a railroad be completely equipped. To sum the whole subject up, their works are a model of perfection.

A continuation of the Second Avenue (N. Y.) elevated road, known as the Subnrban Rapid Transit Railroad, was opened for passenger travel on the 17th. It starts from the Second avenue uortherly terminus and crosses the Harlem river on a handsome drawbridge at an elevation of thirty-two feet above high water mark. There is a four-track road in starting from the the station, but above the freight yards of the Hudson River and Port Chester Railroad the lines diverge, and two tracks run into Jerome Park. Two other tracks run parallel with Third Avenue road to Fordham, and still another branch runs to West Farms and Bronx Park and then to Fordham.

It is said that 124,800 suburban dwellers go in and out of Boston daily, and that there is an increase from year to year of twenty per cent.





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A Superintendent sending his subscription to the STREET RAILWAY JOURNAL says: "Wish you could have some way to give me a pointer to keep cars from sliding on steep hills in winter time; we use any quantity of salt, but nevertheless they at times will get the start of us, especially with onc horse. We use poles with our teams." Will some of our readers who have overcome the same trouble give their experience for the general information of our readers?

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The Arcade Railroad Company has been very busy with its preparations since its bill was signed by the Governor; and its officers say that in sixty days the workmen will be plying their tools at the Battery, and that long before the four-year limit is reached the first section of the road to Fortysecond street will be completed. On the other hand the officers of the District Railway Company say the bill is unconstitutional, and that it will cost the Arcade people \$3,000,000 for litigation as a starter.

Judge Parker of the Supreme Court at Albany, on the 15th, appointed John O'Brien, Chairman of the Democratic State Committee, Receiver of the Broadway R uilway Company, in asuit brought to wind up the affairs of that corporation by the Attorney General. President Richmond has resigned, and his successor has not yet been appointed. Secretary and Treasurer Kerr does not recognize Mr. O'Brien as Receiver, and refuses to obey his orders. All of the directors but four have resigned; and these --Messrs. McLean, Selmes, Pentz and Burt, have constituted themselves a Board of Trustees for the management of the road.

A correspondent in an exchange gives the following receipt for preserving ties: To one gallon of linseed oil add two pounds of resin and enough coal dust to make the mixture the consistency of thick paint. Use good and well-seasoned timber for ties, and submerge them for about one minute in a vat of the paint hot, then wipe them off and they are ready for use. Bore an anger hole in the tie and fill with the paint before driving the spike home. He guarantees that all ties treated in this manuer will remain sound for twenty years; that fifty per

cent. will be good for thirty-five and twentyfive for fifty years. The principal objection to the method is the necessity of boring holes and filling with paint previous to spiking.

The following suggestive sentences are from the Free Press of Detroit, a city which has a street car strike: "Nearly all of the men taking the places of the striking car conductors and car drivers have been out of work for long periods of time-their families destitute, themselves huugry. They could not get work they say, unless they belonged to the Knights of Labor, and they could not join the Knights of Labor unless they were already employed. To these men the strike has proved a great boon, and their desperate desire to earn a subsistence is clearly proved by their holding on to their situations at the risk of their lives. Under what law or constitution or principle of free government they are to be deprived of labor which other men refuse, has not yet been pointed out."

The Amesbury Horse Railway Company was sued by E. G. Kelly, contractor, for \$9,154.04, which was the face of promissory notes, and which the company did not expect to pay because fifty per cent. of the par value of each share of its capital stock had not in fact been paid in; but the court has decided that a street railroad corporation which has duly filed the certificate required by the statute of 1871, chapter 381, Sec. 6, stating that the amount of its capital stock has been unconditionally subscribed for by responsible parties, and that fifty percent. of the par value of each share thereof has been actually paid in cash, cannot escape liability for the payment . f its debt for the building of its road, on the ground that the construction of its road was contracted for and commenced before this cash was paid or subscribed, so that au execution issues to the contractors if the notes are not paid.

The Railroad Commissiouers, iu response to the Senate resolution asking for an account of the earnings and expenditures of the Third Avenue Railroad Company for the past ten years, state, in their report to the Senate, that in October, 1853, the present company was chartered. The amount paid by the grantees for the road constructed to Sixty-first street is unknown, as no books containing the figures are in existence. The present company expended as the total cost of the road and equipment to 1885, \$4,704,716. The original stock was \$1,170,000; the total now was \$2,000,000, and the bouds, \$2,500,000. Interest at 6 and 7 per cent. was paid on the bonds. The dividends from 1856 to 1872 ranged from 6 to 12 per cent., and from 1872 to 1885 from $8\frac{1}{2}$ to 20, except one year when a dividend of 25 per cent. was paid.

An experienced street railway man in a letter ou other matters says:

" I think it a point worth mentioning in your Journal, that single tracks with turn-

outs is a poor investment. I have been maintaining for years that a road not worth double tracking is not worth building. Some of the many objectionable features are waiting on the turuouts, the injury to horses standing in cold weather. One branch of a Newark road, a single track route, had more sick horses than all the other four or five routes put together. The loss of short riders is another very important consideration, for people that can walk will uot get on a car to ride a short distance if they are likely to be held on a switch. Cars can make better time on double track which is an important thing to the success of a railroad company. Many other things could be said in recommending double track, by railroad companies who have had to pay for this knowledge."

Union may be strength, but if the component parts of a body are so rigidly attached to each other that there is no flexibility it seems to be a pretty certain thing that this very union may be an actual source of weakness. Such seems to be to a certain extent the condition of the society known as the Knights of Labor. Their motto, "An injury to one is the concern of all," may be true, just as the location of each grain of sand coutrols the center of gravity of the universe ; but it does not appear to the ordinary man as at all necessary that nothing should be moved for fear of disturbing that center. So when these Knights lock-ont and tie-up, in a wholesale and regardless manner, ordering men to quit work who do not even know of the gricvance, who want the money aud are satisfied with their positious, simply because one or more are dissatisfied, it looks to the casual observer as though the time would come when the disinterested workman would refuse to be locked ont and tied up. aud teach the demagogues that they must run the association for the interest of the masses, and not be swayed by the clamor of a few malcontents.

It seems that the organization is degenerating into a despotism harsher than anything the workmen have been used to before. Two cases in point are that of the recent Brooklyn strike, where five roads were stopped, hundreds of men thrown out of work, and thousands of citizens inconveuienced, all because some stablemen on a sixth road were dissatisfied with concessions made. The other is that of Hall the discharged employee of the bankrupt Texas Pacific. ' For no other reason thau that, the whole business of the southwest was paralyzed, thousands of dollars worth of property destroyed and a uumber of lives lost. Surely it seems that a monster tyrant had the workingmen by the throat, and that in their eagerness to overthrow capital they had jumped from the frying pau into the fire. But as a pendulum swings from one extreme to another before coming to a state of rest, so the workingman will probably swing from one extreme of subjugation to another before finally settling down in the stable postion of fair and reasonable arbitration.

The Metropolitan Repair Shops.

The Metropolitan Street Railway of Bostou have for a number of years been doing their own repairing and building in a small shop that was kept crowded to its utmost capacity and in a confusion of men, material and cars until it seemed a wonder that anything approaching ueatness and order could come forth. They have, however, grappled the difficulty and pushed it so thoroughly to one side that it seems improbable that it can ever return. They have recently purchased the handsome brick and iron building on Huntington avenue, that has heretofore been used for fairs of the Mechanics Institute. We have uo figures at hand giving the dimensions of the building in feet, but a slight account of the uses to which they have put it will convey some idea of the size.

The front portiou of the ground floor has been left undisturbed, and the large hall with a seating capacity of three thousand may still be secured by any who are desirous of using it for entertainment purposes. Above it is a lectnre room with a capacity of some thousand or more, but these are mere side issues and have nothing to do with the shops.

The main building is constructed with a main roof of iron, with a side span on each side. Under one side ou the main floor there is a machine shop with lathes, drill, wheel borer and press, planer and plenty of floor room. Next to this shop is a driveway from the side into the main building and a stairway leading to the second floor. Beyond this driveway is the blacksmith shop where there is ample room for five forges, racks for the storage of iron, benches for vise work if required, and a floor of sufficient size to afford space for piling the implements and appliances that come iu for repairs. Veutilation is obtained by the side lights that are placed in the rise of the main roof, and the room is at all times kept free and clear of smoke.

Next comes the engine and boilers. This engine runs a line shaft that extends down through the blacksmith shop and into the machine shop; it also runs the fan for the blacksmith forges and that used to supply air to the enpola of the foundry, as well as the shafting nsed in driving the wood working machinery on the second floor.

Contrary to the practice of the majority of steam railroads and forming almost the solitary exception to street railroads, the company do all of their own casting. They make everything that can be required abont the cars and road in the shape of brass and iron; all of the fixtnres that go for internal trimming, window catches, strap loops, and slides. The miscellaneous mass of castiron work that is required abont the cars and roadway all come from the company's foundry.

They buy their car wheels and that is all. When these car wheels become worn out they are melted and run into the shapes required. A grade of pig iron that will carry a large percentage of scrap is used and as very little machine work is required of any of the output and on some of it none at all, this scrap can be utilized to the best advantage. Mr. Randall tells us that old car wheels make most lasting frogs and switches and that the chilled portions can be made to do the best of service. The switches and crossovers are required to stand no strains except that of ordinary wear of the running wheels and in this way a great saving is effected; for they practically secure their irou for the price they could get for their old wheels when selling them for scrap.

The foundry where this work is done is at the back of the building in a line with the shops already mentioned. The engola stands at the eud nearest the engine room, and the brass furnace is in the corner near at hand. It is built above the floor and the crucibles are lifted over the wall which is about three feet high. A small core oven completes the present equipment, although it is the intention to put a small elevator in to carry the iron up to the charging floor of the cupola, and a crane to handle heavy ladles full of iron.

The remainder of the ground floor is occupied by the storage tracks. The cars are run in at the back where a light transfer car carries them to the line of rails upon which they are to be stored. These run close together in parallel lines the entire length of the building, and afford room for storing three hundred open cars.

The second floor is an innovation in the building. It extends across the central span and is on a level with the old balcony. It gives however so much head room for the story below, that were it not for the depth of the iron girders supporting it, there would still be sufficient room for a floor between the two. On this upper floor, the light is clear and strong; the office occupies a small space in the ceuter; the wood working machinery is placed on one side, and the remainder of the floor is used for painting, repairing, and building. In spite of the large number of cars that must be kept in repair by these shops, those that are under the workmen's hands seem lost and scattered when distributed over this large floor space. But the superintendent and men are not disposed to grumble at this excess of room, after being subjected to the cramped quarters that have held them so long, and the company is to be congratulated upon the extensive facilities that have come into their possession for the economical and rapid execution or their work.

It is perhaps a little premature to mention these works, as it is only recently that they have been occupied, and improvements are still in course of introduction, while the litter left by what has already been done has not yet been cleared away, and, as Mr. Randall says, they are hardly iu running order as yet.

Street Railway Pavement,

It would seem that the proper pavement to be laid between the rails of a street railway has not received the attention that it deserves. At a meeting of the Street Railway Association some time ago, a committee presented a report upon car starters in which they proved that it was not the strong hard pull exerted in starting a car that wore the horses out, as the muscles of the flanks were sound and in good condition after the horse was utterly nnfit for the service required. But that it was the continval hammering upon the pavement, that destroyed the delicate tendons about the feet, rendering the animal nnfit for the service required.

It is of course impossible to obviate the hammering so long as the horse is obliged to trot, but there is another element that is fully as detrimental as the hammer, which can to a certain extent be removed. If an examination of the stones of a pavement lying between the rails is made, it will be found that they are polished and rubbed smooth by the wear to which they are subjected, and whether they are cobble stones or square blocks the result is the same.

Then if pains are taken to watch the actiou of a horse's hoof upon the street when hauling a heavy truck or car it will be seen that except at exceedingly slow speeds there is a slip at every step. The foot is placed upon the ground and as the pulling strain is put upon it, it ships back until the toe or heel calk, usually the former, catches in the nearest interstice. It is this continued rubbing and slipping that wears the stone smooth and uses up the animal.

That this last assertion may be partly demonstrated, let any one consider whether a greater fatigue comes from the mereshock of coutact between the foot and the ground or 'from the slip and stoppage when walking on slippery places. If then fatigue comes so quickly from this where the stoppage is always more or less gradual, what must it be in the case of an iron shod hoof that meets with no resistance whatever in the backward movement until it is suddenly brought to a standstill by the calks getting caught between the stones and that too when the movement is so quick that it takes considerable practice to be able to detect it at all?

The question then arises how to remove the difficulty. Cobble stoues seem the hardest for the horses to travel over. By careful watching we have come to the conclusion that large cobble stones entail an amount of fatigue upou a horse that is trotting and pulling at the same time that amounts to actual crnelty. If the foot is carefully watched it will be found that in almost every case the toe calk will strike the ronuded surface of the hard smooth stone aud slip in a manuer that is entirely dependent upon the relative positions of the surface, and is quite beyond the power of the horse to coutrol. The most common slip is of course straight back over the crowu of the cobble to the interstice between that and the next stone, but a side

It has been decided by the municipality of Paris to purchase the Tramways Companies of the North and South, at a cost of 14,000,000 francs; and 8,000,000 francs will be expended ou repairs and additious to rolling stock.

motion is by no means uncommon, and cases where the foot will slip out and around a stone to the back will occur every few yards.

The tendons and cords are thus excessively strained and the car life of a horse will be proportionately short. Small stones are not so bad but the evil still exists with them.

The square blocks appear less objectionable; they offer a better foothold themselves, and the slip is always in one direction, but it is still there.

Upon wooden pavement the slip disappears to a great extent, and indeed is so slight that it is hardly appreciable. But here we are met by the insuperable objection of its wearing qualities. If any wood pavement were placed between the rails of some of the city roads that have a heavy traffic, it would not be a month before it would be all ditched out by the continual tread in one line and require relaying, so that for large roads it is practically out of the race.

Concrete aggravates the bad properties of stone in the insufficient foothold that it affords, so that it becomes necessary to make some adaptation of stone that will answer the purpose.

Some engincers have learned the secret of a necessary foothold and applied it on grades with good effect. On the up track the pavement will be composed of smaller stones, and instead of paving with a smooth surface, they are given a cant so that the whole presents a series of ridges as though the street were paved with triangular blocks with the apex up. This system affords a firm foothold for the horses, and makes the back slip very short. It is undesirable, however, that the plan should be carried out except on grades because of the disagreeable surface it presents to passing vehicles, and the bad footing it offers to horses except when traveling ou a line with the rails.

It seems then that a combination of the inclined blocks and the smooth pavement is called for, and the partial solution at least of the difficulty is apparent. Pave the way with thin flat stones placed upon edge, say of a thickness of from one inch to not more than one and one-half inches. This will reduce the backward slip of the hoof to a minimum, and stop it before any great velocity is attained, and the strain upon the animal will be correspondingly diminished. It will give firm foothold for starting and lessen the liability of falling. The objectiou is that the first cost will be greater in every detail, for material, transportation and laving, and the wear will also be less; but when it is taken into consideration what it is intended that it shall do, it seems that it is at least a system of paving that is worthy of a careful trial.

STEEL will not weld as readily as wrought iron, and the reason seems to be in part that the latter has some cinder in its composition which forms a fusible alloy with the oxidized scale covering the surface of the iron.

Street Railway Taxes.

It is an almost universal belief amoug those not closely allied to the street railway business that these corporations pay nothing for the privileges they enjoy, of the use of the streets. The facts are that about the most heavily taxed corporations in our cities are the surface railways. The following statement kindly furnished us by the Frankford & Southwark road of Philadelphia is one of many that illustrate this.

\$65,029.69 or 11.03 per cent. of our gross receipts go for taxes.

It will be uoted every item the street railway pays taxes on is created by its inception. Other property may change hands and a man can accumulate large amounts of real estate, factories, mills, etc., but he docs not add tot he taxable property at all. in the proportion that the street railway does, because the majority of his property was there before him, and a source of revenue to the city whether he came or not. The street railway brings into the town, imports from other sections, or creates by growth and improvement, nineteen of every twenty dollars it pays its taxes upon. In the above instance excepting the item of real estate \$2,723,41, the entire remaining taxes amounting to \$62,306.28 is created by the birth and activity of the corporation itself.

As we understand the measure proposed by the Comptroller of N. Y. City for the franchise tax of the surface roads it would add another five per cent, to the above 11.-03. What with increase of taxes, arbitrary reductions of fare, restriction of dividends, outrageously unjust verdicts in personal injury and other damage suits, and the very modest requirements of the employees, it may be said by-and-by that corporations have no bodies as well as no souls.

The committee on horse railroads of the Massachusetts legislature are thoroughly convinced of the possibilities of electricity as a motive power for surface and elevated roads. The Enos system was very attractive. The nearness to the ground, the readiness in starting and stopping, the total absence of all vibration were found to be features peculiar to this system. The motion of the car is said to be easier than that of a sailboat, without the least rolling or swaying. The committee also witnessed a trial of the electric motors on the elevated in New York, and were much pleased with the results attained.

Two lines, together abont three miles long, of the tramways of Brussels will soon be entirely worked by electricity. Ten cars are now in construction, and other lines will follow.

Obituary.

BENJ. A. CLOONEY, junior member of the firm of Andrews & Clooney, street railway supply manufacturers and contractors, died at his residence, this city, May 14. The deceased was born at Cold Springs on the Hudson in 1847. In early life he learned the business of a machinist at West Point Foundry. He moved to this city at his majority and obtained a position with the N. Y. Car Spring Co. After some time he formed a connection with F. H. Andrews and they succeeded to the business of the company. The business increased rapidly until in 1882 the firm of Andrews & Clooney purchased the Globe Irou Works where they have since carried on an extensive business.

He was twice elected Master of Altas Lodge F. & A. M. Fuueral services under Masonic auspices were held in the Temple on Sunday.

Mr. Clooney had been unable to take any active part in the business for some time, owing to continued ill health, and had but just returned from wintering in Florida.

The remains were taken to Cold Springs on Monday, the 17th, being accompanied by a committee from Atlas Lodge. He leaves a wife but no children.

Mr. F. H. Andrews will continue the business.

We are informed that the employees of the Charles River road struck for more wages, which was granted them. They then struck for a shorter time table, which was granted, the company raising the fare from five to six cents to save themselves from loss. The men theu struck for their share of the sixth cent. This case illustrates two things; oue is that the more concessions are made under the compulsion of a strike the more arrogant and unreasonable employees become. The other is that belief, founded in error, that increased returns for the result of a man's labor snould cause his wages to be increased. It is a well known fact that in hard times when a business is not paying, help are not willing to take a reduction, and many extended and costly strikes have had no other cause. On what equitable ground cau he ask for increase when the business does pay? The fact that he takes no chances in the matter of losses precludes him from asking for a greater portion of the profits. He sells his labor to his employer for the top price and the latter takes the chances of a profit or loss on it, largely contingent, in many eases, on the good faith of the laborer himself. Therefore he should have in justice all the extra profits of the transaction just as he would have to stand all of the losses if the thing tilted that way.

Alderman Jaehne, who has been on trial for bribery in the Broadway franchise vote, has been couvieted and sentenced to nine years and ten months at Sing Sing. He was put to work in the laundry. Not much hope is entertained of his appeal to the higher courts being granted, and he will undoubtedly serve out his time.

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The Law of Supply and Demand.

A correspondent takes issue with an article that appeared ou page 113 of the February number that states the factors that decide the question of remuneration of employees, are the law of supply and demand. He says, "I make a protest against such a doctrine, for if this were so there would be no labor troubles. Employees could be bought and sold like fat cattle. In these times wen have rights and duties to themselves and each other. I cau buy a hog or a mule without consulting the auimal but when we buy labor there must be a mutual understanding, etc."

Our friend is entirely off the track. He is talking about men. We were talking about what those men have to sell. If he had turned over the uext page, the editorial " Employer and Employee" would have given him in its last paragraph the meat of his communication, which is that employees should be considered and treated well by employers. We entirely agree with him in this, but insist that so far as making the price of labor goes sentiment has nothing whatever to do with it. The lesson of all past time is that quantity and quality makes price in labor as it does in merchandise. All the spreadeagle, sentimental gush about "men's rights and duties," " legitimateby-divine-right king," "mutual depend-ence," "patriotism and love of country," etc., have nothing to do with the case.

In this day and generation we do not buy men as we would a mule or a hog, or hay or horses. Every man's individuality is his own and is not a matter of barter and sale among respectable people. Occasionally an alderman is said to find a customer but laborers and employers know nothing of such transactions. The laborer has nothing but his labor to sell. He takes it to the highest market and sells it for the highest price, just as he would his mule, his hog, his hay or his horse if he had one. It is simply a question of "how much will you give me for my eight, ten or twelve hours of work a day," and the answer is always governed by that unwritten law of supply and demand. If labor is scarce the price is higher. If plenty the price is lower. There is no call for sentiment by either party. The laborer would laugh at the suggestion that on account of fire, flood or other calamity to the company he ought to work for lower wages. He would look around and say, "You have got to have so many hundred men. The labor market is short and you will have to pay me my top price." On the other hand in what we call "hard times" when thousands of men are standing around idle ready to accept any work they can at any price, he would not expect or ask for high wages. Every man not born with a silver spoon in his mouth knows this. In my own trade twenty years ago twenty-five and thirty dollars a week was ordinary wages; now there are by the census almost five times as many engaged in it and an increase in production of only about one-fifth; the consequence is that supply and demand in this line of labor has reduced wages to from eleven to eighteen dollars, and very few go above the latter figure.

But aside from this being a fact we contend that it is right. Supply and demand are the only elements that ought to enter into the question. Labor is the largest element in all productive industries. The man who estimates on the cost of his stores and warehouses, his blocks of apartments. hotels and houses for rent, sale and investment, in counting his expenditure finds this item of labor one of the first to be calculated. He naturally estimates it by the state of the labor market as he does his brick, stone, lime, lumber, hardware, etc. There is no call for sentiment. It is out of place. He says. " If I can get the work done on this block of houses for so many thousaud dollars I can afford to build," and the condition of the labor market decides the question. The very fact that another factor entirely foreign to the philosophical solution of the question, has of late came up, the force of organized labor and a system of blackmail that is supported and kept in a semblance of good repute by newspaper twaddle aud sentiment, we say this factor has put a false price upon labor and stopped new enterprises in the building and other lines in New York alone amounting to over eight millions of dollars, besides crippling to a large extent nearly every manufacturing industry in the country. The only periods of real prosperity in its industries this country has ever seen were when the question of wages for labor were decided by this law of supply and demand, and every riot and panic in manufacturing districts has been brought about by an effort to introduce some other issue to decide it.

In this connection the following from an address by Prof. R. H. Thurston, of Cornell University, is pertinent and sound doctrine.

"The simplest principles of political economy and social ethics cover this matter fully. Labor, like any other salable possession, will have a value determined accurately by the great law of supply and demand, and the interruption of traffic in labor, and at the same time the compulsory interruption of production, in the end only result in serious injury to both parties to the controversy and to the whole country as well.

"The principles involved in this matter are simple, the rights of both parties are obvions and distinct, and with fairness of intention and a real desire ou both sides to correct and solve the problems presenting themselves, there should be no difficulty in making steady progress toward a just solution. As I have had occasion to assert on various occasions, and as I am sure all are willing to admit, the right of every man to buy or sell labor wherever and whenever he may choose and wherever and whenever he can make the best bargain is one of those rights which are natural and inalienable. The right of every man to engage in any vocation, or to enter iuto any department of honest industry, to train his children for any productive occupation, or to secure for them any kind of employment, is an equally natural and inalienable right. The privilege of accumulating property to any extent and by any honorable and legitimate means, is also naturally and legally accorded to every citizen. It would seem obvious that one of the first claims of a citizen upon the State is that he shall be absolutely assured of these as constitutional rights. Any infraction of such rights and any attempted contravention of such privileges, whether by individuals, by legally constituted corporations or by associations unknown to the law, should be promptly dealt with, and so severely, whether the culprit be of high or low degree, that the offense shall not be likely to be repeated."

A pamphlet on the labor question recently published in Boston, says:

"We cannot change the fact that the old and universal law of supply and demand makes no exception in the case of labor, though we wish it were otherwise. If we cannot do away with the fact, it is wise to look it in the face. When there is a deficiency of wheat, cotton, lumber, labor, or money, the price of such commodity is bound to advance (naturally and without any forcing); and when there is an overplus of the same, the price will tend downwards. No combinations or corners can more than locally or temporarily arrest this process. Wherever there is a surplus of houses rents decline; or of money, the rate of interest. Water will seek a level. It may be temporarily dammed in spots, but the tendency remains. If we could have the choosing, we would like to except labor from these general laws, but it is not in the nature of things to do this. It applies with equal force to men who labor with their brains, and none can escape it. If in auy city or town there is a surplus of merchants, lawyers, doctors, dentists, or brokers, all have to suffer to a greater or less exteut."

This oue question of wages decided on its merits, then comes the question of treatment, and we heartily agree with our correspondent as to the duty of the employer to his employees. He should obev the higher law. The relation of employer and employce is two-fold, and in their intercourse the employer who forgets his dnty as man to man, and fails to recognize and encourage the self respect and manhood of his employee is a bully and braggart unworthy to have authority over his fellow men. That proper treatment is not the rule is perhaps a fact. The great amount of injustice done employees is deplorable. But sentimental gush will not right it and as the free and independent citizen of this country is not obliged to work for a brute unless he choose, and is free to quit at his pleasure, (unless he is a K. of L., in which case he sells his individual liberty and manhood) the question of greatest interest to him is wages. The sooner the two are separated and recognized as independent of each other the better for workmen and employers.

H. A. S

THE GERMAN RAILROAD UNION includes 40,066 miles of road.

Notes and Items.

Baltimore, Md.

The strike for twelve hours on the city roads was broken the twenty second and all the lines are rnnning regularly since that date.

Bellville, Ill.

CITIZENS' STREET RY. Co. have a mile and a quarter of track jnst completed, and will finish the building of four miles as fast as possible. Five cars are ready for the track, and a part of the road will be put in operation in about ten days. D. P. Alexander is President, H. A. Alexander Manager and Treasurer, and J. E. Thomas Secretary. Boston, Mass.

It is reported in State street that three of the street railroads at least, the Metropolitan, Highland and Charles River, are agreed upon terms of consolidation under the law jnst passed by the Legislature.

THE BOSTON ELEVATED ROAD COMPANY, capital \$10,000,000, wants to build a belt line from the Lowell Station along Canseway street and Atlantic avenue to the Old Colony, and thence across to the Providence, and through Charles street back to the start; also lines to Dorchester, Roxbury, Brookline, Cambridge, Somerville, and South East Boston Boston. The company is to deposit \$1,000,capital stock for all 000 of its liabilities. The road is authorized to lease, unite, consolidate, conuect or make traffic arrangements with any surface or elevated railway, now or hereafter in operation in the counties of Snffolk, Middlesex, Essex or Norfolk. The maximum rate of faro is ten cents though special rates less than ten cents during certain hours may be made. The road is to pay Boston five per cent. of its net earnings to support and embellish the city parks.

Brooklyn, N. Y.

THE LEWIS & FOWLER M'F'G Co. exhibited one of the cars built for the St. Paul Railway Co. by the John Stephenson Company, and equipped with Small's Patent Automatic Street Car Fare Conveyor, at Union Square and Broadway, for two days, and a continuous stream of citizens examined the "Conveyor" and expressed their highest approval and desired to know why it was not used by the bobtail cars of New York. A gentleman from Australia examined it, and ordered the equipment of a system of street railroads he is President of in Sydncy and Melbourne.

WM. WHARTON & Co. have delivered the curves and castings for the large new car house of the Flushing avenue line of the Brooklyn City Railway Co.

Buffalo, N. Y.

WM. WHARTON & Co. have shipped an order of frogs, crossings, switches and patent street enryes to the Buffalo East Side Street Railway Co.

THE BUFFALO STREET RAILWAY employees on April 28th, presented, through a committee of themselves, (not an outside orgunization) the following grievances: 1. We would like you to so arrange your full trips and your swings that each man, on whatever line he may be employed, will average through the week twelve honrs per day, including swing and meal relief. 2. Thirty minutes or over for meals. 3. Men running extra cars will be paid from the time the car leaves the barn until it returns thereto. 4. Conductors to be paid \$2 per day; drivers \$1.80. 5. Extra time to be paid; conductors 25 cents per hour; drivers 20 cents per hour. 6. Drivers must receive their pay in full.

On the 6th, the company in answer to the list of grievances submitted the following: Nos. 1. and 2. Owing to the difference in the leugth of the roads it is impossible to arrange the hours of work so as to bring them exactly alike on each road, unless the men are changed from oue time to another daily; but we have prepared a schedule which brings the working time of each line within twelve hours, and average for all lines eleven hours and 28 minutes. No. 3. Men running extra cars will be paid from the time the car leaves the barn until it retnrns thereto. No. 4. We find that our business does not warrant our paying conductors more than \$1.80, which we find by investigation to be more than is paid in Albany, Syracuse, Rochester, Cleveland, Detroit and other cities similarly sitnated. New drivers will be paid for the first three months \$1.50, and after that \$1.65 perday. No. 5. Running extra cars at night, after a regular day's work, will be paid at the rate of one-sixth of a regnlar day's pay for each trip, No. 6. Drivers will receive full pay on each pay day.

Our companies operate and maintain forty-five miles of track and carry ten millions of passengers a year, and receive an average fare of about 4 84-100 cents; about two and one-half millions of passengers are transferred free, while all thelines in New York City receive a five cent car fare, uo half fares, uo transfers, and only children under four years of age are carried free. The Sixth Avenue Company, for instance, operates four miles of double track or eight miles of single track, and carries eightcen millions of passengers, and other New York companies operate roads not much greater in length and carry from 18 to 36 millions of passengers, which makes it evident that they can better afford to pay their men two dollars, than the Buffalo companies one dollar and eighty cents per day, and you can readily see the injustice of compelling us to carry passengers, for less than they are carried in New York, where they have only about eight miles of track to maintain, against our road of forty-five miles

The concessions above made will eutail a considerable additional expense in operating the roads, and in case the legislation now sought shall be obtained these rates cannot be maintained unless the volume of traffic is largely increased.

The men after two days consultation decided to accept the ultimatum of the company. The level head of conductor Britt, head of the organization, is said to have prevented the threatened strike. The whole dissatisfaction was fomented by the meddlesome daily press.

Cambridge, Mass.

A public test of the Meigs elevated road is announced to take place in a few days.

THE CAMBRIDGE HORSE RAILWAY Co. raised the wages of its employees, and also the fare from five to six cents. Clifton, Ontario.

miton, Ontario

A charter has been obtained for a street railway on the Canada side of Niagara Falls between the Falls and Clifton.

Cincinnati, Ohio.

THE CONSOLIDATED STREET R. R. Co. refusing to grant some unreasonable requests of their employees, their hostlers quit work on May 7th. The company called on the police for protection at their stables and announce that under no consideration will they take back any of the strikers.

Danversport, Mass.

An extension of tracks of the Salem & Danvers Horse Railroad from Danversport to Asbury Grove, via East Danvers and North Beverly, is projected. The proposed route would bring Danvers, Peabody and Lynn nearly two miles nearer to Asbury Grove than by any other ronte, and cut off the steam railway travel to this famous camp ground.

Detroit, Micb.

THE DETROIT CITY RAILWAY extends its track about 5000 feet this season.

AUGUSTUS DAY'S street railway track sweeper is being put on many new cars by buildcrs, and his sales are largely increased in the past year. This is his specialty and from small beginnings entirely on the merits of his invention he has built up his present extensive and profitable business. Fall River, Muss.

THE GLOBE STREET RALLWAY Co. advauces its employees' wages and at the same time reduces the fare from six to five ceuts.

Fitchburg, Mass.

THE FITCHBURG STREET RAILWAY Co. have been incorporated under the laws of Massachusetts with H. A. Willis Pres., H. J. Wallace of Fitchburg, Vice Pres., and Eliab Barker, of Boston, Treas. Wesley N. Sargent, formerly of Chelsea, and for some time connected with the Lynn & Boston Street Railway, has been appointed Supt. The directors of the corporation are: H. A. Willis, H. C. Hartwell, H. J. Wallace, and Geo. H. Spencer, of Fitchburg, and A. H. Rodgers, E. Barker, and S. D. Lowrey, of Boston. The anthorized capital is \$60,000, and the company will build at once 3.26 miles of road through the main streets of Fitchburg, extending to West Fitchburg.

Six cars have been ordered from J. M. Jones'car works, West Troy; two open, two box, and two one horse cars. The one horse cars are to be equipped with the Allen fare boxes, and on the other cars conductors will be run with some sort of a register that is not yet decided upon. All the cars will be equipped with Bemis patent car boxes and gear. The company will purchase twenty horses, and expect to have the road in full operation by June 25th. They are laying Minneapolis, Minn.

THE MINNEAPOLIS STREET RAILWAY Co. are putting in several of Wm. Wharton & Co.'s turntables and automatic switches. Montgomery, Ala.

THE CAPITAL CITY STREET RAILWAY have made a final contract for the equipping of their entire live with the Van Depocle Electric Railway system, and the name of their company has been changed to the Capital City Electric Street Railway. The Montgomery people are more than pleased with the preliminary test made by the Van Depoele Electric Manufacturing Company under the most trying circumstances, and are congratulating themselves on their enterprise in scenring an electric equipment ahead of their less enterprising northern brethren.

Mt. Vernon, N. Y.

THE MT. VERNON STREET RAILWAY is open.

Newport, R. I.

It is reported that two very wealthy New Yorkers will refuse to build if the horse railroad is established. A remonstrauce will be signed by many of the most prominent cottagers, who fear that the road will ultimately run down Bellevue avenue. Most of the permanent residents of the place, however, are in favor of the scheme.

It is not believed that cars will be running till next year. Despite the emphatic popular vote, the City Council delays designating streets, in the interest of cottagers. New York City, N. Y.

Representatives of \$12,000,000 ont of \$22,000,000 property along Wall street petitioned against the Fulton, Wall and Cortlandt Street Ferries Railway Company, expressing the opinion that Maiden Laue, Liberty, Wall, William, Pine and Cortlandt streets are too narrow for a double track road. On the 25th the application of the company to the General Term of the Snpreme Court, for the appointment of Commissioners to determine whether the road should be bnilt, was withdrawu.

J. M. JONES' SONS of West Troy, N. Y., use Josephine D. Smith's lamps exclusively on the cars built by them, they say, "for the reason they are the best in the market, the lamps continue to give our customers very good satisfaction, and we are yet to record the first complaint."

It is understood that Mr. O'Brien has entered into negotiations with the Fourth and Sixth avenue companies to make connections at Fourteenth street and run their cars to the Battery. Mr. O'Brien's inventory of the company's property, filed with the court, shows claims against the Pacific Bank for \$5,036, money deposited; against Jake Sharp for \$952,000 for 9,520 shares of stock; against the holders of 1,-020 shares of stock subscribed for but not paid; against the Broadway and Seventh Avenue Railroad for \$95,200 as assignee and transfer by Sharp of the 9,520 shares of stock, and against the same road for accounting of money received or due from running five cars on the Broadway road. The other property consists of books,

furnithme, &c., in the company's office and railway tracks on the latter, and mortgages held by William Hays and Francis A. Palmer as trustees.

Messrs. Humphreys & Sayce, New York, have just shipped rails and fastenings to the Macon (Ga.) and Suburban Railway, the City and Suburban of Savannah, Seattle Street Railway, Gulf Street Railway of Galvestou and various others.

BEADLE & COURTNEY, 1193 Broadway, general agents Railway Register Manufacturing Co., have just completed an improvement on their folding floor for cars which consists of an end casting of tinned malleable iron with a rib in each apartment to prevent the dowel or cylinder from turning. The floor can be folded as heretofore and this addition not only makes it much stronger and more desirable bnt reversible as well,

North Adams, Mass.

THE NORTH ADAMS HORSE RAILWAY, running five miles to Adams along the Hoosac valley, is being surveyed and will cost \$10,000 a mile.

Pawtucket, R. I.

The PAWTUCKET STREET RAILWAY Co. have just closed a contract with Wm. Wharton & Co., Phila., for rails and all other material for the entire construction of their railway. The line will be eight miles long, single track with twenty-six switches, twelve turntables and ten or twelve curves. The Providence girder rail, steel, seven inches deep, fifty-four pounds to the yard, will be used, laid ou iron bases supported by concrete foundations, and held to gauge every $7\frac{1}{2}$ feet by iron tie rods placed edgewise.

Peoria, III.

THE PEORIA HORSE RAILWAY Co. are building two miles of uew road.

Philadelphia, Pa.

UNION PASSENGER RY. Co. are extending their track on 21st and 22d streets, and Montgomery and Susquehanna avenues. Wm. Wharton & Co. are the contractors.

THE CALLOW HILL STREET BRIDGE is to have the wood work of the upper deck rebuilt and a double track laid down by Wm. Wharton & Co.

WM. WHARTON & Co. are shipping frogs, crossings, switches, and patent street curves, to the Rochester City & Brighton R. R. Co., Union Depot R. R. Co. of St. Louis, Acushnet Street Railway Co. of New Bedford, New Bedford & Fairhaven Street R. R. Co., Chicago West Division Railway Co., North Chicago City Railway Co., Lynn & Boston Railroad Co., Chambers Street & Grand Street Ferry Railroad Co. of New York, People's Passenger Railway Co., Lombard & South Street Passeuger Railway Co., Philadelphia Traction Co., Hestonville, Mantua & Fairmount Passenger Railway Ce., of Philadelphia, Jamestown St. Railroad Co., as well as orders for many other places.

In order to accommodate their increasing business Messrs. Lynn & ettit, manufacturers of cocoa car mats, are building a new

what is known as the Brockton track, with ties only at the crossings and turnouts and connected and held in place by iron rods. Through the main streets cars will make trips every fifteen minutes, with honrly runs to West Fitchburg. The fare decided upon is fifty cents in Fitchburg proper. A new stable and car house will be built at once.

Jamestown, N. Y.

JAMESTOWN STREET Ry. Co. report that they are just putting in about one mile of double track and a new switch.

Kansas City, Mo.

CHIEF ENGINEER WISE of the Ninth street cable company returned Wednesday from the east where he has been directing the work of constructing the material for the Troost avenue and East Ninth street liues. The material will commence arriving June 1, by which time work on both roads will be underway. Both will be constructed on Mr. Wise's system. The grading for the Ninth street extension will be commenced next week.

THE KANSAS CITY CABLE RAILWAY COM-PANY has filed with the county court a petition for right of way for a dummy line five and three-quarter miles in length to connect with its Troost avenue cable line at the southern city limits. If the franchise is granted the extension will be completed simultaneously with the main line and with the union depot read will make an unbroken line of transportation over eight miles in length.

The company has declared its first dividend of five per cent., payable Jnly 1, to stock of record June 15.

La Crosse, Wis.

The two companies in this place have consolidated under the title of La Crosse City Street Railway Co. with B. E. Edwards, Pres., G. F. Gund, Vice Pres., Fred Tillman, Treas., Jas. T. Daggart, Sec., Peter Valier, Supt. of North Division and Geo. F. Smith, Supt. of South Division. Next month they will repaint their old rolling stock, add two new cars and exteud their track one and one-half miles using the Johnson T rail. Ten horses will be added to their live stock.

Macon, Ga.

THE MACON & SUBURBAN extends about one mile.

Michigan City, Mich.

Work on the new street railway is being rapidly pushed forward and cars will be running this month.

Middletown, Conn.

THE MIDDLETOWN HORSE RAILWAY Co., John M. Danford, Pres., J. K. Gny, Secy. and Treas., Joseph Lane Superintendent, began last September the operation of their two miles of track. They have an equipment of six box cars, 31 horses. Their new cars are built by Jones, and are equipped with the Bemis car box and gear. The Wells fare box is used on all the cars and four trips an hour are made the entire length of the town. Five cent fares. factory at Monnt Holly, N. J. Their office and warerooms will remain as heretofore at 707 Market street, Philadelphia.

WAY, RHODES & BLANKLEY, proprietors of the Way Foundry, have removed their place of business from 13th and Hamilton streets, and are now pleasantly situated in more commodious quarters at 23rd and Wood streets, where they have better facilities for carrying on their rapidly increasing business. A new pattern shop is in process of erection. New machinery is being put in and in every way working capacity increased. They supply all materials used in the construction of street railways.

A tasty little pamphlet, containing "nightline time tables" of the Philadelphia street railways, comes to us from Alfred Sloenm & Co. printers. It is a very desirable reference book for the tardy "lodge man".

THE BLUE LINE of the Traction Company runs over Hancock street to Columbia avenue, to Franklin street, to Seventh street, to Market street, to Seventeenth street, to Chestnut street; thence along Chestnut street to Ninth street, to Spring Garden street, to Seventh street, to Thompson, to Front street, to Columbia avenue, to Howard street; thence to the Lehigh avenue depot.

Pittsburgh, Pn.

Over one hundred street car horses are said to be suffering from "the cpizootic" that made such ravages a few years ago. No fatal cases are reported as yet.

Strikes were inaugurated May 31, ou the Pittsburg, Oakland and East Liberty, and the Wylie avenue street car lincs, because the twelve hour schedule had not been put in operation. The cars on both lines are "tied up." An effort will be made to resume.

Sherman, Texas.

C. W. BATSELL of the Sherman City Street Railway, writes us that he is now negotiating for material for one mile and a half of track; he thiuks there will be considerable extensions in many roads in that stateduring spring and summer.

Staten Island.

THE STATEN ISLAND HORSE RAILWAY CXteuds its track four miles this season.

St. Paul, Minn.

ST. PAUL CITY RAILWAY Co. are putting down twelve of Wm. Wharton & Co.'s standard turntables with improved self oiling and adjustable centers, also twelve automatic switches from the same firm.

St. Louis, Mo.

THE UNION STREET CARLANE placed forty new one horse cars on its road last month. They were from the shops of the Brownell & Wight Car Company.

THE CABLE COMPANY have purchased the rails for five miles of their new narrow gauge road.

A measure is before the city government for a cable road on Broadway, to cost about \$140,000 a mile.

THE ST. LOUIS CABLE RY. Co. have just ordered one of the latest improved sweepers with grip attachment, made by the Brooklyn Railway Snpply Co., being the same pattern as that furnished the Kansas City Cable Railway Company. San Francisco, Cal.

Elaborate programmes, circulars and lithographs received from the Market Street Railway show that their Golden Gate Park is "booming" with first class musical attractions.

Toronto, Canada.

A new strike of the conductors and drivers of the Toronto Street Railway Co., declared itself the 1st of May. It was based on the allegation that the company had broken faith with the men. When the strike of March euded, it was evident that the seeds of future trouble remained. The President of the company took the men back on the old conditions, one of which was that they were not to join any union; the men, partly misled, it would seem, by some aldermen, who had intervened in a more or less officious way, gave out that they went back without conditions. The present strike therefore proceeds on a misapprehension at best, and is, in fact, causeless and unsustainable on the ground on which it is put. This time the Mayor has promptly acted the part which his rosition at the head of the municipality exacts from him. The strike of March was accompanied by violence, which aimed to prevent the running of cars. He by proclamation, has promptly warned the turbulent element that no tolerance will be extended it this time; loiterers are notified to move on, and not repeat the obstruction of March. The strikers being forewarned, have behaved well, and there has been no attempt to obstruct the movement of the cars. There is no doubt that the police commissioners are determined to keep the peace, at all hazards, even if it should be necessary to call out the militia.

Utica, N. Y.

THE UTICA BELT LINE STREET RAILWAY Co. have acquired the requisite consent of the property owners on twenty of the twentythree streets over its proposed route, and have applied for a franchise from the Common Council, agreeing to buy the same in opeu anction, to build the entire line in oue year, to make the fare five cents or less, and run on fifteen minute or less headway in the city proper, etc., etc.

THE UTICA & MOHAWK RAILROAD CO. was reorganized May 20th, with the following directors: James F. Mann, A. D. Barber, Wm. E. Lewis, John B. Wild, John H. Sheehan, Wm. Kernau, John B. Wild, John H. Sheehau, Wm. E. Lewis, J. M. Childs, P. C. J. DeAngelis, Ward Hnnt, Jr., T. R. Proctor, W. P. Fish, Charles G. Duffy, R. G. Hoerlein. The directors elected the following officers: James F. Manu, President; J. H. Sheehan, Tr.asurer; Wm. E. Lewis, Secretary.

Executive Committee—The officers exofficio; A. D. Barber and John B. Wild.

The Executive Committee will at once take steps to place the road in good condition, and as far east as Jefferson street it will be placed in the center of the road.

Charles W. Hutchinson is no longer an

officer, director or stockholder in the company. The tearing up of the tracks two or three years ago, the litigation which grew out of the affair, and the disadvantage to East Utica and to the city by having the street car line virtually abandoned, these are too well known to need repetition. Affairs got into such a snarl that it was thought impossible to ever unravel them. Finally James F. Mann undertook to eut the gordian knot and he entered into contract to purchase the property. To fulfill this contract it was necessary to get the consent of the property owners on the street, aud to get persons to take stock in the new company. As there was considerable feeling, and as many believed the affairs of the company were hopelessly entangled, this was no easy matter. But Mr. Mann had the requisite enterprise and push, and he arranged matters harmoniously after considerable time and labor. Best of all the suits in which the railroad company, the county and city were parties, have been dropped. Mr. Mann is to be congratulated on achieving this good result. When the road is once more in operation, and the day is not far distant, East Utica will continue to grow as rapidly as it did just after the factories were built, and the Driving Park will be easily accessible to thousands during the State fair, the Circuit races, and the numerous picuics that are sure to be held on it this summer.

Wasbington, D. C.

A boom in real estate has begun on the Auacostia since the talk of a cable road to connect it with the city.

Windsor, Out.

THE VAN DEPOELE MANUFACTURING COM-PANY have contracted and are now engaged upon the construction of an electric railway at Windsor, Ontario. The expectation is that the line will be carrying passengers on the 24th of May (the Queen's Birthday). When we consider the fact that the work was not commenced until the 20th of May, we think that it demonstrates the fact that electric railways have passed their experimental stage and taken their place among the substantial, permanent enterprises of the day.

Wymore, Neb.

WYMORE & BLUE SPRINGS RY. Co. will expend \$7,000.00 in additions to track equipment, livestoek and stable facilities.

The Miller Grip.

EDITORS STREET RAILWAY JOURNAL:-Iu your last issue in giving description of grip on page 252, you stated it was for the Kingsbridge Road. This was a mistake, as it was the one originally designed for and in nse on the Tenth avenue road in this city. D. J. MILLER.

MAHOGANY is being so extensively used for interior work of passenger cars that there is a considerable increase in the amount imported.

THE LIGHTING of cars by electricity in France is making very rapid strides ahead.

Guaranteeing Car Wheels.

The philosopher, as well as the owner in railroads, will find interesting matter for contemplation in the announcements of many of the car wheel manufacturers. The first may very reasonably be led to enquire why so much stress is laid upon the gross capacity and output of car wheel mills, and so little said concerning the far more important question concerning durability; while the railroad man will recall, with something like bitterness, that the "guarantee" which is printed in such large type in many of these announcements, did not prevent the breaking of a wheel and the consequent wrecking of a train which caused a loss to his road of many thousands of dollars.

Every intelligent human being engaged in car wheel making is aware of the fact, that the business is on the high road to demoralization by reason of the entrance into it of the bogus manufacturers and the sharper, and, further than this, he is aware that a "gnarantee" for a car wheel is about as valuable as a guarantee would be for the safety of a balloon. It were poor consolation for railway owners, as they gaze upon a train piled up in an almost indistinguishable heap, that the broken wheel which caused the accident will be replaced by the manufactnrer in accordance with his guarantee, and so far as the traveling public is concerned they would indeed be crednlous mortals who should think to find security from disaster in the fact that the wheels of their train had been gnaranteed not to break by them who made them.

The bogns wheel manufacturer is doing for the wheel industry what his prototype formerly did for iron rails, and unless some decided action is soon taken to keep up the standard of excellence in car wheel making a similar result is pretty sure, sooner or later, to happen. For it will be remembered that the bogusiron rail men, in the use of inferior material, so underbid the reputable manufacturer that he was eventually compelled to give up the contest. As a result good iron rails were hard to find, and railroad men got to be so suspicious of iron rails that finally there was no sale for them at all, notwithstanding the fact that many eminent anthorities believed in the efficacy and reliability of iron for rails; the wiles of the bogus manufactneers made steel a necessity, and the honest makers began the manufacture of rails out of steel made by the pneumatic process.

This is the history of the rail business, and from present appearances it would not be a difficult matter to presage a similar ending to the present strife between the honest manufacturers of cast iron wheels with steel tread and the scalawags who boast of the *quantity* of wheels they turn out, and keep the facts as to the *quality* a secret unto themselves, and their partners and co-conspirators.

Already there is a growing demand for paper and steel-plate car wheels and a purchasing agent of one of the largest railroads in the country, whom we talked with recently, says that suspicion of nearly all cast iron car wheels is the order of the day.

Right here we wish to say, that there is reason to snspect the quality of any castiron car wheel offered for less than eleven dollars net, for we have the most reliable authority for the assertion, that first-quality car wheels can not be made for less than this figure.

If any mannfacturer can dispute this assertion, we would be glad to hear from him and will willingly accord him an opportunity to present whatever evidence he may have in rebuttal.

Notwithstanding that first-class wheels cannot be made for eleven dollars net, there are large quantities constantly being offered at eight dollars and nine dollars and even seven dollars. Of course a "guarantee" goes with these wheels and, as everybody knows, a "guarantee" is sure to add strength to a rotten car wheel.

This "guarantee" business, especially as applied to wheels of bad quality, is the shallowest of all impostures, and as a rule, though by no means in every case, its presence indicates the presence of wheels which are undeniably second-class.

Quite recently the purchasing agent of a great railroad testified before the Car-Builders' Clnb, that twenty-five per cent. of the cast iron wheels of a certain maker had failed utterly when put into practical use, and those snpplied his company by several other supposed-to-be reputable makers had acquitted themselves scarcely any, if at all better.

We do not wish to have it inferred from what we have said in this article that good and reliable cast-iron car wheels are hard to find. This is not the case.—Railway News.

Street Railways on the Continent.

The street-railway service as managed on the continent of Europe would doubtless commend itself more favorably to the average traveler than either that of Great Britain or our own conntry. It must be admitted that in certain features and regulations appertaining to the continental service, the advantage lies on that side of the water.

It is not that the roads are better laid, manned, or equipped, or that transfer thereon is in any way more expeditious, for in these points the several countries mentioned are not far from being even.

To that widely known and popular character, the "casual observer," the feature of continental tramway travel which chiefly claims his admiration and approval is the entire absence of crowding in the cars; the law prohibiting the carrying of any number of passengers in a car exceeding that of the seats. In addition to this regulation, in favor of which much can be said, another distinctive custom common to nearly all countries of Europe, is the carrying of passengers on the car-roofs. This latter would certainly seem, where practicable, a plan in all respects advantageous, as it provides a first and second class rate of fare, gives a larger seating capacity, and

combines the advantages of both our summer and winter cars. As to the effect of two rates of fare on a company's receipts, the point would demand a thorongh trial of both methods under precisely equal conditions, and a careful comparison of results. That, however, is a question which does not so directly affect the comfort of travelers, as the more personal one of accommodation.

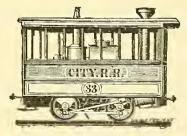
It must without doabt be granted that much is to be said in favor of a law compelling all tramway companies to provide a seat for every passenger, but it should be remembered that while such a law ensures a seat to each passenger in the car in which he is conveyed, it will at times follow that he will be without the means of conveyance at all, for at best the law can bnt prohibit a company from carrying in a car more passengers than it has seats. At such a time a would be patron of the road is rather apt to resent his legal disability to stand np if he so wishes, and arrives at the conclusion that the law approximates too closely the paternal. It is true that the double deck character of the street car of Europe to a great extent obviates this objection, that is to say, proportionably; but it is by no means an unusual circumstance in Paris or Turin, to be compelled to wait while half a dozen cars pass before one is found with the sign "full" turned down. It is also probable that even with the use of the roof, the continental car, divided as it is in to separate seat spaces, would fall short by a considerable number of the capacity of a crowded American car with the customary platform attachments.

The introduction of the roof system into the cities on this side would, however, be a considerable gain in comfort and convenience. New York unfortunately is past the point of that improvement, as the slight elevation of many portions of the elevated roads would render it impossible.

As to the landed virtue of the no-seat-noride plau, it would perhaps at least be worth the trial, could it be shown that the companies would increase their accommodation to an equal carrying capacity. Even then it is probable that the main result would be that those who now do not ride from inability to incorporate their persons into a solid mass of motionless humanity. would then perceive a revised and enlarged opportunity for enjoying erect transportation, of which they would promptly take advantage; for it may be fairly doubted if any free and enlightened American citizen would tamely submit to forcible deprivation of his cherished right and privilege to be uncomfortable.-R. R. Journal.

Light Locomotives.

The accompanying cut is one of hight locomotives built for street railway service by H. K. Porter & Co., of Pittsburg, Pa.



Many companies having long snburl an lines are finding it profitable to discara horses and use steam. Makers report an increase in orders for light locomotives for this service over previous years. EDITORS STREET RAILWAY JOURNAL :---In reply to Mr. Miller's letter in your May issue-

If the writer will inquire of any of the managers of cable roads in San Francisco, he will find that my statement is correct, as I kept them myself when counected with the Sutter Street Railroad, also that it is the custom to cut off the loose strand, tuck the end, and start again. Is it likely that such a course would be adopted if, as Mr. Miller states, it would ruin the cable?

Take the following case. The running cable strands 500 feet, and catches in the conduit, Would Mr. Miller advocate running the duplicate cable while the other is in that positiou and condition? It is in just such a case when the duplicate cable is needed, it cannot be made use of.

I repeat that Mr Miller's statements in your March issue were a misrepresentation of facts notwithstanding the information he may have received from any official conneeted with this road, Will Mr. Miller give the gentleman's name?

The duplicate cable was taken out in July, also the carrying pulleys for same, except in those places where the cable would not retain its normal line, when it was found necessary to place two pulleys in order to stop the cable from chafing on the edge of oue. These pulleys are being replaced by others of different design, and more suitable for the work.

My experience with the duplicate cable was short, but quite sufficient to satisfy me, as woll as many others, that it was good in theory, but not in practice.

Will Mr. Miller please state who inspects the cables on the 10th avenue cable road, and if repairs are necessary to be made, do they send to Chicago for a splicer? It is much better to have a splicer within immediate call, rather than depend upou the generosity of your neighbors for one.

It was uo doubt surprising to Mr. Miller, that uotwithstanding the steel cable was put in the beginning of October, we did nothave a stop until the end of December. The public here have been no more inconvenienced under the single cable system, than have the public of New York, under the duplicate system. An engine should be stopped for several days in order to get a thorough inspection, but Mr. Miller cannot claim the credit for duplicate engines. as every cable road is provided with them, also with such portious of the machinery as may be necessary to keep in duplicate.

The Miller grip as illustrated in your April issue was thoroughly tested, and although several hundred dollars were expended erdeavoring to improve it, it would not pull a train filled with passengers up a teu per ceut. grade, while a grip kindly loaned me by Mr. Holmes, of the Chicago cable road, pulled six crowded cars up the same hill.

I do uot, uor ever have claimed, that every new road must be the same as those in the west.

The sweeping assertion that the 10th av-

enue cable road is superior in every detail to other cable roads is not supported by facts. The slot rail is a trap for horses' shoes, and a guide for mud to fall in the conduit. The drainage system provides for carrying off the water, but leaves the mud iu the tube when rain shonld flush it out.

This company will build several addi-tional miles of cable road, the coming summer, and as a proof of the surpassing ex-cellence of Mr. Miller's system it will be altogether abandoned. Theroad bed yokes, drainage system, carrying pulleys, switch-es, and curves will be changed, which does not look like acknowledging that the duplicate system is the only complete system of cable roads in existence.

When speaking of the excellence of the plant I was paying a deserved tribute to Mr. William Wright, of Newburg, N. Y., and Messrs. Poole & Hunt, of Baltimore, who constructed the engines and machinery. EDWARD J. LAWLESS.

New Method of Laying Rails,

Laying a rail upon a longitudinal iron sleeper is urged as a feasible and economic thing in an article in English Iron. This sleeper is au inverted channel iron with sloping sides, width on the top 9.76 inches, depth 2.36 inches, width over flanges 12.6 inches, and leugth twenty seven feet $10\frac{1}{2}$ inches. These longitudinal sleepers are not directly connected, there being a clear space of one foot 7½ inches between the ends of consecutive sleepers, this space be-ing under the joint of the rail. The rail joint is made with deep fishplates of a new pattern, which are so formed that when the joint is screwed up the pressure is entirely on the flanges of the rail, the web being uutouched by the fishplates. The moment of resistance of the two plates is as great as that of the rail and sleeper together. As the fishplates project about two inches below the top of the sleeper, and there is only just clearance, any creeping of the rails on the sleepers is impossible. The rail is attached to the sleeper at nine points, three feet 5½ inches apart centers, by means of a screw bolt, binding plate and bent washer on each side of the rail. The crossties, of which there are three to each pair of sleepers, consist of a peculiarly-shaped angle or channel iron six feet seven inches long and four inches deep. At each and this is attached by three rivets to the vertical limb of an ordinary angle iron whose horizontal limb has two holes corresponding with the holes in the sleepers, and through which pass the bolts which hold down the binding plate and washer describ-ed above. This angle incoming the interval This angle irou is riveted at au ed above. angle of one in twenty with the cross-tie, thus giving the necessary inward inclination The ballast is levelled up to of the rail. the top of the binding plate, and the form of the cross-tic and the clear space between the sleeper ends conduce to its good drainage. The advantages claimed for the sys-teu are as follows: There is only one pat-tern of sleeper, straight and uniformly holed. There is no jointing of the sleepers. The continuity is complete. The rail joint is suspended. The drainage of the ballast is assisted by the form of the cross-ties. The gauge and the curving of the rails are unchangeably preserved. The laying of unchangeably preserved. The laving of the way is simply and quickly carried out.

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A. Whitney & Sons, Philadelphia, Pa......303 Andrews & Clooney, 545 W. 33d St., N. Y 324-325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314 BEARINGS.

Andrews & Clooney, 545 W. 33d st., N. Y..... 324-325 Edward White, 531 W. 33d. Street, New York 302

Chaplin M'f'g. Co., Bridgeport...... 303 Bemls Car Box Co., Springfield, Mass..... 311 BOXES, JOURNAL.

Andrews & Clooney, 545 W. 33d St., N. Y 324-325 Chaplin M'fg. Co., Bridgeport..... 303 Bemis Car Box Co., Springfield, Mass..... 311

BRAKE RODS.

Lewis & Fowler, Brooklyn, N. Y Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314 BRAKE SHOES.

Andrews & Clooney, 545 W. 33d St., N. Y.....324-325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa.. 314

BRAKE CHAINS. CARS, NEW.

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- sington Ave., Philadelphia, Pa.....
- CAR STARTERS. C. B. Broadwell, 169 Laurel st., New Orleans, La. 305 CAR LAMPS.

Josephine D. Smith, 350 & 352 Pearl St., N. Y..... 308 Pugh & Russell, Stewart Bullding, New York ... 307 CAR WHEELS.

Pugh & Russell, Stewart Building, New York ... 307 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 312 CAR WHEEL PRESSES.

Watson & Stillman, 471 S. Grand St., N.Y.......305 CAR SPRINGS.

Lewis & Fowler, Brooklyn, N.Y..... 322-323 Andrews & Clooney, 545 W. 33d. St., N.Y....324-325 Richard Vose, 13 Barclay St., J.Y.. Pugh & Russell, Stewart Building, New York ... 307 CAR SEATS.

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- Philadelphia, Pa..... Gardner & Co., 643 to 657 W. 48th st., N.Y..... 309 CAR SASIL
- Lewis & Fowler Mfg. Co., Brooklyn, N.Y... 322-323
- CAR CEILINGS. Gardner & Co., 643 to 657 W. 43th st., N.Y......309 COUPLING PINS.
- Lewis & Fowler Mfg. Co., Brooklyn, N.Y 322-323 CASTINGS.
- Wm. P. Cralg, 95 Liherty St., N.Y. .306 Andrews & Clooney, 545 W. 33d St., N.Y 324-325 Wm. Wharton, Jr., & Co[•], Limited, Phila., Pa. . 314 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 312
- CURRY COMBS. Page
- Lewis & Fowler Mfg. Co., Brooklyn, N.Y.. . 322-323 CURVED RAILS.

Andrews & Clooney, 545 W. 33d St., N. Y 324 325 Pugh & Russell, Stewart Building, New York ... 307 Johnston Steel Rail Co., Johnstown, Pa..... 319

CROSSINGS.

- Andrews & Clooney, 545 W. 33d St., N. Y.... 324-325 Johnston Steel Rail Co., Johnstown, Pa..... 319
- CHANNEL PLATES. Andrews & Clooney, 545 W. 33d St., N. Y.... 324-325
- Wm. P. Craig, 95 Liberty st., N. Y..... 306 CABLE ROADS.
- D. J. Miller, 234 Broadway, N. Y..... . 303 Andrews & Clooney, 515 W. 33d St., N. Y.... 324-325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314
- ELECTRIC RAILWAYS.
- FROGS.
- Andrews & Clooney, 545 W. 33d St., N. Y.... 324-325 Pugh & Russeli, Stewart Building, New York .. 307 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 312
- FARE BOXES.
- Wales Manuf. Co., 76 and 78 East Water St., Lewis & Fowler Mfg. Co., Brooklyn, N Y 322-323 J. B. Slawson, 16 W. 46th. Street, New York.....314
- Lewis & Fowler Mfg. Co., Brooklyn, N. Y... 322-323 Standard Index and Register Co, 138 Fulton St.
- 321 New York..... Railway Register Co., 1193 Broadway, N. Y... 317 FARE COLLECTORS.
- Lewls & Fowler Mfg. Co., Brooklyn, N. Y 322-323 FEED CUTTERS.
- GUTTERS.
- Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314 GROOVED CURVES.
- Andrews & Clooney, 545 W. 33d St., N. Y....324-325
- Johnston Steel Rail Co., Johnstown, Pa...... 319 HAMES.
- HARNESS.
- HYDRAULIC JACKS.
- Watson & Stillman, 471 S. Grand st., N. Y 305 HORSE SHOES.
- The Goodenough Company, 156 and 158 E. 25th
- Wm. P. Craig, 95 Liberty st., N. Y 306 KNEES.
- Andrews & Clooney, 545 West 33d st., N. Y.. 324-325 Wm. P. Craig, 95 Liberty Street, New York 306 Pugh & Russell, Stewart Bullding, New York ... 307 Wm. Wharton, Jr., & Co., Llmited, Phila., Pa...314
- LUBRICANTS.
- 306
- Wm. Wharton & Co., Phlia., Pa..... .314Metallic Street Railway Supply Co., Albany N.Y 307 D. F.Longstreet, Providence, R. I. 3076 MATTING.
- Warneck & Toffler, 211 E. 22d st., N. Y... 305 Beadle & Courtney, 1193 Broadway, N. Y 297 MOTORS-Steam.
- H. K. Porter & Co., Plttshurg, Pa..... 30 MOTORS-Electric. Page.
- Van Depoele Electric Manufg.Co.,203 Van Buren PEDESTALS.
- Andrews & Clooney, 545 West 33d St., N. Y. . 324-325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa... 314

PANELS.

- RAILS
 - O. W. Meysenburg & Co., 155 Dearborn st., Chic 305 Pennsylvania Steel Co., 160 Broadway, N. Y....310 Carnegie, Phipps & Co ... Andrews & Clooney, 545 W. 23d St., N. Y.... 224-225 Johnston Steel Rail Co., Johnstown, Pa..... 319

STEEL RAILS.

Carnegie, Phipps & Co..... 207 Humphreys & Sayce, 1 Broadway, N. Y..... 296 F. W. Jesup & Co., 67 Liherty st., N........ 205 Wm. Wharton, Jr., & Co., Limited; Phila., Pa...314
O. W. Meysenburg & Co., 185 Dearborn st., Chic 305 Johnston Steel Rall Co., Johnstown, Pa..... 319

- EATS & SEAT SPRINGS.
- Hale & Kilburn Manuf'g Co..... 303
- SWITCHES. Wm. Wharton, Jr., & Co., 25th St. & Wash
 - ington Ave., Phlladelphia, Pa.....
- Humphreys & Sayce, 1 Broadway, N. Y... 296 M. M. White, 531 West 33rd st, N. Y..... 306 Andrews & Clooney, 545 West 33rd st., N. Y. 324-325 O. W. Meysenhurg & Co., 204 No.3d. st., St. Louis205 Johnston Steel Rail Co., Johnstown, Pa...... 319
- STREET RAILWAY BUILDERS.
- Andrews & Clooney, 545 West 33rd st., N. Y 324-325
- STREET RAILWAY SUPPLIES.
- Humphreys & Sayce, 1 Broadway, N. Y..... 296 Lewis & Fowler, Brooklyn, N. Y..... 322-323 Andrews & Clooney, 545 West 33rd st., N. Y. 324-325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...314 O. W. Meysenburg & Co., 204 No.3d. st, St. Louis.205 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 312
- SNOW PLOWS.
- Andrews & Clooney, 545 West 33rd st., N. Y 324-325 Augustus Day, Detroit...... 308
- Brooklyn Railway Supply Co., 37 Walworth St., Brooklyn. 315 SPONGES AND CHAMOIS. J. B. Greensfelder & Co., 115 SO.4th St., St. Louis.302 TURNOUTS.
 - Wm. Wharton, Jr. & Co., 25 St. & Washing-

 - TURN TABLES.
 - W. P. Craig, 95 Liherty st., N. Y..... Andrews & Clooney, 545 West 33rd st., N. Y.324-325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa., 314 O.W.Meysenburg & Co., 204 No.3d. st., St. Louis.305 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 312 TRACK CASTINGS.
 - Humphreys & Sayce, 1 Broadway, N. Y Andrews & Clooney, 545 West 33rd st , N. Y.324 325 Wm. Wharton, Jr., & Co., Limited, Phila., Pa... 314 Augustus Day, Detrolt..... Way Foundry Co., 23d & Wood Sts., Phila., Pa. 312
- TRACK SCRAPERS. Andrews & Clooney, 545 W. 33d St., N.Y..... 324-325
- Brooklyn Railway Supply Co.. 37 Walworth St., Brooklyn. 315 VARNISHES.
- John Bahcock & Co., 2 Liberty sq., Boston Mass.302 WHEEL PRESSES.
- Watson & Stillman, 471 S. Grand st., N. Y..... 305 Wm. Wharton, Jr., & Co., Limited, Phila., Pa.. 314 WHEELS.
- Andrews & Clooney, 545 West 33rd st., N. Y.324-325

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Pres. & Supt. 3. b. Hoges, Treas. A. b. Hodges, Sec.
BOSTON, MASS. - Highland St. Ry. Co. 19 m.
48% g. 48 ih r., 187 c. 100% h. Pres. Moody MerrIll, Clerk R. B. Fairhairn, Treas. Samuel Little, Supt. J. E. Rugg.
Lynn & Boston. 343' m. 4-8% g. 25-48 ib r. 114 c.
J. E. Rugg.
Lynn & Boston. 343' m. 4-8% g. 25 lb r. 700 c.
500 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas. Chas. Boardman. Office, 16 Kilby St.
Middlesex R.R. Co. 26 m. 4-8% g. 50 lb r. 750 c. 700 h. Pres. Chas. E. Powers, Treas. J. H. Studley, Jr., So. 700 h. Pres. Chas. H. Hersey, Y. Pres. Janes Brodey, Sec. & Treas. Win. Reed, Supt. Daniel Coolidge.
BRADFORD, P.A. -Bradford & Kendah R.R. Co. 11% m. 4-8% g. 34:50 lb r. 150 c. 700 h. Pres. Chas. H. Hersey, Y. Pres. Janes Brodey, Sec. N. Treas. D. C. Giddings.
BRADFORD, P.A. -Bradford & Kendah R.R. Co. 11% m. 4-8% g. 93:50 lb r. 3 c. 4. Pres. Janes Brodey, Sec. N. B. Parsons, Gen. Man. & Supt. Enos Parsons.
BRENHAM, TEX. - Brenham St. K.Y. Co. 2 m. 4 g. 20 lb r. 3 c. 22 mu. Pres. T. J. Pampel, Sec. John A. Randle, Treas. D. C. Giddings.
BRIDGETON, MASS. - Brockton St. Ry. Co. 11% m. 4-8% g. 35 lb r. 3 c. 4. Brockton St. Ry. Co. 13% m. 4-8% g. 50 h. Pres. M. Mc Coss, Treas. Z. C. Keith, Supt. H. B. Rocres.
BROKLYN, Y. Y. The Atlantic Avenue R.Y. Co. of Brooklyn. 32% m. (Reased and owned). 4-8% g. 50-60 lb r. 937 c. 1139 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newburg H. Frost. Onlice cor. Atlantic & Third Aves.
Broadway R.R. Co. 20 m. 4-8% g. 55-060 lb r. 166 c, 657 h. Pres. Me. H. Husted, Supt. W. M. 1108; ed. 1600 M. 900000, V. Pres. Kara 1. Brookkiphy. Coss Town R. Co. 30 m. 4-8% g. 40-60 lb r. 166 c, 657 h. Pres. W. H. Husted, Supt. W. M. Merst. Co. 110 h. Pres. Hand N. M. Corss. Treas, Robert Sealey, Supt. Joshua Crandall. Office 21 Broadway, E. D. Brookhiphy. Coss Town R. Co. 20 m. 4-8% g. 40-60 lb r. 166 c, 657 h. Pres. Meth. Husted, Supt. W. M. Mo

So fol, 12, 20 fit. Tries, Matter 6, Howey. Office 129 First St. Grand Street, Prospect Park & Flathush R,R. Co. 4', m, 4-8', g, 50 fb r, 75 c, 244 h. Pres. Louis Fitz-geraid, 12) Broadway, N. Y., Sec, & Treas, Duncan B. Cannon, Supt. Juo. L. Heins. Offices Franklin Ave. and Prospect Place. Greenpoint & Lorimer St. Prospect Park & Coney Island R.R. Co. 4 7-10 m, 4:5-30 fb r, 4-8', g, 69 c, 214 h. Pres. A. R. Culter Treas, A. C. Washington, Sec. George H. Smith, Eng. Supt. R. Schermerhorn, supt. Robert Attlesey. Offices Ninth Ave., 19th & 20th Sts. (Leased to At-iantic Ave. R. R. Co. Prospect Park & Flatbush R.R. 13', m, 4-8', g, 34 fh r, 70 c, 360 h. Pres. Loftis Wood, Sec. & Treas. Sami P. Arkhill, Supt. Loftis Wood, Sec. & Treas. Sami P. Arkhill, Supt. Loftis Wood, Sec. & Treas. South Brooklyn Central R.R. Co. 7 m (42' m Iaid), 4 8', g, 60 lb r, 42 c, 192 h. Pres. Wm. Richardson, sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Ruddy. The New Williamsburgh & Flathush R. R. Co. 6', m, 4-3', g, 47-50 lb r, 74 c, 255 h. Pres. Geo. W. Van Alten, 54 Ann st., New York, Freas, C. B. Cottrell, 8 Spruce St., N. Y. City, supt. Chas. E. Harris, Nost-rand Ave. & Carroll St., Brooklyn. The Union Railway Co. of the City of Brooklyn inot in operation. Van Brunt St. & Erle Basin R.R. Co. 1', m, 4-8', Van Brunt St. & Erle Basin R.R. Co. 1', m, 4-8',

Not in operation. Van Brunt St. & Erie Basin R.R. Co. 1% m, 4-8% g, 4510 r, 7 c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry.

JUNE, 1886.
RUNSWICK, GA.-Brunswick St. R.R. CO. BUFFALO, N.Y.-Buffalo St. R.R. CO. 17% m, 45%g 50 lot, 96 c, 50 lb. Pres. Henry M. Watson, Y. Pres. P. P. Pratt, Sec. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Buffalo Kast Side St. R.R. CO. 244-5 m, 45%g 4, 20 to, 47 c, 218 h. Pres. S. S. spaulding, Yres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Watson, Y. Pres. P. P. Pratt, Sec. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Diff. 100 For the St. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Diff. 20 (1990)

McMartin. CINCINNATI, 0.—Cincinnati Inclined Plane Ry. Co. 3 m, 5-2% g, 43 ib r, 24 c, 150 h. Pres. Geo. A. Smith. Sec. & Supt. James M. Doherty, Treas. Jos. S.

CINCINNATI, O.-CINCINNAL Inclined Plane Ry.
Co. 3m, 5-23/g, 43 lb r, 24 c, 150 h. Pres. 6'eo, A. Smith, Sec. & Supt. James M. Doherty, Treas. Jos. S. Hill
Cincinnati St. Ry. Co. Pres. Jno. Kligour, V. Pres. Albert. G. Clark, Treas. R. A. Dunlap, Sec. & Auditor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B F. Haughton.
Columbia & Cincinnati St. R.R. Co. 33/ m, 3 g, 35 lb r, 3 c, 6 dummy e. Pres. C. H. Kligour, V. Pres. John Kligour, Treas. B. F. Branman, Sec. A. H. Meier, Mt. Lookout, o. Supt. J. J. Hienderson, Mt. Lookout, O. Mu, Adams & Eden Park Inclined R.R. Co. 33/ m, 5-23/g, g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdock, Supt. Chas. Wbitten.
So. Covington & Cincinnati. (See Covington, Ky.)
CLEVELAND, O.-The Brooklyn St. R.K. Co. 8/g, m, 4-8/g, 5-2 hr, 6 dc, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoetgen, Treas. John McConneli, Supt. A. L. Johnson.
Broadway & Newburg St. R.K. Co. 6 m, 4-8/g, g, 10 r, 46 c, 325 h. Pres. Frank De H. Robison, V. Pres. John McConneli, Supt. M. S. Robison, Jr. The East Cleveland R.R. Co. 20 m, 4-8/g, 35-40 h steel r, 109 c, 520 h. 1 electric motor. Pres. A. Everett, V. Pres. John Koch, Sec., Treas. & Supt. M. S. Robison, Jr. The East Cleveland R.R. Co. 20 m, 4-8/g, 35-40 h steel r, 109 c, 520 h. 1 electric motor. Pres. A. Everett, V. Pres. John Koch, Sec. J. Co. 20 m, 4-8/g, 35-40 h steel r, 109 c, 520 h. 1 electric motor. Pres. A. Everett, V-Pres. M. C. H. Chas. Wason, Sec. & Treas. H. A. Everett, Supt. E. Duty. Offices, 1154 & 1138 Euclida Ave.
Woodiand Avenue & West Side St. R.R. Co. 20 m, 4-8/g g, 43-45 ib r, 46 c, 32/m, 3g, 40 ib r, 8 c, 60 h. Pres. Tom L. Johnson, Supt. A. L. Johnson, Sec. & Treas. J. B. Hanna, Gen. Supt. George G. Mulhern.
South Side St. R. R. Co. 32/m, 3g, 40 ib r, 8 c, 60 h. Pres. Tom L. Johnson, Supt. A. L. Johnson, Sec. & Treas. J. B. Hoetgen.
Suth Side St. R. Co.
Suth Side St. R. Co.
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athaway. West Side R.R. Co. CLINTON, IA.-Lyons & Clinton Horse R.R. Co.

(See Lyons.) COLUMBUS, GA.-Columbus St. R.R. Co. 3 m, 48% g, 16 hr, 6c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Gabourgh

bourgh. COLUMBUS, O. --Columhus Consolidated St. R.R. COLUMBUS, 0. --Columhus Consolidated St. R.R. CO. 19 m, 5-2 g, 20-46 lb r, 8-1 c, 350 h. Pres. A. Rode-ars, 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 lh r, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. R. Rickly, Treas. S. S. Rickly, Supt. Jonas Willcox.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3g, 30-33 lh r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.
CORTLAND, N. Y.—Cortland & Homer Horse Ry. Co. 4 m (2½ lald), 48½ g, 25-30 lb r. Pres. Chas. H. Garrison, Troy, N. Y. Sec. J. M. Milne, Treas. S. E. Welch, Supt. S. E. Welch, (Leased to D. N. Miller.)
Office 23 No. Mercer St.
COVINGTON, KY.—So. Covington & Cincinnati St. R.R. COVINGTON, KY.—So. Covington & Cincinnati St. R.P. COVINGTON, KY.—Dallas St. Ry. Co. 4½ m, 4-8½ g, 20-38 lb r, 12 c, 4h, 72 mu. Pres. Wn. J. Keller, Sec. Harry Keller, Supt. C. E. Keller.
Cuomerce & Eryay St. R.R. 1½ m, 4-8½ g, 20 lh r, 6c, 24 mu. Pres. A. C. Ardrey, Sec., Trea. & Man. H. W. Keller.

DANVILLE, ILL.—Citizens' St. Ry. Co. 4 m, 4 20 lb r, 8 c, 35 mu. Pres. Wm. P. Cannon, V. Pres. Gen. Man. Wm. Stewart, Sec. & Treas. Adam R.

pARVIELE, ILL. -ORDERS W. P. CARNON, V. Pres. & Gen. Man. Wm. Stewart, Sec. & Treas. Adam R. Samuel.
DAVENPORT, IA. -Davenport Central St. R.R. 2% m, 48% g, 300 hr, 12 e, 36 h. Pres. James Grant, V. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. B. Rumsey, Sec. O. S. McNeil.
Davenport City Ry. Co. H. Schuitger, Lessee. DAYTON, KY. -Newport & Dayton St. Ry. Co. 2 m, 5-2% g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.
DAYTON, O. -Dayton St. R.R. Co. 7¼ m, 4-5% g, 44 lb r, 24 c, 36 h and mu Pres. J. W. Stoddard, V. Pres. H. S. Williams, Sec. C. A. Cralghead, Supt. A. W. Anderson.
DAYTON, C. -Dayton St. R.R. Co. 3% m, 4-5% g, 44 lb r, 24 c, 30 h and mu Pres. J. W. Stoddard, V. Pres. Charles E. Clegg, Sec. H. V. Perrine. The Wayne & Fifth St. R.R. Co. 3% m, 4-5% g, 34 as lb r, 5 c, 30 h. Pres. Geo. M. Shaw, Sec. & Treas. Eugene Winchet, Supt. N. Routzahn.
DECATUR, ILL. -Decatur Horse Ry. Co. Citizens' street R.R. Co. 2 m, 4-5% g, 30 h D T, 7 c, 47 h & mu. Pres. D. S. Shellabarger, Sec., Treas. & Supt. A. E. KInney.
DENYER, COL. -Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 5 c, 22 mu. Pres. C. A. Walterhouse, supt. S. A. Robinson.
DENYER, COL. -Denver City Ry. Co. 16 m, 3-6 g, 16 lb r, 5 (c, 20 h. Pres. Monte St. Ry. Co. 10 m, 3g, 25-30-35 52 lb r, 18 c, 100 h. Pres. M. P. Turner, Des Moines & Sebastopol St. Ry. Co.
DETROIT, MICH. -Fort Wayne & Elmwood Ry. Co. 6 m, 4-8% g, 45 lb r, 18 c, 100 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Treas. George B. Pease, Sec. N. W. Goodwin, Supt. Geo. S. Hazard. Detroit City Ry. 30 m, 4-8% g, 43 lb r, 130 c, 100 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Treas. George B. Heush St. line, Cass Are. line, Grand River St. Ry. Co. 23 m, 4-8% g, 43 lb r, 130 c, 100 h. Pres. H. B. Brown, V. Pres. Edward Kanter, Treas. George B. Heush, St. line, Cass Are. line, Gongress & Baker line. Pres. Sidney D. Miller, Treas. Jos. Dalley, Sec. J. W. Dalley, Supt. G. M. Dulley.

Heugh, Gen. Supt. Robert Bell, Mast. Mech. John Willis.
'Grand River St. Ry. Co. 2½ m, 4-8½ g, 43 lb r, 13 c, 110 h. Pres. & Treas. Jos. Dalley, Sec. J. W. Dailey, Supt. C. M. Dalley, H. Dover Horse R.R. Co. 5 m, 3 g, 30 lb r, 4 c, 14 h. Directors, Z. S. Wallingfor, Chas. H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas. Harrison Haley.
DUEUTH, N.H.-Duvley St. R.R. 5 m, 4-8½ g, 21 c, 45 h. Pres, J. A. Rhonberg, Sec. & Treas. B. E. Linehan, supt. J. Linehan.
DULUTH, MINN.-Duluth St. Ry. Co. 5 m, 32 G, 33-51 lb r, 17 c, 90 h and mu. Pres. Sam1 Hill, V. Pres. Tos. Lowry, Sec. & Treas. A. S. Chase, Man. & Supt. T. W. Hoopes.
EAST OAKLAND, CAL.-Oakland, Brooklyn & Fruitvale R.R. Co.
EAST SAGINAW, MICH.-Street R. R. Co. of East Saginaw. - m, 4-8½ g, 30 lb r, 14 c, 35 h. Pres. & Supt. W. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.
EAST ST. LOUIS, ILL.-East St. Louis St. R.R. Co.

b super W. o. Barton, Sec. W. H. Hark, Treas. J. B. Peter. EAST ST. LOUIS, H.L.—East St. Louis St. R.R. Co. EASTON, PA.—The Easton & So. Easton Passen-ger Ry. Co. $1\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 45 lb r, 4 c, 20 h. Pres. H. A. Sage, Sec & Treas. H. W. Cooley, Supt. Elisha Burwell, So. Easton. The West End Passenger Ry. Co. $1\frac{1}{2}$ m, 5-2 $\frac{1}{2}$ g, 45 lb r, 6 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Samuel Berry. EAU CLAHR, WIS.—Eau Clair City Ry. Co. ELGIN, HLL.—Elgin City Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne. ELIZABETH, N. J.—Elizabeth & Newark Horse R.R. Co. 14 m, 5-2 $\frac{1}{2}$, 4-10 $\frac{1}{2}$ g, 30 lh r, 24 c, 74 h. Pres. G. Johnson, Sec. E. C. Bickel, Treas. A. R. Burns. ELIMHA, N. Y.—The Elmira & Horseheads Ry. Co. 92-3 m, 4-8 $\frac{1}{2}$ g, 25-30-40 lh r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wn. S. Kershner, Supt. Henry C. Slisbee. Offi-cers, 212 E. Water. St. EL MASO, TEX.—El Paso St. Ry. Co. $2\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A treas. EMPORIA, KAN.—Emporia City Ry. Co. $3\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g 20 lb r, 8 c, 23 m. Pres. Yan R. Hormes. Treas. Supp. A Streas. St. Ry Co. 3 $\frac{1}{2}$ m, 4-8 $\frac{1}{2}$ g, 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A treas. EMPORIA, KAN.—Emporia City Ry. Co. $3\frac{1}{2}$ m, Farge. Supp. A streas. St. Ry. Co. $3\frac{1}{2}$ m, Farge. Supp. Streas. Star Streas.

Tays. EMPORIA, KAN.-Emporia City Ry. Co. 3½ m, 5g 20 lb r, 6 c, 23 m. Pres. Van R. Holmes, Treas. A. F. Crowe, Sec. & Man J. D. Holden. ENTERPRISE, MISS.-Enterprise St. Ry. Co. 1½ m, 3-6 g, 24 lb r, 2 c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. J. W. Gaston. ERIE, PA.-Erie City Passenger Ry. Co. 532 m, 4-8½ g, 30-40 45 lb r, 20 c, 85 h. Pres. Wm. W. Kecd, Treas. Wm. Spencer, Sec. W. A. Demorest, Supt. Jacob Berst. ¹ JUREKA SPRINGS, ARK.-Eureka Springs Cuty Ry. Co.

City Ry. Co.

THE STREET RAILWAY JOURNAL.

EVANSVILLE, IND. – Evansville St. Ry. Co. 12 m, 4-8 g, 28 lh r, 31 c, 190 mu, Pres. John Gilbert, Sec. P. W. Raleigh, Treas. John Gilbert, Supt. W. Bahr.
FALL RIVER, MASS. – Globe St. Ry. Co. 12 m, 4-8/3 g, 40-46-47 lb r, 40 c, 160 h. Pres. Frank S. Stev-ens, Treas. F. W. Brightman, Sec. M. G. B. Swift, Supt. John H. Bowker, Jr.
FORT SCOTT, KAN. – Bourbon County St. Ry. Co. 1 m, 4-9, 22 lh r, 2 c, 4 m. Pres. Isaac stadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.
FORT SMITH, ARK. – Fort Smith St. Ry. Co. 2 m, 3-6 z, 16-23 lh r, 5 c, 16 h. Pres. Saml M. Loud, Sec. & Treas. Geo. T. Sparks.
FORT WAYNE, IND. – Cliizens' St. R.R. Co.
FORT WORTH, TEX. – Fort Worth St. Ry. Co.
7½ m, 4 g, 25-38 lh r, 16 c, 73 m. Pres, K. M. Van-zandt, Treas. W. A. Huffman, Acting Sec. & Gen. Man. S. Mins, Supt. J. T. Payne.
FRANKFORT, N. Y. – Frankfort & Hion Street Ry. Co. 24 m, 5 g, 4 c. Pres. A. C. McGowan, Frank-fort, Sec. D. Lewis, Hion, Treas. P. Remington, Ilion, Supt. Fredk. Gates, Frankfort.
FREDONIA, N. Y. – Dunkirk & Fredonia R.R. Co. 33 m, 4-10 g, 25 lh r, 5 c, 8 h. Pres Wm. M. McClns-try. Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.
GAINSVILLE, FLA. – Gainsville St. Ry GAINSVILLE, TEX. – Gaussville St. Ry Co. 24

Wheelock.
GA INSVILLE, FLA.—Gainsville St. Ry
GA INSVILLE, TEX.—Gainsville St. Ry. Co. 2½
GA St. Co. 24 (Constraint)
GA Constraint, Constraint of the state of the state

In r, 30 c, 90 hit. FTes. 5. II. Burlett, Stethe Treas-F. D. Allen. GLOUCESTER, MASS.—Gloucester City R.R. Gloucester St. Ry. Co. Pres. & Supt. Morris C. Fitch, V. Pres: Walter A Jones, Treas. Francis W. Homans, Sec. David S. Presson. GRAND RAPIDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. $14\frac{1}{2}$ m, $4-8\frac{1}{2}$ g. 25-40 lb r, 29 c, 190 h. Pres. C. A. otis, Cleveland, O., V. Pres. L. H. Withey, Grand Rapids, Treas. C. G. Swensberg, Grand Rapids, Sec I. M. Weston, Grand Rapids, Supt. A. Bevier, Grand Rapids. GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, $4-8\frac{1}{2}$ g. 23 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.

A. Bevier, Grand Rapids.
GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8½, 23 lb 7, 3 c. 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.
GREENVILLE, S.C.—Greenville City Ry. Co. 1 m
5 g. - lh r, 5 c. 30 h. Proprietors, Gilreath & Harris.
HAMILTON, C. —The Hamilton St. Ry. Co. 4 m, 3 g, 28 lh r, 11 c, 12 h. Pres. James F. Griffin, Sec. O.
V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow.
HANNIP AL, MO.—Hannibal St. Ry. Co. 2 m, 4-8½ g, 36 lb r, 6 c, 92 h. Pros. & Supt. M. Doyle, Sec. & Treas James O'Hern.
HARRISBURG, PA.—Harrisburg City Pas-senger Ry. Co. 5 m, 5-2½ g, 42-47 lh r, 26 c, 65 h, Pres. H. A. Keiker, V. Pres. Daniel Epply, Sec. John T. Ensminger, Treas. R. F. Kelker, Supt. S. B. Reed.
HARTFORD, CONN.—Hartford & Wethersfield Horse R. C. Co. 12 m, 4-8½ g, 36 lb r, 40 c, 250 h. Pres.
& Treas, E. S. (doodrich, Sec. Geo, Sexton.
HAVERHILL, MASS.—Haverhill & Grovelard
St. Ry. Co. 1½ m, 4-8½ g, 25 lb r, 3 c. Pres. J. M. Ans-men, Sec. Joan Smill, Treas. H. D. Alexander.
HOBOKEN, N. J.—North Hudson County Ry.
Co. 1½ m, 4-8½ g, 25 lb r, 3 c. Pres. J. M. Ans-men, Sec. Joan Smill, Treas. H. D. Alexander.
HOBOKEN, N. J.—North Hudson County Ry.
Co. 16% m, 4-7 g, 50 60 lb r, 116 c, 630 h. Pres. John H. Bonn, Sec. F. J. Mallory, Treas, Fredk. Mickel, Union, Supt. Icholas (Goetz, Union.
HOT SPRINGS, ARK.—Hot Springs R.R. Co. 1 m, 4-8½ g, 23 lb r, 3 c. Pres. Wm. H. (Sec. Baurice, Supt. J. L. Butterfield.
HOUSTON, TEX.—Houston City St. Ry. Co. 14 (m, 4-5½ g, 20-30-d lb r, 40 c, 118 m. Pres. Wm. H. Sinclair, Galveston, V. Pres & Gen Man, H. F. MacGregor, Houston, Supt. Henry Freund, Houston, Sec. & Treas E. H. Balley.
HOUSTON, TEX.—Houston City St. Ry. Co. 1 Houston, St. Pres. A. C. McGowan, Sec. D. Lewis, Treas, F. Remington, Supt. Frederick Gates.
INDIANAPOLIS, IND.—Citizens' St. Ry. Co. 1 MAKSON, MIC

JACKSONVILLE, ILL.—Jacksonville Ry. Co. Supt R. F. Stbert. JAMAICA, N. Y.—Jamaica & Brooklyn R.R. Co. 10 m, 4-8% g, 55-60 lb r, 29 c, 56 h. Pres. Aaron A. De-grauw, Sec. Martin J. Durea, Treas. Morris Fos-dick, supt. Wm. M. Scott. JAMESTOWN. N. Y.—Jamestown St. Ry. Co. 3.67m 4-8% g, 30-42 lb r, 13 c, 15 h. Pres. R. N. Marvin, V. Pres. F. E. Gliford, Treas. A. N. Broadhead. Supt. G. E. Mattby, Sec. & Atty. C. R. Lockwood IERSEY CITY, N. J.—Jersey & Bergen R. R. Co. 21 m, 4-10 g, 60 lb r, 73 c, 494 h. Pres. Chas, B. Thurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Newark, supt. Thos. M. Sayre. Savre.

299

Johnstown, N. Y.—The Johnstown, Giovers-wie & Kingshoro Horse R.R. Co. 53/m, 45% g, 26 lh (6 c, 16 h. Pres, James Younglore, V. Pres. & Fan-cher, Sec. & Treas., J. McLaren. Johnstown, P.A.—Johnstown Pass. R.R. Co. 7% m, 5-3 g, 4143 lh r, 13 c, 73 h. Pres. James McMfl-len, Sec. K. L. Jeagley, Treas. W. H. Rosensleet, Jr. Johnstown, P.A.—Johnstown Pass. R.R. Co. 7% m, 5-3 g, 4143 lh r, 13 c, 73 h. Pres. James McMfl-len, Sec. K. L. Jeagley, Treas. W. H. Rosensleet, Jr. Johnstown, Cash. J. E. Henry. Johnstown, Cash. J. E. Henry. McMana, McMana, Supt. Edward J. Lawless. McNoc County Horse R. K. Co. Massa City & Nosedae St. Ry. Co. 20 m, 4-1 g, 30 br, 80 c, 350 h. Pres. Bernard Corrigan, Gen. Man. Thos. Corrigan, Sec. Jas. T. Kelley. Jackson County Horse R. K. R. Co. Manasa City & Woseport St. R. R. Co. McMarson County Horse R. K. Co. McMarson, ONT., CAN. Engrston St. R. R. McMarson, Son M. C. Cash. Pres. Robert Car-son, Sec. & Treas. F. Sargent, Man. William Wilson McMay, G. 22 lb r, 5 c. 2 hacks, 30 h. Pres. W. M. Martet Sq. & Asylum St. Ry. Co. Pres. P. Man. Matet Sq. & Asylum St. Ry. Co. Pres. Peter Kern, Martet Sq. & Asylum St. Ry. Co. Pres. R. M. Mod, Sec. B. L. Smith. Martet Sq. & Asylum St. Ry. Co. Pres. R. M. Mod, Sec. B. L. Smith. Martet Sq. & Asylum St. Ry. Co. Pres. A. C. Folson, McMay, Sg. 34 hr, 5 c, 17 h. Pres. A. G. Folson, McMay, Sg. 34 hr, 5 c, 17 h. Pres. A. G. Folson, McMay, Sg. 34 hr, 5 c, 17 h. Pres. A. G. Folson, McMay, Sg. 35 hr, 6 c, 35 h. Pres F. B. Caldwell, Lafar, Martet Sq. & Msylon, St. W. Co. Of La Crosse, McMay, McMarker, McMarate

LAFAY ETTE, IND. -LAFAyette St. RY. 224 m, 4-83 g, 35 lh r, 6 c, 38 h. Pres F. B. Caldwell, LaFay-ette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette.
LAKE CITY, FLA.-Lake CIty St. Ry. Co.
LAMPANAS SPRINGS, TEX.-Lampasas City Ry. Co. 34 m, 4-85 g, 22 lb r, 6 c, 15 h. 10w hed by Mrs L. R. Snodgrass.] Gen. Man. Geo. M. Snodgrass.
LANCASTER. PA.-Lancaster & Millersville St. Ry. Co. -m, 4-83 g, 20 lb r, 4 c, 14 h. Pres. J C. Hager.
V. Pres. H. S. Shifk, Sec. & Treas. Chas Dennes. Lancaster City St. Ry. Co.
LARCHMONT, N. Y.-Larchmont Manor Co. 1 m'4-8 g, 25 lb r, 2 c, 8 h. Pres. C. H. Murray, Treas.
S. H. French, 38 East Fourteenth St. N. Y. City.
LAWRENCE, MAN.-Lawrence Transportation Co. 5 m, 4-1 g, 38 lb r, 7 c, 34 h. Pres. H. Tisdale, Sec. W. H. Bangs
LAWRENCE, MASS.-Merrimack Valley Horse R.R. Co. 5 4 5 m, 4-5% g, 48 lb r, 20 c, 70 h. Pres. Wm A. Russell, V. Pres. Jas Walton, Methuen. Clerk & Treas James H. Eaton, Supt. A. N. Kimhall, Lawrence.
LEWISTON, ME.-Lewiston & Auburn Horse R.R. Co. 74 m, 4-8% g, 22 lb r, 16 c, 45h. Pres. Frank W. Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas.
H. C. Packard, Auhurn, Supt. E. P. Stinchfield, Auhurn LEXINGTON, HY. -Lexington St. Ry. Co.
LIMAO.-Elma St. Ry. Co.
LIMAO.-Lima St. Ry. Co.
M. Sheldon, Supt. L. P. Young.
LITTLE ROCK, ARK.-Little Rock St. Ry. Co.
M. Sheldon, Supt. L. P. Young.
LITTLE ROCK, ARK.-Little Rock St. Ry. Co.
M. Sheldon, Supt. L. P. Songasport R

Patrick J. Gleason, Supt. Michael Conway. Officers 112 Front St.
LONGVIEW, TEX.-Longview & Junction St Ry. 34m, 3-6g, 2 c, 4 h. Pres. F. T. Rembert, Sec.
R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth, LOS ANGELES, CAL.-Boyle Heights R.R. Co.
Central R.R. Co. and the Sixth & San Fernando St R.R. Co. 7 m, 3-6g, 16 bb r, 13 c. -h. Pres. E. T.
Spencer, Sec. F. X. Palmer, Supt. J. A. Fairchild.
City R.R. of Los Angeles. 45 m, 4-85 g, 36 b r, 9 c, 75 h. Pres. I. M. Heilman, V. Pres. W. J. Brod-rich, Sec. John O. Wheeler, Supt. W. H. Hawks.
Los Angeles & Allso Ave, St. R.R. Co.
Main St. & Agricultural Park R.R.
LOUISVILLE, KY.-Kentucky St. Ry. Co. 5 m, 5-2 g, -hr, 20 c, -h. Pres. T. J. Minary, Sec. & Treas. Thos. Donigan.
Central Pass. R.R. Co. -m, -g, -Ibr, -c, -h, Pres. -, V. Pres. Thos. J. Minery, Crescent Hill Ry. Co.
Louisville City Ry. Co. 63 m, 5g, 58 lb r, 214 c, -mu. Pres. Maj. Alexander Henry Davis, Syracuse1300

300

Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts. supt. H. II. Littell.
LOWELL, MASS.-Lowell Horse R.R. Co. 6 m, Syd g, 28-47 lbr, 28 c, 100 h. Pres. Wm. E. Living-ton, Gen. Man. J. A. Chase.
LYNCHBURG, VA. - Lynchburg St. R.R. Co. 2m, 5-1 g, 26 lbr, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne. LYNCHBURG, VA. - Lynchburg St. R.R. Co. 2m, 5-1 g, 26 lbr, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne. LYNCHS, IA. - Clinton & Lyndharber Bay. Co. 4% m, 3-8 g, 19-30 lbr, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Rand. MACON, GA.-Macon & Suburban St. R. Co.5m 4-8% g, 20 lb T, 12 c, 60 h & mu. Pres. J. S. Brans-ford Sec. & Supt. Jno. T. Voss. Office, 131 Second st. MADISON, IND.-Madison St. Ry. Co. 2% m, 4 g, 15 lbr, 7 c, 8 h. 10 mu. Pres. Jacob Wendle, V. Pres. Peter F. Robenlins, Supt. & Treas. Chas. F. Tuttle. MADISON, WIS.-Madison St. Ry. Co. 2% m, 3 g, 23 lbr, 6 c, 24 h. Pres. E. W. Keyes, V. Pres. Sec. & Treas. D. K. Tenner, Supt. G. W. Carse. MANCHESTER, N. H.-Manchester Horse R.R. 5% m, 3-% g, 27-34 lbr, 14 c, 55 h. Pres. S. N. Bell, Treas. F Smyth, Clerk J.A. Weston, Supt. A. Q. Gage. MARSHALLTOWN, I.A.-3 m, 4 g, 25 lbr, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. c. C. Gillman, Supt. A. E. Shorthill. MARYSVILLE, CAL.-City Pass. R.R. Co. (No returns.) MAYSUHLE, KY.-Maysville St. Ry. & T. Co.

MARYSVILLE, CAL.—City Pass. R.R. Co. (No returns.)
MAYSVILLE, KY.—Maysville St. Ry. & T. Co. 3 m, 20 lb r, 4-8½ g, 6c, 32 mu. Pres. L. W. Robertson, sec. & Treas. W. S. Frank.
MECHANICSBURG, ILL. — Mechanicsburg & Buffalo Ry. Co. 3½ m, 3-10 g, 16 lb r, 3 c, 4 mu. Pres. J. N. Fullenweider, Treas. A. T. Tbompson, Sec. H. Thompson.
MEMPHIS, TENN. — Memphis City R.R.Co. 18 m, 5 g, 38-40 lb r, 6 c, 320 h, Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Supt. W. F. Shippey.
MEMPHIS, TENN. – Mendalast, Ry. Co. 2 m, 4-8 g, 16 lh T, 5 c, 11 mu, Pres. Geo.S. Conant, V. Pres. and Sup. J. L. Handley, Treas. J. A. Kelly, Sec. R M. Houston. Houston

ouston. MIDDLETOWN, O.—Middletown Horse R.R.Co. res, John M. Douglas, Sec. & Treas, Jas. K. Guy. MILLERSVILLE, PA.—Lancaster & Millersville Рŕ

Pres, John M. Douglas, Sec. & Treas, Jas. K. Guy. **MILLERSVILLE, PA.**—Lancaster & Millersville **St.** R.K. Co. **MILW AUK EE, WI.**—Cream City R.K. Co. 8 1-6 m, 4-8½ g, 27-38 lb r, 74 c, 307 m, 2 h. Pres. Winfield smith, V. Pres. Christian Preusser, Treas. Ferdinand Knehn Sec. Wm. Damkoehler, Gen. Man. D. Atwood, supt. H. J. C. Berg. Milwaukee City Ry. Co. 30 m, 4-8½ g, 27 lb iron & 4 sh steel r, 80 c, 450 h. Pres. Peter Mouseoch, Sec. & Treas. Geo. O. Wheateroft. West Side St. Ry. Co. Owner & Manager, Wash-ington Becker, Supt. — McNaughton. **MINWaukee City St. Co.** Owner & Manager, Wash-ington Becker, Supt. — McNaughton. **MINEAPOLIS, MINN.**—Minneapolls St. Ry. Co. 62 m, 3-6 g, 27-35-45 lh r, 186 c, 1050 h aud mu. Pres. Thos. Lowry, V. Pres. C. Morrison, Treas. W. W. Herrick, Sec. C. G. Goodrich, Supt. J. W. Sharp. **MOBILE, ALA.**—City R.R. Co. 17½ m, 5-2 g, 35 lb Tr, 68 c, 240 h. Pres. Jao. Maguire, Sec. I. Strausse, Treas. Myer I. Goidsmitb, Supt. A. Moog. Dauphin & Lafayette Ry. Co. 2 m, 5-2½ g, 35 lb r, 16 c, 35 h. 1 dumuy. Pres. D. Magute. Mobile & Spring Hill R.R. Co. 8 m, 5-2½ g, 35 lb r, 16 c, 35 h. 1 dumuy. Pres. Daniel McNeill, Sec. & **Treas. C. F.** Sheidon, Man. F. Ingate. **MOILNEWS, N. Y.**—Molawk & Hon R.R. Co. 12 m, 4-8½ g, 30 lb r, 4 c contract for motive power). Pres. O.W. Bronson, V. Pres. J. Brown, Sec.II. DAlex-ander, Treas. R. M. Devendorff, Supt. O. W. Bronson. **MOLINE, HLL.**—Moline Central St. Ry. Co. 1% **M. 4-8½ g, 30 lb r, 4 c** (ontract for motive power). **MOLINE, HLL.**—Moline Central St. Ry. Co. 1% **M. 4-8½ g, 30 lb r, 4 c** (ontract for motive power). **MOLINE, HLL.**—Moline Central St. Ry. Co. 1% **M. 4-8½ g, 30 lb r, 4 c** (ontract St. Ry. Co. 1% **M. 4-8½ g, 30 lb r, 4 c** (ontract for motive power). **MOLINE, HLL.**—Moline Central St. Ry. Co. 1% **M. 4-8½ g, 30 lb r, 4 c** (ontract for motive power). **M. 4-8½ g, 30 lb r, 4 c** (ontract for motive power). **MOLINE, HLL.**—Moline Central St. Ry. Co. 1% **M. 4-8½ g, 30 lb r, 4 c** (ontract for motive power).

Pres. F. H. Wessel, Sec. W. R. Moore, Treas. C. F. Hemeuway.
Moline & Rock Island St. Ry. Co. 5 m, 4-8½ g. 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Butord, Treas. C. Lyons, Supt. Win. Gamble.
MONTGOMERY, ALA.—Capital City St. Ry. Co. Electric motors.
MONTREAL, CAN.—Montreal City Pass. Co. 21 m, 4-8½ g, — lb r, 76 c, 465 h. Pres. Jesse Joseph, V. Pres. Alex. Murray Sec. & Man. Ed. Lusher, Supt. T. H. Robiliard.
MOUTREVILLE, S. C.—Middle St. & Sulfi-

MOULTRIEVILLE, S. C .- Middle St. & Sulli-

MOULTRREVILLE, S. C.-Middle St. & Sullivan's Landing Ry.
 MUSCATINE, IA.-Muscatine Clt7 Ry, Co. 3%
 m. 3-6.g, 211b r, 7 c, 19 h. Pres. Peter Musser, V. Pres, D. C. Richman, Sec, T. R. Fitzgerald, Treas.
 MUSKEGON, MICH.-Muskegon Ry, Co. 4% m, 3-6.g, 20 br, 8 c, 26 h, 8 mu. Pres. F. A. Nins, V. Pres. Chas. Merriau, Bostou, Mass., Sec. Thomas Muaroe. Treas. G. R. Sherman, Supt. C. I. Newell.
 NASHUALE, TENN.-Nashville & Edgefield R.R. Co. Fatherland Street Railway Co. North Edgefield and Nashville St. R.R. Co., one management. 5 m, 5 g, 16-20-32 hr, 21 c, 100 nut. Pres. Juo, P. White, 5 c, K. Freas. H. B. Stubblefield, Supt. Dalagerfield Deaderlek.

See, & Treas, H. B. Stubblefield, Supt. Dalogerfield Deaderick.
McGavock & Mt. Vernon Horse R. R. Co. 75, m. 5 g, 16:20-28-32 lb r, 25 e, 140 h & mn. Pres. John P White, V. Pres, B. F. Wilson, Sec. & Treas. H. B. Stubhlefield, supt. Dalngerfield Deaderick.
South Nashville St. R.R. Co. 45, m. 5 g, 16:20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.
NATHER, MASS.—Natick & Cochitaate St. Ry. 3 m. 4:8% g, 35 lb r, 6 c, 17 h. Supt. Geo. F. Keep.
NEW ALBANY, IND.—New Alhauy St. Ry. Co. 6 m, 4:11% g, 25 lb r, 15 c, 55 h. & mu. Pres. Geo. T. Agt. Wm. L. Timberiake.
NEWAIKK, N.J. –The Newark & Bloomfield St. R.R. Co. 7 m, 5:2% g, 37 lb r, 22 c, 140 h. Fres. S. 8. Battin, Sec. W. L. Mulford, Supt. H. F. Toiten. Consolidated with Essex Pass. Ry. Co. Broad St. R.E.

Broad St. R.R. Newark & Irvington St. Ry, Co., 7 m, 5-23/ g, 47 lbr, 3 c, 130 h, Pres, S. S. Battin, Sec. W. L. Mulford, und H. F. Potten,

Supt. H. F. Totten. NEW BEDFORD, MASS. – New Bedford & Fair-haven St. Ry. Co. 75, m. 4-5% g, 35-45-50 lb r, 428 c, 14) Pres. Warren Ladd, Treas. & Clerk, A. G. Plerce. Acushnet St. R.R. Co., 6 m, 4-8% g, 38 lb r, 29 c, 103

h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith. NEWBURGH, N. Y.-Newburgh St. R. R. C Pres. D. S. Haines, Sandy Hill.
NEWBURYPORT, MASS.-Newburyport & Amesbury Horse R.R. Co. 61-3 m, 12 c, 54 h. Pres.
W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens. Lessee, E. P. Shaw.
NEWBURKYPORT, CONN.-Fair Haven & Westville R.R. Co. 7 m, 4½ g, 42 hDr, 23 c, 150 h. Pres. H. B. Ives, Sec. & Treas. L. Candee, Snpt. Walter A. Graham.
New HAVEN, CONN.-Fair Haven & Westville R.K. Co. 7 m, 4½ g, 42 hDr, 23 c, 150 h. Pres. H. B. Ives, Sec. & Treas. L. Candee, Snpt. Walter A. Graham.
New Haven & Centreville Horse R.R. Co. 2½ m, 48½ g, 42 hDr, 4 c, 30 h. Trustee Cornelius Pierponu. State Street Horse R.R. Co. 2½ m, 4-8 g, 43 hDr, 4 c, 40 h. Pres. Co. Warren, Sec. & Treas. C. Blatchen. The Whitney Ave. Horse Ry. 2½ m, 4-8 g, 43 hDr, 4 c, 40 h. Pres. Geo. H. Watrous, Sec. George D. Watrous, Treas. Ell Whitney, jr.
NEW ORLEANS, LA.-Canal & Claiborne st. R.R. Co. 13 m, 5-2½ g, 37 hDr, 40 c, 200 b. Pres. E. J. Hart, Sec. & Supt. Jos H. DeGrange. Crescent City R. Co. 26 m, 5-2½ g, 35 45 hD r, 90 c, 400 h. Pres. Frank Roder, Sec. & Treas. Jno. J. Ju-den. Supt. A. V. Smith. New Orleans St. R.R. Co.
Orienns R.R. Co. -m, -g, -hDr, 32 c, 140 h. Arm. Pres. & Supt. H. Larquie, Sec. & Treas. P. Cougot. Office, cor. White & Laharpe Sts. st. Charles St. R.R. Co. 15 m, 5-2½ g, 35 hD r, 90 c, 366 m. Pres. & Supt. Alden McLeilan, Sec. Vincent Riviere.

366 m. Riviere

a mu. Pres. & Supt. H. Larquie, Sec. & Treas. P. Cougot. Office, cor. White & Laharpe Sts.
st Charles St. R.R. Co. 15 m, 5-2% g, 35 lb r, 60 c, 366 m. Pres. & supt. Alden McLellan, Sec. Vincent Riviere.
New Orleans & Carrollton R.R. Co. S m, 4 Sky g, 30-45 lb r, 65 c, 200 h, 19 engines. Press. Wm Eenthuysen, Sec. Walter F. Crouch, Supt. C. V. Hafle.
New Orleans City & Lake R.R. Co. 64 m, 5-2% g, 46-40 lb r, 180 c, 39 coaches, dummy engines, 1050 mu. Pres. J. A. Walker. Sec. W. E. Leverich, Supt. F. Wintz. NEW PORT, KY. – Newport St. R.R. Co. 8 m, 4-8% g, 60 lb r, 52 e, 530 h. Pres. W. H. Hays, Sec. & Treas. James Affleck, Supt. Heman, B. Wilson. Offices, Ninti A yee, cor. 54th St. Broadway & seventh Ave. R.R. Co. 7 m, 4-8% g, 50 lb r, 52 e, 530 h. Pres. Junes W. Foshay, Sec. & Treas. Thos. B. Kerr, Supt. Henry A. Newell. Office 761, Seventh Ave.
Central Crosstown R.R. Co. 5-22 m, 4-8% g, 52 lb r, 45 c, 241 b. Pres. Geo. 8. Hart, V. Pre- A. Cammack, Sec. & Treas. Miton 1 Masson, Office 365 Ave. A. Central Park North & East River R.R. Co. 14 m, 4-8% g, 60 lb r, 152 c, 1,226 h. Pres. J. H. Sorbher, Y. Pres, C. D. Wyman, Sec. II. Seribner, Treas. J. L. Valentine, Supt. M. W. A. Harris. Office, Tenth Ave., 53d. & 34th. St.
Christopher & Tenth St. R.R. Co. 5 m, 4-8 g, 45 lb Tr, 4-8% g, 60 lb r, 162 c, 1,226 h. Pres. William Wiltre, Auditor E. T. Landon, Sec. & Treas. Richard Kelly, Supt. Fred. F. White. Offices, 805 Grand Ss. Elchth Ave. R.R. Co. 10 m, 4-8% g, 60 lb r, 112 c, 155 h. Pres. William Wiltre, Auditor E. T. Landon, Sec. & Treas. James Affleck, Supt. Hays, Sec. & Treas. S. Allen, Supt. Jondon, Sc. & Supt. G. W. Lynch. Office, 185 Christopher St. Fordy-sec. Mice, 48 ded br, 50 c, 501 h. Pres. Chas, Christopher St. Jordon, Sec. & Treas. Richard Kelly, Supt. Free White. Offices, 605 Grand Ss. Elchth Ave. R.R. Co. 10 m, 4-8% g, 60 lb r, 112 c, 155 h. Pres. William Wiltre, Auditor E. T. Landon, Sec. & Treas. James Affleck, Supt. Hartem Bridge, Morrisania & Fo

6th St. The Third Ave. R. R. Co. 16 m main line, 615 m 10th Ave, cahle line, i m t35th street cable line, 4 8% g, 60 & 74 lb r, 318 c, 2150 b. Pres. Lewis Lyon, 739 Madlson ave., V. Pres. Henry Hart, 410 Trubune Building, Sec. Altred Lazarus, 136 W. 618t st., Treas John Beaver, 211 E, 112th st., Supt. John H. Robert son, 307 E, 55th st. Twenty-third St. R.R. Co. 7 m, 4-S⁴, g, 54 fb r, 102 c, 692 h. Pres. Jacob Sharp, Sec. Thos. H. McLean, Preas, Lewis May, Act-Supt. George Ferry. Office 621 West 23d St.

MAGARA FALLS, N. Y.-Nlagara Falls & Suspension Br.dge Ry. Co. 25, m, 4-35, x, 33-42 ib r, S C, 36 h. Pres. Beul. Flagler, Sec. W. J. Mackay, Treas. A. Schoelkopf.

(5) 36 hr 1155, bedy Plaget, 655, white statisty (1608) NORFOLK, VA. – Norfolk & Cltv R.R. Co. 32/m, 5-2 g, 44 lbr, 18 c, 65 h. Pres, John B. Whitehe ad Treas, H. C. Whitehead, Supt. E. W. Savage. NORTHANPTON, MASS.–Northampton St. Ry. Co. 33/m, 4-8/4 g, 32 lbr, 7 c, 26 h. Pres, Oscar Edwards, Sec. M. H. Spaulding, Treas, & Sup. E. C. Clark.

lark. **NORWALK, CONN.**—Norwalk Horse R.R. Co. **M**, 4-10 g., —In r. 7 c, 20 h. Pres. James W. Hyatt, ⁷ Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt. **NORWICH. CONN.**—Norwich Horse R. R. Co. **OAKLAND, CAL.**—Alameda, Oakland & Pied-nont R.R. Berkley Villa R.R. Broadway & Piedmont St. R. R. Co. Fourtcenth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, — . Pres. & Snpt. Walter Blair, Sec. P. J. Van Loben. Oakland R.R. Co.

Oakland R.R. Co. OGDEN CITY, UTAH.-Ogden City Ry. Co.

3 m, 4-8½ g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtle, Ogden City, V. P. & Supt. O. P. Arnold, Salt La. City, Sec. & Treas, H. S. Young, Ogden City. **0LEAN, N.Y.**—Olean St. Ry. Co. 11-10 m, 3-6 g, 25 lb r, 3 2, 8 h. Pres. M. B. Fobes, Sec. & Treas. M. W. Barse Bars

[JUNE, 1886.

Barse. OMAHA, NEB.—Omaha Horse Ry. Co. 15 m, 4-8% g, 35 fb r, 40 c, 300 h. Pres. Frank Murpby, V. Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W.

. Smith. **ONELDA VILLAGE, N. Y.**—Onelda Ry. Co. 2 4.8% g, 47 lb r, 3 c, 6 h. Pres. Jerome Hickox, ec. & Treas. W. E. Northrup, Snpt. Chas. Bonta. **OSHKOSH, WIS.**—Oshkosh St. R R. Co. 3% m, 8% g, 27 lh r, 9 c, 24 h. Pres. Leander Choate, V. res. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. bommson

4-8-½ g, 27 lh r, 9 c, 24 h. Pres, Leander Choaté, V. Pres, F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.
OSWEGO, N.Y.—Oswego St. Ry. Co. 2 m, 4-8-½ g, 45 lb r, 3 c, 23 h. Pres. Jas. F. Johnson, V. Pres. R. J. Ollphant, Sec. Haynes L. Hart, Treas. Robt, G. Post, Gen. Man. James O'Connor.
OTTAWA, ONT.—Ottawa City Passenger Ry. Co. 3 m, 4-8-½ g, 30 lb r, 9 c, 40 h. Pres. Thomas C. Keefer, V. Fres. R. Blackburn, Sec. James D. Fraser.
OTTUMWA, IA.—Ottumwa St. R.R. Co. 2 m, 3-6 g, 37 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, 3/4 g, 16 lb T r, 1 c 4 h. Owner, L. E. Gray.
PADUCAH, KY.—Park R.R. Co.
PARIS. TEX.—Paris St. Ry. Co.
PATERSON, N. J.—Paterson & Passalc R.R. Co.
7 m, 4-10 g, 33 lb r, 16 c, 24 h. Pres. Jonn N. Terine, Treas, John L. Brown, Sec. E. S. Brown, Man.
& Pur. Agt. Ambrose T. King, Supt. M. O. Rourke. Paterson City R.R. Co. 6 /µ, 4-8/4 g, 35 lb r, 12 c, 41 h. Pres. Garrett Planteu, Treas, Helmas Romalne, 5-6c. Albert A. wilcox.
PENRACOLA, FLA.—Pensacola St. Ry. Co.
PEORIA, ILL.—Central City Horse Ry. Co. 4/2 m, 4-8/4 g, 40 lb r, 60 c, 135 h. Pres. M. Woodward, ..., e.c. M. Pieffer, Treas. Elikot Caliender, Supt. John Strong.

..., ec. M. Pheffer, Treas. Elliot Cahender, Supersona, Fort Clark Horse Ry. Co.-m,-g,-lb r,-c,-h.-Pres. J. II. Hall.
Peorla Horse Ry. Co. 7½ m, 4-8½ g, 40 lb r, 63 c, 140 h. Pres. H. Woodward, Sec. M. Pfelffer, Treas.
H. N. Wheeler, supt. John Strong.
PETERSBURGH, VA.-Petersburgh St. Ry. Co. 32 m, 4-8½ g, 42 lb r, 9 c, 44 h. George Beadle, Pro-PHILADELPHIA, PA.-Citizens Pass. Ry. Co. 10½ m, 5-2 g, 45 7 lb r, 92 c, 420 h. Pres. John Mc-Carthy, Sec. & Treas. J. J. Adams, Sup. Sam'i Cline. Frankford & Southwark Phila. City Pass. R.R. Co. 18 u, 5-2 g, 47 lb r, 102 c, 8 dummy c, 618 h. Pres. Alfred Smith, Sec. & Treas. Geo. S. Gandy, Supt. W. H. Janeey.

18 u. 5-2 g. 47 lb r, 102 c. 8 dummy c. 618 h. Pres. Altred Smith, Sec. & Treas. Geo. S. Gandy, Supt. W. H. Janney. 11 estonville, Mantua & Falrmount Pass, R.R. Co. 20 m, 5-2 g. 43 h r, 60 c, 480 h. Pres. Charles F. Laffer-ty, Sec. & Treas. W. C. Foster. Lehigh Ave, Pass, Ry. Co. Pres. John Lamon, Sec. Chas. A. Porter, Treas. John L. Hill. (Track not laid.) Lombard & South Sts. Pass. Ry. Co. - m, 5-2 g, 43 b, r, 51 c, 378 h. Pres. John B. Parsons, Sec. & Treas. Francis Hazelhnrst Supt. Jno. M. Gaughen. People's Pass. Ry. Co. 41 m, 5-29, 47 lb r, 125 c, 1,080 h. Pres. C. J. Harrah, V. Pres. C. J. Harrah, Jr., Sec. & Treas. Jno. C. Dessalet, Supt. Vm. Hagenswiller. Philadelphia Cit Pass. Ry. Co. 7 m, 5-23 g, 47 lb r, -c, -h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. (Leased to Phila. Traction Co.) Philadelphia Traction Co. 109 m, 5-23/g, 45-78 lb r, 594 c 2,942 h. Pres. W. H. Kemble, V. Pres. P. A. B. Widener & W. L. Ekkins, Treas. D. W. Dickson Philadelphia & Gray's Ferry Pass. R.R. Co. 10 1-3 m, 40 c, 200 h. Pres. Matthew Brooks, Treas, J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-ett. Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 65

m, 40 c, 200 h. Pres. Matthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lovett.
Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 65 (352 h. Pres. E. B. Edwards, V. Pres. John Lambert, Sec. & Treas. Wm. S. Blight, Supt. Wm. Ingles. Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William r. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens. Seventeenth & Nineteenth Sts. Pass. Ry. Co. 75 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Peddle. [Leased to Philada. Traction Co.]
Thilreeath & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 g, 43 br. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas. John B. Peddle. Gased to Philada. Traction Co.]
Thilreeath & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 g, 43 br. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Mreas. John S. Peddle. Supt. Jacob C. Petty. (Leased to Phila. Traction Co.)
West Philadelphia Pass. Ry. Co. 18/ m, 122 c, 646 h. Pres. Peter A. B. Widener, Sec. & Treas. D. W. Dickson. (Leased by the Phila. Traction Co.)
PHILLIPSBURGHI, N. J. Phillipsburgh Horse Car Ry. Co. 2% m, 48 g, 351 br. 74 c, 13 h. Pres. Daniel Runkle, Sec. & Treas. James W. Long.
PHTTSBURGH, P. A. –Central Pass. R. Co. 3m, 16 c, 95 h. Pres. Jre. Cultey. Sec. F. L. Stepnenson, Treas. F. Jones, Supt. R. G. He ron. Beaver Falls & New Brighton Ry. Co. (dizens' Pass. Inc. G. Horms, Sec. C. M. Gormly, supt. Murry Verner. Predent St. & Pleasant Valley Pass. Ry. Co. 26 m, 5-2% g, 46-50 lb r, 20 c, 151 h. Pres. Wm. J. Crozler, Allegheny City. People's Park Pass. Ry. Co. 2 m, 5-2% g, 45 lb r, 10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny City. People's Park Pass. Ry. Co. 2 m, 5-2% g, 45 lb r, 10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny City. People's Park Pass. Ry. Co. 2 m, 5-2% g, 45 lb r, 10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J. Cro

City. Pittsburgh, Alle theny & Manchester Pass Ry. Co. Pittsburgh, Alle theny & Manchester Pass Ry. Co. 5 m. 5-2% g, 46 lb r. 40 c. 275 h. Pres. Chas. Atwell, Sec. & Treas. Chas. Selbert, Supt. James C. Cotton. Manager J. P. Speer. Pittshurgh, Oakland & East Liberty Pass. Ry. Co. 11 m, 5-4% g, 47 lb r, 32 c. 110 h, 61 mu. Pres. J. T. Gordon, Sec. Jobn G. Traggardh, Treas. A. W. Mellon, Supt. H. M. Cherry. Pittsburgh Union Pass, R. R. Co. 5 m, 5-2% g, 45 lb r, 29 c. 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas. Chas. Selbert, Cash. Sami. C. Hunter.

Cotton, Sec. a reasonable Honter. Pittsburgh & Birmingham Pass. R.R. Co. 3% m, 5-2% g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Ssb, D. F. Agnew, Treas. John G. Holmes.

THE STREET RAILWAY JOURNAL.

READING, **PA.**–Reading City Pass. Ry. Co. 21-5m, 5-2½ g, 45 lhr, 19 c, 44 h. Pres, B. F. Owen, V. Pres, Jas, L. Douglass, Sec. & Treas. H. A. Muhlen-berg, Supt. J. A. Riggs. Perklomen Ave. Pass. Co. 21-5 m, 5-2½ g, 45 lb r, 14 c, 36 h. Pres. Chas. Brenelser, Sec. & Treas. Isaac Hester, Supt. John B. Houp. **RED OAK**, **IA.**–Red Oak St. R.R. Co. 14 m, 42½ g, flat 7, 2c, 2h, 2 mu. Pres. J. W. Judkins, V. Pres, G. West, Sec. F. M. Byrlket, Treas. & Supt. F. O. Judkins, **RICHMOND**, **IND.**–Richmond City Ry. Co. 3 m, 3 g, 9 lb r, 10 c, 30 h. Pres. J. Y. Miller, V. Pres. Jos. Rathff. Treas. H. I. Miller, Supt. F. M. Francisco. **RICHMOND**, **ILL.**–Richmond City Ry. Co. 7½ m, 48½ g, 30-45 lb r, 40 c, 180 h. Pres. J. L. Schoolcraft, Sec. & Treas. Walter Kidd, Man. C. M. Bolton, Supt. Charles Selden. **RICHMOND**, **Sec.** C. C. Woodworth, Treas. C. Supt. B. R. Selden. **ROCHESTER**, N. Y.–Rochester City & Brighton R.K. Co. 37m, 4-8½ g, 25-30-45 lb r, 142 c, 596 h. Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodworth, Supt. Thomas J. Brower. Citizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & **ROCKFORD**, **ILL.**–Rockford St. Ry. Co. 6 25 **M**, 48½ g, 2010 r, 13 c, 52 h. 16 m. Pres. Anthony Halnes, V. Pres. L. Rhodes, Sec. Miss A. C. Arnold, **Treas.** N. E. Lyman, Supt. Fred. Haines, **ROCK FORD**, **HLL.**–Rock Island & Milan St. Ry. Co. 7 m. 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres & **ROCK SORD**, **HLL.**–Rock Island & Milan St. Ry. Co. 7 m. 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres & **ROCK SORD**, **HLL.**–Rock Island & Milan St. Ry. Co. 7 m. 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres & **ROCK SOLD**, **HLL**–Rock Island & Milan St. Ry. Co. 7 m. 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres & **ROCK SOLD**, **HLL**–Rock Island & Milan St. Ry. Co. 7 m. 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres & **ROCK SOLD**, **N**, V.–Kingston City R.K. Co. 24-5 m, 48½ g, 40 lh r, 10 c, 40 h. Pres. James G. Linds-ley, V. Pres. S. D. Coykendol, Sec. & Treas. J. F. Robusson. 2 m., with horses, 5 m. With motor. **RONDUT**, N. Y.–Kingston City R.K. Co. 24-5 m, 48½ g, 40 lh r, 1

ley, V. Pies, S. D. Coykendon, Sec. & Treas, Joint C. Romeyee, Supt. Wm. H. DeGarmo. SACRAMENTO, CAL.—Sacramento City St.R.R. Co. SAGINAW, MICH.—City of Saginaw St. R. H. Co. 2½ m, 4 S½ g, 42 lb r, 10 c, 50 h. Pres. David H. Jerome, V. Pres. Geo. F. Williams, Sec. & Treas, Geo. L. Burrows, Supt. Fred G. Benjamin. SALEM, MASN.—Salem & Danvers St. Ry. Co. 6 m, 45½ g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Rus-sell, Sec. G. A. Vickery, Treas, Geo. W. Williams, Supt. W. B. Furgurson, Asst. Supt. David N. Cook. Naumkeag St. Ry. Co. — m. 45½ g, 30-35-45 lb r, 50 c, 140 h. Pres. Chas. Odell, Clerk Joseph F. Hickey, Treas. Henry Wheatland, Supt. Willard B. Ferguson. SALE ACC 13 m, 4-5½ g, 20 lb r, 20 c, 115 mu. Pres. John Taylor, sec. David McKenzle, Treas, James Jack, Supt. Orson P. Arnold. SAN ANTONIO, TEX.—San Antonio St. Ry. Co. 15 m, 4g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas I. Withers, San Antonio, Sec. E. R. Norton, Supt John Robb. Prospect Hill St. Ry. Co. SANDUSKY, O.—Sandusky St. Ry. Co. 2 m, — g, — lb r, — c. — h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude. SAN FRANCISCO, CAL.—California St. R. Co Central R. R. Co. 12 m, 5 g, 45 lh r, 31 c, 290 h Pres. Chas. Main, V. Pres. S. C. Bigelow, Treas. A. J. Gunnison, Sec. C. P. LeBreton, Supt. J. F. Clark. Clay St, Hill R.R. Co. 1 1m, 3-6 g, 30 lb r, 11 c, 12

dummy cars. Pres. Joseph Britton, V. Pres. James Moffit, Trcas. Henry L. Davis, Sec. Chas. P. Campbell, Supt. Joseph Britton.
Clay St. Park & Ocean R.R. Co.
Market St. Cable Ry. Co. 10 9-10 m, 4-8½ lb r, 137 c, 2 motors. 73 h. Pres. Lefand Stanford, V. Pres. Chas. F. Crocker, Trcas. N. T. Smith, Sec. J. L. Willcutt supt. H. b. Morton.
North Beach & Mission R.R. Co. 8 m, 5 g, 46 c, 400 h. Pres. Carl Ahpel, Sec. H. W. Hathorne, Treas.
Wm. Alvord, Supt. M. Skelly.
Omnihus R.R. & Cable Co. 8½ m, 5 g, 35-45 lb r, 50 c, 364 h. Pres. Lefand Stanford, V. Pres. Chas.
Portero & Bay Ylew R.R. Co. 1½ m, 5 g, 35 lb r, 20 c, 64 h. Pres. Lefand Stanford, V. Pres. Chas.
Crocker, Treas, N. T. Smith, Sec. 4. L. Willcutt.
Sutter St. R.R. Co. 5½ m, 411 g, 354 Jb r, 40 c, 189 h. Pres. Restare Sutro, V. Pres. C. Kohler.
Sec. M. Pres, Gustave Sutro, V. Pres. C. Kohler.
Sec. A. Buy Chas. J. Werner.
The City R.R. Co. 11 m, 5 g, 45 lb r, 72 c, 280 h. Pres. R. B. Woodward, V. Pres. Ce. Raum, Scc. M. E. Wills, Treas. Jas. H. Goodman, Supt. William Woodward.

M. E. WIIII Woodward.

Voodward. ' SAN.JOSE, CAL.—San Jose & Santa Clara R.R.Co. First St. & San Pedro St. Depot R.R. Co. Market St. & Willow Glen R.R. Co. North Side R.R. Co. Peopler R. P. Co.

North Side R.R. Co. People's R. R. Co. SANTA BARBARA, CAL.—Santa Barhara St. R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. Mcl'hall. SARNIA, CAN.—Sannla St. Ry. Co. 2½m, 4-8 g, 32 lb r, 2 c, 9 h. Pres. J. F. Lister, Sec. & Treas, Thos. Symington, Supt. Henry W. Mills. SARVGATUCK, CONN.—Westport & Saugatuck Horse R.R.

Symingtoh, Supt. Henry W. Miffs.
SAUGATUCK, CONN.-Westport & Saugatuck Horse R. R.
SAVANNAH, GA.-City & Suburban Ry. Co. 18% (m, 5 g. 16-30 lhr, 49 c, 110 h, 3 engines. Pres. J. H. Johnson, Asst. J. W. Alley. Treas. E. Schmidt. Coast Line R.R. Co. 7 m, 5 g, 30 lbr, 17 c, 37 h Pres. Geo. Parsons, New York, Sec., Treas. & Gen. Man. R. E. Cobb, Savannah.
SAYRE, PA.-Sayre St. Ry. Co. Pres. Howard Elmer (organization not completed).
SCRANTON, PA.-People's St. Ry. Co. 9% m, 4.8% g, 25-52 lbr, 19 c, 70 h. Pres. Wm. Matthews, Sec. & Treas. J. C. Platt.
SEARTCY, ARK.-Searcy & West Point R.K. Co, 8 m, 4.8% g, 20 lbr, 7 c, 6 mu. Pres. A. W. Yarnell. Sec. W. Lightle, Treas. Jasper Hicks.
SEATTLE, W. T.-Seattle St. Ry. Co. 3½ m, 4.8% g, 25 h, 7 5 c, 20 h. Pres. F. H. Osgood Sec. Geo. Kinnear.
SEDALIA, MO.-Sedalia St. Ry. Co. 2½ m, 4.10 g, 20 h r 6 c 25 h. Pres. Joseph D. Sicher, V. Pres. Louis Deutsch, Treas. F. H. Guenther, Sec. Conrad.
SELMA, ALA.-Selma St. R.R. 2½ m, 18 hr, 5

Louis Deutsch, Treas, F. H. Guenther, Sec. Chas. S. Conrad. SELMA, ALA.—Selma St. R.R. 2% m, 18 h r, 5 c, 8h. Pres, E. Gilman, Sec. & Treas. J. H. Hollis, Supt. W. Bohlia. SENECA FALLS, N.Y.—Seneca Falls & Waterloo RY. Co. 7 m, 48% g, 40 b r, 4c, dumnies. SHERMAN, TEX.—Sherman City R.R. Co. 3%m 5.2 g, 20 b r, 7 c, 32 mu. Pres, C. W. Batsell, Treas J. M. Batsell. Sec. C. W. Batsell, Jr. SHREVEPORT, LA.—Shreveport City R.R. Co. 1/2 m, 4+2, 46 b r, 6 c. 14 h. Pres, Peter Yource. SHVER CLIFF, COL.—Shver Cliff St. R.R. Co. SIOUX CITY, IA.—Show City St. Ry. Co. 5 m, 4 g, - r, 8 c, 52 mu. Pres. Fred. T. Evans, V. Pres, D. A. Magee, Sec. & Treas. Fred Evans, Jr. SOUTH CHICAGO, ILL.—Chicago Horse & Dummy R.R. 5 m, 48% g, - b r, - c, - h. Pres. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bliss. [Not In operation.] South Chicago City Ry. Co, 4 c, 8 h. Pres. An-drew Rehm, Sec. & Supt. A. Krimbill, Treas H. Shearrer.

drew Rehm, Sec. & Supt. A. Klimbill, Treas H. Shearrer. SOUTH PUEBLO, COL.—Pueblo St. R.R. Co. SPRINGFIELD, H.L.—Citizens' St. R.R. Co. SPRINGFIELD, H.L.—Citizens' St. R.R. Co. SPRINGFIELD, MASS.—Springfield St. Ry. Co. A Skg g, 33-40 lb r, 30 c, 120 h. Pres. John Olmstead, Auditor L. E. Ladd. Clerk Gideon Wells, Treas. A. E. Smith, Supt. F. E. King. SPRINGFIELD, MO.—The People's Ry. Co. of S pringfield, Mo. 3% m, 4-10 g, 33 lb r, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas. Sheppard, Supt. H. F. Denton. Springfield R.R. Co. 2 m, 30-40 lb r, 4-8% g, 7 c, 19 h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas. B. F. Hobart, Supt. J. A. Stoughton, No. Springreid. SPRINGFIELD, O.—Citizens' St. R.R. Co. 10 m, 4 g, 29 c, 135 h. Pres. D. W. Stroud, V. Pres. A. S. Bushnell, Treas. Hose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hanford. STATEN ISLAND, N. Y.—Staten Island Shore Ry, Co.

Sec. & Treas. Arthur Kirkpatrick, Supt. John F. Meriam.
Frederick Ave. Ry. Co. 12 m, 3 g, 16 lh r, 6 c, 16 h. Pres. Thos E. Tootle, V. Pres. Winslow Judson, Sec. W. D. B. Motter, Treas. Thos W. Evins, SupS. Rowen.
St. Joseph & Lake St. R.R. Co. Union Ry. Co.
Willow Ry. Co.

St. JOSEPIN & Like St. R.R. CO.
Union Ry. Co.
ST. LOUIS, MO.-Badeu & St. Louis R.R. Co.
33 m, 4-10 g, -- lh r, 7 c, 21 h. Pres. George S. Case,
V. Pres. William Z. Coleman, Supt. J. H. Archer.
Benton & Bellefontaine Ry. Co. 7½ m, 4 10 g, 45 lb r,
29 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas.
Parsons. Sec. & Trens. Robert McCulloch.
Cass Avenue & Fair Grounds Ry. Co. 8½ m, 4-10 g,
38 lb r, 39c, 285h. Pres. W. R. Allen. V. Pres. Geo. W.
Allen, Sec. & Treas. J. W. Wallace, Supt. G. G. Gihson,
Cashler O. H. Williams.
Citizen's Ry. Co. -m, -g, -lb r, -c, -h. Pres.
Julius S. Walsh, V. Pres. J. P. Helfenstinc.

Forest Park, Laclede & Fourth St. Ry. Co. Pres-Chas. H. Turner, See H. P. Davis. Jefferson Ave, Ry. Co. Pres. John M. Gelkeson, Gen. Man, John Scullin, Scc. C. K. Dickson. Lindell Ry. Co. 132 m, -g. -, 65 c, 475 h. Pres John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas, Geo. W. Baumhoff, Supt. Jos. C. Liewellyn. Northern Central. Missouri R.R. Co. -m, -g. -lb r, -c, -h. Pres. P. C. Maffit, Sec. W. D. Henry. Mound City R.R. Co. Fres. John. Scullin, Sec. & Treas. C. M. Seaman, Supt. Jas. Sullvan. People's Line. Fres. Chas. Green, Sec. John Ma-honey. SuPt Patrick Siea. Southern Ry. Co. 745 m, 4-10 g, 35-52 lb r, 49 c, 250 V. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson.

301

Southerla Ry, Co. 745 In, 745 S. Minary, Man. W.
L. Johnson.
St. Louils 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. Ischer.
St. Louils Cable & Western Ry. Co. Pres. M. A.
Downing, V. Pres. F. M. Colburn, Sec. & Treas. E. F.
Claypool, Man. Geo. F. Branham.
Tower Grove & Lafayette Ry. Pres. Chas. Green, Sec. John Mahoney, supt. Patrick Shea.
Union Depot R.R. Co. -m., -g, -lb r, -c, -h.
Pres. John Scullin, V. Pres. & Treas. C. M. Seaman, Supt. Jas. H. Roach.
Union Ry., Co. Pres. Julius S. Walsh, V. Pres. J. P.
Helfenstlne, Sec. & Treas. M. J. Moran, Supt. Michael

Meinenstine, Sec. & Treas. M. J. Moran, Supt. Michael Moran.
STONEHAM, MASS.—Stoneham St. R.H. Co. 2½ m, 48½ g, 38 lb r, 10 c, 23 h.Pres. A. V. Lynde, Vei-rose. Treas. & Clerk Lyman Dyke, Supt. John Hill, ST. PAUL, MINN.—St. Paul City EY. Co. 37 m. 48½ g, 45-521 br, 520, 600 h. & mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. A. Z. Levering, Treas. Clinton Morrison, Supt. A. L. Scott.
STILLWATER, N. Y.—Stillwater & Mechanics-ville St. Hy. Co. 4½ m, 45½ g, 25-30 lb r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. Edw. I. Wood, Treas. E. H. Smith.
STROUDSBURGH, PA.—Stroudsburgh Passen ger R.R. Co. 14-5 m, 45½ g, 28-30 lb r, 3 c, 9 h. Pres & Treas. J. Lantz, Sec. Jacob Houser.
SYRACUSEF, N. Y.—Syracuse & Onondaga R.R. Co. 235 m, 4-8 g, 28-47 lhr, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson.

Co. 23.5 m, 4-8 g, 28-47 ln r, 9c, 18 n. rres. reter Burns, sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson. Central City Ry. Co. 2½ m, 4-8½ g, 40 lb r, 12 c, 37 h. Pres. Daniel Pratt, V. Pres. Jonathan C. Chase, Sec. & Treas. James Barnes, Supt. George Crampton. 4 Syracues Savings Bank Bullding, Fifth Ward R.R. Co. 2½ m, 4-5½ g, 35-56 lb r, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Pot-ter, Supt. Hugh Purnell. Office W. Washington St. Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-5½ g, 18-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardiner, Supt. W. J. Hart. Onondaga Savings Bank Bullding New Brighton & Onondaga Valley H. R. Co. 1½ m, 4-S g, 16-351 br, 2 c, 6 h. 1 dummy. Pres. Matthas Britton, Sec. T. W. Meacham, Treas. J. H. Anderson. Supt. J. H. Anderson. Seventh Ward Ry. Co. Syracuse & Geddes Ry. Co. 2 m, 4-8½ g, 35-45 lb r, lo c, 32 h. Pres. R. Nelson Gere, Sec. & Treas. Rasse-las A. Bonta, Supt. Wn. J. Hart. Third Ward Ry. Co. Pres. W. B. Cogswell, Sec. & Treas. W. S. Wales. TAUNTON, MASS.—Taunton St. Ry. Co. 4½ m, 45 g of 62.4 44b.

Syracuse & Geddes Ry, Co. 2 m, 4-8% g, 25-45 fb r, 10 c, 32 h. Pres. K. Nelson Gere, Sec. & Treas. Rasselas A. Bonta, Supt. Wm. J. Hart.
Third Ward Ry. Co. Pres. W. B. Cogswell, Sec. & Treas. W. S. Wales.
TAUNTON, MASS.—Taunton St. Ry. Co. 4% m, 4-8% g, 42, 60 r. 16 c, 48 h. Pres. T. C. Buntin, V. Pres. Josephus Collett, Sec. John R. Hagen, Supt. John T. Shriver.
TEXARKANA. ARK.—Texarkana St. Ry. Co. TOLEDO, OHLO.—Toledo Consolidated St. Ry. Co. TOLEDO, OHLO.—Toledo Consolidated St. Ry. Co. Tol.ED, on H. C. 10 m, 3 g, 28-35 fb r, 31 c, 10 h. Pres. J. E. Balley, Sec. A. E. Lang.
Adams Street Ry. Co. 10 m. 3 g, 28-35 fb r, 31 c, 10 h. Pres. A sec. Jno. J. Slipherd of Clereland, Gen. Man. T. F. Shipherd, Supt. Jno. A. Watson.
Monroe Street R. The Central Passenger R.R. Co. of Toledo, O. 8 m, 3 g, 27 lb r, 17 c, 70 h. Pres. F. E. Seagrave, Treas. & Man. A. K. Seagrave, Supt. Joseph Murphy.
TOPEKA, KAN.—Topeka City Ry.Co. 9 m, 4 g, 25-48 lb r, 26 c, 0 h. Pres. Joah Mulvane, V. Pres. D.W. Stormont. Sec. & Treas. E. Wildes, Supt. Jesse Shaw.
TORONTO, CAN.—Topeka City Ry.Co. 9 m, 4 g, 25-48 lb r, 25 c, 90 h. J. Franklin.
TRENTON, N. J.—Trenton Horse R.R. Co. 11/2 m, 5-2 g, 43-47 lb r, 10 c, 31 h. Pres. Gen. Lewis Perrine, 3 c, 40 m, Supt. Jone J. Franklin.
TRENTON, N. J.—Trenton Horse R.R. Co. 11/2 m, 5-2 g, 43-47 lb r, 10 c, 31 h. Pres. Gen. Lewis Perrine, 40 m, Exton, V. Pres. W. H. Skirm, Sec. H. B. Howell, Treas. Aman. Supt. Join J. Franklin.
TRENTON, N. J.—Trenton Horse R.R. Co. 11/2 m, 5-2 g, 43-47 lb r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Jas. Milen. Cortland & Homer Horse R.R. Co. 11/2 m, 5-2 g, 43-45 lb r, 9 c, 10 h. h.m. Pres. L. A. Filsh, Cortland, N. Y., Treas. Adam Exton, V. Pres. M. A. Skirm, Sec. H. B. Howell, Treas. & Man. Director chas. Y. Bamford.
TROY, N.Y.—Cortland & Homer Horse R.R. Co. 11/2 m, 70, V. Pres. E. A. Filsh, Cortland, N. Y., Treas. Jas. M. Milen. Cortland, Scot. St. Weile, Cortl

VALEJO, CAL.-Valejo St. Ry. Co.
VICKSBURG, MISS.-Vlcksburg St. Ry. Co.
HIL City R.R. Co.
VINCENNES, IND.-Vincennes St. Ry. Co.
WACO, TEX.-Waco St. Ry. Co. 5 m, 48 g,
14 B br, 9 c, 44 h. Pres. E Rotan, Sec. & Treas. W.
R kellum, Supt. J. W. Sedbury.
WAITHAM, MASS.-Waitham & Newton St.
Ry. Co. 3½ m, 3-8½ g, 30 lb r, 7 c, 18 h. Pres. R. E.
Robbins, Sec. & Treas. Henry Bond.
WASHINGTON, D.C.-Capital, No. O. St. & So.
Washington R.R. 13½ m, 48 g, 35 lb r, 45 c, 176 h.
Pres. C. White, Sec. & Treas. W. E. Boughton, Supt.
Andrew Glass.
Columbia R.R. Co. of the District of Columbia. 2½
m, -g, --lbr, 19 c, 56 h. Pres. H. A. Willard, Sec.
Matropolitan R.R. Co. of 1½ m, 48 g, 38 lb r, 90 c, 400
h. Pres. George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William W. Moore, Supt. L. W. Emmart
Washington & Georgetown R.R. Co. 20 m, 4-32 g, 44 h.
Kreas, Milam W. Moore, Supt. L. W. Emmart
Washington & Georgetown R.R. Co. 20 m, 4-34 g, 45 lb r, 173 c, 850 h. Pres. I. A. Wilson, Sec. & Treas. C.M.

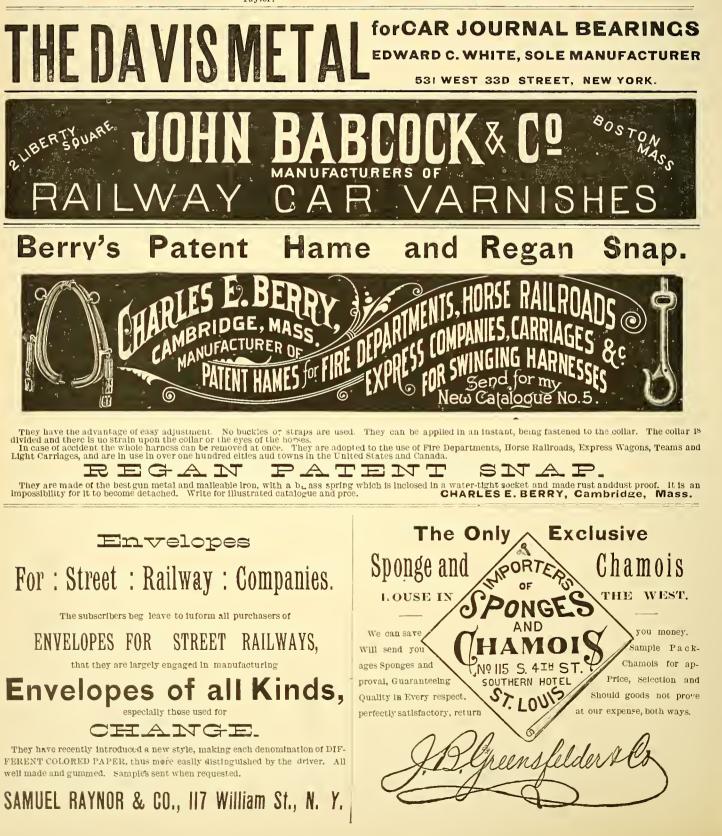
& Treas. C. C. Ormsby. (Leased by the Troy & Lan-singburgh R R. Co.) WATERLOO, I.A.-Waterloo St. Ry. Co. WEST HURON, CONN.-New Haven & West Haven R.R. Co. WESTPORT, CONN.-Westport & Saugatuck

MWESTPORT, CONN.—Westport & Saugatuck Horse R.R.
WHEELING, W. VA.—Citizens Ry. Co. 10 m, 5-2% g, 45 lb r, 20 c, 55 h. Pres. Dr. C. A. Wingelter.
Sec. Van B. Hail, Supt. Michael Loftus.
Wheeling & Elm Grove R.R. 7 m, 4.8% g, 30 lb r, 12 c, 4 Baldwin Motors. Pres. J. D. DuBois, Sec. E. J. Rutter, Supt. E. Hirsch.
WICHITA, KAN.—Wichlta City Ry. Co. 7% m, 11 c, 60 mu, 4 h. Pres. B. H. Campbell, V. Pres., Treas. & Gen. Man. E. R. Powell, Sec. G. W. Lara-mer, Atty. E. C. Ruggles.
WILKESBARKE, PA.—Wilkesbarre & Kingston Pass. R.

WILK ESBARRED, 1.A. Pass, R.R. Wilkesbarre & Ashley Passenger R.R. Co. Coalville Passenger K.R. 2½ m, 4-8½ g, 20-34 lb r, 4 c, 10 h. Pres. Chas. A. Miner, Sec. & Treas George Loveland, Supt. Albert G. Orr. WILLIAMSPORT, PA.—Williamsport St. R.R. Co.

WILLIAMSTOR, DEL.-Front & Union St. Pass-enger Ry. Co. 1% m, 5-2 g, -1b r, 7 c, 20 h. Pres. Geo. W. Bush, Supt. Sam'l A Price, Treas. E. T. Taylor.

Wilmington City Ry. Co. 6 m, 5-2½ g, 45 lb r, 19 c, 80 h. Pres. W. Canby, Sec. & Treas. John F. Miller, supt. Wm H. Burnett.
WINDSOR, CAN.-Sandwich & Windsor Passenger R.R. Co.
Windsor & Waikerville Electric Ry. Co.
WINNIPEG, MANITOBA, CAN.-The Winnipeg St. Ry. Co. 5 m, 48% g, 35 lb r, 13 c, 75 h. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, supt. Geo. A. Young.
WINONA, MINN.-Winona City Ry. Co. 4 m, 3-6 f, 27 lb r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.
WOBURN, MASS.-No. Woburn St. Ry. Co. 2% m, 48 % g, 40 lb r. 5c, 4th. Pres. & Treas. J.R. Carter. Supt. Dexter Carter.
WORCESTER, MASS.-Worcester St. Ry. Co 5% m, 4-8% g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas & Supt. Harry N. Searls, Worcester.
Cluzens' St. Ry. Co. Pres. Chas. B. Pratt, Sec. & Treas. F. W. Brigham.
YOUNGSTOWN, O.-YOUNgstown St. R.R. Co. 2. Areas. J. H. G. Jergen, Sec. W. C. Townsend reas. T. B. Townsend.

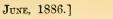












THE STREET RAILWAY JOURNAL.

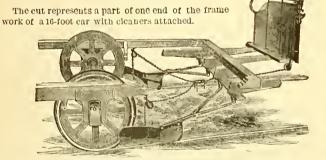




[JUNE, 1886.



DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.



308

These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over three thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. Clean Soow, ice, Nucl and Stones from the rail. The driver can raise or lower them instantly with one hand. To secure the largest benefit they shoul to be attached to every car. No estimate can be made of their advantage in saving of horseflesh hand labor, salt, and the making of time in stormy weather. Since their introduction new and valuable improvements have beeu made in their construction, mode of at-tachmeut, and convenience of handling. They are inlished in a thorough, work-manifike manner of the best material obtainable, the design being to manufac-ture the most efficient article in preference to other considerations. Price In-cludes right of use and is less than heretofore. Interference is made to a few of the roads using the^{co} Cleaners.

nerercheo is made to a rew of the roads using these cleaners.		
Detroit City Ry., Detroit, Mich.	 154 I	Pa
Chleago Cluy ky, Chleago, Ill.	 400	6.6
Rochester City & Brighton R. R. Rochester, N. Y	 100	4.4
Albauy Ly., Albany, N. Y.	 7.5	4 e
Lynu & Boston R. R., Boston, Mass.	 68	+ 6
Boston Ilighland Ry., Boston, Mass.	 46	4.6
Grand Rapids Street Ry	 48	4.6
Naumkelg Street Rv., Salem, Mass	 69	44
Bridgeport Horse Ry., Bridgeport, Conu	 40	63
Cream City Ry., Milwankee, Wis	 40	6.6
Milwaukee City Ry., Milwaukee, Wis	 50	- 66
Buffalo Street Ry Buffalo N Y	 32	- 44

AUGUSTUS DAY, 76 State Street, cor. Park Place,

This cut represents my Snow Plow, 23 of which are now in use. With four horses and two men they have handled two feet of snow, distributing it nine feet from the outside rail.

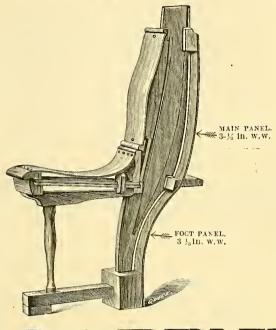
Detroit, Michigan, U. S. A.



It is adapted to single or double track roads, adjustable where necessary; built in the most thorough and substantial manner of the best materelal. The Plow is not intended to supply the price of the small Track Cleanrs, but be auxiliary to them. For execution in deep snow, case, and convenience inhandling, it sur-passes 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. De-troit, Mich. (Two plows.) Kochester City & Brighton R.R. Rochesier, N.Y. (Two plows.) cream City Rv., Milwankee, Wis. West Side Street Ry., Mil-wankee, Wis. Chicago City Ry., Chicago, II. (Three plows.) Grand Rapids Street Ry., Grand Rapids, Mich. Highland St. Ry., Botfalo St., Ry., Buffalo, N.Y. (Two plows.) Joinstown Pass. Ry., Johnstown, Pa. Min-neapolis St. Ry., Minneapolis, Minn. (Two plows.) St. Paul; Ny., St. Paul, Minn. (Two plows.) Kalamazo ost. Ry., Kalamazoo, Micb. Worcester St. Ry., Witwaukee, Wis.

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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 railway lines, which test has left them as firm and good as the day they were put in, we unhesitatingly 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 of iffen the car.

2nd. They are lighter, being only 3-8 inch thick, and so do vot 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.

car. For repairing cars these sides have no equal. **Our Three Ply Car Sents and Backs**, so well known all over the world, are now the most popular seat and back in the market, and recommend them-selves especially for their *Lightness*, *Cleanliness*, *Healthfulmess and Leauly*, 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 periorated or plain to suit customer. 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 decor.ted, and greatly add 10 the heauty 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 general-ly used are *Birch*, *Birdseye Maple*, Oak and Mahogany.



Manufacturers of Car Seats and Ceilings and Depot Seating,

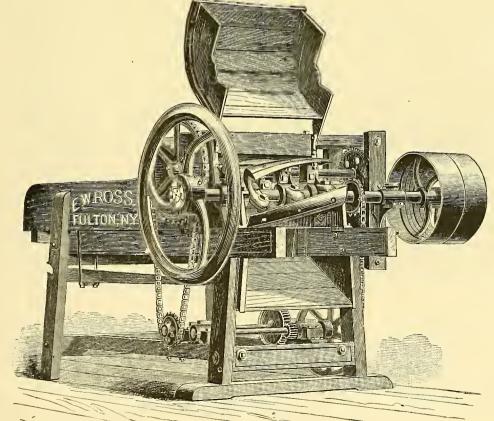
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A FULL LINE OF CUT-TERS BUILT EXPRESSLY FOR STREET RAILWAY BARNS.

THEY HAVE COM-BINED STRENGTH, DURA-BILITY AND GREAT CA-PACITY.

ARE EASILY OPERAT-ED AND CAN BE RUN TO FULL CAPACITY BY SMALL GAS ENGINE.

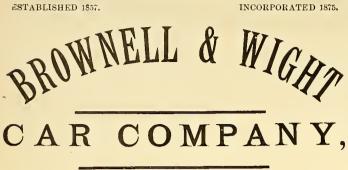
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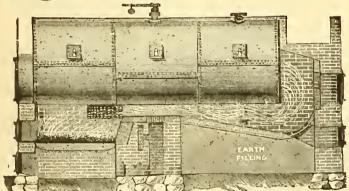
For Horse, Cable or Other Motive Power.

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FOR ERECTING STATIONS ELECTRIC POWER CABLE AND RAILWAYS. USING Jarvis Patent Furnace For Setting Steam Boilers to Burn Cheap Fuel, such as Wet Saw-

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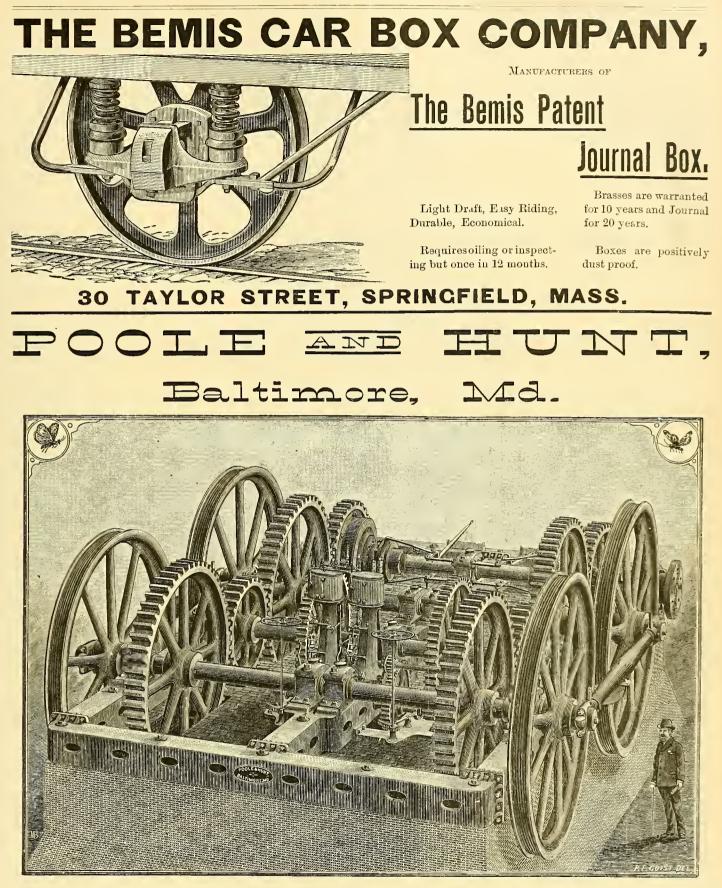
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EDWARD H. JOHNSTON, General Manager,

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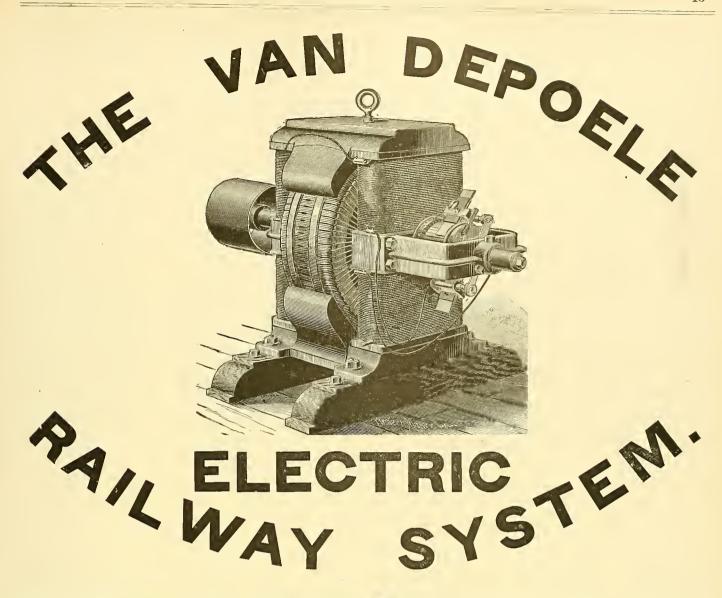
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We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

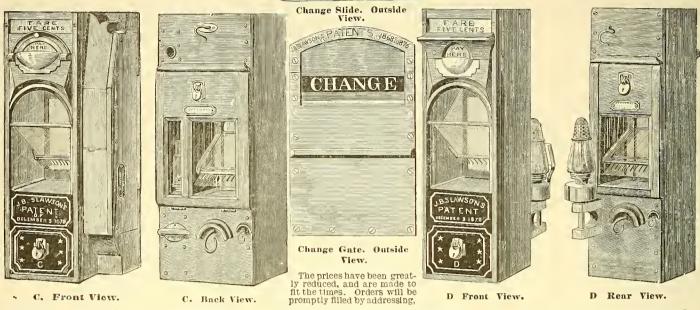
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CHANGE PATENT 1877

TEM," and all of his Boxes, Change Gates and Drivers' Change Box are protected by several patents, and par-ties using them are not liable to claims for iniringe-ments, 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 Ameri-ca, Europe, Asia, Arica and Australia-in fact, nearly all places where street cars are used.



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The Oldest and Largest Manufacturers of Street Railway Track Appliances in the World. Responsible parties contemplating Building, Renewals or Extensions will find it to their interest to correspond with us.

THE KLYN AY AVENY ROCKLINA SUPPLY

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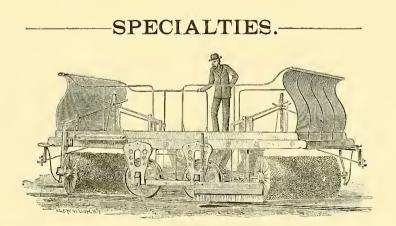
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Yellow Pine Timber for Track Construction of Best Quality. Knee Spikes and Joint Plates.

Rail Spikes at Lowest Manufacturer's Prices, Made to Order, to Fit any Rail.

Any Kind of Materials Promptly Furnished Responsible Parties and Satisfaction Guaranteed,

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Latest Improved Snow Sweepers of OUR OWN MANUFACTURE. Now used in nearly all the principal Northern cities. Rattan for refilling Brooms. Snow Plows. Sand Cars.

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PATENTEE AND MANUFACTURER OF

Graduated Street Car Springs.

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RIGHARD VOSE, ESQ. Dear SIT, —This company has had in use for the past seveu or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-tainly all that we desire. Yours Respectfully, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARD VOSE. Dear Sir. — We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respliy. J. W. FOSHAY, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN, N. Y.

RIGHARD VOSE, ESQ. Dear Sir, —Yours of May 27 to Mr. Hazzard, Prest., has been referred to me for reply. And would say that we have uow in use about 600 sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly, A. N. DICKIE, Supt.

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RIGHARD VOSE, ESQ. Dear Sir,-Replying to your favor of a recent date 1 beg to say that we have been

using your Graduated Car Springs since 1881 and have increased the number, upth at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

COL. RICHARD VOSE. Dear Sir. — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, W. A. BANCROFT, Supt.

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RICHARD VOSE, ESQ. Dear Sir, -All I can say in favor of the Vose Spring is that we continue to apply them to most of our new cars. Have about 60 cars equipped and think very weii of them. If they could be produced for less money should think better of them. Very Respectfully Yours, E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentlemen,-Yours of May 28 at hand, with re-gard to your Car Springs. We find they are the best in use. They come a little higher than the Barrel Spring, but they are much the better springs. Yours truly, H. J. C. BERG, Supt.

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To WHOM IT MAY CONCERN: We have used the Rich and Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwil-ling to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

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MR. RICHARD VOSE. Sir,—We have eighteen cars equipped with your Patent Graduated Spring, and will use your springs to replace all other kinds as fast as repairs are needed. Your springs give the best satisfaction to our company and *patrons* of any that we have ever tried. Yours Respectfully, A. W. ANDERSON, Supt.

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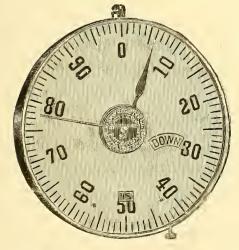
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This Register, which is so generally used throughout the United States and Europe, we claim to be the most perfect check that has ever been placed before the public for the Collection and Registration of Fares on Street Railroads, especially where different rates

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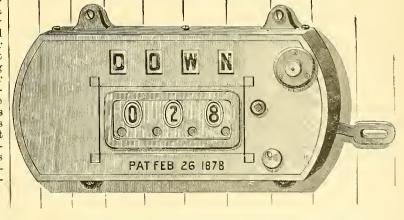
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The Monitor Register.



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The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the sole bars and frog of the horse's foot are never cut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

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The advantages of the Goodenough System are, first and foremost, SOUND HORSES; Secondly, CHEAP HORSE-SHOEING.

Horse railroads using the system in its entirety not only buy much less iron and pay for much less labor, but have also much more serviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides frogs and Boston finds cobble stones."

To those who desire to read further upon the subject we will send upon application free of cost our pamphlets entitled,

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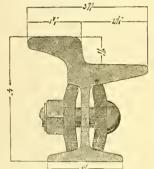
THE GIRDER SYSTEM OUR SPECIALTY.

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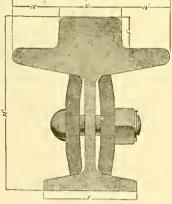
Johnson Steel Street Rail Company,

JOHNSTOWN, PA.

Section C. 38, No. 111.



Patented February 20, 1883. Section E. 76, No. 117.



Patented January 29, 1884.

SIDE BEARING GIRDER RAILS

OR

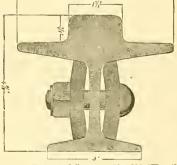
CENTER BEARING GIRDER RAILS.

Large Assortment of different Weights and Sections,

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Patented November 27, 1883.

Section G. 58, No. 120.



Patented January 29, 1884

Rolled Steel Switches, Frogs, Curve Crosses, Etc.

We Furnish Every Detail Wanted in Track Work.

Our customers are guaranteed against all suits for infringements on goods purchased from us and we further undertake to defend the patents covering the details of our Girder System.

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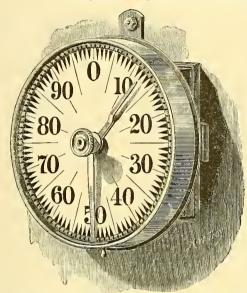
The United States Steam and Street Railway Advertising Company,

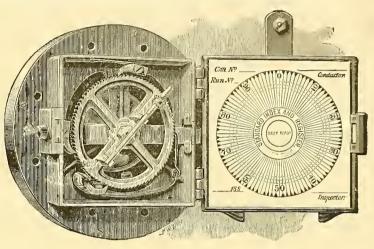
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It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway com-panies anxious to secure a correct report and record of trips made and fares collected, for the reason that, in addition to the visual dial and indicator, a permanent registration of each trip made, and the exact number of fares collected or passengers carried, is auto-metically mode by respect to the relation of each trip made and the exact number of fares collected or passengers carried, is auto-to the provide the trip made and the exact number of fares collected or passengers carried, is auto-to the trip made and the exact number of fares collected or passengers carried, is automatically made by mechanical means upon paper, by which the latter is punctured in a manner that prevents obliteration, and can be preserved in the office of the company for reference and comparison with fares turned in by the conductor, and for filing for future purposes.

TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY. PRESIDENT'S OFFICE. C. A. RICHAROS. 16 KILBY STREET,

BOSTON, March 9, 1883.

Boston, March 9, 1883. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co., New York, N. Y., Dear Sir, —In answer to your inquiry of March 8 I would most respectfully state, that after a trial of some months of the two hundred odd registers that you have placed in our cars, I feel that I do no more than exact justice to your com-pany in giving you in the strongest and most unqualified manner my entire ap-proval of them. They are in every way all that you claimed, and all that you purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen. Very respectfully yours, &c., C. A. RICHARDS, President Metropolitan Railroad Co.

C. A. RICHARDS, President Metropolitan Railroad Co.

C. A. RICHARDS, President. CHAS. BOAROMAN, Treas. W. P. HARVEY, Secy. OFFICE OF

THE METROPOLITAN RAILROAD COMPANY, NO. 16 KILBY STREET,

BOSTON, March 23, 1886.

Boston, March 23, 1886. E. BALDWIN, ESQ., Prest. Standard Index and Register Co.: Dear Sir,—We have now in daily use four hundred and twenty-five of your registers. They have by repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of four years we feel that we are justified in recommending them. Very respectfully yours, &c., C. A. RICHAROS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY.

G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Secy. and Treas. W. N. A. Harris, Supt. OFFICE, 10TH AVENUE, 530 ANO 54TH STREETS,

The Standard Index Register instruments purchased from you about a year and a half ago have since that thine been in constant use upon the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried by us. We believe from our experience that in their construction

and result they attain the object sought with accuracy and at the same time with a minimum liability to external tampering or dishonest manipulation. Very respectfully, C. DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Treas. Howard Scribner, Secy. W. N. A. Harris, Supt. TENTH AVENUE, 530 AND 54TH STREET,

TENTH AVENUE, 530 AND 54TH STREET, NEW YORK, March 24, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co.. 138 Ful on Street, New York : My Dear Sir, -We have used about 130 of your "Standard Index Registers" for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inside paper dial are free from the danger of being tampered with. In a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you. Very sincerely yours. C. DENSMORE WYMAN, Vice President.

OFFICE OF THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY, COR. 7TH AVE. ANO 50TH STREET,

COR. 7TH AVE. ANO 50TH STREET. NEW YORK, March 25, 1886. ELI BALDWIN, ESQ., Prest, Standard Index & Register Co: Dear Sir,—Concerning your luquiry as to the result of our experience in the use of the Standard Register furnished by your company ano the satisfaction given I will state that after dive years' test during which they have been in use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I cheerfully endorse them as the best registers that we have ever seen and have found them reliable and not easily put out of order. In short we would not be without them. The paper register or tablet upon which regis-collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers on the cars of our roads at the present time. *Very* Truly Yours, *J. W. FOSHAY*, President.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

321

THE

J. W. FOWLER, President,

DAN'L F. LEWIS, Treasurer.

LEWIS & FOWLER M'F'G CO.,

P. O. BOX 102,

Brooklyn, n. y.

Brooklyn, N. Y., April 1st, 1886.

To the Managers of Street Railway Companies :

GENTLEMEN: We take pleasure in announcing to our friends, patrons, and the trade generally, that we have this day taken possession of, and will hereafter occupy, the extensive works (at the above address) formerly occupied by the late James Binns, of this city.

The establishment has been prominently and favorably known for the past forty years as one of the largest finnishers of Railway Castings in the country, the good will of which we have secured, and will continue the business on an enlarged scale.

The machine shops are large and complete, and in connection therewith are iron, brass, and wheel foundries, all of which we shall operate, and we trust in a manner that we shall be prepared to place before the trade the only full line of Street Railway Supplies ever offered by any one establishment, and which will embrace everything pertaining to the construction, equipment and maintenance of a street railroad.

The only complete Catalogue of Street Railway Supplies ever published will shortly follow this, which we feel will be a very material aid to railway companies in making purchases of supplies.

. A cordial invitation is hereby extended to all to visit onr new works. An inspection of the same will be convincing that the fa cilities at our command will enable us to not only produce the goods referred to, but at first hands, and to sell the same at bottom figures.

We sincerely thank the trade for the earnest support given us in our business in the past, and will deeply appreciate any en couragement we may receive in the future in our extended and new undertaking.

Yours very truly,

The Lewis & Fowler Manfg. Co.

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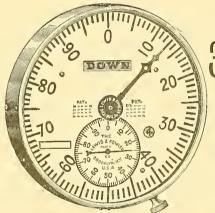
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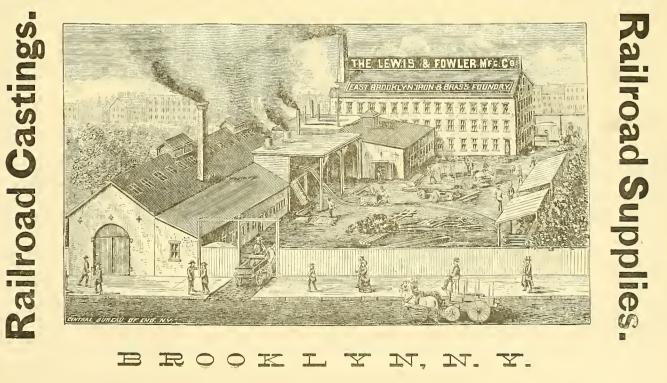
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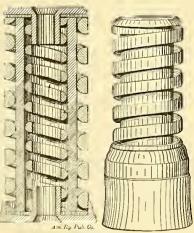
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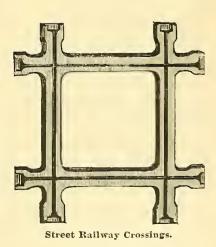
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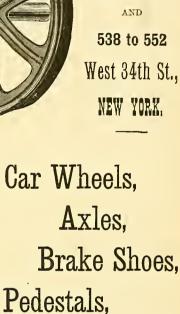
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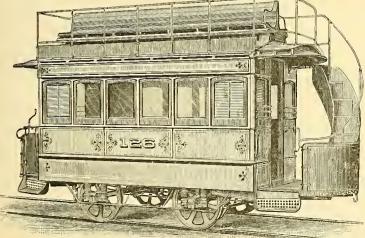
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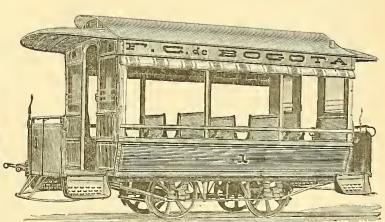
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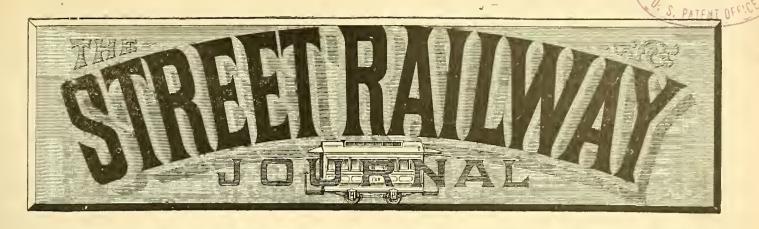
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VOL. 11. NEW YORK: 32 Liberty Street.

JULY, 1886.

A. S. Hallidie on Cable Roads.

During a recent visit to Melbonrne, Australia, Mr. A. S. Hallidie of San Francisco was tendered a banquet by the promotors of the cable system of tramways in the former city. In response to a toast of his health Mr. Hallidie made the following interesting statement regarding the system of which he is the originator, and which we quote from the Melbourne Argus:

"It is now 14 years since I matured the cable system of street tramways, which you have inangnrated on such a grand scale in this beautiful city of Melbourne.

"By the courtesy of your chairman and of the engineer of the Trust I have been driven over the various streets on which you propose to build your lines. I have been over your lines aheady constructed, have visited your workshops where your cars are being made, have examined your machinery, and can truly say that I congratulate the Trust on the character of the roads already constructed, and the corporation operating these lines, not only on the work that has been placed in its hands, but on the evidence of great care that has been exercised in the selection of routes, the locating of engine house and workshop sites, as well as the admirable manner in which provisions have been and are being made for the building and maintenance of your rolling stock and driving machinery. When I remember that it is 12¹ years since I completed the little cable road in Clay street, San Francisco, and the total lack of confidence in the enterprise, the failnre to enlist capital for nearly two years, the sly fun poked at me, the hints about a " bee in my bonnet," and many other interesting but not encourag. ing facts that I mot with at that time, and when I realise how slow it is this driving of human habits or thoughts into new channels, and the careful chinging to old ways and ideas which we feel are safe, it is not so much a matter of snrprise to me today as it was a few years since that the public did not see things as I saw them.

"Snppose, instead of the cable system, you had adopted the steam motor or the horse car system, in what way would the comfort and health of the public, the pockets of the shareholders, or the property of your citizens have been affected? Let us see. If the steam motor. In order to do

the carrying business in proportion to your population and to the enterprise of your people, yon would require at least 100 motors, which, in order to mount your grades and rnn at the requisite speed, would weigh abont 14 tons each, liberate millions of cubic yards of heated gas, and abont 2,700,-000,000 cnbic yards of vapor, heated over 212 degrees, and probably deposit 40,000,000 chips of cinder in your eyes per annum (good for oculists)-i. e., say one chip per passenger-and if they were run same as at Sydney, yon would be £20,000 behind in your interest account, and no dividends per annum; moreover, yonr streets would be cnt np by a worse than bad road-bed, always out of repair, your sleep would be disturbed by the shrill whistle of the motor, and by the puff of the exhaust steam, while the best service you could give the public would be from 15 to 30 minutes intervals. But I do not mean to say that the steam motors cannot be utilised as auxiliary or supplemental to a better system. In many cases they can be so used, but my experience with them is that they require a proportionately larger rate of fare in order to make them pay, and the fact that on grades there is a definite amount of dead weight needed in order to give sufficient adhesion between the wheel and the rail precludes the idea of having light motors and consequently necessitates the use of a solid and substantial permanent way, and this will apply, of course, to any kind of motor that carries its own load and depends upon its own load and force for its tractive power, whether it is latent steam, compressed air, gas, or electricity. Bnt snpposing you should have determined on the horse-tram system, what would have been the conditions of that system? In order to carry, say, 40,000,000 fares per annnm (San Farncisco trams carried 50,000,-000, 1885) there would be required at least 400 cars and 4,400 horses, and a proportional number of drivers, hostlers, &c. Horses do not deposit cinder and soot, and emit volumes of hot gases and vapors-which. objectionable as they are, do not lie on the streets to generate pntrid and death-dealing miasmatic gases-but a horse in ordinary health, according to Dr. Kemp, who carefnlly investigated the subject in New York, will deposit 101 lbs. of solid matter per day, and Dr. Liantard, head of the Ameri-

can Veterinary College, states that the aver-

age discharge of liquid matter per day is 4 4-10ths gallons. (This does not include what exudes from the body by perspiration.) Now what does this mean? It means that the 4,400 horses needed for the tram system of this city would deposit per day 46,200 lbs. solid matter, and 19,360 gallons liquid matter, or per annum 7,528 tons of solid matter, and 7,066,150 gallons of liquid. Besides this, there is the wear and tear on the street, which, with 30 miles of double-track tramway at § in. per annum on wooden block, would amonnt to 10,000 enbic feet of pulverized vegetable matter in the form of dust, and for which the municipalities wonld have to pay in repairs, and the citizens in doctors' bills. Then, again, in the matter of service to the public. More than an average speed of three and a half miles per hour caunot be depended on with horse trams; and at times the epizootic comes along, when the unfortunate horses have to be put in the stable, and the business of the tramway suspended. Now as to the cable system. I suppose I only recapitulate that which you have already considered, and which has been presented to you before, but if your patience will indulge me, I will lay the facts before you to be considered from the various standpoints of trnstee, stockholder, and user, and briefly refer to what is being done elsewhere. Reduced to its simplest elements, the cable system is based on the plain proposition of hauling a car or carriage over a tramway by means of a rope, actuated by a stationary steam engine or other motor, the most economical and simplest form of traction known. Simple as this proposition is, nntil the Clay street Hill cable tramway was built in 1873, in the city of San Francisco, the principle had never been applied to street traffic; nor did the requirements of such traffic, and the varying conditions under which it actually existed, receive, up to that time, the attention of any one having a practical knowledge of the same: and I must admit that the difficulty was not to convince myself of its practicability, as it was to persuade others, so that the practical test could be made-a test that needed considerable money to make the experiment, and some faith on the part of those inexperienced in the matter. Both the money and faith were found, after considerable delay, and three gentlemen joined me

(CHICAGO:) (Lakeside Building.) 061 2 1990

No. 9.

in the construction of the Clay-street line, which we constructed at an ontlay of £20,-000, and made the first trip on the 1st day of Angust, 1873. That line was then threefifths of a mile long. It was three years and a half before the next line was built, and although the system has been slow to introduce itself, it is advancing surely. Ahready there are 110 miles of track operated by cable, in ten different cities, and abont 300 miles more are in course of construction. Many lines have been converted from the horse to the cable system. The Sutter-street line in Sau Francisco, that did not pay as a horse tram, has been made to pay very largely by the cable system, and the Market street system of San Francisco as well as the Chicago City systemcomprising about 40 miles of track-which were formerly paying horse lines, but which did not meet the demand upon it, by their conversion to the cable system have increased their dividends very largely, and more than doubled their business. The shares of these companies have generally trebled in value, on which the dividends are usually 6 per cent. For instance, Sutter street, cost £5, sells at £20; Geary street, £7 8s. 6d., sells at £20 12s., &c. What has been the effect on property? I can give you the effect it has had on property in the city of San Francisco, which would be a fair comparison with Melbonrne, as the two cities are about equal in extent and population, and are backed by an equal population in the two states, i. e., California and Victoria. The assessor of the city of San Francisco, under seal, and attested by the mayor, makes the following statement, and I beg to submit for your inspection a photographed copy of the document:-

Name of Company.	Value of Lands Bordering the Route one year Previous to con struction.	Value of Lands for Year 18-4, Showing In- crease in value.	Percentage of Increase of value on Said Lands
Clay St. Hill' Sutter St [†] California St [*] Geary St. [*] Presidio and Ferrites [*] Market St [†]	1,707,405 1,431,430 519,880	1,410,125 2,979,736 1,548,615 624,065 26,801,255	40 42-1001 hs 18 49-100 ths 23 52-100 ths 8 18 100 ths 20 03-100 ths 14 98-100 ths
*Always Cable		+Formerl	y Horse.

Then follows a table showing a remarkable depreciation in the value of the lands bordering the horse lines, which, taken in conjunction with the foregoing, makes the showing more favorable to the cable system:---

Name of Company.	Value of Lands, 1879.	Value of Lands, 1854.	Per Cent of Depreciation.
Omnlbus	Dol. 16,147,270	Dol. 12,125,755	24 9-10ths
NorthBeach		7,265,250	23 8-10ths

The year 1879, the assessor states, was least unfavorable to the horse car system. The inanguration of the cable system in San Francisco had the effect of attracting back to that city a large number of residents who had moved to the adjacent towns of Oakland, Alameda, and San Rafael, iucreased facilities and more rapid transit

business. Why is it that the cable system is so popular with the public? It is more rapid in its transit, it is more convenient to get on and off the cars, its intervals of departures are nearer, it is comparatively noiseless, the cars, are cleaner and more roomy, there is no anxiety about the horses, and the better nature is not shocked by overtaxing them, there are no horses to deposit filth in the street, there are no horses to pulverise the street and create dust, the sanitary condition of the city is better under the cable system, the cars are more nuder control, and can be stopped quicker, the streets are better payed under the cable system, there is better discipline among the employees, and better service to the public. It is fortunate that the projectors of the eable trams in this city were men of perception and observation, and have avoided the agony of experiment which other cities have gone through. When I was in Paris a few years ago, talking with one of the directors of the Compagnie Generale des Omnibus, he told me that they had experimented on thirteen different methods of dispensing with horses, that electricity was the last and most expensive experiment, and that after all they had returned to horses, and determined to make no further experiments. Here was a case of complete discouragement. Just before I left San Francisco I received the report of the Board of Trade of Birmingham, and the curefully written report of Sir Frederick Bramwell. The city of Birmingham, acting on those reports, has determined to adopt the cable system; and Mr. Holmes, president of the Chicago City cable trams, states that he has now operating twenty-six miles of single track cable line, that they carried 2,610,000 more passengers in 1885 over 1884, that the increase in value of property affected by the cable lines has been 50°_{\circ} since these lines were built; the cable cars ran 5,228,000 miles and the rope 60,000 miles on the main line. In the southern part of the state of California we have a little town of 40,000 inhabitants-Los Angeles-which has two cable lines each 1¹/₂ miles long in successful operation, another live in contemplation, and the city is lighted entirely by electricity; eighteen tall musts 150' to 200' high, each supporting the electric lights, which shed their brightness everywhere throughout the city. The amount of business the cable system is capable of doing is far beyond that of any other. It is exceedingly elastic. While the public convenience is best met by running often, iu emergencies an extra car or two can be attached to the same grip-car. In Chicago, where the streets are a dead level, they attach two cars to the grip-car, and have carried 600 passengers in one train. In San Francisco the practice is to rnn nuder short headway, say one minute and a half or two minutes intervals, or sometimes less, during the basy hours. In that city, with a population of 300,000, nearly 50,000,000 fares were carried in 1885, or about 160 times the population. I think more people ride in Melbourne enabling them to live nearer their places of | than in San Francisco in proportion to the

population. In starting a new system as you are doing now in Melbonrne, I have no doubt you have experienced some difficulties, as you have had to work raw materials, and break them in to managing machinery, the rope, and especially the grips. This has been the experience elsewhere. Very much, however, depends on superintendents, who should have direct charge of each line, and be responsible to your general manager for the condition of the machinery, rope, grips and cars, and the general efficiency of the working of his line. Among your superintendents there naturally will be a feeling of emplation that will tend to keep np this efficiency. The construction of these cable lines will add largely to the rateable or taxable value of property, and the mnuicipalities could well afford to let these cable lines go free of taxation. It is an enterprise of considerable magnitude, and should receive the most ample support from the public. When completed it will attract the attention of the civilised world wherever tramways are in use, and where there i. so much auxiety to find some substitute for the existing methods. When I look back at the modest beginning of the eable system in the remote city of San Francisco, and see to-day how it is spreading to the important cities of the globe, I feel a pardonable pride in its success-a pride I am sure von will share with me; and the pleasnre of that pride is enhanced when I look around, and in this most beautiful city of Melbonrnethe pride and glory of the South Pacific, the yonngest giant of the Anglo-Saxon race—find that the cable tramway is one of the many excellent fixed institutions of this city."

Rasping and Greasing Horses' Hoofs.

The horse is one of the most superbly perfect of Nature's works, viewed physically; and he occupies besides au exalted position among animals as to his intelligent moral qualities. It is therefore most painful to see how, under the handling of intelligent (?) man, he is maltreated and even abused. He submits his neck to the yoke uncomplainingly; he accepts the iron-plating of his feet, and he allows the galling check upon the movements of his head, and yet gives man his best service even to the death. The ignorant smith has his views as to what should be the shape of his feet; so he cuts and rasps, and forms them to suit himself. He has an idea that the hoof is made on purpose for him to rasp and shoe, and exercise al the tools of his trade upon. So he makes a shoe and fits the hoof to it; he removes the natural polished exterior, which by its tongh elasticity defends the tender par s from iujury, is nearly impervious to water, and permits a little evaporation of internal moisture, by which it is kept normally pliable and vitalized to the very surface. He rounds and smooths off the new surface; leaves it in a condition to allow the moisture of the hoof to pass off rapidly, and the hoof to dry and crack; and thus he recommends the application of tar and grease and lamp-black, as if he were trying to render an old boot pliable and presentable. The greasing may be well enough better than nothing—after the mischief is done. But why do sensible horse-owners allow the evil which their peremptory orders, if not their mere remonstrances, would prevent ?—Ex.

Timber Track vs. Metallic Way.

EDITOR STREET RAILWAY JOURNAL;-

In the discussions between myself and Mr. Craig on the above subject, I quoted very high authority on railroad construction both foreign and native, to substantiate my humble opinion, that a railway built solely of metal, was more permanent in character, as cheap in construction, cheaper in maintenance, and smoother riding than one built of timber.

In further corroboration of my claims, Mr. Wright, another authority on street railway construction, says:—"Agirder rail is better so far as track is concerned in *all* cases, because of the wretched fastenings (adopted for timber system) and consequent vibrations. *Permanency* is what all railways desire in their track construction. Besides the inconvenience to the public in track renewals, the loss to the company is great; \$500 per diem does not cover the decrease in receipts upon many a line from traffic interruptions."

In May, 1866, I received a communication from Mr. McDermott, an experienced railway contractor of thirty years, now superintendent of city work, who states :----"While I admired your metal system of track laying last winter, I had serious doubts as to the longitudinal cast iron stringers standing the frosts of winter and the thaws of spring; but since I have closely examined the present good condition of the track, which was laid under such adverse circumstances, and have seen the rapidity and accuracy you laid track this spring, I can only say to you what I have said to others who have asked my opinion, that were I laying a track to own, I would pay twice the amount for your metallic track as have the timber track for nothing."

D. K. Clark, in writing on the metallic system, says:—"It has been adopted for all railways in Monte Video, and also used at Buenos Ayres, Salto, &c., &c.

"The boxes (stringers) are filled with coarse sand, and placed in the ground. After being in Buenos Ayres upwards of ten years, has stood well and given great satisfaction. It is an admirable system."

Our system has been likened to the above, inasmuch as it is composed solely of metal. The difference of construction is:—Our track is built *without* the aid of rivets, bolts, nuts or fish plates, while the other uses some if not all of these to arrive at the sume result.

If a system requiring bolts, nuts, &c., can give such satisfaction as to merit tho title "admirable construction," surely a system using none of these, and yct arriving at the same result, must be admirable also. I thank Mr. Craig for acknowledging some "commendable points in all patent tracks;" that is one concession; he may also in the near future concede that *metal* is more durable and serviceable than timber for track foundation, and he may also concede that *any* system, dispensing with timber, spikes, bolts and fish plates, must be more economical in maintenance than a system using the same.

Mr. Craig, after twenty-five years, must have experienced the fact, that timber rots and loses its tenacity to hold to the spike; that spikes work upward and are driven back by car wheels, until the heads are either broken or worn off; that joints get low and loose from defective fastenings, thus making travel painful to passengers and expensive repairs to track, horses and rolling stock.

He also knows, that the renewal of such asystem is more labor and expense than the first construction, the tearing up of streets, withdrawing old spikes from rotten timber, and carting away the debris, &c., &c. It is not only very expensive to the railway company, but a great annoyance and inconvenience to the people.

If the metal system had to be renewed as often as the timber system, there is still this in its favor—the iron stringers are worth half their first cost, while the timber is worthless, beside the expense of removal.

I have given the opinions of eminent men on this subject, permit me to express my opinion thusly.

It is a poorly constructed house whose foundation, (timber stringers and crossties) and surroundings, (paving) have to be torn up every time the roof leaks, (worn out rails).

Mr. Craig justly remarks:—"In adopting a style of track, a railway company takes into consideration the various items of first expenditure, cost of maintenance, convenience of making connections, curves, switches, turnouts &c., &c."

All these important points have been carefully considered, and I have practically demonstrated

1st. That we can build a track composed solely of metal for the same price, (using same weight of rail) as timber stringer system described by him.

2nd. That the cost of repairs must be 50% less than timber system, because we use none of the abominations, such as spikes, knees, plates, &c., which canse the great expense of repairs—of track and rolling stock.

3rd. That as the rails are bent, and the stringers cast to the radius of the curve, and turnouts required, must therefore be accurate, and as each part is numbered and tested before shipment, the commonest mind can put them by their numbers together, and by driving the wedge key through the mortises in the stringers and the lugs on bottom of rail, lock all the parts together. In corroboration of this fact, on November 21st last, I took up the necessary (Belgium Block) paving and laid a 56' curve 34' radius, repaired the same in eight hours with eight weak and the same in eight hours with eight weak and the same in eight hours with eight weak for the tot the tot hour the tot the necessary for the same in eight hours with eight weak for the tot hour the tot the necessary for the same in eight hours with eight hours ho

men, without any obstruction to street or bridge travel.

On the other hand, a curve built on timber system, is a mass of fitted timber, spikes and braces, slow and very expensive in construction, and requires *skilled* labor.

The longitudinal iron stringer is not only "ideally very pretty," but has practically shown its superiority over the timber system-in its greater lateral and vertical stiffness, rapidity in construction, can be laid in winter or summer, less paving and no obstruction to street travel while building, no injury to track from digging ditches on account of its vertical stiffness, and less obstructive to those digging ditches for water mains in not aving the timber cross ties. As for telegraph wires, when they have to be buried, a slight alteration in the longitudinal stringer will adapt and make them safe guardians for those important threads.

I trust Mr. Craig will examine my comparative statement of cost of systems, and point out wherein I fail to prove the superior economy of iron over wood, or why a sinking fund would not be created from said economy to meet all future cost of repairs.

I have had upwards of twenty years practical experience in railway construction and repairs, and have long since compared the *timber* system to a man who, born an invalid, requires plasters, pills and other condiments to keep him alive; while the metal system is like the man, born with an iron constitution, who for three score years and ten has fought the stern battle of life, is still hale and hearty.

T. H. GIBBON, Engr.,

Metallic Street Railway Supply Co. Albany, N. Y.

Horse Shoeing.

Prof. Slade, of Harvard College, expresses some good common sense views in regard to shoeing horses, in the following:

Horse shoeing has given rise to much controversy, yet it is a matter which in itself, so far at least as regards the principal object in view, is extremely simple and easily understood. The object of the shoe is the protection of the ground surface of the outer wall of the hoof against excessive wear. In the wild horse the balance between the growth and the wear of the horn of the hoof is equally maintained, but when civilization subjects the animal to hard and rapid labor upon paved and macadamized roads, then this balance is destroyed-the wear exceeds the growth. Hence the aim of the farrier is to ward against this condition of things by attaching a rim of iron or steel to the circumference of the foot. The moment this is done, however, the balance is again destroyed: the growth will exceed the wear, necessitating in time the removal of this metallic rim, and the reduction of the horn by artificial means. Although the growth of the horn down is equal over the entire surface of the wall, it will usnally be found that in the healthy foot more must be quarters. This is because the shoe is firmly fastened to the toe; whereas, in the other regions—especially at the heels—there is a certain amount of motion allowed by the absence of nails, and consequently more or less wear takes place. This may be readily seen on examination of a shoe that has been worn for three or more weeks, the burnished line on the foot surface of the shoe showing distinctly the outline of contact.

It may be asked whether it is not practicable in a great many cases to dispense with shoeing. We answer most unhesitatingly yes, with great benefit to the animal, as well as to the owner. There are many country districts where the roads are of turf or are sandy, and where shoes are unnecessary. If the colt is never subjected to this process, the foot acquires that natural firmness and hardness which will serve the animal under ordinary circumstances. In winter, when roads are very slippery, and the horse is called upon for heavy draft, in many cases we must provide means by which he can gain a firm foothold, and this, in the present state of our knowledge, can only be doue by shoes with calks. We do but follow a blind and foolish custom where we apply shoes without the necessity.

When shoes have been constantly worn, and it is desirable to dispense with them. great care must be exercised in gradually accustoming the foot to this new condition, and no long and severe labor should be at once demanded of the animal. Calks are detrimental under any circumstances, and should always be avoided if possible. There can be no reason or excuse for their use on road horses of light draft in summer, even on pavements. When actually required, it is very essential that they should have an equal bearing on all sides-at the toe as well as at the heels. Any unequal distribution of the weight of the animal is sure to bring abont strains of the ligaments, sinews, and muscles. The fashionable heel of the modern bellc is not more sure to lay the foundation for future suffering.

No shoe should be allowed to remain upon the foot more than four or five weeks. Many horsemen patronize the farrier who nails on the shoes so that they will stay more than double this time, with the idea that such a proceeding is economical, whereas it is the furthest possible remove from economy. As the growth of the horu is constantly downward and outward, the shoe, which when applied weeks before, was fitted to the foot, has now become altogether too small, and consequently there is pressure upon the sensitive portions at the quarters, causing corns and other affections. Os the removal of the shoe, if again to be applied, the ground surface of the wall of the hoof must be reduced by the rasp to a perfect level, which can be attained by the eye accustomed to good work. The level of the untouched sole forms a ready and practical guide for the amount of reduction. Neither the sole nor the frog should undergo the least mutilation, since nature removes by constant exfoliation all superfluous bone; neither should the natural bar-

rier at the heels, provided for the express purpose of keeping the foot expanded, ever be cut into, as is the almost universal custom, under the insane idea that it "opens out the foot." No greater folly or barbarity can be permitted, and no surer way could be devised for producing contraction with its attendant evils. The walls of the hoof should uever be rasped. It is by this process that the external fibres of the horn are destroyed, the beautiful polish removed, and the internal surface exposed, whereby the entire structure is rendered more brittle and unfitted to perform its functions.

Let the intelligent horseman who has hitherto given little or no thought to this important subject follow the above instructions, and satisfy himself of their correctuess, aud tell them to his neighbors.

An Alleviation, Not a Cure.

The new Street Railway Bill is now a law. It provides that the local anthorities of a city shall not give away any more valuable railroad franchises for their owu benefit alone, but that such privileges shall be put up at auction, after due public notice, and sold to the bidder who will pay the city the largest percentage per annum of the gross receipts. But the percentage agreed upon is not to be less than that required by the law of 1884, which is 3%on the gross receipts for the first five years and 5% thereafter.

The law provides that the bidder to which the franchise may be sold shall be an incorporated company organized to construct, maintain and operate a street railroad in the city in which the franchise is granted. This opens the door for the competition of all existing railroad companies, and it also requires the organization of a company by any new persons who may desire to compete for a franchise. It is charged that this and other clauses of the bill were designed to give an advautage to the Cable Company which made such desperate efforts to secure a wholesale franchise by methods similar to those purshed by Jacob Sharp and his friends.

The law finds favor with many persons in the belief that it will put a total stop to the bribery of the Aldermen. But it is by no means a complete safeguard. When Jacob Sharp bought the Aldermanic votes for the Broadway franchise the law required him to pay 3% of his gross receipts to the city for five years, and 5% thereafter. It is now seen that he could have afforded to pay a million dollars in bribes if these percentages had been doubled, and still have made an enormous profit out of the franchise. We believe it would have been wiser to require the sale of the franchise for a sum of money paid down in addition to the percentages required by the law of 1884.

The inefficacy of this law as a means of wholly preventing the bribery of the Aldermen is to be found in the fact that, while the franchise is to go to the person offering to pay the highest percentage, it is still

optional with the Aldermeu whether they grant or refuse the consent of the city. They grant nothing without being paid for it.—N. Y. World.

Equal Rights for Workers.

There is one question connected with the labor troubles that has attracted some attention, but not nearly so much as it deserves. That is, Who and what are the meu, and where do they come from, who are always ready to step into the vacant places when workmen go out on strike?

We are too apt to think that the members of the trades unions are the only hand workers, and that when they have been satisfied the whole labor question has been solved. Recent facts give an emphatic contradiction to this theory. On the Missouri Pacific Railroad about 4,000 Knights of Labor struck. The company appears to have been able to fill all their places at once. and traffic on the road would apparently uot have been interrupted a day had not violence been resorted to. On the Thirdavenue street-car line in New York about 1,300 men struck. The company were able to fill all their places at ouce, and only mob action prevented keeping the road in full and continuous operation.

Do not these cases show that there is a great army of unemployed who do not belong to the trades unions, and to whom it is the height of good fortune to get the very employment that the trades unionists are throwing away? These men who are eager to step into vacancies that the strikers leave have as good a right to work for a living as the trades unionists have. And they have as good a right to call on the authorities to protect them in their efforts to work and live as trades unionists I ave. In fact, the question whether such men can or cannot be protected in peacefully pnrsuing their occupations is a test of the strength of our social system. If law and opinion are not strong enough to defend and sustain honest workers at any calling, then our system is a failure, and must be recognized as a government by mob and not by law.

It is the custom of the members of trade unions to call all other workers "rats," and "scabs," and "blacklegs," and other bad names. But it does not appear that they deserve to be so stigmatized. If they do nothing but take such work as offers at such pay as they can get, they are only doing what it is every man's right to do and to be protected in doing. That must be understood, and strikers must be punished severely for interfering with other workers if this is to be a country where life, liberty, and the pursuit of happiness are to remain secure.

To all appearance, the non-union workers are much the more numerous, and it will be impossible, when the subject is fully canvassed, to ignore them or allow their natural right to sell their labor in any market that suits them to be interfered with. It is so very unamerican and nurcasonable to permit any set of men, who

don't work themselves, to beat and maul and intimidate another set of mon whose only offense is willingness to work, that it can not and will not be permitted. The whole community will rise-and in arms, if neccssary-to protect men who want to earn a living in doing so. Society cannot exist unless this right is defended. Strikers who expect to keep their places vacant by mauling and maiming and even murdering other workers who are as good and have as good rights as themselves, should understand that in thus becoming lawbreakers and rioters they are putting themselves in peril of the severest peualties of the law, and that they are also attempting to accomplish the impossible. In this free country free men who ask nothing but to be allowed to do honest work must and will be allowed to exercise that natural and lawful right and will be protected in it.

The moral of this is that in these times men who have good employment will show good sense by sticking to it, at least till they can do better. Everywhere there is a great army of the unemployed ready to step into any vacant place that commands regular wages. And this great army of willing workers cannot be kept out. They have a right to work and nobody has a right to keep them from working. Any man who leaves his place vacant, has only himself to blame if he finds another man in it when he tries to come back. This is especially true of unskilled occupations. Any man of ordinary iutelligence can learn to drive a team or brake a car or turn a switch in two or three days. All such places left vacant, even if they are thousands in number, can be filled at a day's notice. Skilled workmen can not be found so qnickly, but in most trades there are many unemployed who would be only too glad of the chance for work which a strike would give. -Bnffalo Express.

Destruction of the Metropolitan Shops.

The great building used for several months past by the Metropolitan Railway Co., of Boston, as a storehouse and repair shop, but formerly known as the New England Intitute Building, on Huntington avenue, Boston, was destroyed by fire June 21st, resulting in the burning to death of at least five, and possibly fifteen men. The foreman was the first to see the fire, abont 2 o'clock, but had hardly r ng in an alarm before the building was a mass of flames. The fire started in the right corner of the lower floor, but almost in a moment the flames had reached the paint room directly above on the second floor. From thence the fire spread with great rapidity to the wood working room and the trimming room. The oil in the paint room spread over considerable space after the fire had entered the room, and was a speedy carrier of the destructive element. The roof fell in soon after the second alarm was rung in, and five minntes later the sides of the building nearest the roof crumbled and fell. The iron work offered no resistance to the flames and soon the strong bands were warped and twisted. The fire was intensely hot, but on account of the wind which was blowing toward Brookline the firemen were enabled to work with advantange ou the easterly side of the building.

The building and land were purchased in December by the Metropolitan Horse Railway Company for \$150,000. Within its walls were abont 100 box cars, valued at \$700 each, belonging on the different lives operated by the company. Only one was saved. The company has added about \$60,000 worth of stock, machinery and tools. The burned building was crected in 1881 by the New Englaud Mannfactnrers and Mechanics' Institute, a corporation similar to the American Institute iu New York. Exhibitions were held there in 1881, 1882, 1883, and 1884, but the enterprise proving unprofitable, the building was used for sometime as a skating rink and for other purposes. The fact that the building was erected upon leased land, together with the unprofitable exhibitions, forced the corporation into insolvency about a year ago. The building was of irou and brick and had 35,834 square feet, or about eight acres available for exhibition purposes. The main building was 540 feet long by 384 feet wide.

Thus far the bodies of the following persons have been taken from the ruins: Alex. Cambell, Wm. Taylor, OliverFrost, Patrick Lyons and James Mullen. The injured are John McDonald, Wm. Sturgis, Joseph Whiddeu, Joseph Hazeltine and Eph Farren.

Later. - Seveu bodies in all were removed from the ruins, three of which were so badly charred and disfigured that indentification is impossible. The names of the others are believed to be as follows: William Taylor, Oliver Frost, Patrick Lyons, Alexander Campbell. The body of the negro known to have been burned at the window has not been recovered. This makes eight fatalities known to have been caused by the fire. The foreman of the repair shop states that all of the eightyeight workmen iu the building wheu the fire broke out are accounted for, with the exception of the four named above, and the other four unfortunates were probably strangers who entered the building to assist in removing the cars.

The actual loss is a difficult matter to estimate. President Richards' figuring, given elsewhere, evidently makes it very low, for the building cost over \$400,000, and the sale at \$16,000 as mentioned by him was over and above a mortgage. While the loss to the company is doubtless as he states, yet the actual loss in property is much greater, and the following figures probably approximate it more nearly: On the building, including the improvements made in fitting it for the uses of the road, \$100,000 to \$150,000; on cars and other rolling stock, \$60,000; on machinery, \$30,000, and on patterns, \$10,000, making a total of between \$200,000 and \$250,000. The insurance is placed in varions American and foreign companies, and is about as follows: On building, \$25,000; on stock and machinery, \$25,000; on box cars, \$600 per car, or from \$45,000 to \$60,000 or all cars, making a total of from \$95,000 to \$100,000. The whole cost of the property when ready for exhibitions, exclusive of the land, was about \$400,000.

President Richards says. "I am, of course, much disturbed by what has happened, but not so much by the loss of property as by the loss of valuable lives, a thing for which nothing can compensate. Rebuild? Certainly, I laid all my plans to do so while I stood in the meadow this afternoon watching the fire. I have examined the wall as far as possible and believe that upon them, with a little bracing when needed. I can erect a building much more suited to our wants than the one destroyed. I shall simply put on a large monitor roof, making but one story in the building, and shall divide this story by solid brick partitions, so that a repetition of this fire will be impossible. In the old building there was much room—in fact, the whole front of the building that we did not ntilize at all. The new building will come way ont to the street, and will not have an inch of waste room in it, besides being built specially for our needs. Just as soon as the ruins are cool enough to work upon, a large force of men will be set at work clearing away the wreck and preparing for building.

"In the meantime, we shall not be idle, so far as car repairing and car making go. We have the old shops at the Roxbury crossing still intact, with all the machinery and eugines except a few heavy pieces. I have ordered all the men in Randall's (the mechanical) department to meet me at the old shops to-morrow morning, and then we will start at ouce to get things in order. You see I have over one hundred cars to build or buy before the snow flies and no time is to be lost. The public will not feel the loss of the burned cars, for we always have enough of a reserve supply on hand to meet all emergencies. Some of the cars put into nse will not be new ones, but the public gain in the end in getting new ones finally in place of those destroyed. We will be all right by New Year's, and nobody will be the worse for it.

"The loss is a difficult matter to estimate without figures at hand to refer to. We paid \$300,000 for the building and land. but the land is worth that alone if it is worth anything. The building cost \$400,-000 or over to build, but it was sold at auction for \$16,000 before we bought it. Still that is, of course, not a fair valuation of it and it was worth more than that to us. As I look at it, its value to us is about what it was insured for-\$25,000-and represents what we lose; though not the actual loss in dollars and ceuts on the value of the building. What the building might be actually worth I cannot say, but certainly it was worth not much more to us than the figures named. Our box cars are insured for \$600 each, aud our open cars for \$300 each. Now those sums will not replace a car, although it might be the value of an old one, but I think our loss on this property cannot be over \$50,000, including in this some 25 or 30 snow plows, also in the building for

repairs. Then our stock and machinery, the loss may be \$25,000 more, so that in all it figures up about \$100,000. But I hope to save some of the machinery, heavy castings that would not warp readily, and also realize something from the old iron which must abound. One loss we cannot make up and that is the loss of our patterns for frogs, switches, &c. These were carefully piled up in a room prepared for them, but all are

switches, &c. These were carefully piled up in a room prepared for them, but all are destroyed and no money value can be placed upon them. But in all the company will not be so much out of pocket. We have our insurance, and then whatever we put into a car over the insurance we have as capital and get its full value. We shall get a better building, and while I should not, of course, had the fire happen, yet when we get straightened out after it we shall be better off than ever.

"What I feel most downhearted about is these men who have, lost their lives. I would rather have lost a great deal than the life of a single man. I shall make it my personal business to see that their families are suitably provided for and shall do all in my power to help them. I shall also compensate the workmen who lost their tools and shall see that they sustain no loss."

Ayers' Anti-Rattler.

One of the most annoying features in street car travel is the deafening rattle and clatter of the car windows and shutters. In the new cars this trouble is to a greater or less extent avoided, but even with some of the latest and most expensive devices the rattle still troubles us after a little wear. The remedy offered by this invention is at once so simple and so inexpensive that it



would seem that the trouble might be entirely done away with. They are equally applicable to old or new sash. They consist of a rubber button with a countersunk hole for an ordinary wood screw and in applying it you screw one of the holders on each side of the casings of the car window at center of sash. Place them so that the sash is pressed hard against the outside strip—thereby forming a complete weather strip and preventing all rattling. The window can be easily raised, as the appliance revolves in the act.

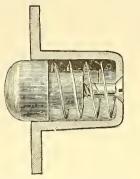
The material used in the button is a compound of rubber and rotten stone, for which it is claimed, that while it will wear away it will not scratch or mar paint or varnish.

The Ayers Patent Sash Holder Co., Room 42, Stewart Building, New York.

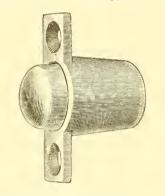
The General Manager of the Wichita, Kansas, Street Railway writes us: "I had my file of JOURNAL burned the other day, and would like to know if I can get the numbers till Vol. 2, No. 7. I consider the paper invaluable, and every one should keep them on file, so many valuable suggestions are therein contained."

Ayers' Patent Sash Holder.

The illustrations give an excellent idea of this invention, and it needs no extended description. It is designed for all kinds of windows and is especially recommended for holding car windows at any height.



The claims of the makers are: 1st—It holds the sash at any spot and prevents it from rattling in windy weather. 2d—It is vastly more durable and much less liable to get out of order than the cord and weight, and unlike any other device for unweighted windows, it is entirely ont of sight. 3d—It is extremely simple in its application, only



requiring two holes bored in each side of the sash, about four inches from the top and bottom, in which to set the holders. 4th-They are very compact and so constructed that it is impossible for them to get out of order. The material of which the holder is composed is a compound almost as hard as iron, but is of such a nature that it will not emhed itself in the wood, nor mar the paint. 5th-This sash holder is especially adapted to car windows. The custom now being to fit tho sashes so tightly that it is almost impossible to raise them in damp weather, with this holder they can be fitted more loosely and, in comparison with the sashes as now set, raised with ease.

*The Ayers Patent Sash Holder Co. Room 42, Stewart Building, New York.

If you want to buy or sell street railway property, want a position or want a mau for a position on a street railway, advertise under "special notices" in the STREET RAIL-WAY JOURNAL.

If you want anything in the street railway line, consult our directory, and if you do not find what you want write to the publishers.

Cable Railways in Massachusetts.

Mr. Lilley, of Middlesex, for the Committee on Street Railways, reported the following bill in the House June 21st:

Section 1. Any street railway company which is now, or may hereafter be formed, may, with the approval of the Board of Aldermen of cities and Selectmen of towns, establish and use the cable system of motive power, so called, for the purpose of operating its road, and may, with the approval and under the direction of the Board of Aldermen of cities and Selectmen of towns, make such underground or surface alterations in the streets or ways through which such railway passes as may le necessary to the purpose, subject, however, to the provisions of chapter 113 of the Public Statutes, so far as the same are applicable.

Section 2. Any street railway company, operated hy cable motive power, so called, which enters upon and uses the tracks of another in the manner now provided by law may, with the approval of the Board of Railroad Commissioners, use the cable motive power of such other company, and for such use shall pay such compensation as the Board of Railway Commissioners shall from time to time determine. The manner, and time of payment of such compensation to be fixed by the Commissioners, after hearing, in the manner provided by chapter 112 of the Public Statutes for compensation for the use of motive power by connecting railroads.

Section 3. Any street railway company for the purpose of carrying into effect the provisions of this act may increase its capital stock in the manner provided by sections 58, 59 and 60 of chapter 112 of the Public Statutes, for increase of capital stock of railroads.

Section 4. The provisions of chapter 113 of the Public Statutes relating to the formation of street railway companies shall, subject to the provisions of this act, apply so far as possible to street railway companies in whole or part by the cable system of motive power, so called, the same as though such street railway companies were operated hy animal power.

Section 5. This act shall take effect upou its passage.

The Swing System.

Complaint was made to the State Board of Railroad Commissioners against the Williamsburgh and Flatbush Railroad Company by D. G. Wilson, representing the employees, concerning the use of the swing system, by which employees make two trips in the morning, are laid off for eight honrs, and then make several more trips to finish up the day's work. The point mado was that the legal limit of twelve hours' work on railroads was exceeded. The Commissioners were unanimous in their opinion that the bill does not interfere with the swing system, but simply prohibits the exaction of fourteen hours' continuous work, which the time tables then in use made necessary. They told the employees that their only redress was to make up a new time table, and send it to the Commissioners, who would present it to the railroad company with suggestions.

Our readers will find the following rules, in use by the largest street railway system in Boston, and perhaps in the country, iuteresting. The discipline of this road is well nigh perfect, and the men are well satisfied with their treatment. The rules for conductors and other employees are equily explicit. As most of the troubles with employees on street railways have originated with drivers, the fact that this road has had no strike or disturbance of its regular routine makes its methods particularly valuable. Other roads would, of course, have to change the local features of the rules, but aside from that, they are probably as satisfactory as could be compiled.

1. You will see that your horses are properly harnessed before starting from the terminus of the road, and avoid stopping on the road to alter the harness. The use of whips is strictly prohibited. Examine your car on every trip, before starting. See that it is in perfect order, especially as to the brakes, brake handles, ratchets and dogs, and if anything is defective report the same, in writing, to the Starter.

2. You will, at any time, when your horses are not ready, help harness them yourself, and report any such neglect of duty on the part of the hostlers, at the Division Master's office.

3. You will at uo time substitute a man in your place; all substitutions to be made from Division Master's office.

4. You will be required, when absent from duty, to report fat the Division Master's office, either by letter or in person, before 2 P. M., the day before you wish to go to work.

5. You will not leave your car, anywhere on the road, to get refreshments, or for any other purpose not actually necessary; nor at the terminus of the road, without first notifying the Conductor of the necessity.

6. When going to or from the stables with the horses hitched to the pole, let the traces out long enough, so the eveners will not hit their heels. If your horses ever try to get away from you, drop one rein and hold on to the other; by so doing you will bring them round in a circle, and will be better able to control them. When the horses are hitched to eveners keep the eveners from hitting their heels by lifting the rope or hook furnished you for that purpose. If a horse loses a shoe on the street going from the stable, send the team back by the first car you meet going to the stable, and take the team on said car and go on to the end of your route; then back to the stable. If you have horses that crowd each other when at work, or any not well matched, nor cleaned, you will report the same to the Division Master. Also, you will report all tow boys who do not attend to their duties.

7. You will not drop your pole in detaching your horses from the car, except in extreme cases, to avoid accidents. If your horses become balky from any cause, and the detention causes a block-up on the street, make an immediate exchange of horses with some other driver at yonr rear, or going in the opposite direction, who has a lighter load than yourself, no matter at what stable the horses may belong. In this respect drivers are expected to be accommodating to one another, and make necessary changes of horses for the time being on any such occasion. Any known violation of this rule will be sufficient cause for immediate dismissal.

8. When you see extra cars running with regular cars, never drive in between them, nor do anything to separate them; wait until they pass, and then go on. When driving an extra car on the time of the regular car, keep as close to it as you can with safety. Always see that the rear brake is off before starting the car, and never put it on hard when you want the car to move. If you run off the track apply the brake very lightly, if at all, nntil the car is on again-Have the horses far enough from the car to make the traces straight when they start it.

9. You will pay particular attention to braking-up your car, when approaching a team or carriage on the track. Be sure and brake-up in season to give the carriage or team sufficient time to get out of the track, if your wheels should slide. Allow no one not in the service of the Company to manage your brake.

10. You will walk your horses over all curves, switches, and turnouts. At points where two tracks unite you will drive with great caution. Racing is strictly forbidden on any part of the road. In case of a collision at the junction of two tracks, the drivers of both cars will be discharged. Enter into no conversations with passengers. Answer questions courteously, but do not allow your attention to be diverted from your duty.

11. You will bring your horses down to a walk before crossing the cross-walk on Tremont street, at the junction of Court street, and walk them until you are over the cross-walk, at the junction of Cornhill and Court street; on Tremont and Washington streets, at Eliot street; on Harrison avenue, at Kneeland street; from stand at Tremont House to Winter street; on Hanover street, from Court street to the American House; across New Washington street; on Battery street, crossing Commercial street; on Causeway street, from Leverett street to Merrimac street; on all bridges.

12. You will, at the foot of Cornhill, allow the car coming up New Washington street, the right of way.

13. You will be very careful and drive slowly, when turning from Court street on to Cornhill, coming from the depot.

14. You will pay particular attention to the rules and regulations of the Board of Aldermen and the Police Commissioners, relating to cars. Copies of said rules can be obtained at the Division Master's office.

15. You will avoid stopping your car across any cross-walk or street. You will run on your time, as nearly as possible, and avoid "loafing," or crowding with other cars.

16. You will avoid running your car

close up to the car in front of yon, when you are blocked-up, on the street; always giving room for teams to pass between your horses and the car in front. You must never, under any circumstances, after yon have stopped your car, start again, unless you have the signal by the bell from the conductor.

17. When your car is in motion, you will keep back so that carriages can pass between you and the car in front, without risk of collision; and when south of Dover street, you will keep 100 feet from other cars.

18. Your particular attention is called to the following Section of Act concerning Street Railway Corporations, viz:-When a street railway crosses, or is crossed by a steam railroad at grade, where locomotive engines are in daily use, the driver of the car on the street railway shall, when approaching the point of intersection, stop his car within one hundred feet of the crossing. No street railway car shall pass another car standing to receive or deliver passengers in a parallel track in the same street, at a rate of speed faster than a walk. For each violation of this Section, the driver shall forfeit ten dollars, and the Corporation employing the driver shall forfeit twenty dollars.

19. You are not allowed to be seated while your car is in motion.

20. You will always stop your car whenever persons wish to get off the front platform, notwithstanding they may say to the contvary. You will also notify passengers that it is a violation of the rules for them to enter or leave a car by the front platform,

21. You will pay particular attention to the bell, and keep your brake on until the Conductor strikes the bell for yon to start. One bell is the signal to stop in ordinary cases, two bells to start, three bells to stop instantly, whether on curves, grades or anywhere else. If your brake does not work well, and you wish the carstopped by the Conductor, give him three quick, sharp bells. When you get the bell to start, do not hurry too much; allow two or three seconds for the prevention of accidents. Be reasonably prompt, but not reckless.

22. You will keep a good lookout for passengers on your route, and stop your car as soon as possible and proper, when asked or notified so to do. Notify the Conductor of passengers or large parcels on the front platform.

23. You will, at all times, be courteous and polite to passengers, answer proper inquiries for information, and use especial care when passengers insist on getting on or off the car by the front platform. You will not shut the door of the car, as accidents are liable to occur therefrom.

24. You will take the best of care with horses, cars, or any other property of the company placed in your charge. Yon will, at all times, when on duty, wear the uniform cap or hat.

25. Accidents.—You will use your ntmost care in controlling your team and car, so as to prevent any kind of accident, either to your horses or car, or to either horses or vehicles by collision, or to persons, or passengers getting on or off the cars, crossing the streets, or in any other way liable to be injured by the horses or cars of the company. In case of slippery tracks, causing your car to slide, be more than ordinarily careful; go slow down grades, and avoid collisions. Report all cases where tracks are not properly sanded or otherwise in good order. Be as careful to avoid collisions with heavy teams as with light ones, as slight collisions are liable to throw persons from their seats, and severely injure them.

26. In case of any accident, however slight, to person or property, you will note all the circumstances within your observation, and at once give the facts, and names of any witnesses you may obtain, to the Conductor of the car. Under this and all other circumstances, while on the car, you will obey the orders and instructions of your Conductor.

27. You will be held responsible to the company for all damage caused by neglect of duty, or carelessness on your part, to their property, or to the persons or property of others, for which the company may be held responsible or liable.

28. Any Driver who may be found wilfully or recklessly violating any of the above rules, will, upon sufficient proof, be immediately discharged from the service of the company.

29. Any careless or negligent repetitiou of a violation of these rules, will subject the Driver to immodiate discharge. Any Driver who may be found intoxicated, while on duty, will be discharged.

30. You will obey the orders of the "Aids" while they are on duty, and in uniform.

31. Drivers are especially directed to make frequent and careful study of the above rules; and especially of those pertaining to accidents to persons or property; and to havo a copy of the rules at all times in their possession.

Recent Patents.

Automatic street railway switch, M. Dudley, Lynn, Mass.

Cable brake, A. Roncaglia, Denver, Col. Cable railway, W. G. Huey and F. J. Lovegroove, Philadelphia, Pa.

Cable traction for street cars, O. H. Jadwin, New York.

Car brake and starter, D. Hall, Gault, Mo.

Car brake and starter, F. Tompkins, New York, N. Y.

Car starter, C. L. N. T. Hansen and C. N. Fischer, New York.

Car starter, S. Rockafellow, Muscatine, Iowa.

Carter starter and brake, J. W. and G. R. Strickle, Louisville, Ky.

Cable railway, H. M. Laue, Norwood, Ohio.

Circuit for electric railways, G. H. Short and J. W. Nesmith, Denver, Col.

Draw iron for street cars, J. H. Whiteley, Arlington, Md. Device for operating street cars, M. C. Tully, Louisville, Ky.

Electric railway, E. M. Bentley, Brooklyn, N. Y.

Electric railway, S. H. Short, Denver, Colorado.

- Feed trough, H. Mendenhall, Audubon, Iowa.
- Feed trough, S. A. and J. M. Rine, West Carlisle, Ohio.
- Forging stops for cable railways, I. Harris, Cleveland, Ohio.
- Gripping device for wire cable railways, R. Wetherill, Chester, Pa.

Gripping device for cable cars, G. H. Dodge, Philadelphia, Pa.

Guard and trace attachment for harness hames, J. Douglass, Brooklyn, N. Y.

Halter, E. R. Michaelis, Sycamore, O. Hame fastener, I. Howland, Chicago, Ill. Harness, C. LaDow, Albany, N. Y.

Harness, J. F. Randall, South Haven, Michigan.

Horseshoe, J. P. Dudley, San Jose, Cal. Horse collar, J. Ambrose and G. J. Atkins, Youngstown, Ohio.

Horse collar pad, W. Hurlburt and B. B. Havens, Rushville, N. Y.

Horseshoe, C. W. Hawes, Washington, D. C.

Link cable for street railways, S. R. Mathewsou, Portersville, Cal.

Metallic cross tie for street railways, H. Howard, Boston, Mass.

Quarter boot for horses, E. A. Leonhard, Dayton, Ohio.

Registering door for street cars, H. B. Corner, Philadelphia, Pa.

Snow sweeper and melter, T. Wright, Camden, N. J.

Street railway switch, F. D. Robinson, Cleveland, Ohio.

Street sweeper, D. E. Grove, St. Louis, Mo.

Switch for cable or other conduit railways, W. Wharton, Jr., and E. Samuel, assignors to W. Wharton, Jr., & Co., Philadelphia, Pa.

Tension apparatus for cable railways, H. M. Lane, Cincinnati, Ohio.

Ticket punch and register, G. J. Thorpe and J. H. Richardson, Manchester, Eng.

Traction cable system, C. H. Bowen⁹ Washington, D. C.

Track sanding apparatus for street cars, W. T. Butler and G. A. Hathaway, Boston, Mass.

Underground conduit, J. Beeler, assignor of one-third to E. Coombe, Cincinnati, Ohio.

To Prevent Wheels Slipping.

Mr. H. Tisdale, Treasurer Lawrence Transportation Co. of Lawrence, Kansas, writes that they use one and two horse cars, and have been enabled to prevent the wheels from slipping by the use of poles on the double and shafts on the single horse cars.

The "swing system." the cause of so much concern to the drivers and conductors the past few months, is said to have been originated by Col. A. W. Johnson, President of the Citizens' Street Railway, Indianapolis, Ind.

Electric Street Cars in Philadclphia.

The Union Electric Company has recently been operating an experimental electric motor car on Ridge avenue, between 32d and 33d streets, Philadelphia, and has met with very fair success. Each afternoon, a car carrying the usual burden of passengers has been run over the track at a rate of nine miles an hour. The system employed is that of underground electrical transmission. A conduit, 41 inches wide by 9 deep, and having a central slot similar to that employed on cable roads, extends along the center of the track. This has been laid on concrete and covered with Portland cement. At suitable intervals, connections are made with the sewer, in order to permit the rain water to discharge or the conduit to be washed out, should that be necessary. A copper conductor, one-quarter inch deep by one inch wide, runs along the conduit on each side of the slot. A grooved piece of channel iron is attached to the bottom of the conductors. A so-called "traveler." supported by wheels, runs in the slot, and is provided with two springs which slide along the channel irons on each side of the slot, and thus receive the electric current. The traveler is connected to the car by small chains. From its center, wires extend into the car, connecting the motor on board with the copper conductors in the conduit, by which the electric circuit may be closed. A regulator on the car controls the current, and permits the car to be driven in either direction. The trials covered a very stormy period, but it is stated that the bad weather caused no interruption in the working of the system. The estimated cost per day of running the electric car, according to the Ledger, is \$1.84, while that of operating a horse car is \$4.74. Neither estimate includes salaries. The cost of ten miles of electric railway on this system, and fifty cars, is stated to be \$175,000.

THE BROOKLYN UNION ELEVATED RAIL-ROAD Co.'s \$1,000,000 capital stock in 10,-000 shares of \$100 each was all subscribed for June 9. Fred Uhlmann and Wm. N. Cohen, who are also heavy stockholders in the Brooklyn Elevated Railroad, each subscribed for one-fifth of the stock. The other subscribers are New York and Brooklyn merchants. The directors elected the following named officers: Frederick Uhlmanu, Presideut; William N. Cohen, Vice President; George W. Wingate, Secretary and Treasurer. The majority of the directors and officers are connected with the Brooklyn Elevated Railroad. As soon as the consent of the property owners has been obtained for the construction of the various routes a petition for the right to build will be presented to the Board of Aldermen. Confidence is expressed that the Union Company will be at work on the road within six mouths.

If you want anything in the street railway supply line, consult our directory, and if you do not find what you want write to the publishers.

The Electric Railway at Minneapolis, Minnesota.

Minneapolis with its phenomenal growth has for the last few years felt the necessity of rapid transit, to bring its people from the city to the suburbs, where cheaper homes and more comfort can be obtained by the multitudes.

The object was accomplished by railway cars propelled by 75 and 80 horse-power steam dummies doing the work, the latter coming down in the heart of the city with trains packed full. Of late, however, the residents along the streets where the railway passes, and the public in general, have proclaimed the steam dummy a nuisance and have succeeded in stopping its coming down in the dense part of the city, so that, in order to bring the traveling public into the city, some means other than steam or horse-flesh had to be resorted to.

After some fignring, the Minneapolis, Lyndale & Minnetonka Railway Company entered into a contract with the Van Depoele Electric Manufacturing Company of Chicago, to bring the trains in the city by means of their electric motor. The trains consist of three or four passenger cars, each weighing eleven tons empty. The number of passengers carried is often as high as 600 at one time, so that the weight of the train is as follows:

Four cars, each 11 tons	44	tons.
600 passengers at 130 lbs	39	6.6
Motor car	8	"
Total	$\overline{91}$	tons.

The cars being the fac simile of those nsed on the New York Elevated Railway. The steam dummy brings the train to a point as far as allowed to come in the city, and then the electric motor brings the train down town with its passengers, and as soon as the cars are emptied, the waiting throng rushes in and in less than a minute the train is moving toward the dummy, there to deliver its train and to receive an incoming train to be brought down.

This operation of the electric motor begins at six precisely in the morning, and closes at half past eleven or twelve at night. The distance over which the electric motor travels is at present somewhat near a mile; the speed being about scven miles yer hour; that being the regulation speed within the city limits. Considering the constant stopping and starting at each block, the grades on the road, and the heavy trains, the electric motor must be given the credit of doing at least as good work as could be expected from any steam engine : during the seventeen or eighteen hours of service, not a single minute of stoppage is made except to let off and take on passengers. This electric road has been in operation for several weeks without a hitch or a breakage. The electric motor, which is of abont 40 horse power, works as perfect under a heavy as under a light load. The electric generator furnishing current to the motor is driven by a 12 inches x 18 inches cylinder engine, common slide valve,

making 125 revolutions per minute; steam 60 or 80 lbs. per square inch. Consumption of coal in 18 hours run, 3000 lbs.

From the permanency and the character of work done by this electric railway, it must be admitted that electric railways on elevated as well as on ordinary roads will become facts in the immediate future. There is no more tronble to build two or three hundred horse power generators than to build machines of fifty horse power. Several of these machines can be connected up and run in perfect unison, and by adding their currents together, any amount of power can be transmitted, with at least as much reliability as the steam boiler.

Electric motors and generators are, and can be constructed, to-day, which will outlast any steam engine, and from the very nature of these machines it becomes possible to use less expert attendance than in the case of a steam locomotive; the parts being fewer and less liable to get out of order on an electric motor than on any other kind of motor, it must and will become the favorite of the industrial world. The public are gradually losing their skepticism, and what had been proclaimed as an impossibility yesterday, becomes a fact today.

With regard to economy of electrical transmission, it has been shown by Marcel Depres and other that a mechanical efficiency of over 50% is easily obtained, so that by the use of stationary engines and boilers where cheap fuel can be used the production of electric currents and their application leave very little to be desired to make the electric railway system at once practical and economical. The cost of fuel used on a steam locomotive, as compared to a stationary engine, has been discussed too often to be entered mpon here, and everybody is well acquainted with the facts.

Street Car Starters.

The statement has been made that some 2,500 patents have been issued in the United States for street car starters. If this is so, it is no wonder that the patent office has become a source of revenue and pays a surplns of several hundred thousand dollars every year into the treasury. It is safe to say that any practicable car starting device will continue to be the one thing needful in street car populsion so long as horse power holds its own against mechanical motors. Inventors have been wrestling frnitlessly with the problem for years, and although the field still remains clear, and is growing larger every day, very little has as yet been accomplished in the way of supplying the "long felt want." To say that the problem is beset with difficulties makes it none the less, but all the more, fascinating to a large number of inventors who are eager to reap the rich harvest of success.

But after all, is there not some delusion about it akin to that of perpetual motion? We are inclined to think there is. I deed, we are quite snre of it, so far as storing up the momentum energy of the moving car is concerned and making it available for

starting. It involves a question of compensation very much like that which is involved in lifting one's self by one's boot straps, or in making something out of nothing, only its absurdity is less apparent. The power expended in checking the momentum is something, to be sure, and it really seems as if this energy could be applied in winding up a spring or in compressing air into a cylinder, and that the power thus caught and harnessed could help start the car.

And so it can be, but there isn't enough of it. The game don't pay for the ammunition. The average street car speed is too slow; the momentum energy is too little; and besides, it is not all stored np. a large percentage of it being frittered away and lost in the slow stopping. The available excess is consequently too small to compensate for the cost of apparatus and the energy expended in hauling the additional weight. A helper in starting is needed most in ascending grades, and on these the momentum power is diminished in proportion to the steepness of grade, while on the heavier grades, where a horse-helper has to be used, it is practically nothing.

A street car can never be made to start itself except down an incline, but the toiling inventors are trying to devise a plan to make it help start itself on a level, with a load of passengers and the additional weight of a mechanical starting apparatus. If the requisite power for doing this could be snpplied extraneously from the terminals or at points along the line, and the quantity needed could be boxed up, taken on board and used at every stop, it would be about the thing that is wanted, but the ways and means for doing this are yet to be discovered.—Car Builder.

Street Car Propulsion in Great Britain.

In Great Britain the expense of horse feed is much higher than it is in America. so that the expense of operating street railways with horses reaches very high. Efforts have constantly been made for years to introduce a cheaper motive power, but thus far without success. Steam motors have had a limited application, but the municipal boards object to having them in the public streets, so their use is obstructed by annoying ordinances. When the Portrush Electric Tramway was opened in Ireland two years ago, it was expected that the ex-perience gained in the actual operation of that road would lead the way to operating ordinary street ways by electricity, but nothing has come of it. The application of electricity to car propulsion, says the National Car Builder, is recognized as being still in the experimental stage and capitalists will not put money into experimental schemes that promise so little financial retnrn. In Manchester, there has lately been considerable agitation in favor of introducing the cable system of street car propulsion. The practical success of this system in San Francisco and Chicago is cited as good reason why it should be introduced in Manchester.

The Manchester engineering world has been familiar with cable traction almost since this century began, and it is snrprising that it has not been tried more for street-car traction. If we remember rightly the Blackwell Railway in London was first opened as a cable road some fifty years ago or more. That was a failure, principally through defects in the mechanical details, and the loss incurred by the promoters of the enterprise may have deterred others from entering into similar schemes.—Am. R. R. Journal.

Street Railway Policy.

Last month we gave the condensed wisdom of a western Superintendent received in answer to our blank recently seut out. The following are the ans ers of a live marager in St. Louis, who knows what he is talking about:

To prevent a strike give the men what they want or knock them in the head by the supremacy of the law and do it quick. No cure has yet or can be devised while the daily newspaper devotes page after page to publishing the vaporings of hired agitators and political demagogues, thus adding dynamite to dynamite as it were.

Labor Unions should not be recognized; to me, my servant stauds or falls; the contrary is to-day the way it stands.

We pay our conductors \$2.00 per day; drivers \$1.75.

The longest day's work on our line is 11 hours and 50 minutes daily, with pay as above noted. Ruu what we call tripper cars night and morning with the regular service; the tripper men taking the late and early trips for our regular men, we pay them so much per trip.

The native horse weighing about 1100 lbs., is the best we consider for our purpose. They run about 13 miles daily. Six lbs, of ground corn mixed with about two lbs. of cut timothy, about 5 lbs. of oats and about 8 lbs. of loose hay, with all the Mississippi water they can drink, is the daily allowance for our stock. We experimented with a noiseless, smokeless, steam motor some years ago but it frightened too many horses and we were forced to take it off; the curves and grades, if I recollect right, bothered it some too.

There is no end to the life of a car. While there's a board left to hold a nail, the car will continue to run. We have some the roof of which is the only part left representing the original.

Economy in Driving.

It is too often assumed that a driver's a driver, "and that's the end of it." There is a great difference in the economy with which different drivers handle their teams. Iu one case the animals are so fretted that their worry is more wearing than their actual work; while in other cases by judicious and skillful management a team of the same temperament is made to do its work in the coolest possible manner, with, of course, a great saving of strength, which is the same thing as a saving in dollars. This subject and its relation to promotion of drivers, and the labor question, will be treated by the well known writer, W. E. Partridge, iu our next issue.

Frank H. Andrews, senior partner of the firm of Andrews & Clooney, has bought the entire interests of the heirs of the late B. A. Clooney, and will hereafter conduct the business of this well known supply firm. Mr. F. T. Lerned will have the entire management of the sales. Mr. Lerned, who has just returned from the Pacific slope, has placed the representation of the business in California in the hands of Wry. B. Isaacs, 258 Market street, San Francisco.

The New York Third avenue strike is estimated to have cost the company over \$270,000. The final and complete collapse of the strike is worth many times that amount to the street railway interests. When the various cases pending in court against members of the Empire Association MONTHLY, \$1.00 PER YEAR and others for inciting riot, "boycotting," etc., are decided, the serious nature of such action will become so apparent to employees, that they will hesitate before taking such steps again.

At a meeting of Methodist ministers recently held at Cleveland, Ohio, resolutions were passed condemning the running of street cars on Sunday, and advising people to walk to church. Let us see, how does this figure out :

A car will carry say 20 people to church, an average distance of two miles, in say half an hour. This involves the labor of say 1 stableman, 1 couductor, 1 driver, 2 horses, thirty minutes each.

The plan advised by the preacher would require the labor of 20 people, say threequarters of an hour, instead, and about the same figures in proportiou would apply to all the cars engaged in hauling people to church.

Which is the best way to keep the Sabbath, to go afoot, or ride ?

John Casey, a striking New York Third avenue car driver, pleaded guilty June 29 in the General Sessions of riot in stopping a Third avenue car, on May 15, unhitching the horses and setting them scampering down the avenue. " Committeemen Graham and Boyle, who according to the evidence in the case of your associate, directed you to do what you did, are far more culpable than you are," Judge Cowing said to him, " and merit much more severity than I am about to show toward you. I wish I could convince you and all other workingmen of the folly of intrusting your personal liberty to men who do not seem to be half as wise or well informed as yourselves. The whole community sympathized with you and your associates, when yon asked for shorter hours and better pay, because you were entitled to both. But when you made other demands, and virtually said that no man who differed with the views of your organization had a right to earn a living in New York, you outraged a cardinal principle of our American institutions, and brought upon yourselves overwhelming condemnatiou I sentence you to the penitentiary for six mouths." Graham is Master Workman of District Assembly 75, Knights of Labor, and Boyle was Master Workman of the Third Avenue Local Assembly.

If you want to buy or sell street railway property, want a positiou or want a man for a position on a street railway, advertise under "special notices" in the STREET RAIL-WAY JOURNAL.

If you want to buy anything in the street railway supply line consult our directory and if you do not find what you want write

E. P. HARRIS, General Manager.

TO USENAL

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G. H. FAXON, Treasurer.

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Philadelphia, Pa., 119 So. FOURTH ST., J. H. MC-GRAW, Manager.

J. H. McGRAW: Manager Subscription Department.

The Third Avenue Railroad Company of New York has by its consistent and firm stand in the recent strike on its line conferred a benefit on the street railways of the country.

As we go to press there are rumors of an impending general strike among the street railway employees in Brooklyn. It would seem as if the results of recent strikes in that vicinity would be anything but encouraging to such a project.

The destruction of the great shops of the Metropolitan Road in Boston reminds us to ask, Is the interest in a Street Railway Mutual Insurance Company dead? Can a plau be devised by which street railway property can be insured for less than two or three times the actual cost of the risk, and that too in insurance companies in many cases having a capital of one-tenth that of the street railway insured?

The Indianapolis, Ind., roads use mules from 800 to 900 lbs. weight, 14 to 15 hands, in preference to horses. They make about eighteen miles a day, and last on an average about six years, when they are in good condition to sell for slower work. Many of them have run on the road for fifteen years and arc "colts" yet. They are fed the best quality of corn, timothy hay, rye feed, wheat middlings and oats and as to quantity, "all you can coax them to cat."

"Pay wages sufficient to attract intelligent men. Hire only such. Govern them wise-ly, firmly, but not harshly. Treat them as trusted servants, not as abject slaves. Protect them always when they are in the right; coudemn them without fear or favor when they are in the wrong. Show no partiality.

The above is the creed, lived up to in every particular, of a road that probably pa s the highest wages and gives as much or more consideration to its employees as any in the country. And yet those same employees agitated a strike. It would seem sometimes that the more handsomely men are treated the more they will demand. | to the publishers.

Colic-Its Symptoms and Treatment.

In our April number we gave an abstract of that portion of Dr. W. H. Arrowsmith's paper on "Diseases Common to Car Horses," read at St. Louis, devoted to pneumonia. Following is an abstract of the part of the same valuable paper devoted to that very common, very serious and not too well understood complaint, colic. Our readers will find it very instructive and valuable.

The term colic in its etymological sense relates to that portion of the intestines known as the colon, but in the present nomenclature of diseases it is applied to all the acute varieties of pain independent of inflammation and structural lesions that affect the digestive organs contained in the abdomen.

The commencement of an attack of colic is usually sndden; at times the attack begins by the patient manifesting a degree of languor and dullness; if in the stable, he stands back at the end of the rope of his halter and looks around at his flanks; if on the street and in harness, he will not show his usual spirit in driving, will not respond to the bit or whip, will knuckle over on the hind fetlocks and possibly stumble. Bnt, whether the attack appears suddenly or slowly, the horse soon becomes restless, and paws and stamps on the ground; if in the stall, pulls his bedding back, flexes his fore legs, hesitates to lie down, although making the attempt, and finally lies down, either to roll once or twice and then get up or remain down extending all four legs a jainst the stall, resting flutly on the sides, or possibly lying entirely upon his back, These positions are not continued long; he soon rises up, moves about, paws and perhaps lies down again and rolls, at times expressing his suffering with moaning and granting. The countenance is always anxious and contracted, the eyes are dilated and at times fixed, the nostrils are widely opened, and the whole face expresses pain and suffering. In some cases the paroxvsms are intermittent and there is a time of rest to the animal when he remains quiet. although presenting an anxious and expectant look, when in a short time another paroxysm of pain takes place; while in others the pains are continuous, the animil is in constant and wearisome motion, getting up and down, stamping and looking at his flunks. The movements and struggles are more or less violent, according to the severity of the plins. Every horse, however, has his own peculiar form of attack, and his special mode of exhibiting his distress, and the general manifestation will be modified according to the individuality of the patient.

The temperature in all colics at the onset is normal, but may rise a degree from the labor and excitement as the pain continues; the respiration is accelerated, and remains so to the end of the attack, whether fatal or favorable.

The pulse is, as a rule, hard, small and often irregular, and the arterial tension below the normal, while the heart's action becomes decreased; when the disease has progressed somewhat the heart becomes accelerated, but the pulse remains hard, small and thready; this is especially noticed in those cases that terminate fatally. In the first stages there is often a profuse perspiration, and in those cases that are approaching dissolution there will be a profuse sweating and a cold icy feeling over the entire body.

Certain cases of colic, either by treatment or a natural reaction, recover; the point at which a cessation of the pains takes place is shown by a free expulsion of gases or fæces, or a copious evacuation from the bladder. The intense expression of the face passes away and the animal frequently shakes himself and begins to munch hay, while in other cases, even with the best care and treatment, the struggles become more violent and rapid, the symptoms of pain become more aggravated and decided, the animal seems to become unconscious and regardless of the attendants and objects about him, the respiration becomes more accelerated, the pulse, at first hard and thready, becomes less distinct, and finally almostimperceptible; the muconsmembrane becomes injected and a cold perspiration covers the whole body. At the approach to a fatal termination a deceptive appearance presents itself; the animal becomes quiet, stands with head out stretched and seems to be in relief; but there is still the characteristic expression in the face of extreme pain; the respiration although not so labored is quickened, the pulse is almost imperceptible and possibly pulseless; the animal lies down carefully, stretches his legs, and with a few struggles and convulsive efforts expires; or at times they persistently stand, the muscles of the shoulders and hips will be seen to quiver, the animal will reel and suddenly fall forward, and with a struggle is dead.

During even slight attacks of colics the functions of the gastro-intestinal canal and of the bladder are suspended, there is a paralysis of the muscular coats of these organs, and as a differential diagnostic point it is well to remember that in all intestinal and stomachic colics the functions of the bladder are checked, and that although the animal may present the desire to micturate, still, the tronble is not in the bladder but in the stomach or intestines.

The different diagnosis of colics is, as a rnle, exceedingly difficult. Still, although there are many attitudes and actions common to the numerous forms which manifest themselves by colicky pain, there will always be present some special characteristic symptoms which willaid usin making a correct diagnosis, and it is very essential to make a correct decision at the outset and then proceed with the proper treatment.

The first form of colic, the symptoms and treatment of which we will consider, is the nervous or spasmodic, and this form generally manifests itself some time after eating or drinking, and often after a long drive.

The pains produced are intermittent and vary in intensity, and continue from two to six hours. The abdomen is retracted, res-

piration accelerated, pulse is quickened, bnt presenting fullness under pressure, and continues so unless approaching a fatal termination, when it becomes small, hard and thready. When exercised, motion is not painful and in some cases seems to afford relief. The pains and paroxysms in spasmodic colic are very severe, and the animal during the spasms will throw himself down with great violence and quickly jump up and at once commence pawing or moving about in the stall. Then there will be a cessation of the pain and the animal seem relieved; but in from five to ten minutes there will be a return of the spasm and the animal will again undergo violent exertions. The temperature is always normal or but slightly increased if the animal has been suffering for a length of time. The abdominal muscles are frequently retracted. Care should be taken to discriminate between spasmodic colic and peritonitis or inflammation of the bowels; in spasmedie colic the pains are not continuous and are more violent. There is but very slight increase in temperature, while in peritonitis the temperature is always increased. Spasmodic colics are generally attributable to the local irritation of the ingesta; it may arise from indigestion either from excess in quantity, or from the indigestible quality of the food. It frequently follows exposure to cold or fatiguing exercises, but these causes probably act by occasioning indigestion. Certain foods with particular horses will give rise to spasmodic colic in consequence of an idiosyncrasy which is inexplicable.

This form of colic, although attended with great and protracted suffering, is not considered fatal. It is one of those violent functional affections from which recovery takes place rapidly. It has no tendency to eventuate into inflammation or any other disease, but in proportion to its duration it is followed by fatigue and weakness, and more or less abdominal soreness may remain; and should the attacks be repeated in the same animal he will become weak and emaciated, and if they be not checked or relieved he will die from exhanstion during an attack.

The treatment in spasmodic colic has two objects: first, to check the spasm, and, second, to relieve the pain; and thus prevent undue exhaustion. Chloral hydrate has been found the most efficacious medicine and presents the best results; it should be given in the form of a ball composed of chloral hydrate, one ounce, pulverized lobelia, one drachm, and sufficient honey or simple syrup added to form a mass, This in most cases will be found to relieve, but should the pains continue for an hour or more another ball composed of half the quantity given above, or a drench, which the writer has found to act with excellent results in those that are persistent, composed of chloral hydrate, one-half ounce, and opei tincture, one ounce, in about a pint of water. In most cases the administration of the ball alone will, in about fifteen minutes, relieve the pains and produce quiet and peaceful sleep.

The tympanitic form of colic is not difficult to diagnose and is recognized by the swelling and tympanitic condition of the abdomen. It first presents the usual symptoms of all colics, namely nneasiness, pawing, a desire to lie down, when if the ear is placed to the right flank the formation and passage of gas from oue portion of the bowels to another may be heard, and soon there will be noticed a distention of the abdomen, and with the continued formation of gas the flanks and abdomen become hard, resisting, and more or less resounding on percussion. The animal exhibits great pain and assumes many positions, at times throwing himself down with great violence; and it is during these efforts that complications arise which prove fatal; such as the rupture of some portion of the intestines or stomach, laceration of the diaphragm or distention, and rupture of some of the larger blood-vessels, producing internal hemorrhage.

This form of colic is due to indigestion with fermentation. The stomach and bowels are torpid, the food undergoes fermentation and gives rise to the accumulated gases. Again, other causes are foods that are of poor quality or have become heated or fermented. Water taken into the stomach while the animal is warm or exhausted after violent exertion, or over-loading the stomach in cases where the animal gains access to the feed-box, frequently give rise to this form of colic. It is common in cribbers and is an evidence of the bad condition of their digestive apparatus. Frequently the formation of gas takes place in the stomach and the distention of the bowels is not so apparent. This condition may be recognized by the regurgitation of the gases in the throat.

In the treatment of this form of colic prompt action is very essential. If the distentiou is great, relief should at once be given by recourse to the trocar and canula; this is an instrument composed of a silver tube or cannla abont eight inches long and one-quarter of an iuch in diameter, into which is inserted a round steel rod or trocar, oue end of which is pointed and the other end inserted into a handle, the pointcd end projecting beyond the canula about half-an-iuch. This instrument then is inserted through the skin and into the large intestine called the colon; the point for inserting is on the right flank and is at the point of an augle formed by drawing two diagonal lines downwards, one from the external point of the hip and oue from the last rib, and the point at which they meet will be the point at which a puncture can be made. When the trocar and caulla have been inserted almost to the full length the trocar is withdrawn and the canula allowed to remain, when the gas contained will escape and with such forc as to produce a distinct whistling sound.

To relieve the gas that has formed in the stomach and the small intestines, four or five balls composed of six drachms each of pulverized wood-charcoal rolled np dry in tissue-paper will act to absorb it. Also give to the animal a dreuch composed of:

to which add about a pint of water; and should the horse not gain entire relief in one or two hours, the above drench may be repeated. Should the distention continue and the animal seem greatly distressed and respiration quickened, he should then be again punctured with the trocar and cannla. There should be no hesitancy in puncturing. There is but one unpleasant result that may follow, which is the formation of a small abscess at the point where the puncture was made, and that should be opened at once with a sharp scalpel and bathed with hot water several times a day. But this seldom follows, especially if care is taken to withdraw the canula quickly when the flow of gas ceases.

The other form of colic which we will consider is that due to impaction of the ingesta at some portion of the intestine; this impaction may occur at any portion, either in the large or small intestines, or even the stomach.

The symptoms are not difficult to distiuguish and the history of the case will be an important factor in the diagnosis.

The animal is dull, refuses food and sometimes water, paws the bedding and occasionally lies down, remaining for a time and then rising to commence pawing again. The respiration in the first stages is not accelerated, but if the animal continues to suffer two or three days it becomes quickened. The pulse is quickened and full at the commencement, but if the impaction continues it becomes hard and thready. The history of the case will reveal the fact that the animal has not defecated freely, and has been dull and dejected. The symptoms are uot violent as in spasmodic colic nor is there any tympanitis as in wind colic.

The etiology of this form of colic is in most cases obscure. In some cases it is due to over-feeding and not sufficient work. Horses that are convalescing are permitted to eat large quantities of hay, and perhaps their bedding is affected with it.

Auimals that are debilitated either from age, overwork or sickness, lack force and tonicity in the peristaltic action, and the result is impaction of the food at some weak point of the bowels, and to this impacted ingesta is added all the food that the animal may take before showing distress. The treatment should always be heroic. Purgatives should be given at first in the form of raw linseed oil, one and onehalf pint, and give injections of warm water and soap containing two ounces of the tincture of barbadoes aloes every three hours. Should the bowels not show any response in from ten to twelve hours, a physic ball should be given composed of aloes barb. pulv., one onnce, nnx vomica pulv., one drachm. And a nerve tonic in the form of tincture of nux vomica, one ounce, tincture belladonna-leaf, two onnces, water sufficient quantity to make eight ounces, and give an ounce every three hours. If the animal is weak and seems exhausted, a | RAILWAY JOURNAL.

drench of one ounce of alcohol and eight ounces of water should be given every four hours. The principal object should be to endeavor to induce au action of the bowels, and when the diagnosis of impaction is made all efforts should tend to promote the action of the bowels.

The prognosis is always doubtful and most cases of impaction are very persistent and frequently never respond to treatment. The animal will continue to suffer from four to eight days and then die.

There are other conditious which give rise to colicky symptoms, but from the fact that they are not of frequent occurrence in our railroad stables, and the time necessary to describe them being beyond our limit, we will simply mention them and advise that, in cases of colic which present symptoms of an unusual and remote character, a competent veterinary surgeon be employ ed to treat them.

Invagination, or the condition where one portion of an intestine is pushed into a portion adjacent, is either due to a lack of peristaltic action in one portion or to the calibre of a portion of the intestines becoming enlarged, and the part next to it being received into it. This condition when it does occur presents persistent colicky pains and frequently terminates fatally.

Foreign bodies taken into the stomach by the mouth, producing irritation or the formation of calculi, give rise to colicky paius that are often obscure and difficult to diagnose.

The various forms of hernia, either scrotal, inguinal or rectal, will produce colicky symptoms requiring the prompt attention of a competent veterinary surgeon.

Special Notices.

The attention of our readers is respectfully called to onr department of special notices as a means for making announcements of street railway property for sale, or wanted in the street railway line, positions wanted, or men wanted to fill positions on street railways.

The results to those who have used this column, have been very satisfactory, and we desire to make it a general medium of exchange for such information. For rates see department.

American Street Railway Association.

The next session of the American Street Railway Association will be held in Cincinnation the third Wednesday in October. Subjects for discussion: Causes, Prevention and Settlement of Accidents; Sanitary Condition of Street Cars; Veutilation, Lighting and Care of Cars; Progress of Cable Motive Power; Progress of Electric Motive Power.

If you want to buy or sell street railway property, want a position, or want a man for a position on a street railway, advertise under "special notices" in the STRFIT RAILWAY JOURNAL.

Notes and News.

Boston, Mass.

The Highland Street Railway has equipped ten open cars with the Chaplin Roller Bearing, making in all thirty sets of this bearing in use on that road.

Buffalo, N. Y.

The Buffalo City Railway Co., at its annual meeting, unanimously re-elected its officers and directors.

Bridgeton, N. J.

A new passenger street railway is contemplated. Everything is favorable toward the movement and work will probably soon commence. Oberlin Smith, of Bridgeton, is one of the interested parties.

Brooklyn, N. Y.

THE BROOKLYN RAILWAY SUPPLY Co., 37 Walworth street, Brooklyn, N. Y., are at work on a new shop 35×100 which will afford them further facilities.

All the conductors and drivers of the Brooklyn City Railroad Company who did not report for duty at the regular hour on the morning of the last general "tie up," June 6th, lost their cars, or have been put on the extra list. No consideration will be shown them by the company. President Hazzard said:-"No man who lost his car by not being on hand on Sunday morning will get it again with my consent. The men who tied us up on Saturday need not expect any consideration from this company. The understanding with the employees made some time ago is no longer binding. It was broken by the men ou Saturday. Those portions of the agreement that I consider just will continue in force, but there are other parts that I have always held to be extravagant, and these certainly will not remain in force."

Chicago, Ill.

THE NORTH CHICAGO PASSENGER RY, Co. has received from the City Council the right to "make all needful and convenient curves, trenches, excavations, and sewer connections, and to place convenient cables and machinery on any streets upon which its railways are now constructed." It is alleged that twenty members of the Council received \$127,000 to pass the ordinance.

Denver, Col.

THE DENVER TRAMWAY COMPANY has been incorporated. Capital stock, \$500,000. Rodney Curtis, and others, incorporators. Battle Creek, Mich.

THE BATTLE CREEK STREET RAILWAY COMPANY has been incorporated. Capital stock \$35,000. H. H. Brown, Lucius Clark, South Bend, Ind., and H. H. C. Miller, Chicago, Ill., incorporators.

Detroit, Mich.

The Detroit City Railway is adding several new cars to its equipment.

THE HIGHLAND PARK RAILWAY COMPANY will build an electric road from the Woodward avenue street car line to the new exposition grounds. W. A. Jackson, 24 Newberry and McMillan Building, Detroit, is interested.

Gloucester, Mass. The Gloucester Street Railway is open for business.

Haverhill, Mass.

A new street railway company, to be called Pentucket Railway, is being organized with a capital stock of \$40,000.

Kissimmee, Fla.

The Town Council have granted a right of way through the streets of Kissimmee to the Florida Midland Railroad.

Lowell, Mass.

Thomas Nesmith and others are about to build a new street railway here. They are at present looking up the merits of the girder and other systems of laying rails.

Los Augeles, Cal.

THE CITY AND CENTRAL RAILROAD COM-PANIES, controlled by I. W. Hellman and E. F. Spence respectively, under a new arrangement, pool their earnings, and both roads are under one management. President, I. W. Hellman; Secretary, Fred. Harkness; Superintendent, William Hawks. There are three divisions of the road, as follows:

Olive Street Division (One Collection)-100 horses, 13 cars, 10 regular cars, 3 extras; length of road, 41 miles; time for round trip, 80 minutes; 10 regular drivers, 3 extras, 8 men in barn, 2 blacksmiths, 2 car builders, 1 teamster, 1 trackman.

Central Division (One Collection)-54 horses, 12 cars, 9 regular drivers, 3 extra drivers, 7 hostlers, 2 car builders, 1 blacksmith, 1 teamster, 1 hostler, 4 miles long.

Boyle Heights Division-13 horses, 4 cars. 3 drivers, 1 extra driver, 1 man in barn, 3 miles of road.

A bridge is being built over the Los An. geles river, to cost \$6000. When the bridge is completed, through cars will run to Evergreen Cemetery, avoiding the inconvenient change at the stables.

The rails for the extension of the Central Division have been distributed along Pearl and Ninth streets to a point beyond Alvarado street. The work of constructing this extension will be commenced shortly.

The City Division is to be extended shortly to East Angeles, running up Downey avenue and up Chestnut and Hough streets, and four blocks up Hough street to Daly street.

At the present terminus of the Central Division on Sixth street are located the main barn and shops. Several cars are being overhauled, cut down or repaired, and a new one is being built. A new car is being built at the Olive street shop also.

A double track is to be laid this summer from the intersection of Main and First streets to Agricultural Park. At Washington Gardens one track will keep straight on down Main street, abont one mile to Jefferson street, and thence west on Jefferson street, to Figueroa, whereit will meet the other track, which will follow the present course. At the intersection of Jefferson and Figneroa streets the double service will be resumed to the park.

William Lacy and others have a franchise for a railroad along Mission street in front

of the County Hospital, which will be built in a short time.

A number of property owners met May 25th, at the W. R. Burke's place, and subscribed \$2230 toward the extension of the City Division along Vermont Avenue. Messrs. Tarble, Bennett, McCreary, Simons Hall, Burke and Sinsabangh were appointed a committee to solicit subscriptions to make up the balance of \$6000, for which Mr. I. W. Hellman promises to build the extension within ninety days from the date the subscription is completed.

Col. A. H. Wands, for a number of years connected with the California St. Ry. Co. of San Francisco, meeting with a serious accident resigned his position there and came to Los Angeles for his health. The Temple Street Cable railway was nearing completion and they made the Colonel an offer to take charge of it, and he has consented. The road is now in perfect running order.

Macon, Ga.

The street railway has been extended recently across the Ocmulgee river to East Macon, also to South Macon, both of which sections are growing rapidly. Macon is attracting the attention of capitalists by its splendid streets and beautiful park and commercial advantages. It is one of the foremost cities in the Empire State of the South.

Melbourne, Australia.

The cable system of motive power has been adopted by the promotors of the street railway enterprise of this city. And thirty-four miles of track will be laid. Michigan City, Mich.

The Michigan City common council have granted a franchise to a company to build a street railway in that city. Jeremiah Knight and John Lyons of South Bend, Ind., are pushing the enterprise.

Minneapolis, Minn.

No street cars were running June 20th. Superintendent Lowry offered to allow the use of seats within certain specified limits on each line, but the drivers demand unconditional return to the privilege of sitting down at will. Mr. Lowry now proposes to fill the strikers' places and appeals for police protection in running cars. Mayor Ames is not disposed to interfere.

Middletown, Conn.

In our last issue the types made us say that the Middletown Horse Railway Co. were using the "Wells" fare-box, instead of the "Wales" fare-box.

Newton, Mass.

The street railway committee of the Massachusetts Legislature have reported a bill to incorporate the Newton Street Railway Company, with \$50,000 capital and anthority to employ the electric system of motive power, and to lay tracks from the Boston & Albany R.R. in Newton Center, north through Institution Avenue to Beacon Street, thence west to Walnut Street, thence north to Washington Street and Anburn Street to Auburndale; also from this corner east through Washington Street to Newtou Corner; also from Bowers Street in Newtonville to connect with the proposed line on Walnut Street. The steam plant for running the dynamo electric machines will be installed by the Jarvis Engineering Co. of Boston, and will include power enough to run an electric light plant. The engin's will be of the Armington & Sims Co. make, and will belt direct to the dynamos, thus saving the power usually wasted in running shafting. The boilers will be made of Otis steel and set with the Jarvis Patent Boiler Setting to burn coal screenings for fuel. In running an electrical railroad, the principal item to be considered is the cost of power. Most of the electric railroads started thus far, have put in long stroke engines, and use lines of shafting. The boilers have been set with plain settings, and used the highest cost fuel. The Jarvis Engineering Co. have erected nine-tenths of all the electric light plants in the New England States, and it is to their credit that every plant they have installed is paying dividends. With improved engines, and boilers set to burn the lowest cost fuel, it is claimed that the cost of running street railroads as compared with horses will show an economy of 50% or more. The prospects of transmitting power by electricity to run street cars are to-day in a more advanced state than electric lights were in 1878.

New York, N. Y.

THE HOUSTON, WEST STREET & PAVONIA FERRY R. R. Co. elected the following directors June 8: John Lowry, James H. Woods, Henry Thompson, Solomon Mehrbach, W. H. Kemble, D. B. Hasbrouck, C. E. Warren, P. A. B. Widener, Thomas F. Ryan, Henry Steers, Clay Kemble, W. S. Elkins and Ebenezer Beadleston. These gentlemen are understood to represent the Philadelphia Syndicate.

Samuel Raynor & Co., New York, have facilities for producing one million envelopes per day. Their production includes street railway change envelopes.

THE BROADWAY AND SEVENTH AVENUE R. R. Co., at its annual meeting, June 14th, elected a new board of directors. The 7,882 votes cast were cast unanimously for the following ticket:

Charles Banks, William B. Dinsmore, Bernard M. Ewing, John H. Murphy, Thomas J. O'Douohue, Thomas F. Ryan, John J. Bradley, William L. Elkins, Charles F. Frothingham, Solomon Mehrbach, W. H Rockwell, Henry Thompson, and Peter A. B. Widener. The old Board were:

James W. Foshay, Thomas B. Kerr, John H. Murphy, S. Sidney Smith, M. M. White, John J. Bradley, Jacob Sharp, Alfred Wagstaff, George N. Curtis, Haurison D. Kerr, George Law, William Henry Hays, and A. C. White. Only J. J. Bradley and John H. Murphy were reclected.

The new Board elected Henry Thompson, President; Thomas F. Ryan, Secretary and Treasurer, and the only new directors who were not present were Wm. B. Dinsmore and Charles Bauks. Mr. Dinsmore is President of the Adams Express Company, Mr. Banks is a member of the firm of Banks Brothers, the law publishers, Widener and Elkins are of the Philadelphia syndicate. Henry Thompson is President of the Avenue C line of horse cars, and of the Metropolitan Railroad Company, and represents the Philadelphians in this city. Charles F. Frothingham is a broker. Solomon Mehrbach is a horse dealer and politician. Secretary Ryan is a stockholder, and a prominent Tammany man. Thomas J. O'Donohue is a brother of Joseph J. O'Donohue, and was once in the tea business, W. H. Rockwell is a physician and Bernard M. Ewing is a dry goods man. Mr. Bradley was once a State Senator. He keeps a livery stable, and is a brother-inlaw of Peter B. Sweeny.

Not only the horse car tie-up is over, but the Empire Association has owned up to its defeat on the Third avenue, and the Third avenue strike is declared over. The local assemblies were notified on June 5th that they will no longer be called on for contributions to support the strikers. There were 1,300 of these strikers originally, but their numbers have dwindled by the defection of conductors and others till there are now 1,053 out of work. They must shift for themselves. The Third avenue people say that none of them are wanted back now, and that in case of vacancies in the future union men, if they apply, will be likely to be discriminated against. The general tie-up was ordered off as it was ordered on, without explanations. As nearly as can be made out it was originally ordered to last twenty-fonr hours only, and was intended to demonstrate to the other companies that the failure of the Third avenue strike has not broken down discipline in District Assembly 75. Executive Committeeman Andrew D. Best, who came back from Cleveland June 5th, is reported as declaring that under the action of the General Assembly upon strikes and boycotts, the tie-up was unworthy of the support of the order. It was ordered, anyhow, just in time to prevent several of the roads from following the example of the Third avenue road and going to war with the strikers. It has cost many of the men their places as it is.

Ogdensburg, N. Y.

The new street railway at this place is being built by Haines Brothers of New York City. It will be about five miles long.

Pawtneket, R. I.

A stock company is being organized for the purpose of constructing a street railroad, Arnold B. Chace, Valley Falls, and L. B. Darling, Pawtucket, are interested in the movement.

Philadelphia, Pa.

THE HALE & KILBURN MANUFACTURING Co. have just issued a beautiful new illustrated cat.logue of their productions in the way of car seats, springs, etc. They have a number of contracts for car seating, among which is one from the Third Avenue line of New York, for 25 cars. The "spring edge" style of seat, recently furnished by them for the Broadway line, is beginning to be adopted by other roads. The company reports that the strike which has just ended in their works did not affect in any way their railroad business, but was confined entirely to other departments.

MESSES. LYNN & PETTIT, 707 Market strect, are enlarging their plant for the manufacture of coccoa car mats.

Providence, R. I.

THE TOCKWOTTEN ST. LINE of the Union Railway Company running to East Providence, about 3 miles in length, was completed and put in operation this Spring. It is equipped with the finest cars and live stock, and like every other detail of the Union system, is probably not surpassed in this country.

Pittsburg, Pa.

The Union street carmen June 7th formally declared a boycott against the Eagle Avenue and Oakland Street Railway companies, all efforts for a compromise having failed. Master Workman Evans of the Knights of Labor said he thought that the non-union men would not return to work, but they did. The Executive Committee of the Street Car Assembly issued a circular calling upon all workingmen and their families to boycott the roads. A few cars are running, but they stop at 6 o'clock in the evening.

The Oakland Street Car Company entered snits in the United States court June 8th against Richard Campbell, Master Workman of the Street Car Assembly, Knights of Labor, and Messrs. Edward Woods, Henry Gamble, and Robert Eberhardt, charging them with conspiracy.

The accused were in the employ of the company and struck recently for the twelvehour schednle. President Gordon of the company alleges that they conspired to prevent the running of cars, and interfered with the men who wanted to work. Woods and Campbell were arrested and held for a hearing in \$500 bail each. Warrants are now out for Gamble and Eberhardt.

There is a project on foot to extend the Second Avenue street car line to Hazlewood.

Rockland, Me.

THE COBB LIME COMPANY will furnish information in regard to a new cable road to be built by Rockland capitalists.

Santa Ana, Cal.

Schoder, Johnston & Co. have received the contract to furnish 250,000 lbs. of 16pound steel rails for the new street railroad to join Santa Ana, Orange and Tustin City. Work will begin on the road at an early day.

Salem, Mass.

The Naumkeag Horse R.R. is having built new J. G. Brill & Co. cars equipped with the Bemis gear.

Salina, N. Y.

THE WOODLAWN AND BUTTERNUT STREET RAILWAY COMPANY has been incorporated Capital stock, \$30,000. Peter Kappesser and others incorporators.

Stillwater, Minu.

THE STILLWATER STREET RAILWAY COM-PANY has been incorporated. Capital stock, \$100,000. S. Matthews, and others, incorporators.

st. Louis, Mo.

The Brownell & Wight Car Co., St. Louis, are building cars equipped with the Bennis gear for McGavock & Mt. Vernon H. R R. of Nashville, Tenn.

Troy, N. Y.

Several months ago three bell punches were stolen from the stables of the Troy and Lansingburgh Horse Railroad Company, and ever since then the directors of the road have been looking for the thieves. For several weeks the receipts have been falling off and the company spent a good sum of mony endeavoring to find the whereabouts of the missing punches. They employed several Pinkerton men and many spotters.

June 2d one of Pinkerton's men, with Capt. Hodgson of the Cohoes police, arrested Eugene Lee and William Cooper, conductors on the Blue line, at a game of base ball which was being played on Adams Island between members of the Red and Blue lines, and in which they participated. They were locked up in the Cohoes police station on suspicion, and their room in the Miller House was searched. Two of the missing punches were found in a trunk, and charges of robbery were made against the prisoners. They waived an examination in order to retain counsel, and their trials will come off at once.

The men got possession of the punches in a roundabout way, they having been handed down through several persons. After getting the punches they began to swindle the company in a systematic manner. It is thought that they each robbed the company of about \$1,000. The company intends to make an example of the two men, who are old conductors on the road. Lee was at one time employed to break in new conductors and was always considered a most trustworthy man.

J. M. Jones' Sons, West Iroy, N. Y., are building cars for the following roads using the Bemis gear:—Union of Providence; Citizens', Worcester; Fitchburg (Mass.) Horse.

Fare Collector.

The Pavonia Street Railway Company of Jersey City have placed upon several of their cars a new fare collector that is made by Lewis & Fowler of Brooklyn, N.Y. It consists of a U shaped piece of brass with the uprights of the U but slightly higher than the thickness of a five cent nickel or a twenty-five cent silver piece. Ou the outside there are two brass strips riveted so that when placed on edge a trough is formed that will hold a coin on edge and yet allow it to be seen. This trough is backed by a strong piece of bar iron, and the whole placed on an incline leading from

the back of the car down one side and around a corner to a fare box near the driver.

On the posts of an open car or between the windows of a close car, there are small brass fare receivers, so that the passenger may drop the fare into them without leaving the seat. The openings in these receivers are so small that only one coin can be dropped in at a time, so that there is no danger of clogging the trough.

When a coin is dropped in, it rolls on its edge to the fare box and is dropped into the strong box by the driver, in the usual way.

The collector is giving excellent satisfaction where it is in use, and two-horse open cars, that will carry sixty passengers, are run without a conductor. It is stated, too, that where this collector is in use, pas sengers, who are regular travelers, make ita point to have their exact fare in readiness, so that less change is required of the driver. We are told by disinterested parties that in commission hours when the cars are crowded, the drivers do not average making change more than four or five times to the trip.

Uniforms for Conductors.

Every street car passenger has at times experienced difficulty in recognizing the conductor, especially on occasions when the rear platform was crowded with passengers; and on those roads uot using the bell-punch or other form of fare registerthey are not many, it is true—there is an uncertainty in the payment of fare as to whether it has gone to the right personage. The average conductor dresses himself in pretty much any manner he pleases, and there is even a great diversity in the style of hats worn. He is hidden behind a pleasing impersonality which more than once is a cloak for some open violation of the rules.

Common-sense calls for the conductors of street-cars to be uniformed in some manner, and also the drivers, though the importance is not so great in their case. The expense of such uniforming need not be great, nor need it extend to the entire clothing. As a rule a coat alone, if sufficieutly distinctive, will answer the purpose, or eveu a uniformed cap provided it be conspicious in shape and style, and be plainly marked with the word "Conductor." The public has a right to know the company's servants at sight, without the necessity of indulging in guess-work and running the risk of offending some overnice masculine passenger who would show marked disapproval at being taken for the official in question. -F. Martin Gayler, in R. R. Journal.

[Ou the horse-car lines of Boston and vicinity, and of several other New England cities, conductors wear distinctive caps.— EDS.]

W ANTED-A party with \$50,000 to \$75,000 to form a Company for Consolidating several street Car lines in a large and growing city. A good opportunity. A valuable franchise. Address, "CONSOLIDATION," STREET RAILWAY JOURNAL, 32 Liberty street, New York,

STREET RAILWAY STOCK QUOTATIONS.

Corrected by H. L. GRANT, 145 Broadway, N. Y. City.

New York Stocks.	Par.	Amount.	Period.		Date.		Bid.	Asked
Bleecker St. & Fulton Ferry	100	900,000	J. & J.		January, July,	1886	28	30 116
1st mort Broadway & Seventh avenue	1,000 100	700,00	J. & J. Q.—J.	2	January,	1900 1886	$\frac{113}{280}$	290
1st mort	1,000	1,500,000	J. & D.	5	June,	1904	108	112
2d mort Broadway Surface Guaranteed	1,000	500,000 1,500,000	J. & J. J. & J.	5 5	July, July,	$1914 \\ 1924$	108 110	109 112½
Additional	1,000	1,000,000	J. & J.	5	July,	1905	106	107
Brooklyn City-Stock	10	2,000,000	QF.		February,	1886 1902	205	210 110
1st mort Brooklyn Crosstown	$1,000 \\ 100$	800,000 200,000	J. & J. A. & O.	5 4	January, October,	1885	$106 \\ 165$	175
1st mort bonds	1,000	400,000	J. & J.	7	January,	1888	105	1123/2
Central Park North and East river. Con, mort. bonds	100	1,800,000	QJ.	$\frac{2}{7}$	January, December.	$1886 \\ 1902$	141 122	$142 \\ 125$
Christopher & Tenth	1,000 100	1,200,000 650,000	J. & D. F. & A.		February,	1886	132	138
Bonds	1,000	250,000	A. & O.	7	October,	1898	110	116
Central Crosstown 1st mort	$100 \\ 1,000$	600,000	QF. M. & N.	134	January, November,	$1886 \\ 1922$	162 114	165 115
Dry Dock, East B'way & Battery	1,000	250,000 1,200,000	Q_{-F}		February,	1886	202	2063
1st mort consol	500	1,900,000	J. & D.	27-	June,	1893	114	116%
Scrip. 42d & Grand St. Eerry	100 100	1,200,000 748,000	F. & A. QF.	6	August, February,	$1914 \\ 1886$	$\frac{106}{255}$	107 260
1st mort	1,000	236,000	A. & O.		April,	1893	111	116
42d St., Manhattan & St. Nich. av	100	2,500,000	31 . 0	-		1910	45	50 112
1st mort 2d mort. In. bonds	1,000 1,000	1,200,000 1,200,000	M & S. J. & J.	5		1910	110 70	73
Eighth Avenue—Stock	100	1,600,000	Q.—J.	21/2	January,	1886	240	265
Scrip.	100	1,000,000	F. & A.	6 2	August,	$1914 \\ 1885$	105 150	110 156
Housten, West St. & Pavonia Ferry 1st mort	100 500	1,000,000 250,000	Q — F. J. & J.		August, July,	1894	112	113
Second Avenue-Stock	100	500,000	J. & J.	5	January,	1886	205	210
1st mort Consol	1,000	1,862,000 550,000	M. & N. M. & N.	5 7	November, May,	1909 1888	108 106	110 108
Sixth Avenue.	100	1,050,000	M. & S.	5	September,	1885	200	210
1st mort	1,000	500,000	J. & J.	7	July,	1890	112	116 330
Third Avenue—Stock	100	2,000,000 2,000,000	QF. J. & J.	47	February, January,	$1886 \\ 1890$	315 110	112
22d StStock	100	600,000	F. & A.	4	November,	1885	280	300
1st mort.	1,000	250,000	M. & N.	73	May,	1893	110 138	113 145
Ninth Avenue Chicago St. Railway.	100 100	800,000		9	September,	1885	299	325
emough bu italinaj.								
BOSTON STOCKS.				1				
Charles River								55
Cambridge								85
Metropolitan Middlesex								97% 118
South Boston		1						- 83
Highland								141 160
Lynn and Boston								595
Somerville H. Road Boston and Cheisea								603

Directory of Manufacturers and Dealers in Street Railway Appliances, and Index to Advertisers.

AUTOMATIC SWITCHES.

Frank H. Andrews, 545 W. 33d St., N. Y 372-373 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361 Wm. P. Craig, 95 Llberty st., N. Y 354 AXLES.

Page.

F. W. Jesup & Co., 67 Liberty St., N. Y......352 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361 BEARINGS.

Frank. H . Andrews, 545 W 33d st., N. Y 372-373 Pugh & Russell, Stewart Building, New York ... 350 Edward C. White, 531 W. 33d. Street, New York.351

BOXES, JOURNAL.

Chaplin M'f'g Co., Bridgeport...... 355 Bemls Car Box Co., Springfield, Mass..... 359 Wm. Wharton Jr., & Co., Limited, Phila. Pa....361 BRAKE RODS.

Wm. Wharton, Jr., & Co, Limited, Phila., Pa...361

BRAKE SHOES.

Frank H. Andrews. 545 W. 33d St., N. Y.... 372-373 Wm. Wharton, Jr., & Co., Limited, Phila., Pa.. 361 BRAKE CHAINS.

CARS, NEW.

CARS, SECOND HAND.

Humphreys & Sayce, 1 Broadway, N. Y...... Frankford & Southwark R.R. Co., 2501 Ken-sington Ave., Philadelphia, Pa... ...353

CAR STARTERS.

C. B. Broadwell, 169 Laurel st., New Orleans, La. 352 CAR LAMPS.

Josephine D. Smith, 350 & 352 Pearl St., N. Y..... 358 Geo. M. Clute, West Troy, N.Y..... Pugh & Russell, Stewart Bullding, New York ... 350

CAR WHEELS. A. Whitney & Sons, Philadelphia, Pa..... Pugh & Russell, Stewart Bullding, New York...350

Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 360 CAR WHEEL PRESSES. Watson & Stillman, 471 S. Grand St., N.Y......352

CAR SPRINGS.

Lewis & Fowler, Brooklyn, N.Y..... 366-367 Andrews & Clooney, 545 W. 33d St., N.Y.... 372-378 Richard Vose, 13 Barclay St., N.Y..... Pugh & Russell, Stewart Building, New York ... 350

CAR SEATS. Hale & Kilhurn Mfg. Co., 48 & 50 N. 6th Str.,

CAR SASIL

Lewis & Fowler Mfg. Co., Brooklyn, N.Y... 366-367

CAR CEILINGS.

COUPLING PINS. Lewis & Fowler Mfg. Co., Brooklyn, N.Y.... 366-367

CASTINGS.

Bowler & Co., Cleveland, O......852 Wm. Wharton, Jr., & Co', Limited, Phila., Pa. . 361 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 360 CURVED RAILS.

Frank H. Andrews, 545 W. 33d St., N. Y..... 372-373

CURVED RAILS-Pat. Steel Grooves. Page. Wm. Wharton Jr. & Co. Limited, Phila, Pa.....361 CROSSINGS.

Frank H. Andrews, 545 W. 33d St., N. Y.... 372-373

Poole & Hunt, Baltimore..... Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361

FROGS.

Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361 Way Foundry Co., 23d & Wood Sts., Phlla., Pa. 360

FARE BOXE . Wales Manuf. Co., 76 and 78 East Water St.,

Syracuse, N. Y...... 355

FARE REGISTERS, STATIONARY. Lewis & Fowler Mfg. Co., Brooklyn. N. Y... 366-367 Standard Index and Register Co, 138 Fulton St. .. 369 New York.....

Rallway Register Mfg. Co., 1193 Bdy., N. Y., 365 FARE COLLECTORS.

Lewis & Fowler Mfg. Co., Brooklyn, N. Y 366-367 FEED CUTTERS.

GUTTERS.

Bowler & Co., Cleveland, O.352 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361 GROOVED CURVES.

Humphreys & Sayce, 1 Broadway, N. Y Frank H. Andrews, 545 W. 33d St., N. Y.....372-373 Pugh & Russell, Stewart Bullding, New York ... 350 Johnston Steel Rall Co., Johnstowu, Pa..... 363 Wm. Wharton Jr. & Co. Limited, Phila, Pa.....361 HARNESS.

HYDRAULIC JACKS.

Watson & Stillman, 471 S. Grand st., N. Y 352 HORSE SHOES.

The Goodenough Company, 156 and 158 E. 25th 364

Wm. P. Craig, 95 Llherty st., N. Y 354 KNEES.

Frank H. Andrews, 545 West 33d st., N. Y..372-373 Wm. P. Craig, 95 Liberty Street, New York.....354 Pugh & Russell, Stewart Building, New York....350 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361

LUBRICANTS.

METALLIC RAILWAY. Wm. Wharton, Jr., & Co. (limited) Phila., Pa....361 Metallic Street Railway Supply Co., Albany N.Y 353 Humphreys & Sayce, 1 Broadway, N.Y........349 D. F.Longstreet, Providence, R. I...... 353 MATTING.

Beadle & Courtney, 1193 Broadway, N. Y 351 MOTORS-Steam.

H. K. Porter & Co., Plttsburg, Pa......352 MOTORS-Elec ric.

Van Depoele Electric Manufg.Co.,203 Van Buren PEDESTALS.

Frank H. Andrews, 545 West 33d St., N. Y.. 872-873 Wm. Wharton, Jr., & Co., Limited, Phila., Pa... 361

PANELS.

RAILS

O. W. Meysenburg & Co., 185 Dearhorn st., Chic 352 Johnson Steel Rall Co., Johnstown, Pa...... 363 Wm. Wharton Jr. & Co. Limited, Phila, Pa.....361

STEEL RAILS.

Carnegle, Phipps & Co Humphreys & Sayce, 1 Broadway, N. Y...... 349

SWITCHES.

Wm. Wharton, Jr., & Co., 25th St. & Wash-

O. W. Meysenburg & Co., 204 No.3d. st., St. Louis352 Johnson Steel Rail Co., Johnstown, Pa...... 363

Metailic St. Rallway Supply Co., Albany, N. Y. 353

STREET RAILWAY SUPPLIES. Humphreys & Sayce, 1 Broadway, N. Y...... 249 Metaille Railway Supply Co., Albany, N. Y 353 Frank H. Andrews, 545 West 33rd st., N. Y. 372-373 Wm. Wharton, Jr., & Co., Limited, Phila., Pa...361 O. W. Meysenburg & Co., 204 No.3d. st, St. Louis.352 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 360

Wm. Wharton Jr. & Co. Limited, Phila, Pa.....361 SNOW PLOWS.

SPONGES AND CHAMOIS.

J.B.Greensfelder & Co., 115 So.4th St., St. Louis.351 TURNOUTS.

Way Foundry Co., 23d & Wood Sts., Phila., Pa. 360 TURN TABLES.

W. P. Craig, 95 Liberty st., N. Y....... 354 Frank H. Andrews, 545 West 33rd st., N. Y.372-373 Wm. Wharton, Jr., & Co., Limited, Phila., Pa.. 361 O.W.Meysenburg & Co., 204 No.3d. st., St. Louis.352 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 360

TRACK CASTINGS.

Humphreys & Sayce, 1 Broadway, N. Y...... 349 Frank H. Andrews, 545 West 33rd st , N. Y. 372-373 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 360 Johnston Frog and Switch Co., 307 Walnut St., Philadelphia, Pa...... 350

TRACK SCRAPERS.

WHEEL PRESSES.

Watson & Stillman, 471 S. Grand st., N. Y..... 352 Wm. Wharton, Jr., & Co., Limited, Phila., Pa..351 WHEELS.

Frank H. Andrews, 545 West 33rd st., N. Y. 372-373 A. Whitney & Sons, Philadelphia Pa,......851

OFFICIAL LIST OF THE STREET RAILWA IN THE UNITED STATES & CANADA Compiled from data furnished the editors of "The Street Railway Journal," by the officers of the various roads.

ABEREVIATIONS-m, milles; g, gauge; lb r, pounds rali to the yard; c, cars; h, horses; mu, mules. Officers' addresses are the same postoffice as the company unless otherwise specified.

AKRON, O. - Akron St. Ry. & Herdic Co. 23 m, 6c, 31 h. Pres. Ira M. Miller, V. Pres. James Christy, Treas. R. L. Dodge, Sec. F. M. Atterholt, Supt. John T. Metlin.

ARRON, O.-AKTON SI, Ry, & Herdic Co. 24 m, Ge, 3th. Pres. Ira M. Miller, V. Pres. James Christy, Treas, B. L. Dodge, Sec. F. M. Atterholt, Supt. John M. Methin.
 ALBANY, N. Y.-Watervilet Turnpike R.R. Co. 74 m, 2645 lbr, 27 G, 143h. Pres. Chas. Newman, Sec. & Treas. P. Way, Supt. M. C. Foster.
 The Albany Ry. 10 m, 45M g, 33-47 lb r, 51 G, 194h. Pres., Supt. and Treas. John W. McNamara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St.
 ALLENTOWN, PA.-Allentown Pass. R.R. Co. 34 m, 6 G, 29 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balliet, Supt. Russel A. Thayer.
 ALTON, HLL.-Aiton & Up. Alton Horse Ry. Co. ALTOONA, PA.-City Pass. Ry. Co. of Altoona. 35 m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John J. Buch. AMSTERDAMI, N. Y.-Ansterdam St. Ry. Co. 41TOON, HL.-Aiton & Up. Alton Horse Ry. Co. ALTOON, H. C., 68 h. Pres. John J. Buch. AMSTERDAMI, N. Y.-Ansterdam St. Ry. Co. 48 m, 45 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. Leased to Jas. R. snell.
 APPLETON, WIS.-Appleton Electric St. Ry. ASIITABULA, O.-Ashtabula City Ry. Co. 4 m, 45 Mg 4, 9 C, 60 h. Owner & Pron.Jno.N. Stewart. ATCHISON, KAN.-Atchison St. Ry. Co. 55 M. 48 g, 20-30 lb r, 19 c, 60 h. Pres. & Gen. Man. J. Beeson, Treas. H. M. Jackson, Sec. J. P. Adams. Gate City St. R.R. Co. 23 m, 4-8 Mg 5, 20 lb r, 6 c, 34 mu. Pres. J. D. Turner, V. Pres. T. L. Lang-ston, Sec. & Treas. B. H. Brunhead, Man. & Pur. Agt. Jno. S. Brumhead.
 ATLANTA, GA.-Atlanta St. Ry. Co. 31 m, 4-8 Mg 5, 40 b C. B. ratil, 40 two h cars, 150 horses. North Atlanta Line 1 m. Decatur St. Line 1.50 m. Marita St. Line 2.50 m. Meest End Line 2.50 m. Watta Line 1.50 m. Pres. Richard Peters, Sec. & Treas. J. W. Culpepper, Supt. & Purch. Agt. ATLANTA, GA.-Atlanta St. Ry. Co. 24 m, 4-8 Mg 5, 40 br, 6 c, 25 h. Pres. David M. Osborne, Sec. & Treas. J. W. Culpepper, Supt. & Purch. Agt. ATLANTA, GA.-Augusta & Summerville R.R. Co. 14 m, 4-3 Mg 5, 25.30 br, 4c, 13 h. Pres. D. M

Edw, G. Mosher. AURORA, ILL.—Aurora City Ry. Co. 5 m, 4-8%g, 28 ib r, 7 c, 1 i, 30 mu. Pres. H. H. Evans, V. Pres. S. W. Thatcher, Sec. A. J. Hopkins, Treas. E. W. Trask, Supt. I. B. Chattle. BABYLON, N. Y.—Babylon Horse R.R. Co. 1% m, 4-9 g, 60 lb r, 3 c, 3 b. Pres. W. F. Norton, Sec. Jos. M. Sammis, Treas. John R. Reid, Supt. David S. S. Sammis.

Jos M. Sammis, Treas, John R. Reid, Supt. David S. S. sammis, Treas, John R. Reid, Supt. David S. S. sammis, Treas, John R. Reid, Supt. David S. S. sammis, Treas, John R. Reid, Supt. David S. S. sammis, BALTHJORE, MD. –Baltimore & Powhatan Ry. Co. 6 m, 54% g, 4 c, 17 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Clark, Supt. I. M. Ketrick. Baltimore City Pass. Ry. Co. 40 m, 5-4% g, 46 & 47 lb r, 160 c, 1076 h. Pres, Oden Bowle, Treas. John Bolgfano, Sec. S. L. Bridge. Baltimore & Catonsville Ry. Co. 6 m, 5-4% g, 35 lb Roleg and S. C. Supt. T. C. Robbins. Baltimore & Catonsville Ry. Co. 6 m, 5-4% g, 35 lb Roleg and S. C. Supt. & Pur. Agt. G. W. Appleby. Office Pratt St. & Frederick Av. Baltimore & Halls Spring R.R. Co. Central Ry. Co. 5% m, 5-4% g, 46 lb r, 34 c, 360 b. Pres. Jos. S. Hagarty, Treas. Watter Blakistone. Citizen's Ry. Co. 30m, 5-4% g, 46 lb r, 34 c, 360 b. Pres. Jos. S. Hagarty, Treas. Wm. S. Hammersley, Supt. C. C. Speed. Monumentail City Ry. Co. North Baltimore Passenger Ry. Co. 11 m, 5-4% g, 45 lb r, 72 c, 400 h. Pres. Jas. L. McLane, Treas Dan'1J. Foley, Sec. Thos. J. Wilson. People's Ry. Co. 3% m, 5-4% g, 4245 lb r, 30 c, 200 h. Pres. Ry. Co. 3% m, 5-4% g, 51 b. r, 30 c, Supt. & Pur. Agt. Wm. A. House, jr. Office Fort Ave. & Johnson St. Soon move to Druid Hill ave. York Road R.R. Co.

Avec & Jounson St. Soon move to Druta Hill ave.
York Road R.R. Co.
BATTLE CREEK, MICH.—Battle Creek Ry. Co.
5 m, 3 6 g, 28 ib 7, 8 c, 18 h, 3 mu. Pres. Geo. Det.
J. White, V. Pres, H. H. Brown, Sec. Chas. Thomas,
supt. John A. White, Gen. Man. J. W. Hahn.
BAY CITY, HICH.—Bay City St. Ry. Co. 7%
m, 48% g, 18 lb r, 13 c, 35 h. Pres. James Clements,
Treas. Win. Clements, Sec. Edgar A.Cooley.
BEAVER FALLS, PA.—Beaver Valley St. Ry. Co.
3 1-10 m, 5-2% g, 38 lb r, 8 c, 32 h. Pres. M. L. Knight,
V. Pres. Col. J. Weyand, Sec. & Treas. J. F. Merriman, Supt. L. Richardson.
BELLAIRE, O.—Bellaire St. R.R. Co.
BELVILLE, ILL.—Citizen's St. Ry. Co. 1% m, 5 c. Pres. D. P. Alexander, Man. & Treas. H. A Alexander, Sec. J. E. Thomas,
BEREA, O.—Berea St. Ry. Co. 1% m, 3-6 g, 28 lbr,

ander, Sec. J. E. Thomas, BEREA, O.-Berea St. Ry. Co. 1½ m, 3-6 g, 28 lbr, 2 c, 2 h. Pres. C. W. D. Milier, V. Pres, T. Chinchward Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bisbop. BINGHAMTON, N. Y.-Washington Street & State Asylum R.R. Co. 4½ m. 4g, 16-25 lb r, 13 c, 23 h. Pres. R. H. Meagley, V. Pres. Geo. Whitney, Sec. C. O. Root, Treas. F. E. Ross, Supt. Wm. Whitney, Binghamton Central R.R. Co. 3½ m (3½ lald),3

g, 28 ib r, 6 c. Pres. Geo. L. Crandall, Supt. Nelson Stow, Sec. Chas. O. Root, Treas. H. J. Kneeland. Offices 65 Court St. Binghamton & Port Dickinson R.R. Co. 5 m, 4-8% g, 20-30 ib 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. Main, Court & Chenango St. R.R. 5 m, 4-85, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington St.

Washington St.
BIRMING(HAM, ALA.—Birmingbam St. Ry. Co.
BIRMING(HAM, ALA.—Birmingbam St. Ry. Co.
Supt., 8c, & Treas. W. H. Morris.
Supt., Sec. & Treas. W. H. Morris.
fligbland Avenue R. 6½ m, 4-8½ g, 30 lb r, 9 c, 28 h. Pres. H. M. Caldwell, Supt. W. J. Milner, Owners
The Elyton Land Co.
Birmingham & Pratt Mines St. R. R. Pres. J. A.
Van Hoose.

Van Hoos BLOOMFIELD, N. J.-Newark & Bloomfield R.

R

R.
BLOOMINGTON, ILL. —Bioomington & Normal Horse Ry. Co. 5% m, 4-8% g, 36 lb r, 10 c, 60 n. Pres. & Proprietor A. H. Moore, Sec. Edw. Sharp.
BOONE, IA.—Boone & Boonsboro St. Ry. Co.
J& m, 3 g, 20 lb r, 3 c, 10 h. Pres. L. W Reynolds Treas. Ira B. Hodges, Sec. and Supt. A. B. Hodges.
BOONSBORO, IA.—Twin City & Des Moines River Motor St. Ry. Co. 3 m, 3-6 g, 2 motors, 3 c. Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger.
BOSTON, MASS.—Highland St. Ry. Co. 19 m, 4-8% g, 45 lb r, 187 c, 1000 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg.

BOSTON, MASS. – Highland St. Ry. Co. 19 m, 4-8% g & 16 r, 187 c, 1000 h. Pres. Moody Merrill, Clerk R. B. Fairbairn, Treas. Samuel Little, Supt. J. E. Rugg.
Lynn & Boston. 34% m, 4-8% g, 25-48 lb r, 114 c, 514 h. Pres. Amos P. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.
Metropolitan R. R. Co. 80 m, 4-8 g, 50 lb r, 700 c, 3600 h. Pres. C. A. Richards, Sec. H. 18. Harding, Treas. Chas. Boardman. Office, 16 Kilby St. Middlesex R. Co. 26 m, 4-8% g, 50 lb r, 150 c, 700 h. Pres. C. A. Richards, Sec. H. 18. Harding, Treas. Chas. Boardman. Office, 16 Kilby St. Middlesex R. Co. 26 m, 4-8% g, 50 lb r, 150 c, 700 h. Pres. Chas. E. Powers, Treas. J. H. Studley, Jr., Supt. Johu H. Studley. Address, 27 Tremont Row, so. Boston Ry. Co. 13 m, 4-8% g, 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersey, V. Pres. Jas. C. Davis, Sec. & Treas. Wm. Reed, Supt. Daniel Coolidge.
BRADFORD, PA. – Bradiord & Kendail R.R. Co. 1½ m, 4-8½ g, 32 lb r, 3 c, 4 h. Pres. James Brodey, g. 20 lb r, 3 c, 20 uu. Pres. T. J. Pampeil, Sec. John A. Randle, Treas. D. C. Giddings.
BRENHAM, TEX. – Brenham St. Ry. Co. 2 m, 42, 20 lb r, 32 c, 30 h. 7, 6 c, 50 h. Pres. Albert Eamer, Sec. & Treas. D. C. Giddings.
BRIDGEFORT, CONN. – The Bridgeport Horse R. R. Co. 5 m, 4-8½ g, 42 lb r, 6 c, 50 h. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar.
BROOKLYN, N. Y. – The Atlantic Aveuue R. K. Co. of Brooklyn. 32½ m, (leased and owned). 4-8½ g, 50-60 h r, 297 c, 139 h. Pres. Withmarkingson, sec. W. J. Richardson, Treas. Newbery H. Frost. Office c, 557 h. Pres. Edwin Beers, Sec. & Treas, Robert Senokuon Y, R. Co. 12 m, 4-8½ g, 45-50-60 h r, 166 c, 657 h. Pres. Edwin Beers, Sec. & Treas, Robert Senokuon Y, R.R. Co. 12 m, 4-8½ g, 45-06 h r, 166 c, 657 h. Pres. Edwin Beers, Sec. & Treas, Robert Senoky, O. J. Richardson, Treas. Newbery H. Frost. Office oc. Atlantic & Third Aves. Brooklyn Cross Town R.R. Co. 16 m, 4-8½ g, 40-60 h r, 72 c, 400 h. Pres. H. R. Co. 16 m, 4-8½ g, 40-

Sealey, Supt. Joshua Crandall. Office 21 Broadway, E. D.
Erooklyn Cross Town R.R. Co. 16 m, 4-8½ g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ezra B. Tuttle, Sec. & Treas. John R. Connor, Supt. D. W.
Sullivan. Offices 585 Manhattan Ave.
Bushwick R.R. Co. 28 m, 4-8½ g, 45-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, V. Pres. Wm. H. Hus-ted, Treas, & Sec. S. D. Hallowell, Supt. W. M. Mor-rison. Office 22 Broadway, N. Y.
The Brooklyn, Bushwick & Queens County F.R. 11 m, 4-8½ g, 42-47 lb r, 41 c, 117 h. Pres. Richard H. Green, V. Pres, James W. Elwell, 59 South St. N. Y.
Sec. John D. Elwell, Treas. Wm. W. Greene.
Brooklyn City R.R. Co. 37 m, 4-8½ g, 60 lb r, 761 c, 3045 h. Pres. William H. Hazzard, V. Pres. William M. Thomas, Sec. & Treas. Daniel F. Lewis, Asst. Sec.
Francis E. Wrigley. Offices 8 & 10 Fuiton St. Brooklyn City & Newtown R.R. Co. 132 m, 4-8½ g, 45-60 lb r, 128 c, 419 h. Pres. Louis Flizgeraid, N. Y.
Culvary Cemetery, Greenpolnt & Brooklyn Ry. Co. Coney Island and Brooklyn R.R. Co. 18-5 m, 45 lb r, 4-8½ g, 103 c, 316 h. Pres. James Jourdan, Sec. Ed. F. Drayton, Supt. William Farreit. Orfice cor. Smith & Huntington Sts. Coney Island, Sheepshead Bay & Ocean Avenue R. R. Co. 29 (M, 4-8½ g, 4 c. Pres. A. A. Chener, V. Pres. Daniel Mone, Sec. John McMahon, Sheepshead Bay, Treas. Horace Vaikulyb. Office 16 Red Hook Lane.
Crosstown Line, Hamiton Ferry to Bridge.
Grand St. & Newtown R.R. Co. 18 m, 4-8½ g, 4 5-

Crosstown Line, Hamilton Ferry to Bridge, Grand St. & Newtown R.R. Co. 13 m, 4-8½ g, 45-1 br, 72 c, 250 h. Pres. Martin Joost, Sec. & Treas, m. E. Horwill, Supt. Walter G. Howey. Office 129 Wm.

Wm. É. Horwill, Supt. Walter G. Howey. Office 129 First St.
Grand Street, Prospect Park & Flatbush R.R. Co.
11½ m, 4-5½ g, 50 lb r, 75 c, 244 h. Pres. Louis Fitz-gerald, 120 Broadway, N. Y., Sec, & Treas, Duncan B.
Cannon, Supt. Juo. L. Heins. Offices Franklin Ave. and Prospect Place.
Greenpoint & Lorimer St.
Prospect Park & Coney Island R. R. Co. 25 m, 45-50 lb r, 4-3½ g, 69 c, 214 h. Pres. A. R. Cuiver Treas. A. C. Washington, Sec. George H. Smith, Eng.
Supt. R. Schermerhorn, Supt. Robert Attiesey.
Offices 16 Court St. (Leased to Atlantic Ave. R. R. Co). Co)

Prospect Park & Flatbush R.R. 3 m, 4-84 g, 34 1b r. 70 c, 360 h. Pres. Loftis Wood, Sec. & Treas, Sam'l Parkhill, Supt. Loftis Wood. Offices 45 Broad-

way. South Brooklyn Central R.R. Co. 8½ m, 4.8½ g, 60 Ib r, 42 c, 192 b. Pres. Wm. Richardson, Sec. Wm. J. Richardson, Treas. N, H. Frost, Supt. James Rud-dy. Offices, Atlantic & 3d aves. The New Williamsburgh & Flatbush R. R. Co. 17½ m, 4.8½ g, 47-50 lb r, 74 c, 255 h. Pres. Geo. W. Van Allen, 64 Ann St., New York, Sec. W. B. Waitt, 3th St. & gth Are., New York, Treas. C. B. Cottrell, 8 Spruce St., N. Y. City, Supt. Chas. E. Harris, Nost-

345

rand Ave. & Carroll St., Brooklyn.
The Union Railway Co. of the City of Brooklyn (not in operation).
van Brunt St. & Erle Basin R.R. Co. 2 m, 4-8% g, 43 b r, 7 c, 24 h. Pres. John Cunningham, Sec. & Treas. Edmund Terry. Offices, 264 Van Brunt st.
BRUNSWICK, GA. - Brunswick St. R.R. Co. BUFFALO, HL. -See Mecbanicsburg, III.
BUFFALO, HL. -See Mecbanicsburg, III.
BUFFALO, N. V. --Buffalo St. R.R. Co. 17% m, 4-3% g, 50 b r, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. Jose Mecbanicsburg, III.
BUFFALO, St. K. -BURIAD ST. R.R. Co. 17% m, 4-3% g, 50 b r, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. Jose Mecbanicsburg, III.
BUFFALO, N. V. --Buffalo St. R.R. Co. 17% m, 4-3% g, 52 b r, 96 c, 510 h. Pres. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards.
Burfalo East Side St. R.H. Co. 287 -87 m, 4-8% g, 42 b r, 47 c, 218 b. Pres. S. S. Spaulding, V. Pres. Joseph Cburchyard, Sec. H. M. Watson, Treas. W. H. Watson, Supt. Edward Edwards. Office 246 Main St.
BURLINGTON, IA. --Burlington City R.R. Co. 23 (m, 4-8% g, 22 b r, 9 c, 30 h. Pres. John Patterson, Sec. & Man. C. T. Patterson.
Union St. Ry. Co. 8% m, 4-5% g, various r, 19 c, 55 h. Pres. Geo. E. Rust, Sec. & Supt. F. G. Jones.
CAHRO, HLL. -Cairo St. Ry. Co. 2 m, 2-6 g, 25 b h. 748, 55 c, 148 h. Pres. Prentiss Cummings, Treas. A Goldstine, V-Pres. H. Bioms, Supt & Treas. Thos. Lewis, Sec. H. Schulze.
CAMBRIDGE, MASS. -Cambridge R.R. Co. 51-59 m, 4-8% g, 50 fb r, 255 c, 148 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. Wim. A. Bancroit.
Charles River St. Ry. Co. 2158 m, 4-5% g, 50 fb r, 60 c, 356 h. Pres. Chas. E. Raymond, Corp. Clerk C Directors, O. S. Brown, Supt. Wim. A. Bancroit.
Charles River St. Ry. Co. 2158 m, 4-5% g, 50 fb r, 60 c, 356 h. Pres. Chas. E. Raymond, Corp. Clerk C Directors, O. S. Brown, Supt. Wim. A. Bancroit

E. Harden, Treas. Damiel U. Chamberlin, Supt. John N. Akarman.
 CAMDEN, N. I.—Camden & Atlantic St. Ry. Camden Horse R.R. Co. 9 m, 5-1 g, 25-47 lb r, 26 c, S h. Pies. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood.
 CANTON, O.—Canton St. R.R. Co. (new road.)
 CAPTON, O.—Canton St. R.R. Co. (new road.)
 CAPTE MAY, N. J.—Cape May & Schellenger Landing Horse R. R.
 CARTHAGE, MO.—
 CEDAR RAPIDS, IA.—Cedar Rapids & Marion Ry., 12% m, 48% g, 27 and 35 lb r, 17 c, 40 h. Pres. W.
 Greene, V.-Pres, O. T. Richmond, Sec. N. B. Consig-ny, Treas. G. Greene,
 CHAPMPAIGN, ILL.—Champaicre R. R. Co.

R., 12% m, 43% g, 27 and 35 lb r, 17 c, 40 h. Pres. W. Greene, V. Pres, O. T. Rlchmond, Sec. N. B. Consig-ny, Treas. G. Greene, CHAMPAIGN, ILL.-Champaign R.R. Co. Urbana & Cbampaign St. R.R. Co. (See Urbana.) CHAMPAIGN, ILL.-Champaign R.R. Co. Urbana & Cbampaign St. R.R. Co. (See Urbana.) CHARLESTON, S. C.-Charleston Cliv Ry. Co. 8 %m, 4-8% g, 38-42 lb r, 22 c, 84 h. Pres. Jno. S. Riggs, Treas. Evan Edwards, Sec. Frank Whelden, Supt. Jno. Mohlenhoff. Enterprise R.R. Co. 12 m, 5 g, 42 lb r. 14 c, 51 h. Pres. A. F. Ravenel, Sec. & Treas, U. E. Hayne, Supt. T. W. Passaltaiger. Middle Street Sullivan Island Ry. Co. 2 m, 6 c, 12 mu. Pres. B. Caflaghan, Sec. & Treas, Frank F. Whild-den, Supt. B. Buckley. CHATTANOOGA, TENN.-Chattanooga St. R. R. Co. 5% m, 4-5% g, 25-45 lb r, 12 c, 65 h. Pres. and Treas, J. H. Warner, Sec. C. R. Gaskill. CHESTER, PA.-Chester St. Ry. Co. 5% m, 5-2% g, 47 lb r, 14 c, 66 h. Pres. Richard Peters, Jr., Treas. Sam'l H. Seeds, Sec. & Manager E. M. Cornell. CHIGGO, ILL.-Chicago City Ry. Co. 87 m, 4-8% g, 45 lb r, 567 c, 1,416 h, cable doing work of 2,500 h. Pres. C. B. Holmes, Sec. H. H. Windsor, Treas. T. C. Pennington, Supt. C. B. Holmes. Chicago & Hyde Park St. - m, - g, - lb r, - c, - h. Pres. Dougtas S. Clarke. North Chicago City Ry. Co. 35 m, 4-8% g, 45 lb r, 316 c, 1,700 h. Pres. & Gen. Supt. V. O. Tarner, V. Pres. Chas, T. Yerkes, Sec. & Treas. Hiram Crawford, Supt. of Track & Construction, Augustine W. Wright, Asst. Supt. Fred L. Threedy, Supt. Horse Dept. Noth Atkins, Purch. Agt. John W. Roach, Master Mecbanic J. Miller. Or Miller. CHILLOTHE, O.-Chillicothe St. R.R. Co. 1% m, 3g, 16 lb r, 7 c, 10 h. Pres. E. P. Safford, sec. A. E. Wenis, Treas. William Potanel, Supt. Ewei McMartin. CINCINNATI, O.-Chillicothe St. R.R. Co.

CINCINNATI, 0.—Cincinnatl Inclined Plane Ry. 0. 3 an, 5-2½ g, 43 ib r, 24 c, 150 h. Pres. Geo. A. mith, Sec. & Supt. James M. Doherty, Treas. Jos. S. Co

Co. 3 m, 5-2% g, 43 lb r, 24 c, 150 h. Pres. Geo. A. Smith, Sec. & Supt. James M. Doherty, Treas, Jos. S. Hill.
Cincinnati St. Ry. Co. Pres. Jno. Kilgour, V. Pres. Albert G. Clark, Treas. R. A. Dunlap, Sec. & Auditor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B F. Haughton.
Columbia & Cincinnati St. R.R. Co. 3½ m. 3 g, 35 lb r, 3 c, 6 dummy c. Pres. C. H. Kilgour, V. Pres. John Kilgour, Treas. B. F. Branman, Sec. A. H. Meler, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O. Mt. Adams & Eden Park Inclined R.R. Co. 3½ m, 5-2½ g, 42 lb r, 40 c, 320 h. Pres. & Treas. J. P. Kerper, Sec. J. R. Murdock, Supt. Cbas. Whitten.
So. Covington & Cincinnati. (See Covington, Ky. J. CLEVELAND, O.-The Brooklyn St. R.R. Co. Sy m, 4-8½ g, 52 lb r, 66 c, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoetgen, Treas. Jobn McConnell, Supt. A. L. Johnson.
Broadway & Newburg St. R.R. Co. 6 m, 4-S½ g, 10 (, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Sam'l Andrews, Sec. & Treas. E. Fowler.
Superior St. R.R. Co. 15 m, 4-S½ g, 45 lb r, 46 c, 255 h. Pres. Trank De H. Robison, Jr. The East Cleveland R.R. Co. 20 m, 4-5½ g, 35-40 lb steel r, 103 c, 520 h, 1 electric motor. Pres. A. Everett, V-Pres. & M. C. B. Chas. Wason, Sec. & Treas. L. A. Everett, Supt. E. Duty. Offices, 1154 & 1158 Euclida Ave.
Woodland Avenue & West Side St. R.R. Co. 20 m, 4-5½ g, 43-45 lb r, 124 c, 555 h. Pres. M. A. Hanna, V. Pres. C. F. Emery, Sec. J. B. Hanna, Gen. Supt. George G. Mulhern.
South Side St. R. R. Co. 3% m, 3g, 40 lb r, 8c, 60 h. Pres. Ton L. Johnson, Sec. & Treas. J. B. Hoefgen, Suth Side St. R.R. Co. CLINTON, IA.-Lyons & Clinton Horse R.R. Co. See Lyons.)

COLUMBUS, GA.—Columbus St. R.R. Co. 3 m, 8% g, 16 lb r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Ga-

346

4.3% f. 16 lb r, 6c, 25 h. Pres. Cllff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtls, Supt. J. A. Gaburgh.
COLUMBUS, O.—Columbus Consolidated St. R. R. Co. 19 m, 5-2 g, 30-46 lb r, 82 c, 350 h. Pres. A. 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, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. R. Rickly, Treas. S. S. Rickly, Supt. Jonas Willcox.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.
CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey, Treas. H. J. Crippin, Clerk E. C. Hoag.
CONTLAND, N. Y.—Cortland & Homer Horse RY. Co. 4 m, 4-8½ g, 25-30 lb r. Pres. Chas. H. Garton, Troy, N. Y. Sec. J. M. Milne, Treas. S. E. Weich, Supt. S. E. Weich, Leased to D. N. Miller.)
Office 23 No. Mercer St.
COVINCII. BLUFFS, IA.—Council Bluffs St. R. R. COVINGTON, KY.—So. Covington & Cincinnati St. Ry. Co. 17½ m, 5-2½ g, 24 lb r, 46 c, 296 h. Pres. F. Abbott, Sec. J. C. Benton, Treas. G. M. Abbott.
DANUCIL, BLUFFS, IA.—Challas St. Ry. Co. 4½ m, 4-5½ g, 20 lb r, 5 c, 35 mu. Pres. Wm. J. Keller, Sec. Harry Keiler, Supt. C. E. Keller.
DANVILLE, ILL.—Citizens' St. Ry. Co. 4 man. H. W. Keller.
DANVILLE, ILL.—Citizens' St. Ry. Co. 4 man. R. Samuel.
DAVENPORT, IA.—Davenport Central St. R. R. Man. R. Samuel.

& Gen. Man. Wm. Stewart, Sec. & Treas. Adam R. Samuel.
DAVENPORT, IA. - Davenport Central St. R.R. 2% m, 4-5% g, 201b r, 12 c, 36 h. Pres. James Grant, V. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. B. Rumsey, Sec. O. S. McNell.
Davenport City Ry. Co. H. Schultger, Lessee.
DAYTON, KY. - Newport & Dayton St. Ry. Co. 2 m, 5-2% g, 44 lb r, 9 c, 36 h. Pres. & Supt. W. W. Bean.

Bean.

DAYTON, O.—Dayton St. R.R. Co. 7½ m, 4-8½ g, 44 lb r, 24 c, 80 h and mu Pres. J. W. Stoddard, V-Pres. H. S. Williams, Sec. C. A. Craigbead, Supt. A. W. Anderson.

Hari'son Haley.
DUBUQUE, IA.—Dubuque St. R.R. 5 m, 4-Sig g, 31 c, 45 h. Press J. A. Rbonberg, Sec. & Treas. B. E. Linehan, Supt. J. J. Lineban.
DULUTH, MINN.—Duluth St. Ry. Co. 6 m, 3-6 g, 33-51 b r, 17 c, 90 h and mu. Pres. Sam'l Hill, V. Pres. Thos. Lowry, Sec. & Treas. A. S. Chase, Man. & Supt. T. W. Hoopes.
EAST OAKLAND, CAL.—Oakland, Brooklyn & Fruitvale R.R. Co. of East Saginaw. — m, 4-Sig g, 30 b r, 14 c, 35 h. Pres. & Supt. W. J. Barton, Sec. W. H. Hark, Treas. J. B. Peter.

a su Pete EAST ST. LOUIS, ILL .- East St. Louis St. R.R. Co

EAST ST. LOUIS, ILL.—East St. Louis St. R.R. Co.
EASTON, PA.—The Easton & So. Easton Passenger Ry. Co. 13 m, 5-3% g, 45 lb r, 4 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Elisha burwell, So. Easton.
The West End Passenger Ry. Co. 1% m, 5-2% g, 45 lb r, 6 c, 20 h. Pres. H. A. Sage, Sec. & Treas. H. W. Cooley, Supt. Samuel Berry.
EAU CLAIR, W18.—Eau Clair Clty Ry. Co.
ELGIN, ILL.—Elgin Clty Ry. Co. 2 c. Pres. Sec. Treas. Supt. & Owner, B. C. Payne.
ELLIZABETH, N. J.—ElZabeth & Newark Horse R.R. Co. 14 m, 5-2%, 4-10% g, 30 lb r, 24 c, 74 h. Pres. & Treas. Jacob Davis, Sec. & Supt. John F. Pritchard.
ELKHART, IND.—Cltzens' Ry. Co. 3% m, 4-8% g, 30 lb r, 6 c. 30 h. Pres. F. W. Miller, V. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Officers, 21 E. Water. St.
EL PASO, TEX.—El Paso St. Ry. Co. 2% m, 4-S% g, 20 lb r, 8 c, 25 h. Pres. G. B. Zimpelman, V. Pres. A. Krockauer, Treas. F. Magonice, Sec. & Supt. 1. A. Tays.

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EMPORIA, KAN.-Emporia City Ry. Co. 3% m,

5 g, 20 lb r, 6 c, 23 m. Pres. Van R. Holmes, Treas. A. F. Crowe, Sec. & Man. J. D. Holden.
ENTERPRISE, MISS.—Enterprise St. Ry. Co. 124 m, 3-6 g, 24 lb r, 2 c, 6 h. Pres, John Kampe, V. Pres. E. B. Gaston, Sec. & Treas. J. W. Gaston.
ER IE, PA.—Erle City Passenger Ry. Co. 534 m, 4-834 g, 30-40 45 lb r, 20 c, 85 h. Pres. Wm. W. Reed, Treas. Wm. Spencer, Sec. W. A. Demorest, Supt. Jacob Berst.
EUREKA SPRINGS, ARK.—Eureka Springs City Ry. Co.

EUREKA SPRINGS, ARK.-Eureka Springs City Ry. Co. EVANSVILLE, IND.--Evansville St. Ry. Co. 12 m, 4-8 g, 28 lb r, 31 c, 190 mu. Pres. John Gilbert, Sec. P. W. Ralegh, Treas. John Gilbert, Supt. W. Babr. FALL RIVER, MASS.-Globe St. Ry. Co. 12 m, 4-8% g, 40-46-47 lb r, 40 c, 160 h. Pres. Frank S. Stev-ens, Treas. F. W. Brightman, Sec. M. G. B. Swift, Supt. John H. Bowker, jr. FITCHBURG, MASS.-Fitchburg St. Ry. Co. 3% m, 6 c. Pres. H. A. Wills, V. Pres. H. J. Wallace, Treas. Ellab Barker of Boston, Supt. Wesley N. Sar-gent. gent

FORT SCOTT, KAN.—Bourbon County St. Ry. o. 1 m, 4 g, 22 lb r, 2 c, 4 m. Pres. Isaac Stadden, Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Co Randolph

V. Pres. Benj. Files, Sec. win. Perry, Treas. J. H. Randolph.
FORT SMITH, ARK.—Fort Smith St. Ry. Co.
2m, 3-6g, 16-28 lb, 5, c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Geo. T. Sparks.
FORT WAYNE, IND.—Citizens' St. R.R. Co.
FORT WORTH, TEX.—Fort Worth St. Ry. Co.
7% m, 4g, 25-38 lb r, 16 c, 73 m. Pres, K. M. Van-zandt, Treas. W. A. Huffman, Acting Sec. & Gen.
Man. S. Mims, Supt. J. T. Payne.
FRANKFORT, N. Y.—Frankfort & Illon Street Ry. Co. 2% m, 5g, 4c. Pres. A. C. McGowan, Frank-fort, Sec. D. Lewis, Illon, Treas. P. Remington, Illon, Supt. Freds. Gates, Frankfort.
FREDONIA, N. Y.—Dunkirk & Fredonia R.R.Co.
3% m, 4 10 g, 25 lb f, 5 c, 8 h. Pres. Wm. M. McCins-try, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wheelock.

GAINSVILLE, FLA.—Gainsville St. Ry.
GAINSVILLE, FLA.—Gainsville St. Ry.
GAINSVILLE, TEX.—Gainsville St. Ry. Co. 2%
M. 3-6 g. 17 lbr, 4 c. 12 h. Pres. C. N. Stevens, V.
Pres. J. T. Harris, Sec. & Treas. F. R. Sherwood.
GALESBURG, ILL.—College City St. Ry. Co. 3
M. 4-% g. 18-20-48 lbr, 4 c. 16 h. Supt. Geo. S. Clayton.
GALVESTON, TEX.—Galveston City R.R. Co.
Is m, 4-8% g. 30 lb r, 68 c. 169 mu. Pres. Wm. H. Sinclair, Sec. & Treas. F. D. Merrit, Supt. M. J. Keenan.
Guif City St. Ry. & Real Estate Co. 15 m, 4 g. 20-30
lb r, 30 c. 90 mu. Pres. J. H. Burnett, Sec. & Treas.
F. D. Allen.

Ib r, 30 c, 90 mu. Pres. J. H. Burnett, Sec. & Treas. F. D. Allen. GLOUCESTER, MASS.—Gloucester City R.R. Gloucester St. Ry. Co. Pres. & Supt. Morris C. Fitch, V. Pres. Walter A Jones, Treas. Francis W. Homans, Sec. David & Presson. GRAND RAPHDS, MICH.—Street Ry. Co. of Grand Rapids, Mich. 14½ m, 4-8½ g. 25-40 lb r, 29 c, 190 h. Pres. C. A. Otis, Cleveland, O., V. Pres. L. H. Witbey, Grand Rapids, Treas. C. G. Swensbergr, Grand Rapids, Sec I. M. Weston, Grand Rapids, Supt. A. Bevier, Grand Rapids. GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 4-8½ g, 23 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolpb Rogers.

Ro GREENVILLE, S.C.-Greenville City Ry. Co.1 m

GREENVILLE, S.C.-Greenville City Ry. Co.1 m 5g. -- Ib r, 5c. 20 h. Proprietors, Glireatb & Harris, HAMILTON, 0.-The Hamilton St. Ry. Co. 4 m, 3 g, 28 lb r, 11 c, 12 h. Pres. James F. Griffin, Sec. 0. V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow, HANNIP AL, MO.-Hannibal St. Ry. Co. 2 m, 4-Syd g. 36 lb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas. James O'Hern.

4-5% g, 36 in, 6 C, 22 n. Fles. & Supt. M. Doyle, Sec. & Treas. James O'llern.
HARRISBURG, PA.-Harrisburg City Passenger Ry. Co. 5 m, 5 2% g, 42-47 br, 26 c, 65 h, Pres. II. A.Kelker, V. Pres. Daniel Epply. Sec. John T, Ensminger, Treas. R. F. Kelker, Supt. S. B. Reed.
HARTFORD, CONN.-Hartford & Wethersfield Horse R.R. Co. 12 m, 4.8% g, 45 lb r, 49 c, 250 h, Pres. & Treas. E. S. Goodrich, Sec. Geo. Sexton.
HAVERHILL, MASS.-Haverbill & Grovelard St. Ry. Co. 4% m, 4-4% g, 30 lb r, 12 c, 30 b. Pres. & Gen. Mau. Jas. D. White, Treas. John A. Colby. Pentucket St. Ry. Co.
HERKIMER, N. Y.-Herkimer & Mohawk St. Ry. Co. 1% m, 4-5% g, 50 br, 3 c. Pres. John Ancolay. Pentucket St. Ry. Co.
HERKIMER, N. J.-North Hudson County Ry. Co. 18% m, 4-7 g, 50 60 lb r, 14 c, 630 h Pres. John H. Boon, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. MASS.-Holyoke St. Ry. Co. 2 m, HOLYOKE, MASS.-Holyoke St. Ry. Co. 2 m, 10 LYOKE, MASS.-Holyoke St. Ry. Co. 2 m, 11 LYOKE, MASS.-HOLYOKE, MASS.-HOLYOKE,

Co. 16% m, 4-7 g, 50-00 lD 1, 110 C, 650 H - 112S, 50 lm
H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. Nicholas Goetz, Union.
HOLYOKE, MASS. -Holyoke St. Ry. Co. 2 m, 4-8% g, 35 lb r, 8c, 26 h. Pres. Wm. A. Chase, Treas. C. Fayette Smith, Supt. H. M. Smith.
HOTSPRINGS, ARK.-Hot Springs R.R. Co. 3 m, 4 g, 25 lb r, 11 c, 30 h. Pres. S. W. Fordyce, Sec. C. E. Maurice, Supt. J. L. Butterfield.
HOUSTON, TEX. -Houston City St. Ry. Co. 14 m, 4-8% g, 20-30-40 lb r, 40 c, 118 m. Pres, Wm. H. Sinclair, Galveston, V. Pres. & Gen. Man. H. F. MacGregor, Houston, Supt. Henry Freund, Houston, Sec. & Treas. E. H. Balley.
HUTCHINSON, KAN.-Hutchinson St. Ry. Co. 1LION, N. Y. -Franktort & Ilion Ry. Co. 22 m, 5, 25 lb r, 4 c, 6h. Pres. A. C. McGowan, Sec. D. Lewis, Treas, F. Remington, Supt. Frederick Gates.
INDIANAPOLIS. IND.-Clitzens' St. Ry. Co. 35 m, 4-8% g, 20-33-38-40-52 lb r, 70 c, 53 h. Pres. A. W. Johnson, Indianapolis, Treas, Tom L. Johnson, Cleveland, O. Sec. A. A. Anderson, Indianapolis, Man. W. T. Steele, Indianapolis, Auditor P. Wool-iridge, Louisville, Ky.
JACKSON, MICH.-Jackson Street Ry. Co. JACKSON, MICS, Jackson Street Ry. Co. JACKSON, MISS, -Jackson Street Ry. Co. JACKSON, MISS, Fux, Samuel Hopeweil, Gen. Supt. Henry H. Smith. JACKSON, MISS, -Jackson Street Ry. Co. JACKSON, MISS, C. 28 m, 5 g, 25 lb r, 40 c, 18 m. Owner & Gen. Man. G, H. Backinstae, Sec. & Treas, F. W. Backinstae.
Jacksonville St. Ry. Co. 24 m, 5 g, 25 lb r, 10 c, 36 m. Pres. H. S. Halnes, Savannah, Ga., V. Pres. & Sec. Geo. R. Foster, Treas, W. P. Hardee, Savannah, Savannah

Ga., Supt. G. W. Haines. JACKSONVILLE, ILL.-Jacksonville Ry. Co.

[JULY, 1886.

Ga., Supt. G. W. Hantes.
JACKSONVILLE, ILL.-Jacksonville Ry. Co.
Supt. B. F. Stbert.
JAMAICA, N. Y.-Jamalca & Brooklyn R.R. Co.
Io m, 48% g, 56-60 lb 7, 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.
3.67m 4-8% g, 30-42 lb r, 13 c, 15 h. Pres. R. N. Marvin, Y. Pres. F. E. Gifdord, Treas. A. N. Broadhead. Supt. G. E. Mattby, Sec. & Atty. C. R. Lockwood
JERSEY CITY, N. J.-Jersey & Bergen R. R. Co. 21 m, 4-10 g, 60 lb r, 73 c, 494 h. Pres. Chas. B. Thurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Newark, Supt. Thos. M. Sayre. JERSEY CITY, N.J. Jorsev & Bergen R. R. Co. 21 m, 4-10 g, 601b r, 73 c, 494 h. Pres. Chas. B. Flaurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Newark, Supt. Thos. M. Sayre.
JOHNSTOWN, N. Y. -The Johnstown, Glovers-ville & Kingsboro Horse R.R. Co. 54 m, 4-54 g, 261b r, 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fancber, Sec. & Treas., J. McLaren.
JOHNSTOWN, PA. -Johnstown Pass. R.R. Co. 74 m, 5-3 g, 41-43 lb r, 13 c, 73 h. Pres. James McMillen, Sec. 8. L. Yeagley, Treas. W. H. Rosensleet, Jr. JOLHET, HLL.-Joliet City R.R. Co. 33 m, 4-53 g, 41-43 lb r, 13 c, 73 h. Pres. James McMillen, Sec. 8. L. Yeagley, Treas. W. H. Rosensleet, Jr. JOLHET, HLL.-Joliet City R.R. Co. 33 m, 4-53 g, 41-00 h. J. E. Henry.
JOPHN, MO.-KALMAZOO, MICH.--Kalamazoo St. Ry. Co. 10 m, 4-53 g, 35 lb r, 28 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P. H. Brown.
KANSAS CITY, MO.--Kansas City Cable Ry. Co. 22 m, 4-53 g, 45 lb r, 10 pass. cars, 10 dummy cars. Pres. Wm J. Smith, Sec. W. H. Lucas, Eng. Robert Gillham. Supt. Edward J. Lawless.
Corrigan, Sec. Jas. T. Kelley. Jaokson County Horse R. R. Co. Kansas City & Rosedale St. Ry. Co. 4 Kansas City & Rosedale St. Ry. Co. 7 M, 3-6 g, 91 b r, 10 c, 36 h. Pres. Robert Carson, Sec. & Treas. F. Sargent, Man. Willam Wilson.
KNOXYILLE, TENN.--KNOXVIIE St. R.R. Co. 2 m, 4-8 g, 22 b r, 5 c, 2 hacks, 30 h. Pres. W. P. Chamberlain, Sec. Treas. K. Supt. T. L. Beaman. Mabry Bell Ave. & Hardee St. Ry. Co. Pres. R. N. 100d, Sec. B. L. Smith.
Market Sq. & Asylum St. Ry. Co. Pres. R. N. 100d, Sec. B. L. Smith.
AcONAIA, N. H.-Laconia & Lake Village Horse R.

Field Thinkin, Sec. Valler, Supt. (South Division), Geo. F. Smith.
LAFAYETTFE, IND.—LaFayette St. Ry. 2% m, 4-8% g, 35 lb r. 6 c, 38 h. Pres. F. B. Caldwell, LaFayette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette.
LAKE CITY, FLA.—Lake City St. Ry. Co. LAMPANS SPRINGS, TEX.—Lampasas City Ry. Co. 8% m, 4-8% g, 22 lb r, 6 c, 15 h. [Owned by Mrs L. R. Sndgrass.] Gen. Man. Geo. M. Snodgrass.
LANCASTER. PA.—Lancaster & Millersville St. Ry. Co. = LAMPANS SPRINGS, TEX.—Lampasas City Ry. Co. 8% m, 4-8% g, 22 lb r, 6 c, 15 h. [Owned by Mrs L. R. Sndgrass.] Gen. Man. Geo. M. Snodgrass.
LANCASTER. PA.—Lancaster & Millersville St. Ry. Co. = M. S. Shirk, Sec. & Treas. Chas. Dennes. Lancaster City St. Ry. Co.
LARCHMONT, N. Y.—Larchmont Manor Co. 1 m, 4-8 g, 25 lb r, 2 c, 8 h. Pres. C. ll. Murray, Treas. S. H. French. 38 East Fourteentb St. N. Y. City.
LAWRENCE, KAN.—Lawrence Transportation Co. 5 m, 4-1 g, 38 lb r, 7 c, 34 h. Pres. H. Tisdale, Sec. W. H. Bangs.
LAWKENCE, MASS.—Merrimack Valley Horse R. R. Co. 64-5 m, 4-8% g, 29 lb r, 16 c, 45h. Pres. Frank W ana. Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinchfield, Auburn LEXINGTON, NO.—LexIngton City Ry. Co. 5 m, 4-10 g, 20 lb r, 20 c, 70 h. Pres. Ry. Co. LINA, 0.—Lima St. Ry. Co.

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112

LIMA, O.-Lima St. Ry. Co. LINCOLN, NEB.-Capital City Ry.Co. 4m, 481-55 lbr, sc. 64h. Pres. & Treas. E. B. Durfee, Sec. Supt II. B. Durfeee. Lincoln St. Ry. Co. 6½ m, 10 c, 60 h. Pres Frank ; Sheldon, Supt L. P. Young. LITTLE ROCK, ARK.-Little Rock St.Ry. Co... ½ m, 5-10 g, 361 br, 9c,60 mu: Pres. T.J. Darragh, Sec J. Thompson, Tres. C. F. Penzel, Sup.J.A. Garrett. Citzens' St. Ry. Co. 4½ m, 4-10 g, 201 br, 32 c, 80 h. wned and operated by Little Rock Street Rallway Same offices.

owned and operated by Little Rock Street Railway Co. Same offices. LOGANSPORT, IND. – Logansport Ry. Co. 2 m, 4g, 23 lb r, 6 c, 29 mu. Pres. Frank. G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques. Office, Urbana, Ill. LONDON, CAN.–London St. R.R. Co. 3 m, 48 χ 30 lb r, 12 c, 30 h. Pres. V. Cronga, Sec. Jas. H. Flock, Supt. Henry Thos. Smith. LONG ISLAND CITY, N. Y. – Steinway & Hunter's Point R.R. Co. 30 χ m, 48 χ g, 47 lb r, 65 c, 154 h. Pres. Wm. Steinway, Steinway Hall, N. Y. City. V. Pres. Henry A. Cassebeer, Jr., Steinway P. O., Long Island Cliy, N. Y. Sec. & Treas. Chas. J. Campbell. Offices Steinway Hall, N. Y. Dutch Kills & Hunter's Point R.R. – m, – g, – lb r, – c, – h. Pres. R. J. Gleason. Long Island City & Newtown Ry. Co. 4 χ m, 4.8 χ g, g, 45-55 lb r, 25 c, 60 h. Pres. Isaac Buchannan, N. Y. City, Sec. Geo. S. Crawford, Brooklyn. N. Y. Treas. 12 Front.St.

LONGVIEW, TEX.-Longview & Junction St. Ry. 3(m, 3-6 g, 2 c, 4 h. Pres. F. T. Rembert, Sec, R. B. Levy, Treas. F. L. Whaley, Supt. C. W. Booth.

LOS ANGELES, CAL.—Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Fernando St, R.R. Co. 7 m, 3-6 g, 16 lh r, 13 c, -h. Pres. E. T. Spencer, Sec. F. X. Palmer, supt. J. A. Falrchild. City & Central St. Ry. Co. 4½ m, 3-6 & 4-8 g, -1br, 2 g cars, 167 h. Pres. I. W. Heilman, Sec. Fred Harkness, Supt. Wm. Hawks. Los Angeles & Aliso Ave. St. R.R. Co. Main St. & Agricultural Park Ry. Co. Pres. W. J. Broderick, sec. Col. John Wheeler, Supt. Wm Hawks. Second St. Cable Ry. Co. 6 c and 6 grip c. Pres. Jesse Garnell, Sec. & Man. Edw. A. Hall, Eng. and Supt. — Kibble. Temple. St. Cable Ry. Co. 8 c. and Sgrip c. Pres. Walter S. Maxwell, Supt. and Man. Col. A. H. WandS

Temple. St. Cable Ry. Co. 8 c. and 8 grip c. Pres. Waiter S. Maxwell, Supt. and Man. Col. A. H. Wands LOUISVILLE, KY.-Kentucky St. Ry. Co. 5 m, 5-2 g. - lh r, 22 c. -h. Pres. T. J. Minary, Sec. & Treas. Thos Donigan. Central Pass. R.R. Co. -m, -g. -lb r, -c. -h, Pres. -, V. Pres. Thos. J. Minery, Crescent Hill Ry. Co. Louisville City Ry. Co. 63 m, 5 g, 58 lb r, 214 c. -mu. Pres. Maj. Alexander Henry Davis, Syracuse, n Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell. **IOWELL**, MASS.-Lowell Horse R.R. Co. 6 m. Sy g, 28-47 lb r, 28 c, 100 h. Pres. Wm E. Lilving-ston, Gen. Man. J. A. Chase. **IYNCHBURG**, VA. - Lynchburg St. R.R. Co. 2 m, 5-1 g, 26 lb r, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne. **IYNCHBURG**, VA. - Lynchburg St. R.R. Co. 4% m, 3-8 g, 19-30 lb r, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Rand. **MACON**, GA.-Macon & Suhurban St. R.R. Co. 6% m, 4-5% g, 20 lb T. r, 20 c, 100 mu. Pres. John S. Bransford, Nashville, Tenn., Sec. and Supt. Jno. T. Voss, Office, Elm St. **MADISON**, IND.-Madison St. Ry. Co. 2% m, 4 g, 16 lb r, 7 c, 8 h, 10 mu. Pres., Jacoh Wendle, V. Pres. Peter F. Robenlius, Supt. & Treas. Chas. F. Tuttle. **MADISON**, WIS.-Madison St. Ry. Co. 2% m, 3 g, 23 lb r, 8 c, 7 h, 24 mu. Pres., D. K. Tenney, Sec. and Treas. B. W. Jones, Supt. A. R. Kentzler. **MANCHESTER**, N. H.-Manchester Horse R.R. 5% m, 3-% g, 27-34 lh r, 14 c, 55 h. Pres. S. N. Bell, Treas. F. Smyth, clerk J.A. Weston, Supt. A. R. Gage. **MARSHALLTOWN**, IA.-3 m, 4 g, 25 lh r, 7 c, 0 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gillman, Supt. A. E. Shorthill. **MARYSVILLE**, KY.-Maysville St. Ry. Co. (No returns.)

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returns.) MAYSVILLE, KY.-Maysville St. Ry. & T. Co. 3 m, 20 hr, 4-3½ g, 6 c, 32 mu. Pres. L. W. Robertson, Sec. & Treas. W. S. Frank. MECHANICSBURG, ILL. - Mechanlesburg & Buffalo Ry. Co. 3½ m, 3-10 g, 16 hr, 3 c, 4 mu. Pres. J. N. Fullenwelder, Treas. A. T. Thompson, Sec. H. Thompson

J. N. Fullenweider, Treas. A. T. Thompson, Sec. H.
 Thurpson, TENN, - Memphis City R.R.Co. 18 m, 5g, 28-40 lh r, 66 c, 320 h, Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Supt. W. F. Shippey.
 MERIDIAN, MISS.-Meridian St. Ry. Co. 2 m, 4-8 g, 16 lb T r, 5 c, 11 mu, Pres. Geo.S. Conant, V. Pres. and Sup. J. L. Handley, Treas. J. A. Kelly, Sec. R. M. Houston.
 MICHIGAN CITY, MICH.--Michigan City St.

MICHIGAN CITY, MICH.—Michigan City St. Ry. Co. MIDDLETOWN, CONN.—Middletown Horse Ry. Co 2 m, 6 c, 31 h. Pres. John M. Dantord, Sec. and Treas. J. K. Guy, Supt. Joseph Lane. MIDDLETOWN, 0.—Middletown Horse R. R. Co. Pres. John M. Douglas, Sec. & Treas, Jas. K. Guy. MILLERSVILLE, PA.—Lancaster & Millersville St. R.R. Co.

Press John H. Douglass, Soc. & Fuels, Just, Out, S. M. Out, S. M. C. S. MILLERSVILLE, PA.-Lancaster & Millersville St. R.R. Co.
MILLWAUKEE, WIS.-Cream Clty R.R. Co. 81-6 m, 48% g, 21-38 lb r, 74 c, 307 m, 2 h. Pres. Winfield smith, V. Pres. Christian Preusser, Treas. Ferdinand Knehn, Sec. Wn Dankoehler, Gen. Man. D. Atwood, Supt. H. J. C. Berg.
Milwaukee Clty Ry. Co. 30 m, 4-8% g, 27 lb iron & 48 lb steel r, 80 c, 450 h. Pres. Peter McGeoch, Sec. & 7reas. Geo. 0. Wheateroft.
West Side St. Ry. Co. Owner & Manager, Washington Becker, Supt. — McNaughton.
MINWakee Clty, S. MINN.-Minneapolls St. Ry. Co. 62 m, 3-6 g, 27-35-45 lb r, 186 c, 1030 h and mu. Pres. Thos. Lowrry, V. Pres. C. Morrison, Treas. W. W. Herrick, Sec. C. G. Goodrich, Supt. D. W. Sharp.
MOBILE, ALA.-City R.R. Co. 17% m, 5-2 g, 35 lb T, 68 c, 240 h. Pres. Jno. Magulre, Sec. I. Strausse, Treas, Myer I. Goldsmith, Supt. A. Moog. Dauphin & Lafayetten Hy. Co. 2 m, 6-2% g, 36 lb 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.
Mohlte & Spring Hill R.R. Co. 8 m, 5-2% g, 35 lb r, 50 h, 1 dummy. Press. Danden McNeill, Sec. & Treas, C. F. Sheldon, Man. F. Ingate.
MOHAWK, N. Y.-Mohawk & Hon R.R. Co. 134 m, 4-8% g, 30 lb r, 4 c (contract for motive power). Pres. Own Bronson, W. Press. J. Brown, Sec.H. DAtex. ander, Treas. R. M. Devendorff, Supt. O. W. Bronson. MOLINE, HLL.-Moline Central St. Ry. Co. 154 m, 4-8% g, 30 lb r, 4 c (contract for motive power).
Pres. P. H. Wessel, Sec. W. R. Moore, Treas. C. F. Hemenway.
Moline & Rock. Island St. Ry. Co. 5 m, 4-8% g, 20 lb

Prez, P. H. Wessel, Sec. W. R. Moore, Treas, C. F. Hemenway.
Moline & Rock Island St. Ry. Co. 5 m, 4-8½ g, 20 lb
r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Buford, Treas. C. Lyons, Supt. Wm. Gamble.
MONTGOMERY, ALA.—Capital City Electric St. Ry. Co. Electric motors.
MONTREAL, CAN.—Montreal City Pass. Co. 21 m, 4-8½ g, -1b r, 76 c, 465 h. Pres. Jesse Joseph, V. Pres. Alex. Murray Sec. & Man. Ed. Lusher, Supt. T. H. Budlard

H. . Robillard. MOULTRIEVILLE, S. C.-Middle St. & Sulli-

MOULTREPILLE, S. C.-Mudde St. & Sun-van's Landing Ry. MT. VERNON. N. Y.-Mt. Vernon St. Ry. Co. MUSCATINE, IA.-Muscatine City Ry. Co. 3% m, 3-6 g, 21 lb r, 7 c, 19 h. Pres. Peter Musser, V. Pres. D. C. Richman, Sec. T. R. Fitzgeraid, Treas. S. M. Hughes, Supt. O. J. Chapman. MUSKEGON, MICH.-Muskegon Ry. Co. 4% m, 3-6 g, 20 lb r, 8 c, 26 h, 8 mu. Pres. F. A. Nims, V. Pt.'s. Chas, Merriam, Boston, Mass., Sec. Thomas

Munroe, Treas. G. R. Sherman, Supt. C. H. Newell. NASHUA, N. H.—Nashua St. Ky. Co. NASHVILLE, TENN.—Nashville & Edgefield R.R. Co. Fatheriand Street Rallway Co. North Edge-field and Nashville St. R.R. Co., one management. 5 m, 5g, 16-20-32 H. r, 21 c, 100 mu. Pres. Jno. P. White, Sec. & Treas. H. B. Stubblefield, Supt. Daingerfield Deaderick Sec. & Tre Deaderick.

Deaderick. McGavock & Mt. Vernon florse R.R. Co. 7½ m, 5g, 16-20-28-32 lh r, 25 c, 140 h & mu. Pres. John P White, V. Pres. B. F. Wilson, Sec. & Treas. 11. B. Stubble-field, Supt. Dalngerfield Deaderick. South Nashville St. R.R. Co. 4½ m, 5g, 16-20 lb r, 10 c, 68 h. Pres. W. M. Duncan, Sec., Treas. & Supt. C. L. Fuller.

C. L. Fuller.
NATICK, MASS.—Natick & Cochituate St. Ry.
3 m. 4.8% g, 35 lb r, 6 c, 17 h. Supt. Geo. F. Keep.
NEW ALBANY, IND.—New Albany St. Ry. Co
6 m, 4-11% g, 25 lb r, 15 c, 55 h. & mu. Pres. Geo. T.
Vance, Treas. Letitla V. Vredenburgh, Supt. & Pur.
Agt. Wm. L. Timberlake.

Agt. Wun. L. Timberlake.
NEWARK, N. J. .-Newark & Bioomfield St. R.R. Co. 7 m, 5-2% g, 47 lb r, 22 c, 140 h. Pres. S. Sattin, Sec. W. L. Multord, Supt. H. F. Totten. Consolidated with Essex Pass. Ry. Co.
Broad St. R.R.
Newark & irvington St. Ry. Co., T m, 5-2% g, 47 lb r, 92 c, 130 h. Press. S. Battin, Sec. W. L. Multord, Supt. H. F. Totten. Consolidated with Essex Pass. Ry. Co.
NEW BEDFOID, M.N.S. .-New Bedford & Fairlawen St. R.R. Co., 5 m, 4-5% g, 25 lb r. 29 c, 163 h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith.
NEW BURGH, N. V. .-Newburgh St. R. R. Co. Pres. D. S. Haines, Sandy Hill.
NEWBURGH, N. V. .-Newburgh St. R. R. Co. Pres. D. S. Haines, Sandy Hill.
NEWBURGH, N. V. .-Newburgh St. R. R. Co. Pres. D. S. Haines, Sandy Hill.
NEWBURGH, N. V. .-Newburgh St. R. R. Co. 26 m, 45% g, 45 lb r, 92 c, 163 h. Pres. He. B. V. Swens. H. Shepard, Sec. Geo. H. Stevens. Lessee, E. P. Shaw.
NEW HAVEN, CON .- Fair Haven & Westville R. Co. 7 m, 4% g, 42 lb r, 32 c, 150 h. Pres. He. B. Ves, Sec. & Treass. L. Candee, Supt. Waiter A. Graham.
New Maven & Centreville Horse R.R. Co. 29 m, 45% g, 64 lb r, 45 g. 40 lb r,

347

Albert J. Ellas, Supt. Chas H. Meeks. Office 20 Whitehall St. The Second Ave. R.R. Co. 28 m, 48% g, 60 lb r, 316 9cars, 1730 h. Pres. W. Thorn, V Pres. J. Wadsworth, Sec. & Treas. J. B. Underhill. Office Second Ave. cor. 96th St.

Statistics, B. Containing of the biocontain of a first sector of the sector o

Ineas, Lewis May, Metsupt. George Fenty. Once fell West 22d St.
NIAGARA FALLS, N. Y.—Niagara Falls & Suspension Bridge Hy, Co. 2½ m, 4-5½ g, 35-42 b r, 8 c, 36 h. Pres. Benj. Flagter, Sec. W. J. Mackay, Treas. A. Schoellkopt.
NORFOLK, VA.—Norfolk & City R. R. Co. 3½ m, 5-2 g, 44 lb r, 18 c, 65 h. Pres. John B. Whitehe ad Treas. H. C. Whitehead, Supt. E. W. Savage.
NORTHADAMS, MASS.—North Adams Horse Ry. Co. 3½ m, 4-5½ g, 32 lh r, 7 c, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark.

Edwards, Sec. M. H. Spalning, Treas. & Sup. E. C. Clark.
NORWALK, CONN.-Norwalk Horse R.R. Co.
2m, 4-10 g, --lh r, 7, 20 h. Pres. James W. Hyatt,
V. Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt,
NORWICH, CONN.-Norwich Horse R.R. Co.
OAKLAND, CAL.-Alameda, Oakland & Piedmont R.R.
Berkley Villa R.R.
Berkley Villa R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, -h. Pres. & Supt. Walter Blair, Sec. P. J. Van Loben.
Oakland R.R. Co.
OGDEN CITY, UTAH.-Ogden City Ry. Co,
3m, 48% g, 20 lb r, 4 c, 21 h. Pres. L. W. Shurtle,
Ogden City, V. P. & Supt. O. P. Arnold, Salt Lake
City, Sec. & Treas. H. S. Young, Ogden City.
OGDENSBURG, N. Y.-Ogdensburg St. Ry. Co.

5 m. **OLEAN**, N.Y.—Otean St. Ry. Co. 1½ m, 3-6 g, 25 hh r, 3 c, 8 h. Pres. M. B. Fobes, Sec. & Treas. M. W.

Barse. **OMAHA, NEB.**—Omaha Horse Ry. Co. 15 m, 48% g, 35 hr, 40 c, 300 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Treas. W. W. Marsh, Supt. W. A. Smith. **ONELDA VILLAGE, N. Y.**—Onelda Ry. Co. 2 m, 4-8% g, 47 lb r, 3 c, 6 h. Pres. Jerome Hickox, Sec. & Treas. W. E. Northrup, Supt. Chas. Bonta. **OSHKOSH, WIS.**—Oshkosh St. R R. Co. 3% m, 4-8% g, 27 lh r, 9 c, 24 h. Pres. Leander Choate, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.

A34 g; 27 lh r, 9 c, 24 h. Pres. Leander Choate, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson.
OSWEGO, N.Y.—Oswego St. Ry. Co. 24 m, 4-S4 g; 45 lb r, 3 c, 23 h. Pres. Jas. F. Johnson, V. Pres. R. J. Otiphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor.
OTTAWA, ONT.—Ottawa City Passenger Ry. Co. 3 m, 4-84 g, 30 lh r, 9 c, 40 h. Pres. Thomas C. Keefer, V. Pres. R. Blackburn, Sec. James D. Fraser.
OTTUMWA, IA.—Ottumwa St. R.R. Co. 2 m, 3-6 g, 27 lh r, 4 c, 2 h, 14 mt. Pres. J. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. G. Caviness.
PARIS. TEX.—Parls Ry. Co. 1½ m, 4-5½ g, 22 lb r, 2 pass. 4 ft c. 16 mu. Pres. I. M. Danlel, Sec. Geo. M. Danlel, Treas. John I. Brown, Sec. E. S. Brown, Man. & Pur. Agt. Ambrose T. King, Supt. M. O. Rourke. Paterson City R.R. Co. 6, m, 4-5½ g, 35 lb r, 12 c, 31 h. Pres. Garrett Planten, Treas. Heimas Romaine, Sec. Ames Dt. R. O. 5 m, 54 lb r.
PAWTUCKET, R. I.—Pawtncket St. Ry. Co. 5 m, 54 lb r.
PENSACOLA, FLA.—Pensacoia St. Ry. Co. 4% m, 4-5½ g, 40 lh r, 00 c, 155 h. Pres. H. R. Woodward, Sec. M. Pieffer, Treas. Elliot Callender, Supt. John Strong.

PEORITA, HLL-CENTRALOPHONS, PROSENES, 2019 m, 4-83g, 40 lbr, 60 c, 125 h. Pres, H. R. Woodward, /sec, M. Pfieffer, Treas, Elliot Callender, Supt. John Strong. **Fort** Clark Horse Ry. Co. -m, -g, -lb r, -c, -h. -Pres, J. H. Hall. Peoria Horse RY. Co. 7½ m, 4-8½ g, 40 lb r, 63 c, 140 h. Pres, H. Woodward, Sec. M. Pfelffer, Treas, H. N. Wheeler, Supt. John Strong. **PETERSBURGH, VA.** –Petershurgh St. RY. Co. 3½ m, 4-8½ g, 42 lb r, 9 c, 44 h. George Beadle, Pro-**PHILADELPHIA, PA.** –Cit/zens Pass. RY. Co, 10½ m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres, John Mc-Carthy, sec. & Treas, J. J. Adams, Sup, Sam? Cline. Frankford & Southwark Phila, City Pass, R.R. Co. 18 m, 5-2 g, 45-47 lb r, 192 c, 420 h. Pres, John Mc-Carthy, sec. & Treas, J. J. Adams, Sup, Sam? Cline. Frankford & Southwark Phila, City Pass, R.R. Co. 18 m, 5-2 g, 47 lb r, 102 c, 8 dummy c, 615 h. Pres, Alfred Smith, Sec. & Treas, Geo. S. Gand7, Supt. W. H. Janney. Hestonville, Mantua & Fairmount Pass, R.R. Co, 90 m, 6-2 g, 43 lb r, 50 c, 480 h. Pres, Charles F. Laffer-ty, Sec. & Treas, John L. Hill, (Track not iaid.) Lombard & South Sts, Pass. Ry. Co. - m, 5-2 g, 43 lb, r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas, Francti Hazelhurzt, Supt. John M., Gaughen. People's Pass, Ry. Co. 44 m, 5-2 g, 47 lb r, 125 c, 1,080 h. Pres, C. J. Harrah, V. Pres, C. J. Harrah, Jr., Sec. & Treas, Jno. C. Dessilet, Supt. Wm. Hagenswiller. Philadelphia City Pass, Ry. Co. 7 m, 5-24 g, 45-78 lb r, 694 c 2,912 h. Pres, W. H. Kemble, V. Pres, R. T. (D) Philadelphia Traction Co. 109 m, 5 24 g, 45-78 lb r, 694 c 2,912 h. Pres, W. H. Kemble, V. Pres, R. R. Co. 10 1-3 m, 40 c, 200 h. Pres. Matthew Brooks, Treas, J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lov-ett. Ridge Avenue Pass, Ry. Co. 14 m, 5-2 g, 47 lb r, 5-82 k. Pres, E. E. Edwards, Y. Pres, John Lam-

ett. Ridge Avenue Pass. Ry. Co. 14 m, 5-2 g, 47 lb r, 55 c, 352 h. Pres. E. B. Edwards, V. Pres. John Lam-bert, Sec. & Treas, Wm. S. Blight, Supt. Wm. Ingles.

Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h.
Pres, Alexander M. Fox, Treas. William F. Miller,
sec. Charles D. Matlack, Supt. David W. Stevens.
seventeenth & Nineteenth Sts. Pass. Ry. Co. 75 m.
Pres. Matthew S. Quay, Sec. & Treas. John B. Feddle. (Leased to Philada. Traction Co.)
Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2
g, 43 lb r. 73 c, 452 h. Pres. Thos. W. Ackley, Sec. & Treas. Thos. S. Harris, Supt. Wum. B. Cooper.
Union Pass. Ry. Co. 70 m, 348 c, 1,724 h. Pres.
Wm. H. Kemble, Sec. & Treas. John B. Peddle. Supt. Jacob C. Petty. (Leased to Phila. Traction Co.)
West Philadelphia Pass. Ry. Co. 18½ m, 122 c, 646
H. Pres. Peter A. B. Widener, Sec. & Treas. D. W. Dickson. (Leased by the Phila. Traction Co.)
PHILLIPSBURGH, N. J. – Phillipsburgh Horse Car Ry. Co. 24 m, 48 g, 53 lb r, 4 c, 13 h. Pres. Daniel Runkle, Sec. & Treas. James W. Long.
PHTTSBURGH, PA.-Central Pass R. R. Co. 3m, 16 c, 95 h. Pres. JF. Cluley, Sec. F. L. Stephenson, Treas. F. R. Jones, Supt. R. G. Heirron.
Beaver Falls & New Brighton Ry. Co.
Citizens Pass. Ry. Co. 16½ m, 5-2½ g, 47 lb r, 40 c, 37 h. Pres. Jno. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner.
Pederal St. & Pleasant Valley Pass. Ry. Co. 26 m, 5-2½ g, 46-50 lb r, 20 c, 154 h. Pres. Wm. H. Creery, Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny City.
People's Park Pass. Ry. Co. 2 m, 5-2½ g, 45 lb r, 10 c, 75 h. Pres. Vm. McCreery, Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny City.
Pittsburgh, Allegheny & Manchester Pass. Ry. Co. 26 m, 5-2½ g, 46-50 lb r, 40 c, 75 h. Pres. Vm. McCreery, Sec. R. F. Ramsey, Treas, James Boyle, Supt. Wm. J. Crozler, Allegheny City.

348

Pittsburgh, Alleghen y & Manchester Pass. Ry. Co. 5 m. 5-2% g, 46 lb r, 40 c, 375 h. Pres. Chas. Atwell, Sec. & Treas, Chas. Seibert, Supt. James C. Cotton. Manager J. P. Speer. Pittsburgh, Oakland & East Liberty Pass. Ry. Co. 11 m, 5-4% g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T. Gordon, Sec. John G. Traggardh, Treas. A. W. Mellon, Supt. H. M. Cherry. Pittsburgh Union Pass. R.R. Co. 5 m, 5-2% g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas, Chas. Seibert, Cash. Saml. C. Hunter.

Mellon, Supt. H. M. Cherry. Pittsburgh Union Pass. R.R. Co. 5 m, 5-2% g, 45 lt r, 29 c. 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas. Chas. Selbert, Cash. Saml. C. Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 3% n, 5-2% g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec D. F. Agnew, Treas. John G. Holmes. Pittsburgh & West End Pass. Ry. Co. 3% n, 5-2g (5) lb r, 13 c, 75 h. Pres. John C. Reilly, Sec. & Treas. Pittsburgh & Wilkinsburg St. Ry. Co. Second Avenue Pass. Ry. Co. 3% m, 5-2% g, 47 lb r, 8 c, 60 h. Pres. Geo. Fawcett, Sec. Jas. F. Fawcett, Treas W. J. Fawcett.
South Side Pass. R.R. Co. 2% m, 5-2% g, 47 lb r, 8 c, 60 h. Pres. Geo. Fawcett, Sec. Jas. F. Fawcett, Treas W. J. Fawcett.
South Side Pass. RY. Co. 6% m, 5-2% g, 51 br, 12 c, 80 h. Pres. D. Entckelt, Sec. & Treas. W. T. Wal-lace, Supt. W. M. Roshorough. Transverse Pass. Ry. Co. 6% m, 5-2 g, 52 lb r, 39 c, 23 h. Pres, C. L. Magee, V. Pres. C. F. Klopter, Sec. & Treas. Wia. R. Ford, Supt. Miller Elliot.
PITTSTON, PA. -Pittston St. R.R. Co. 1% m, 3 c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris, Sec. William Allen.
PORT HURON, MICH. --Port Huron St. Ry. Co. 6% m, 4-5% g, 7 c, 22 h. Pres. Jno. P. Sanborn, V. Pres Frank A. Beard, Sec. Treas. & Man. J. R. Wastell.
PORTI.A. ND, ME. --Ocean St. R.R. Co. 2 m 3-6 g, 25-42lb r, 11 c, 40 h. Pres. Jno. P. Sanborn, Sec. & Supt. C. K. Harbaugh.
Multnomah st. Ry. Co. 2% m, 3-6 g, 30 lb r, 19 c, 65 h. Pres. H. J. Libby, Treas. & Gen. Man. E. A. Newman, Supt. Geo. W. Soule.
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.
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.
PORTSWOUTH, 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.
PORTSMOUTH, C. M. Arts, Office 491 Main St.</l

Pres. Jos. W. Henry, V. Pres. A. Robertson, Sec. & Man. W. W. Martin. QUINCY, II.L.—Qulncy 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 4g 30 lb r, 9c-40h. Pres. John T. Fish, Sec. & Treas. E. S. Dodge., Gen. Man. Geo. B. Hathaway. RAPID CITY. DAK.—Rapid City St. Ry. Co. Pres Fred. T. Evans. READING, P.A.—Reading City Pass. Ry. Co. 21.5 m, 5-2% g, 45 lb r, 19 c, 44 h. Pres. B. F. Owen, V. Pres. Jas. L. Douelass, Sec. & Treas. H. A. Muhlen-berg, Supt. J. A. Riggs. Perkiomen Ave. Pass. Co. 21.5 m, 5-2% g, 46 lb r, 13 c, 41 h. Pres. Chas. Brenelser, Sec. & Treas. Isaac Illester, Supt. John B. Houp. RED AK, IA.—Red Oak St. R.R. Co. 14/m, 4-2%g, flat r, 2c, 2h, 2 mu. Pres. J. W. Judkins, V. Pres. Jos. RICHMOND, IND.—Richmond City Ry. Co. 3 m, 8 g, 9 lb r, 10 c, 30 h. Pres. J. V. Judkins, V. Pres. Jos. Ruthin, Treas. II. I. Miller, Supt. F. O. Judkins. RICHMOND, IND.—Richmond St. R.R. Co. RICHMOND, M. A.—Red Oak St. R.R. Co. RICHMOND, IND.—Richmond St. R.R. Co. RICHMOND, M. A.—Red Dimond St. R.R. Co. RICHMOND, M. A.—Red St. R. Co. 75 m, 4 Sk g, 30-43 lb r, 40 c, 180 h. Pres. J. L. Schooleraft, sec. & Treas. Walter Kidd, Man. C. M. Bolton, Supt. Charles Seiden. ROCHESTER, N. Y.—Rochester City & Brighton

c. Supt. B. R. Selden. ROCHESTER, N. Y.-Rochester City & Brighton

R.R. Co. 37 m, 4-8½ g, 25-30-45 lb r, 142 c, 596 h. Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodworth, Supt. Thomas J. Brower. Citizens' St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas. J. E. Pierpont, Supt. S. A. Green.
ROCKFORD, HL., -Rockford St. Ry. Co. 6 2-5 m, 4-8½ g, 30 lb r, 13 c, 52 h, 16 m. Pres. Anthony Halnes, V. Pres. L. Rhodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Halnes.
ROCK ISLAND, HL., -Rock Island & Milan St. Ry. Co. 7 m, 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres. & Supt. Bally Davenport, Sec. E. H. Hunt, Treas. J. F. RONDOUT. N. Y. --Kingston City R. R. Co. 3 m, 4-8½ g, 40 lb r, 10 c, 40 h. Pres. James G, Linds-ley, V. Press. S. D. Coykendoll, Sec. & Treas. John C. RONDOUT. N. Y. --Kingston City R. R. Co. 3 m, 4-8½ g, 40 lb r, 10 c, 40 h. Pres. James G, Linds-ley, V. Press. S. D. Coykendoll, Sec. & Treas. John C. RONDOUT. N. Y. --Kingston City R. R. Co. 3 m, 4-8½ g, 40 lb r, 10 c, 40 h. Pres. James G, Linds-ley, V. Press. S. D. Coykendoll, Sec. & Treas. John C. RONDOUT. N. Y. --Kingston City R. R. Co. SACRAMENTO, CAL.--Sacramento City Ry. Co. 121-horse and 10 2-horse c. Prop. R. S. Carey, Supt. Geo. W. Carey.
SAGINAW, MICH.--City of Saginaw St. R. R. Co. 2½ m, 4-5½ g, 42 lb r, 10 c, 50 h. Pres. David II. Jerome, V. Pres. Geo. F. Williams, Sec. & Treas. Geo. L. Burr, ws, Supt. Fred G. Benjamin.
SALEM, MASS.--Salem & Danvers St. Ry. Co. Kaumkeag St. Ry. Co. - m, 4-5½ g, 30-35-45 lb r, 50 c, 140h. Pres. Chas. Odell, Clerk Joseph F, Hickey, Streas. Henry Wheatland, Supt. Milard B. Ferguson. SALINA, N. Y.--Woodlawn and Butternut St. Ry. Co.

c, 140 n. Pres. Chas. Odell, Clerk' Jöseph F. Hlck'ey, Treas. Henry Wheatland, Supt. Willard B. Ferguson. SALINA, N. Y. --Woodlawn and Butternut St, Ry. Co. SALT LAKE CITY, UTAH.-Salt Lake City R.R Co. 13 m, 4-S/g g, 20 lb r, 20 c, 115 mu. Pres. Jobn Taylor, Sec. David McKenzle, Treas. James Jack, Supt. Orson P. Arnold. SAN ANTONIO, TEX.-San Antonio St. Ry. Co. 15 m. 4 g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas I. Withers, San Antonio, Sec. E. R. Norton, Supt John Robb. Prospect Hill St. Ry. Co. SANDUSKY, O.-Sandusky St. Ry. Co. 2 m, -g, - lb r, - c, - h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude. SAN FRANCISCO, CAL.-California St. R.R. Co. Central R. R. Co. 12 m, 5 g, 45 lb r, 31 c, 290 h, Pres, Chas. Main, V. Pres. S. C. Bigelow, Treas. A. J. Gunnison, Sec. C. V. LeBreton, Jupt J. F. Clark. Clay St. Hill R. R. Co. 1 m. 3-6 g, 30 lb r, 11 c, 12 dumny cars. Pres. Joseph Britton, V. Pres. James Moffit, Treas. Henry L. Davis, Sec. Chas. P. Camp-bell, Supt. Joseph Britton. Clay St. Park & Ocean R.R. Co. Market St. Cable Ry. Co. 10 9-10 m, 4-8½ lb r, 137 c, 2 motors, 75 h. Pres. Leland Stanford, V. Pres. Chas. F. Crocker, Treas. N. T. Smith, Sec. J. L. Willcutt Supt. H. D. Morton. North Beach & Mission R.R. Co. 8 m, 5 g, 45 lb r, 50 c, 364 h. Pres. Gustav Sutro, V. Pres. D. Callaghan, Sec. G. Ruegg, Supt. M. Martin. Portrero & Bay View R.R. Co. 13/m, 5 g, 35 lb r, 20 c, 64 h. Pres. Gustav Sutro, V. Pres. Chas. Market St. Cable R. Co. 11/m, 5 g, 35 lb r, 20 c, 64 h. Pres. Gustav Sutro, V. Pres. Chas. Market, Supt. James McCord. Telegraph Hill R.R. Co. 1700 tf, 4-11 g, 36 lb r, 20 c, 64 h. Pres. Gustav Sutro, V. Pres. Co. Sutter St. R. R. Co. 51/m, 6 g, 45 lb r, 70 c, 28 h. Prorker, Treas. J. Smith, Sec. J. L. Willcutt. Sutter St. R.R. Co. 1700 tf, 4-11 g, 36 lb r, 20 c, 64 h. Pres. Gustave Sutro, V. Pres. C. Kohler. Sec. & Supt. Chas. J. Werner. The City R.R. Co. 11/m, 6 g, 45 lb r, 70 c, 28 h. Prorker, R. R. Co. 11/m, 6 g, 45 lb r, 72 c

People's R.R. Co. **SANTA BARBARA, CAL.**—Santa Barbara St. R.R. Co. 1 m, 3-6 g, 3 c, 8 mu. Pres. A. W. McPhall. **SARNIA, CAN.**—Sarnia St. Ry. Co. 2×m, 4-8 g, 32 lb r, 2 c, 9 h. Pres. J. F. Lister, Sec. & Treas. Thos. Symington, Supt. Henry W. Mills. **SAUGATUCK, CONN.**—Westport & Saugatuck Horse R.

SAUGATUCK, CONN.-Westport & Saugatuck Horse R.R.
 SAVANAH, GA.-City & Suburban Ry. Co. 18% m, 5 g. 16-30 lb r, 49 c, 110 h, 3 engines. Pres. J. H. Johnson, Asst. J. W. Alley, Treas. E. Schmidt. Coast Line R.R. Co. 7 m, 5 g, 30 lb r, 17 c, 37 h. Pres. Geo. Parsons, New York, Sec., Treas. & Gen. Man. R. E. Cobb, Savannah.
 SAYRE, PA.-Sayre St. Ry. Co. Pres. Howard Elmer. Notin operation.
 SCRANTON, PA.-People'S St. Ry. Co. 9% m, 4-8% g, 20 br, 19 c, 70 h. Pres. Wm. Matthews, Sec. & Treas. J. C Platt.
 SEARCY, ARK.-Searcy & West Point R.R. Co, 8 m, 4-8% g, 20 br, 7 c, 6 mu. Pres. A. W. Yarnell. Sc. W. H. Ligbtie, Treas, Jasper Hicks.
 SEATTLE, W. T.-Seattle St. Ry. Co. 3% m, 4-8% g, 35 lb r, 5 c, 20 h. Pres. F. H. Osgood Sec. Geo. Kinnear.

eo. Kinnear. SEDALIA, MO.—Sedalia St. Ry. Co. 24 m, 4-10 221br 6 c 25 h. Pres. Joseph D. Sicher, V. Pres. ouis Deutsch, Treas. F. H. Guenther, Sec. Chas.

SELMA, ALA.—Selma St. R.R. 2½ m, 18 lb r, 5 8 h. Pres. E. Gilman, Sec. & Treas. J. H. Hollis,

SELMA, M.A.-Seima St. R.R. 250 III, 10 10 1, 0
c, Sh. Pres. E. Gilman, Sec. & Treas. J. II. Holits,
SENECA FALLS, Y. --Seneca Falls & Waterloo
RY. Co. 7 III, 48% g, 40 lb r, 4 c, dummles.
SHERMAN, TEX.-Sherman City R.R. Co. 3½m
5 g, 20 lb r, 7 c, 32 mu, Pres. C. W. Batsell, Treas
J. M. Batsell. Sec. C. W. Batsell, Jr.
SHREVEPORT, LA.-Sherveport City R.R. Co.
HIREVEPORT, LA.-Sheveport City R.R. Co.
SILVER CLIFF, COL.-Sliver Citif St. R.R. Co.
SIOUX CITY, IA.-Slow City St. Ry. Co. 5 m,
4 g, - r, 8 c, 52 mu. Pres. Fred. T. Evans, V. Pres.
D. A. Magee, Sec. & Treas. Fred Evans, Jr.
SOUTH BEND, VND.-South Bend Railway,
South Bend and Mishawauka St. RY. Co.
SOUTH CHICAGO, ILL.-Chicago Horse &
Dummy R.R. 5 m, 48% g, -lb r, -c, -h. Pres.

[JULY, 1886.

D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bilss. [Not In operation.]
South Chicago City Ry. Co. 4 c, 8 h. Pres. Andrew Rehm, Sec. & Supt. A. Krimbill, Treas II. Shearer.
SOUTH PUEBLO, COL.-Pueblo St. R.R. Co.
SPIRINGFIELD, ILL.-Citizens' St. R.R. Co.
SPRINGFIELD, MALL.-Citizens' St. R.R. Co.
SPRINGFIELD, MASS.-Springfield St. Ry. Co.
48% g, 3340 br, 30 c, 120 h. Pres. J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman.
Springfield City Ry. Co.
SPRINGFIELD, MASS.-Springfield St. Ry. Co.
48% g, 3340 br, 30 c, 120 h. Pres. John Olmstead, Auditor L. E. Ladd, Cierk Gideon Wells, Treas. A.
E. Smith, Supt. F. E. King.
SPRINGFIELD, MO.-The People's Ry. Co. of Springfield, No. 3½ m, 410 g, 33 b f, 5 c, 30 h. Pres. J. C. Cravens, Sec. Benj. N. Massey, Treas. Chas.
Sheppard, Supt. H. F. Denton.
Springfield R.R. Co. 2 m, 30-40 br, 4-8½ g, 7 c, 19 h, 19 mu. Pres. C. W. Rogers, St. Louis, Sec. & Treas.
B. F. Hobart, Supt. J. A. Stoughton, No. Springfield.
SPRINGFIELD, O. --Citizens' St. R. Co. 10m, 4 g, 29 c, 135 h. Pres. D. W. Stroud, V. Pres. A. S.
Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, Supt. W. H. Hantord.
STATEN ISLAND, N. Y.-Staten Island Shore Ry. Co.
ST. CATHARINE'S, ONT.-St. Catharine's, Mer-riton & Thoroid St. Ry. Co. 5½ m, 43% g, 30 b f, 5 c, 32 h. Pres. E. A. Smyth, Sec. S. K. Smyth, Supt.
E. A. Smyth.
ST. JOSEPHI, MO.-Citizens' St. R. R. Co. 3 m,

rllton & Luxer, A. Smyth, Sec. e. ... c. 32 h. Pres, E. A. Smyth, Sec. e. ... ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m, ST. JOSEPH, MO.—Citizens' St. R.R. Co. 3 m, sec. & Treas. Arthur Kirkpatrick, Supt. John F. Sec. & Treas. Arthur Kirkpatrick, Supt. John F.

Merriam. Frederick Ave. Ry. Co. 1½ m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thos E. Tootle, V. Pres. Winslow Judson, Sec. W.D.B. Motter, Treas. Thos W. Evins, Sup. S. Rowen. st. Joseph & Lake St. R.R. Co. Union Ry. Co.

W. D. B. Motter, Treas, Thos W. Evins, Sup. S. Rowen. St. Joseph & Lake St. R.R. Co. Union Ry. Co. ST. LOUIS, MO.-Baden & St. Louis R.R. Co. 3gm, 4:10g, -ib, 7, c, 2ih. Pres. George S. Case,V. Pres. William Z. Coleman, Supt. J. H. Archer.Benton & Bellefontaine Ry. Co. 7<math>gm, 4:10g, 45 b r, 29 c, 200 h. Pres, J. G. Chapman, V. Pres. Chas. Parsons, Sec. & Treas. Robert McCuiloch. Cass Avenue & Fair Grounds Ry. Co. 8gm, 4:10g, 45 b r, 29 c, 200 h. Pres, J. G. Chapman, V. Pres. Chas. Parsons, Sec. & Treas. Robert McCuiloch. Cass Avenue & Fair Grounds Ry. Co. 8gm, 4:10g, 58 b r, 39 c, 285h. Pres. W. R. Allen, V. Pres. Geo. W. Allen, Sec. & Treas. J. W. Wallace, Supt. G. G. Gibson, Cashier O. H. Williams. Citizen's Ry. Co. -m, -g, -lb r, -c, -h. Pres. Julius S. Waish. V. Pres. J. P. Heifenstine. Forest Park, Laclede & Fourth St. Ry. Co. Pres. Chas. H. Turner, Sec H. B. Davis. Jefferson Ave. Ry. Co. Pres. John M. Gelkeson, Gen. Man. John Scullin, Sec. C. K. Dickson. Lindell Ry. Co. 13 $gm, -g, -g, -f_{5}$ 5 c, 475 h. Pres John H. Maquon, V. Pres. John H. Lightner, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Lleweilyn. Northern Central, Missourt R.R. Co. Pres. John. Scullin, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Lieweilyn. Northern Central, Missourt R.R. Co. Pres. John. Scullin, Sec. & Treas. C. M. Seaman, Supt. Jas. Sullivan. People's Line. Pres. Chas, Green, Sec. John Ma-honey, Supt. Patrick Shea. Southern Ry. Co. 74 5m, 4:10g, 35.52 lb r, 49 c, 250 V. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson. St. Louis R.R. Co. 11 m, 4-10g, 38.44 lb r, 58 c, 375 h. Pres. C. Pepcr, Sec. & Treas. R. B. Jennings, Supt. Chas, Ischer. St. Louis Cable & Western Ry. Co. Pres. M. A. Downing, V. Pres. F. M. Colburn, Sec. & Treas. E. F Chaypool, Man. Geo. F. Branbam. Tower Grove & Lafayette Ry. Pres. Chas. Green, Sec. John Mahoney, Supt. Patrick Shea. Union Depot R.R. Co. -m, -g, -lb r, -c, -h.Pres. John Sculiin, V. Pres. & Treas. C. M. Seaman, Supt. Jas. H. Roach. Union Ry., Co. Pres. Julius S. Wa

Union Ry., Co. Pres. Julius S. Walsh, V. Pres. J. P. Helfcnstine, Sec. & Treas. M. J. Moran, Supt. Michael Moran.
STO *EHAM, MASS.-Stoneham St. R.R. Co. 2% m. 4-8% g, 33 b r, 10 c, 28 h. Pres. A. V. Lynde, Melrose, Treas. & Clerk Lyman Dyke, Supt. John Hill-ST. PAFL, MINN.-St. Paul City Ky. Co. 37 m. 4-8% g, 45-52 b r, 852, 600 h, & mu. Pres. Thos. Lowry, V. Pres. C. G. Goodrich, Sec. A. Z. Levering, Treas. Clinton Morrison, Supt. A. L. Scott.
STHLLWATER, MINN.-Stillwater & Mechanics Wille St. IV. Co. 4% m, 4-8% g, 25-30 b r, 3 c, 6 h. Pres. S. Rowley, V. Pres. W. L. Denison, Sec. Edw. 1, Wood, Treas. E. H. Smith.
STROUDSBURGH, PA.-Stroudsburgh Passen ger R.R. Co. 14-5 m, 48% g, 28-30 b r, 3 c, 9 h. Pres & Treas. J. Lantz, Sec. Jacob Houser.
SYRACUSE, N. Y.-Syracuse & Onondaga R.R. Co. 23 5 m, 4-8g g, 28-47 ib r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson.
Central City Ry. Co. 2% m, 4-8% g, 40 lb r, 12 c, 37 h. Pres. Danlel Pratt, V. Pres. Jonathan C. Chase, Sec. & Treas. James Barnes, Supt. George Crampton. 4 Syracuse & Surings Bank Building.
Tifth Ward R.R. Co. 2% m, 4-8% g, 55-56 lb r, 6 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Potter, Supt. Hugh Purnelt. Office W. Washington St. Gedes St. Ry. Co.
Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-8% g, 16-30 lb r, 10 c, 35 h. Pres. Robt. G. Wynkoop, Sec. & Treas. Geo. J. Gardiner, New Brighton & Onondaga Savings Bank Building.
Struth. Underson.
Seventh Ward RY. Co. Co. 2.8 m, 4-8% g, 55-56 lb r, 6 c, 30 h. Pres. R. R. R. Co. Co. 3.5 m, 4-8.5 g, 55-56 lb r, 6 c, 30 h. Pres. R. R. R. Co. 10 h. Pres. P. R. Brayton, Sec. & Treas. Rasselas A. Bonta, Supt. W. B. R. Co. 2.8 m, 4-8% g, 55-56 lb r, 10 c, 25 h. Pres. Netword Ry Co. Synacuse & Geddes St. Ry. Co.
Seventh Ward RY. Co. Co. S. Sm, 4-8% g, 55-56 lb r, 10 c, 25 h. Pres. Netword Ry Co. Synacuse & Geddes Ry. Co. 2.8 m, 4-8% g, 55-56 lb r, 10 c, 25 h. Pres.

Pres. Josephus Collett, Sec. John R. Hagen, Supt. ohn T. Shriver.
TEXARKANA, ARK.—Texarkana St. Ry. Co.
TOLEDO, OHIO.—Toledo Consolidated St. Ry. Co.
Tol.EDO, OHIO.—Toledo Consolidated St. Ry.
Oo. 173 m, 48 g, 425 lb r, 41 c, 200 h. Pres. J. E.
Balley, Sec. A. E. Lang.
Adams Street Ry. Co.
Metropolitan St. Ry. Co. 10 m, 3 g, 28-35 lb r, 31 c, 101 h. Pres. & Sec. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F.
Shipherd, Supt. Jno. A. Watson.
Monroe Street R.R.
The Central Passenger R.R. Co. of Toledo, O. 8 m, 3 g, 27 lb r, 17 c, 70 h. Pres. F. E. Seagrave, Treas. & Man. A. R. Seagrave, Supt. Joseph Murphy.
TOPEKA, KA — Topeka Clty Ry. Co. 9 m, 4 g, 25-48 lh r, 55 c, 90 h. Pres. Joab Muivane, V. Pres. D.W.
stormont, Sec. & Treas. E. Wides, Supt. Jessee Shav.
TORONTO, CAN.—Toronto St. Ry. Co. 60 m, 4-103 g, 30 lb r, 160 c, 750 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Frankilin.
TRENTON, N. J.—Trenton Horse R.R. Co. 156

4-10% g, 301b r, 160 c, 750 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Franklin. **TRENTON, N. J.**—Trenton Horse R.R. Co. 1½ m,5-2 g, 43-47 1b r, 10 c, 31 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, 1r, Supt.Thomas Sillorris. City Ry. Co. 7 m, 5-2½ g, 25 1h r, 19 c, 110 h&m. Pres. Adam Exton, V. Pres. W. H. Skirm, Sec. H. B. Howell, Treas. & Mang. Director Chas. Y. Bamford. **TROY, N.Y.**—Cortiand & Homer Horse R R. Co. 4 m, 4-5½ g, 25-30 hr, 2 c, —h. Pres. C. H. Garri-son, Troy, V. Pres. E. A. Fish, Cortland, N.Y., Treas. Jas. M. Milen. Cortland, Sec. S. E. Weich, Cortland. Troy & Aibia Street Ry. Co. 3½ m, 4g, 25-43 lb r, 9 c, 41 h. Pres. Thos. A. Knickerbocker, Sec. & Treas. Theo. E. Hasiehurst, Supt. W. R. Bean. Troy & Lansingburgh R.R. Co. 21½ m, 4-8½ g, 47 lb r, 91 c, 466 h. Pres. William Kemp, V. Pres. Charles Cleminshaw, Sec, & Treas. Joseph J. Hagen, supt. L. C. Brown, Asst, Supt. C. H. Smith. 295 River St. **URBAN A, ILL.**—Urbana R.R. Urbana & Champaign St. Ry. Co. 2 m, 4-8½ g, 33 lb r, 4 c, 20h. Pres. W. Park. J. Jaues, Supt. W. Park. R.R. 10 1-3 m, 4-8½ g, 43-56 lh r, 17 c, 82 h. Pres. Isaac Maynard, Sec. & Treas. Robt. S. Williams, Supt. Roger Rock. The Utica & Mohawk R.R. Co. 3½ m, 4-8½ g, 25-04

Isaac Maynaro, Sec. & Heas. Roberts, Harris, Roger Rock. The Utlca & Mohawk R.R. Co. 3½ m, 4-8½ g, 25-04 lb r, 9 c, 5 h. Pres. Jas. F. Mann, Sec. Wm. E. Lewis, Treas. J. H, Sheehan.

What Work Is.

I was riding up town iu a Third avenue car the other day when a butcher's boy, a lad some 14 years of age, in a hickory shirt and with a battered derby hat on the back of his head, stepped airily upon the back platform and hung his basket on the handle of the brake. He had sandy hair cut close to his head. He was very much freckled, his eyes were pale blue, but keen in their expression, and his nose was of the genus pug. He was smoking a cigarette. For sometime he shared the privileges of the platform alone with the conductor, who began talking to the boy about the wrongs of the conductors and their right to strike.

"What are you givin' us?" said the boy; "yer call it hard work to stand out here on the platform and yank a bell? When you ain't doing that, you are inside taking fares, and knockin' 'em down, too. That ain't no work. Just you begin at 4 o'clock in the morning, like me. Open the shop, sweep it out, clean ice-cold fish out of the refrigerator, aud never get no chance to warm yourself; then lug big baskets of meat up to the top of flats all day long, and be cussed by the boss because you don't move round faster. That's work. You fellows have struck it soft, you have. You can't talk to me. I ain't no greenhorn." And he jumped off the car and went down the street whistling "The flowers that bloom in the spring."-Phil. Record.

The eighty-third meeting of the New York Electrical Society was held in the rooms of the American Institute, Clinton Hall, June 23. Mr. John M. Pendleton read an interesting paper on electrical railways, accompanied by a diagram of the proposed motor. Mr. Brackon, the attorney and agent in the United States for the celebrated electrician, Edmund Julien, was Utica Beit Line St. Ry. Co. VAILSBURGH, N. J.—Newark, So. Orange, Ferry St. & Hamburg Place R.R. Co.

Ferry St. & Hamourg Place R.R. Co.
VALEJO, CAL.—Valejo St. Ry. Co.
VICKSBURG, MISS.—Vicksburg St. Ry. Co.
Hill City R.R. Co.
VINCENNES, IND.—Vincennes St. Ry. Co.
WACO, TEX.—Waco St. Ry. Co. 5 m, 4-8 g,
14-18 ih r, 9 c, 44 h. Pres. E. Rotan, Sec. & Treas. W.
R. Kellum, Supt. J. W. Sedbury.
WALTHAM, MASS.—Watham & Newton St.
Ry. Co. 3½ m, 3-8½ g, 30 lb r, 7 c, 18 h. Pres. R. E.
Robins, Sec. & Treas. Henry Bond.
WALUNGTON D.C.—Capital No.O. St. So.

Rôhbins, Sec. & Treas. Henry Bond, WASHINGTON, D.C.—Capital, No. O. St. & So. Washington R.R. 134 m, 48 g, 35 lb r, 45 c, 176 h. Press. C. White, Sec. & 1 reas. W. E. Boughton, Supt. Andrew Glass. Anacostia & Potomac River Ry. Co. 3 m, 4-8 g, 37 lb r, 9 c, 24 h. Pres. H. A. Griswold, Sec. Edward femple, Treas. T. E. Smithson. Columbia R.R. Co. of the District of Columbia. 25 m, —g, —lb r, 19 c, 56 h. Pres. H. A. Willard, Sec. & Treas. Wm. H Clayette, Supt Thos. E. Benson. Metropolitan R.R. Co. 21 χ_{m} , 4-8 g, 35 lb r, 90 c, 400 h. Pres, George W. Pearson, V. Pres. A. A. Wilson, Sec. & Treas. William W. Moore, Supt. L. W. Emmart Washington & Georgetown R.R. Co. 20 m, 4-84 g, 42 lb r, 173 c, 850 h. Pres. H. Hurt, Sec. & Treas. C. M. Koones, Gen. Supt. C. C. Salier. WATERFORD, N. Y.—Waterford & CohoesR.R.

WATERFORD, N. Y.—Waterford & CohoesR.R. Co. 2 m, 4-8% g, 451b r. Pres. Thos. Breslin, Sec. & Treas. C. C. Ormsby. (Leased by the Troy & Lan-singburgh R.R. Co.)

WATERLOO, IA.—Waterloo St. Ry. Co. 2 m, 3 20 lb r, 2 c, 1 baggage wagon, 9 h. Fres. Loran W. eynolds, Sec. and Treas. J. H. Kuhn, Man. M. K. Ken

WEST HURON, CONN.-New Haven & West Hay aven R.R. Co. WESTPORT, CONN.-Westport & Saugatuck

Horse R.R.

WHEELING, W. VA.-Cltizens Ry. Co. 10 m, 5-2½ g, 45 lb r, 20 c, 55 h. Pres. Dr. C. A. Wingelter, Sec. Van B. Hail, Supt. Michael 1, 1tus. Wheeting & Elm Grove R.R. 7 in, 4-8½ g, 30 lb r, 12 c, 4 Baidwin Motors. Pres. J. D. DuBois, Sec. E. J. Rutter, Supt. E. Hirsch.

introduced and gave a brief explanation of Mr. Julien's system as used on the Rue de Loure at Brussels. A contract, according to Mr. Brackon, has already been made with Mr. Julien to have his cars, with their electrical accumulators, placed upon roads in both Philadelphia and this city, probably within the next five weeks. The particular 10ad in this city has not as yet been decided upon, but will no doubt be the Broadway line.

SPECIAL NOTICES.

Rates for Special Notices.

Advertisements of Street Raliway Property, "Wanted "or "For Sale," "Positions Wanted " or "Men Wanted," or similar matter inserted under this heading at 10 c. per line, eight words to a line. The name of the advertiser kept confidential when desired. Replies may be addressed "Care of STREET RAILWAY JOURNAL," at its New York, Chicago, Philadelphia and Boston Offices, as is most conven-ient to the advertisers. Replies will be forwarded, if desired. Excellent results have been realized by ad-vertisements in this department.

W ANTED TO BUY, A HORSE RAILROAD. The advertiser desires to learn of a moderate sized street railroad, say 25 to 50 horses. Address, giving fuil particulars, INVESTMENT, care STREET RY. JOURNAL 32 Liberty Street, New York.

W ANTED.—Position on the construction of street railways. Am thoroughly acquainted with all details, estimates made for same, measure-ments taken for curves, switches, frogs and cross-ings of all shapes and angles. Would engage with railway switch works. No objection to going out of the country for few months or year. Address "CON-TRACTOR," care Sr. KY. JOURNAL, 119 South 4th St., Philadelphia, Pa.

5000 IN 8 PER CENT. 10 YEAR BONDS FOR Sale. Pald up capital \$13,000. Entire issue of bonds \$10,000, no floating debt. Interest paid semi-annually. Investigation solicited, Address TREAS-URER, care STREET RY. JOURNAL, 32 Liberty St. New York. York.

ANTED-Position as Superintendent or Fore-man with some good street railroad, by a thoroughly practical and experienced street railroad man who has had 15 years' experience in the busi-ness; can refer to some of the most prominent street railroad men of the country. Address R. P. A., care STREET RY. JOURNAL, 32 Liberty St., New York.

ANTED-A man with small capital to invest in a street Railway, situated in a live town of 15,000 inhabitants. Just struck off. Three miles ottrack, well stocked, good barn and everything in good condition. A rare chance if taken at once. For further particulars address, J. H. ROSE, P. O. Box 919, Lima, Ohio.

WICHIITA, KAN.-Wichita City Ry. Co. 7½ m, 11 C, 60 mu, 4 h. Pres. B. H. Campbell, V. Pres., Treas. & Gen. Man. E. R. Powell, Sec. G. W. Lara-mer, Atty. E. C. Ruggles. mer WILKESBARRE, PA.-Wilkesbarre & Kingston

Pas

Pass. R.R.
 Wilkesbarre & Ashley Passenger R.R. Co.
 Coalville Passenger H.R. 2½ m, 4-8½ g, 20-24 lb r,
 4 c. 10 h. Pres. Chas. A. Minér, Sec. & Treas. George
 Loveland, Supt. Albert G. Orr.
 WILLIAMSPORT, PA.-Williamsport St. R.R.

Co. WILMINGTON, DEL.-Front & Union St. Passenger Ry. Co. 1½ m, 5-2 g, -1b r, 7 c, 20 h. Pres. Geo. W. Bush, Supt. Sam'l A Price, Treas. E. T. Geo. W Taylor

Geo. W. Bush, Supt. Sam'l A Price, Treas. E. 1. Taylor.
Wilmington Clty Ry. Co. 6 m, 5-3% g, 45 lh r, 19 c, 80 h. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett.
WINDSOR, CAN.-Sandwich & Windsor Passen-ger R.R. Co.
WINNIPEG, MANITOBA, CAN.-The Winnipeg St. Ry. Co. 5 m, 48% g, 25 lb r, 12 c, 75 h. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young.

Duncan MacArtnur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young. WINONA, MINN.—Winona City Ry. Co. 4 m, ?-6 g, 27 lb r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter. WOBURN. MASS.—No. Woburn St. Ry. Co. 2% m, 48 ½g, 40 lh. r. 5c, 4 h. Pres. & Treas. J. R. Car-ter, Supt. Dexter Carter.

ter, Supt. Dexter Carter. WORCESTER, MASS.—Worcester St. Ry. Co 5% m, 48% g, 45 lb r, 19 c, 100 h. Pres. Geo. H. Seeley N. Y. City, V. Pres. Nathan Seeley, N. Y. City, Treas & Supt. Harry S. Searls, Worcester. Citizens' St. Ry. Co. Pres. Chas. B. Pratt, Sec. & Treas, F. W. Brigham. WYMORE, NEB.—Wymore and Biue Springs Ry. Co.23% m. 3-6 g, 3 c, 8 h. Pres. E. P. Reynolds, Rock Island, Ill., V. Pres. I. H. Reynolds, Gen. Man. Ben. Reynolds, Sec. Treas. and Acting Supt. E. P. Rey-nolds, Jr.

Notes, Jr. YOUNG STOWN, O.—YOUNGSTOWN St. R.R. Cc. ZANESVILLE, O.—Beltaire, Chillicothe & Canton Zanesville & McIntire St. Ry. Co. 3 m, 3-6 g, 23 lh r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend Treas. T. B. Townsend.

ANTED-A thoroughly reliable man exper-ienced in Street Raliway practice, to organ-ize and manage a company, for the introduction of a new system of propulsion. Patentee will rurnish capital. An exceptional opportunity for a man of large street raliway acquaintance and with the en-ery and judgment requisite to success. Address, IXION, STREET RAILWAY JOURNAL Office, 32 Liberty Street, New York Clty.

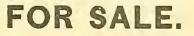
FOR SALE-FOUR SUMMER CARS, Good as New. Road has discontinued use of Summer Cars and will sell these at a bargain. Address, FRANKFORN & SOUTHWARK R. R. Co., 2501 Kensington Avenue, Phila Pa Phila ., Pa.

WANTED-A party with Capital to take one-half interest in horse and cattle grooming machine, now ready for operation, fully covered hy patents. Will sell whole or one-half interest. Full control given in either case. Patentee has other business. Cannot give it his attention. Address, SAFETY, care STREET RAILWAY JOURNAL, 119 South 4th St., Phila., Pa.

FOR SALE-Street Railroad connecting two live Manufacturing towns. Forty horses, 9 cars. We have exclusive franchise for 25 years. New road, Good Business. Address, HORSE RAILROAD. care ST EET RAILWAY JOURNAL, 32 Liberty St., New York.

SUPPLIES WANTED-We anticipate building short line Street Raliroad, gauge 3% feet; need two or more light passenger cars and two or more flats and all supplies except Iron. Address, S. W. S., Alvardo, Tex.

FOR SALE—Three NEW one-horse cars, never have heen used. Built by Jones of Troy, with Fare Boxes, fitted with Andrews & Clooney wheels. For sale low. The road for which they were built nevec having been completed. Address # W," this office.



Six S cond-hand One-Horse Street Cars.

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Steel Rails, T and Street Patterns, all weights.

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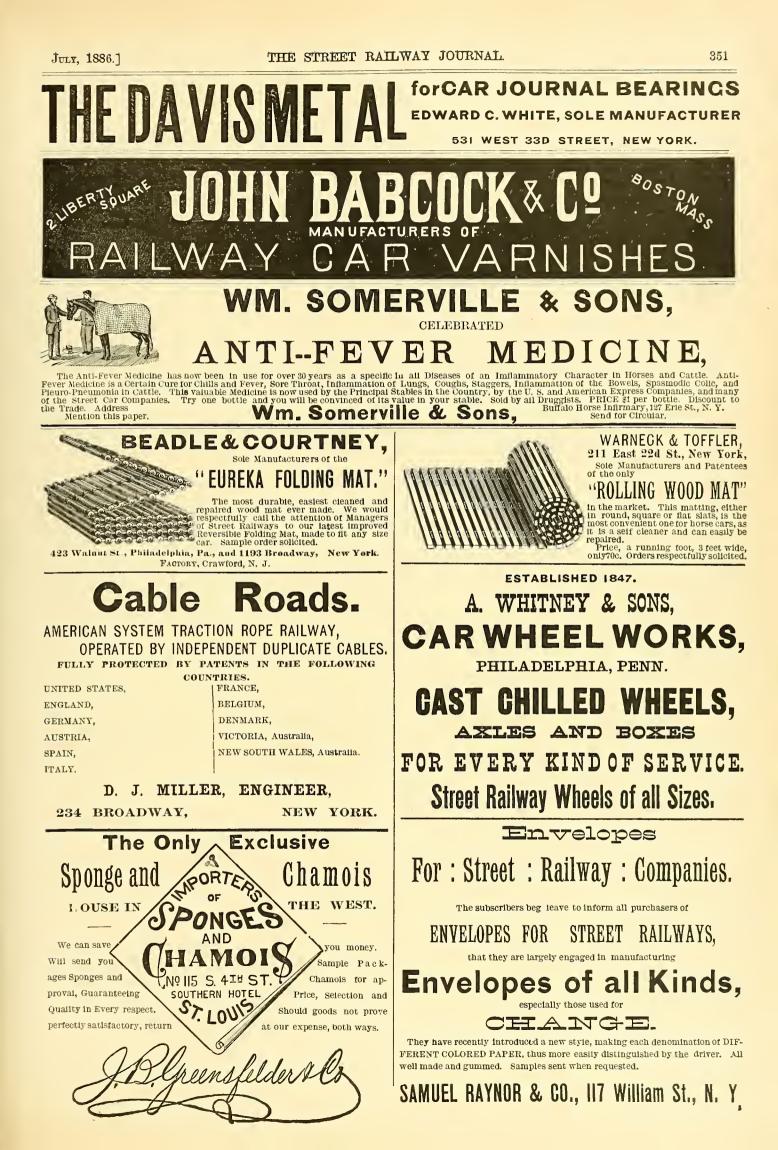
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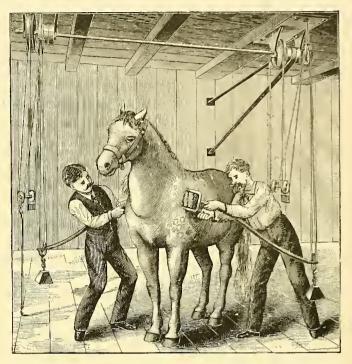


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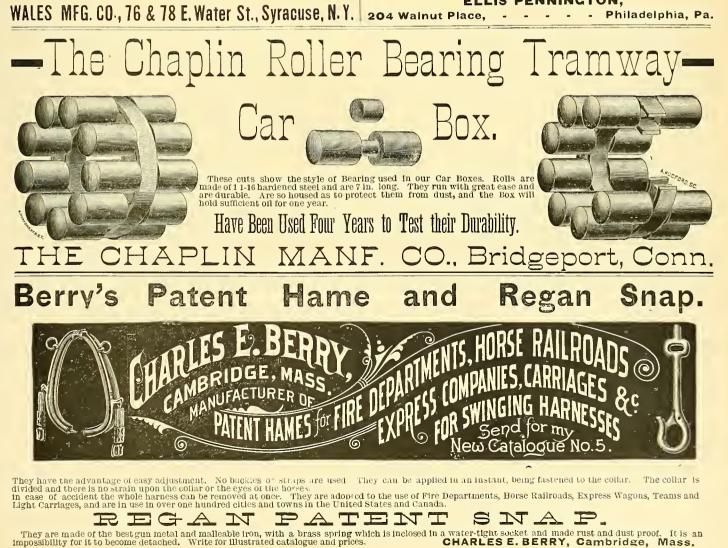
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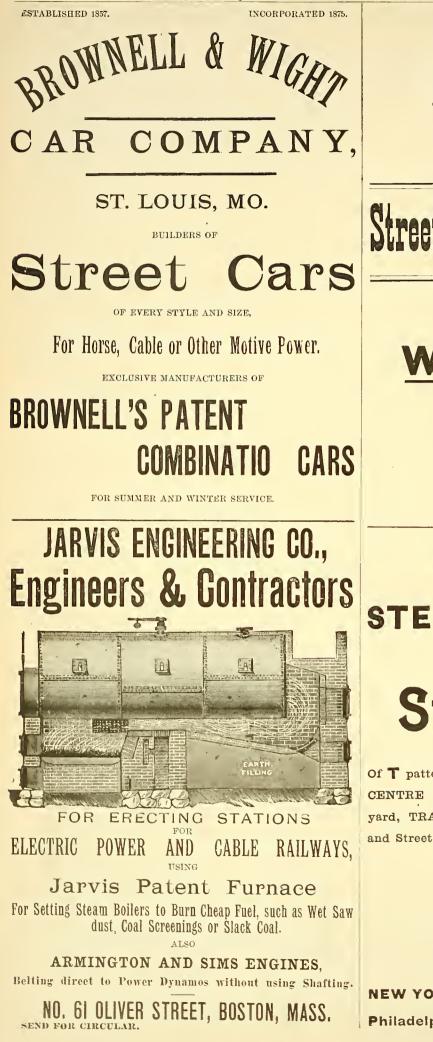
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The brush is caused to revolve by gear wheels actuated by a flexible shaft, Both hands free to handle brush. Swings and turns in any direction. Direc-tion of motion quickly changed. The cheapest and best Grooming Machine yet invented. Motion supplied by hand, steam or animal power. Rights to use or manufacture. For full particulars an i rates apply to ELLIS PENNINCTON,

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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 railway lines, which test has left them as firm and good as the day they were put in, we unhesitatingly place these sides in the market as a superior article. They are composed of three white wood (or poplar) veneers, each b/ inch thick, the grain of the center layer running at richt 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.

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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

car. For repairing cars these sides have no equal. Our Three Ply Car Scats and Backs, so well known all over the world, are now the most popular seat and back in the market, and recommend them-selves espectally for their *Lightness*, *Cleanliness*, *Healthfulness and Beauty*, as also their *Cheapness and Durability*. For they are indestructible hy 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 periorated or plain to suit customer. Birch is the wood most generally used. Today fully one-halt the railroads in the country are using these seats and hacks. 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 i hey have no equal; for they are placed over the carlines and cover all the oid paint and wood work. The woods general-ly used are *Birch*, *Birdscye Maple*, Oak and Mahogany.

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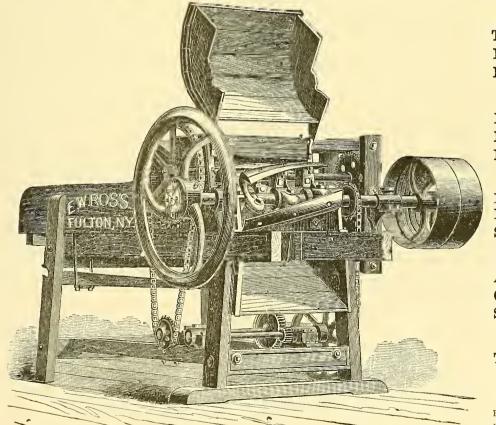
OFFICE AND FACTORY: 643, 645, 647, 649, 651, 653, 655 and 657 West 48th St., New York.

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COM-THEY HAVE BINED STRENGTH, DURA-BILITY AND GREAT CA-PACITY.

ARE EASILY OPERAT-ED AND CAN BE RUN TO FULL CAPACITY BY SMALL GAS ENGINE.

MACHINES SENT T₀ ANY PART OF THE U. S. APPROVAL DE-ON IF SIRED.

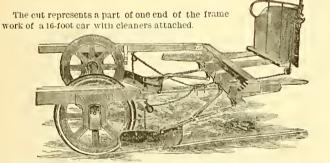
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STREET RAILWAY TRACK CLEANERS. DAY'S IMPROVED

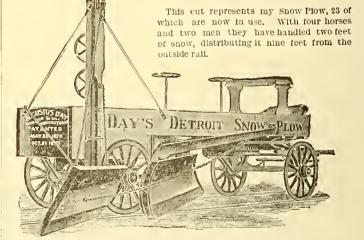


358

These Track Cleaners meed no extended statement of their great superiorly over all others invented. The fact of over three thousand pairs being now in u-ers sufficient evidence of their necessity and utility. Are adaptable to all kinds of ralks and styles of crs. Clean Srow, i.e. Aud and Stones from the rall. The driver can raise or lower them instantly with one hand. To secure the largest benefit thoy should be attached to every car. No estimate can be made of their advantage in saving of horseflesh hand labor, salt, and the making or time in stormy weather. Since their hirrduction new and valuable improvements have been made in their construction, mode of attached no the naterial obtainable. The functions, Price in cludesright of use and is less than heretofore. Reference is made to a few of the roads using these Cleaners.

_ Reference is made to a few of the roads using these Cleaners.			
Detroit City Ry., Detroit, Mich.	 	. 154	Pair
Chicago City Ry, Chicago, Ill.	 	400	6.6
Rochester City & Brighton R. R. Rochester, N. Y		100	4 s.
Albany Ly., Albany, N. Y.		. 75	٤.
Lynn & Boston R. R., Boston, Mass.		68	- 6
Boston Highland Ry., Boston, Mass.		46	5.6
Grand Rapids Street Ry		48	6.6
Numkelg Street Ry., Salem, Mass.		. 69	2.5
Bridgeport Horse Ry., Bridgeport, Conn		. 40	86
Cream City Ry., Milwaukee, Wis		. 40	8.5
Milwaukee City Ry., Milwaukee, Wis	 	50	61
Buffalo Street Ry., Buffalo, N. Y.	 	32	66

AUGUSTUS DAY, 76 State Street, cor. Park Place,

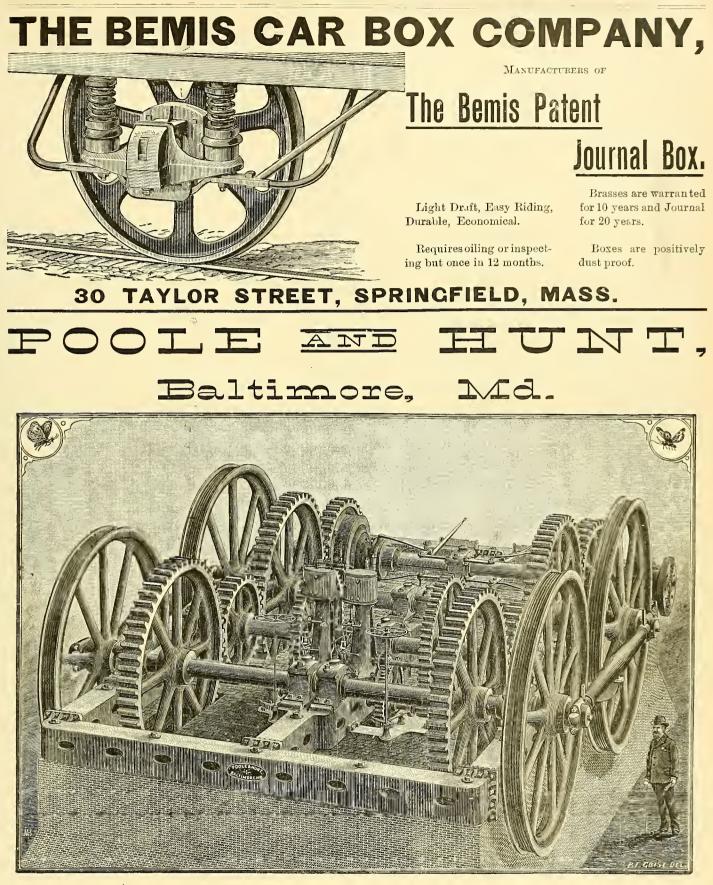


It is adapted to single or deude track roads, adjustable where necessary; built in the nost thorough and substantial manner of the best matereial. The Plow is not intended to supply the place of the small Track Cleanrs, but be auxiliary to them. For execution in deep snow, case, and convenience inhandling, it sur-passes 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, De-troit, Mich. (Two plows.) Rock ster (thy & Brighton R.R. Rochester, N. Y. (Two plows.) cream City Rv., Milwaukee, Wis. West Side Street Ry, Mil-waukee, Wis. Chicago City Ry, Chicago, III. (Three plows.) Grand Rapids Street Ry., Grand Rapids, Mich. Highland St. Ry, Bothatown, Pa. Min-neapolls St. Ry, Minneapolis, Winn. (Two plows.) St. Paul v. Ry, st. Paul, Minn. (Two plows.) Kolcharzo St. Ry., Kalamazoo, Mich. Worcester St. Ry, Worcester, Mass. South Bend Ry., South Bend, Ind. Milwaukee City Ry, Milwaukee, Wis.

Detroit, Michigan, U. S. A.

For Further Information and Price, Address:

JULY, 1886.]

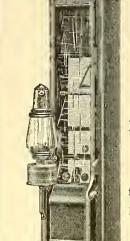


Manufacturers of Cable Railway Plant. Machine Moulded Gearing for Mills and Factories. CORRESPONDENCE SOLICITED.

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NOW IN GENERAL USE IN CITIES THROUGHOUT THE U. S.



Ornamental to any Car.

REDUCTION IN PRICE WHERE TWO BOXES ARE PLACED IN ONE CAR.

Roads Equipped with Boxes on Trial, and if not Satisfactory, Returned Without Any Expense to the Company trying them.

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BOX NO 2

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CHARIOT PATTERN. EOX NO. 1. EOX NO. 2 CHARIOT PATTERN. One of the principal merits of these Fare Boxes over all others, consists in the fact that the fares are not turned out of sight at once by the drivers, leaving nothing hut the bare word and memory of the parties as evidence of the payment, thereby making it easy for deception to be practised, even though an officer is on the car, and is endeavoring to see that the driver is faithfully performing his duties. They are so constructed that the fares are kept in sight from one end of the roud to the other, and at any point on the line an officer of the company, or indeed any other person, can taily passengers with the fares. The drops can easily carry from 75 to 80 fares, and can be counted without mistake, and counterfeit money can be easily detected. These boxes are very simple in construction, heing cleared, when required, in five minutes, whereas any other box takes a much longer time. The glass fronts and drops render them so transparent that a per-son sitting in the further end of car can readily count the fares and make the taily, without making himself conspicuous in the matter, if desirable. They are nost as plain as by day. When the box is put in a car it can not be taken out or tampered with, unless the keys are obtained from the office, and can not be robud without violence. Special attention given to correspondence on the subject of street railway construction, equipment aud operation. Address all cor-respondence to respondence to

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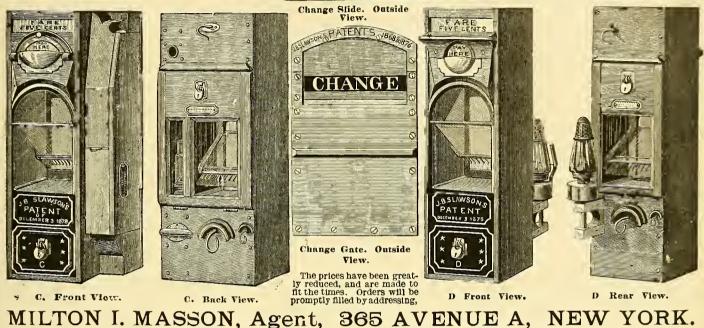
The Way Foundry Company, 23rd & Wood Sts., Philadelphia.

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These Boxes are of the latest a: d 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 pur-pose. 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 lated. B. Slawson originated the "FARE Box Sys-



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or the JOHN STEPHENSON COMPANY, Limited, 47 EAST TWENTY-SEVENTH STREET, New York.

WM. WHARTON Jr. & CO., Limited, Engineers, Manufacturers & Contractors,

Twenty-Fifth Street and Washington Avenue,

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Cable Railways, Grips, And All Appurtenances.

The Oldest and Largest Manufacturers of Street Railway Track Appliances in the World. Responsible parties contemplating Building, Renewals or Extensions will find it to their interest to correspond with us.

THE KLYN AY BOKLUNAY BUPLY

37 WALWORTH ST., BROOKLYN, N. Y.,

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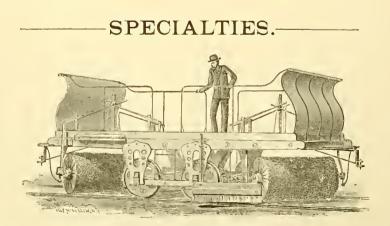
RAILWAY SUPPLIES.

Yellow Pine Timber for Track Construction of Best Quality. Knee Spikes and Joint Plates.

Rail Spikes at Lowest Manufacturer's Prices, Made to Order, to Fit any Rail.

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Latest Improved Snow Sweepers of OUR OWN MANUFACTURE. Now used in nearly all the principal Northern cities. Rattan for refilling Brooms. Snow Plows. Sand Cars.

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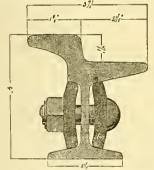
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THE

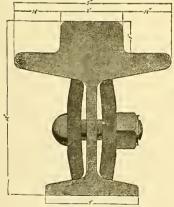
Johnson Steel Street Rail Company,

JOHNSTOWN, PA.

Section C. 38, No. 111.



Patented February 20, 1883. Section E. 76, No. 117.



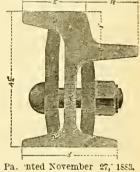
Patented January 29, 1884.

SIDE BEARING GIRDER RAILS

 \mathbf{OR}

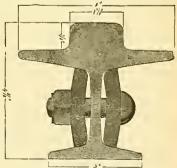
CENTER BEARING GIRDER RAILS.

Large Assortment of different Weights and Sections, Section D. 45, No. 119



Л

Section G. 58, No. 120.



Patented January 29, 1884.

Rolled Steel Switches, Frogs, Curve Crosses, Etc.

We Furnish Every Detail Wanted in Track Work.

Our customers are guaranteed against all suits for infringements on goods purchased from us and we further undertake to defend the patents covering the details of our Girder System.

To those contemplating the use of the Girder System, we offer, FREE OF COST, to survey their routes, and after consultation as to the best and most economical construction, to furnish full and complete estimates of cost of the completed work. Send for filustrated Catalogues.

The Goodenough System

OF

HORSE-SHOEING.

The Goodenough System of Horse-Shoeing, of which the GOODENOUGH HORSE-SHOE is the exponent, is an endeavor to take from the hand of unthinking and barbarous method, the important art of farriery.

In the correct use of the system and proper application of the shoe, the sole bars and frog of the horse's foot are never cut, the rasp and knife being applied only to the wall of the foot, and no fire is used in the fitting.

The shoe is very light and narrow (Army pattern), easily worked cold and allowing frog bearing, without which there can be no good horse-shoeing.

FROG PRESSURE

is as important a factor to the health of the horse's foot as air is to the lungs or food to the stomach. It is the

KEY-STONE OF THE ARCH.

The advantages of the Goodenough System are, first and foremost, SOUND HORSES; Secondly, CHEAP HORSE-SHOEING.

Horse railroads using the system in its entirety not only buy much less iron and pay for much less labor, but have also much more serviceable stock.

Said a horse railroad superintendent of now the largest road in the United States:

"We don't wear iron nowadays, we wear frogs and cobble stones; nature provides frogs and Boston finds cobble stones."

To those who desire to read further upon the subject we will send upon application free of cost our pamphlets entitled,

"HORSE-SHOEING," and "FACTS FOR HORSE-OWNERS."

THE GOODENOUGH COMPANY,

156 and 158 East Twenty-Fifth Street,





MANUFACTURING

MANUFACTURERS AND OWNERS OF THE Latest Designs, Improvements and Inventions in Registers, Indicators, Classiflers and Punches, for the Recording of Fares Collected on Street and Steam Railroads.



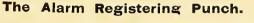
JAMES McCREDIE, Pres., Buffalo, N. Y.

COMPANY.

371

This company owns over 100 Patents embracing all the Valuable Features of Fare Registers, Indicators, etc., and was awarded three Medals at the Chicago Exposition of Railway Appliances.

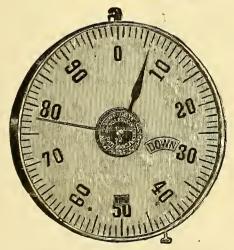
Benton Register.



This Register, which is so generally used throughout the United States and Europe, we claim to be the most perfect check that has ever been placed before the public for the Collection and Registration of Fares on Street Railroads, especially where different rates

of Cash fare and tickets are to be collected.

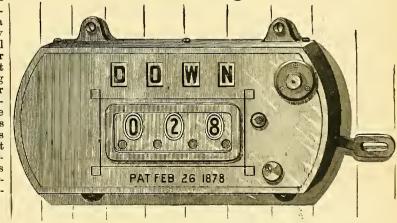
The Monitor Register.



Railwa y companies desirng to use a Stationary will Register consult their own interest by examining this Register before adopting any of the cheap devices now offered as it is the most Reliable Register of its kind. For further particu-lars address

The Pond Register.

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BEADLE & COURTNEY, Gen'l Agents, 1193 BROADWAY, NEW YORK. Branch Office 423 Walnut St., Ph'a.

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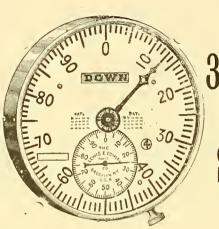
THE-

Lewis and Fowler Man'f'g Co.,

Office and Works:

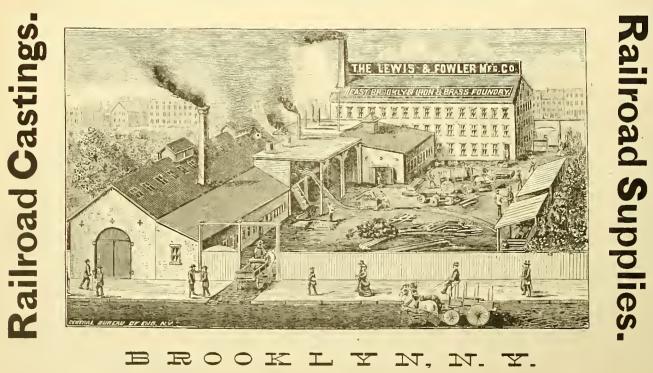
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Walworth Street.



31 to 37 & 32 to 40 Sandford Street.

Fifteen Minutes from Brooklyn Bridge via Flushing avenue cars.



THE

J. W. FOWLER, President.

DAN'L F. LEWIS, Treasurer.

LEWIS & FOWLER M'F'G CO.,

P. O. BOX 102,

BROOKLYN, N. Y.

Brooklyn, N. Y., April 1st, 1886.

To the Managers of Street Railway Companies :

GENTLEMEN: We take pleasure in announcing to our friends, patrons, and the trade generally, that we have this day taken possession of, and will hereafter occupy, the extensive works (at the above address) formerly occupied by the late James Binns, of this city.

The establishment has been prominently and favorably known for the past forty years as one of the largest furnishers of Railway Castings in the country, the good will of which we have secured, and will continue the business on an enlarged scale.

The machine shops are large and complete, and in connection therewith are iron, brass, and wheel foundries, all of which we shall operate, and we trust in a manner that we shall be prepared to place before the trade the only full line of Street Railway Supplies ever offered by any one establishment, and which will embrace everything pertaining to the construction, equipment and maintenance of a street railroad.

The only complete Catalogue of Street Railway Supplies ever published will shortly follow this, which we feel will be a very material aid to railway companies in making purchases of supplies.

A cordial invitation is hereby extended to all to visit our new works. An inspection of the same will be convincing that the facilities at our command will enable us to not only produce the goods referred to, but at first hards, and to sell the same at bottom figures.

We sincerely thank the trade for the earnest support given us in our business in the past, and will deeply appreciate any encouragement we may receive in the future in our extended and new undertaking.

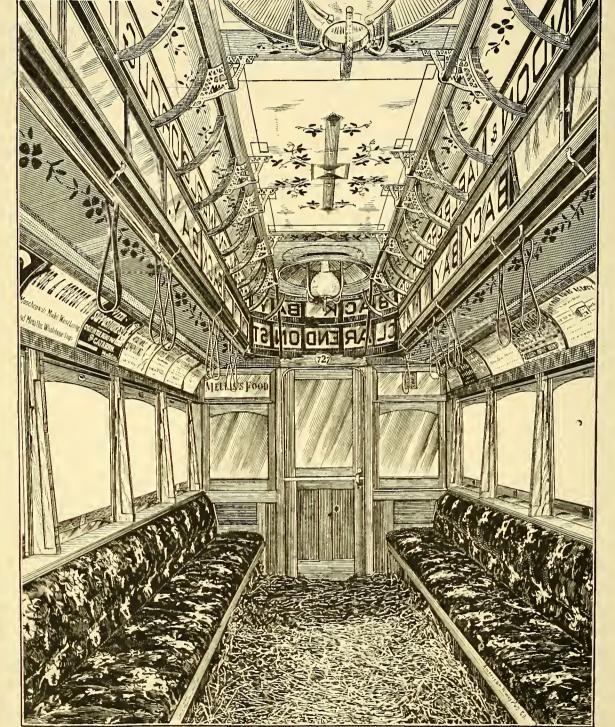
Yours very truly,

The Lewis & Fowler Manfg. Co.

The Lewis & Fowler Manfg. Co. BROOKLYN, NEW YORK.

The United States Steam and Street Railway Advertising Company, Limited,

Sign. Vibrating Blackmer The Sole Agents For



Contractors For Advertising Space in Street Railway Cars. wm.f. carleton, Manager, 239 Broadway, N.Y. P. O. BOX 2366.

Sole Agents For

The

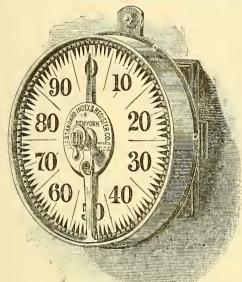
Randall

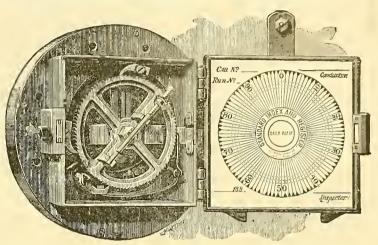
Car Advertising Rack.

THE STANDARD INDEX & REGISTER CO., **NEW YORK**, SOLE LICENSEES AND MANUFACTURERS OF INDEX AND REGISTER, THE STANDARD

ADOPTED BY THE LEADING RAILROADS IN THE UNITED STATES,

For Indelibly Recording upon paper the number of trips made, and passengers carried for each trip as well as for any number of trips for any period of time, and sounding an alarm simultaneously with each registration made.





The recent decision of the U. S. Circuit Court in our favor after three years of litigation in which the Standard was involved, justifies us in accepting orders

It will appear obvious upon inspection that the Standard was involved, justifies us in accepting orders plicity efficiency and *infallibility* as an indicating and recording register. It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway com-panies anxious to secure a correct report and record of trips made and fares collected, for the reason that, in addition to the visual dial and indicator, a permanent registration of each trip made, and the exact number of fares collected or passengers carried, is auto-matically made by mechanical means upon paper, by which the latter is punctured in a manuer that prevents obliteration, and can be pre-erved in the office of the company for reference and comparison with fares turned in by the conductor, and for filing for future purposes purposes.

TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY. PRESIDENT'S OFFICE. C. A. RICHARDS. 16 KILBY STREET,

BOSTON, March 9, 1883.

Boston, March 9, 1833. ELI BALDWIN, ESQ. Prest. Standard Index & Register Co., New York; N. Y., Dear Sir,—In answer to your inquiry of March 9 I would most respectfully state, that after a trial of some months of the two hundred odd registers that you have placed in our cars, I feel that I do no more than exact justice to your com-pany in giving you in the strongest and most unqualified manner my entire ap-proval of them. They are in every way all that you claimed, and all that you promised me they would prove to he. In short, I like them. They answer my purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen. Very respectfully yours, &c., President Metropolitan Raliroad Co.

C. A. RICHARDS, President Metropolitan Rallroad Co.

C. A. RICHARDS, President. CHAS. BOARDMAN, Treas. W. P. HARVEY, Secy. OFFICE OF THE METROPOLITAN RAILROAD COMPANY,

NO. 16 KILEY STREET,

Boston, March 23, 1886. E. BALDWIN, ESQ., Frest. Standard Index and Register Co.: Dear Sir,—We have now in daily use *four hundred and twenty-five* of your registers. They have by repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of lour years we feed that we are justified in recommending them. Very respectfully yours, &c., C. A. RICHARDS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY. G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Secy. and Treas. W. N. A. Harris, Supt. OFFICE, 10TH AVENUE, 53D AND 54TH STREETS,

New York, August 31, 1852. The Standard Index Register Instruments purchased from you ahout a year and a half ago have since that time heen In constant use upou the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried hy us. We believe from our experience that in their construction

and result they attain the object sought with accuracy and at the same time with a minimum liability to external tampering or dishonest manipulation. Very respectfully, C, DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY

G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Treas. Howard Scribner, Secy. W. N. A. Harris, Supt. TENTH AVENUE, 53D AND 54TH STREET,

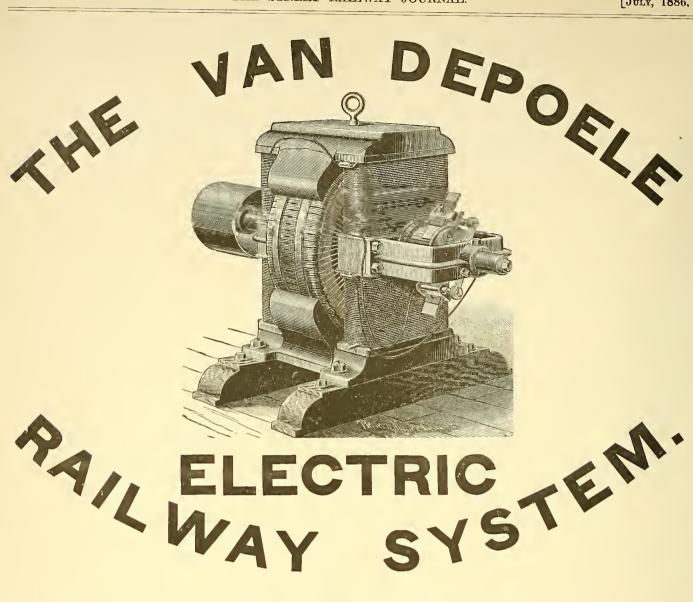
TENTH AVENUE, 53D AND 54TH STREET, NEW YORK, March 24, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co., 133 Fulton Street, New York: My Dear Sir, —We have used about 150 of your "Standard Index Registers" for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inside paper dial are free from the danger of being tampered with. In a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you. Very sincerely yours, C. DENSMORE WYMAN, Vice President.

OFFICE OF THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY, COR. 7TH AVE. AND 50TH STREET,

COR. 7TH AVE. AND 50TH STREET, NEW YORK, March 25, 1886. ELI BALDWIN, ESQ., Prest, Standard Index & Register Co.: Dear Sir,—Concerning your inquiry as to the result of our experience in the use of the Standard Register furnished by your company and the satisfaction given I will state that after five years' test during which they have been In use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I cheertuily endorse them as the best registers that we have ever seen, and have found them reliable and not easily put out of order. In short we would not he without them. The paper register or tablet upon which regis-trations are recorded of the number of passengers carried and trips made is an invaluable feature, producing as it does an infallible and indelible record of fares collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers out the cars of our roads at the present time. Very Truly Yours, J. W. FOSHAY, President.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

[JULY, 1886,



The Van Depoele Electric Manufacturing Company,

21 NORTH CLINTON STREET, CHICACO, ILL.

Owning the Van Depoele Patents for Electric Railways and for Van Depoele Motors, are prepared to equip railways with their Electric System.

We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Businss.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

Depoele Electric Manufg. Co. Van

RICHARD VOSE,

13 Barclay Street, New York.

PATENTEE AND MANUFACTURER OF

Graduated Street Car Springs.

ADAPTED TO THE

STEPHENSON.

BEMIS,

RANDALL,

HIGLEY,

BRILL.

JONES,

BALTIMORE

VOLK

And all other Boxes.



I CUSHIO

RUBBER





CONE



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.

AC TIN 1

Nº 5

DEMAGEST.SCINEY.

MIDDLESEX RAILROAD CO., BOSTON, MASS. RICHARD VOSE. Dear Sir, -- We have had in constant use upon this road for several years the "Vose Grad-uated Spring," and they have given very general satisfaction. So much so that we shall continue to order them. Very truly, CHAS. E. POWERS, Prest.

NO. CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear SI, —This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-tainly all that we desire. YOUR RESPECTURE, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARD VOSE. Dear Sir,—We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respliy. J. W. FOSHAY, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN N.Y.

RIGHARN VOSE, ESQ. Dear Sir,—Yours of May 27 to Mr. Hazzard, Prest., has been referred to me for reply. And would say that we have now in use about 60. sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly, A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICAOO, ILL. RIGUARN VOSE, ESQ. Dear Sir,—Replying to your favor of a recent date I beg to say that we have been using your Graduated Car Springs since 1881 and have increased the number, until at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

COL. RICHARN VOSE. Dear Sir, — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARN VOSE. Dear Sir,—Send us 6 more sets of your new pattern Car Spring, same as the lot we ordered of you last Sept. in every way. This is the best answer we can make to your question of "How we like them." Yours truly, J. M. DOHBRTY, Surt.

LYNN & BOSTON R.R. CO., CHELSEA, MASS.

RICHARN VOSE, ESQ. Dear Sir,—All I can say in favor of the Vose Spring is that we continue to apply them to most of our new cars. Have about 60 cars equipped and think very well of them. If they could be produced for less money should think better of them. Very Respectfully Yours, E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentlemen,—Yours of May 28 at hand, with re-gard to your Car Springs. We find they are the best in use. They come a little higher than the Barrel Spring, but they are much the hetter springs. Yours truly, H. J. C. BERG, Supt.

LOWELL HORSE R.R. CO., LOWELL, MASS.

To WHOM IT MAY CONCERN: We have used the Rich ard Vose Graduated Car Springs for several years, and are well pleased with them, Should be unwil-ting to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

DAYTON STREET R.R., DAYTON, O.

MR. RICHARN VOSE. Sir,—We have eighteen cars equipped with your Patent Graduated Sprinz, and will use your springs to replace all other kinds as fast as repairs are needed. Your springs give the best satisfaction to our company and patrons of any that we have ever tried. Yours Respectfully, A. W. ANNERSON, Supt.

FT. WAYNE & ELMWOOD RY. CO., DETROIT, MICH.

RICHARN VOSE, ESQ. Dear Sir,—For the past four years we have been using your Graduated Springs on all of our cars (30). Our Superintendent says that none of them have ever had to be repaired and that they are the best springs we ever used. Yours truly, N. W. GOONWIN, Secy.

DETROIT CITY RY., DETROIT, MICH.

RICHAEN VOSE, ESQ. Dear Sir,—I have your favor of the 20th ultimo. We have about 70 cars equipped with your springs. Our experience is that they wear well and give general satisfaction. Yours truly, GEO. HENDRIE, Treas.

(JULY, 1886.

FRANK H. ANDREWS,

SUCCESSOR TO

ANDREWS & CLOONEY,

F. T. LERNED, Gen'l Agent.

Manufacturers and Contractors for Constructing Street Railways

THE BUILDING OF



AND FURNISHING MATERIALS FOR SAME, A SPECIALTY.

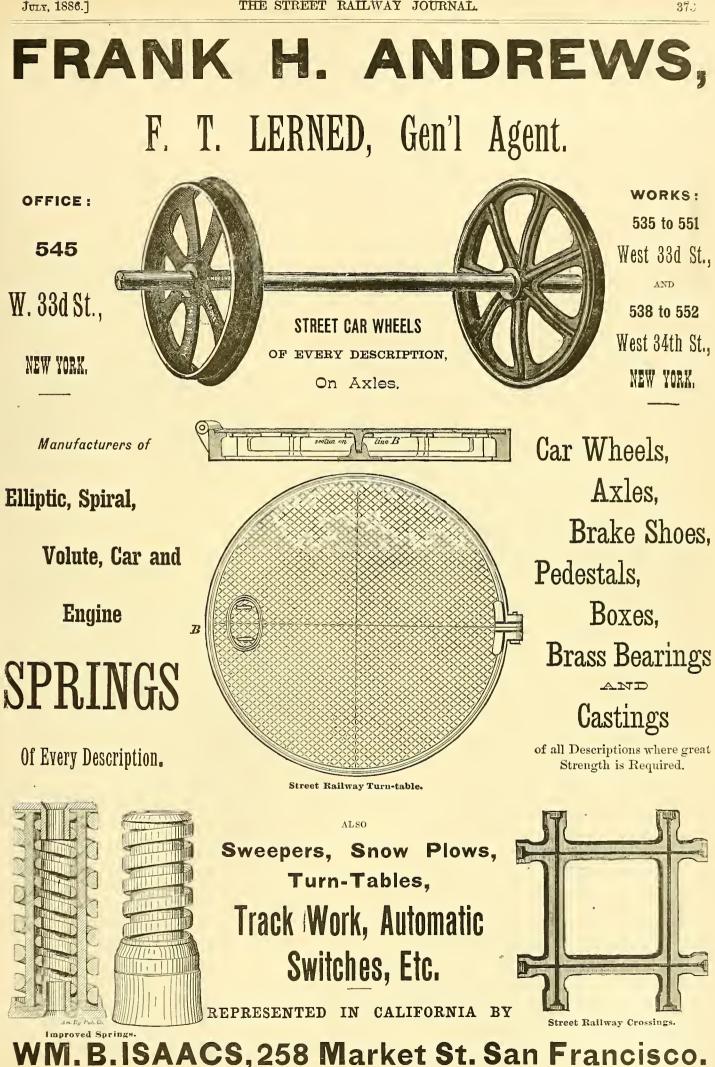
All Kinds of Steel and Steel Grooved Rails, Straight or Bent to any Radius. Knees, Fishplates, Spikes, Bolts, Etc., Etc. MACHINERY: Wheel Presses, Wheel Borers, Axle Lathes, Drills, &c., EITHER FOR STEAM OR HAND POWER.

Promptness and Reasonable Prices.

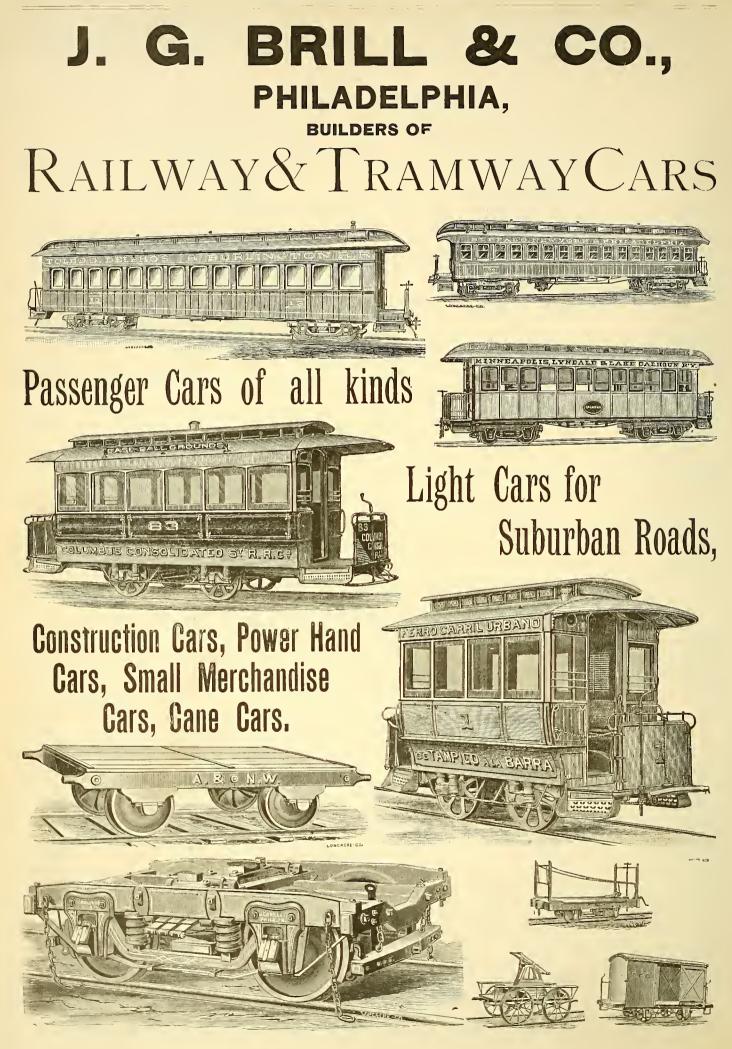
Send for Illustrated Catalogue.

ST. LOUIS. CHICAGO, BOSTON. Southern Hotel. 37 Centre Street. Lakeside Building.

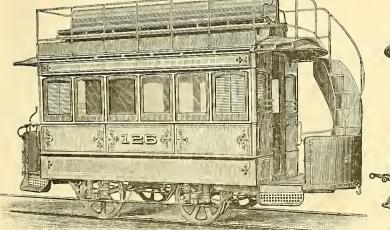
Branch Offices:

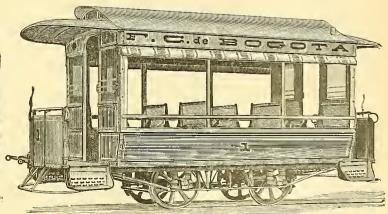


374









JOHN STEPHENSON COMPANY

(LIMITED),

New York.

TRAMWAY CARS

MEDAL OF FIRST CLASS, WORLD'S INDUSTRIAL COTTON EXPOSITION, NEW ORLEANS, 1885.



LIGHT ELEGANT, DURABLE.

Every Description.

Best Materials.

Minimum Prices.

ORDERS QUICKLY FILLED. CAREFUL ATTENTION TO SHIPMENTS.

All Climates Suited.



{ NEW YORK: } 32 Liberty Street.} VOL. II.

SEPTEMBER, 1886.

{ CHICAGO: {Lakeside Building.} No. 11.

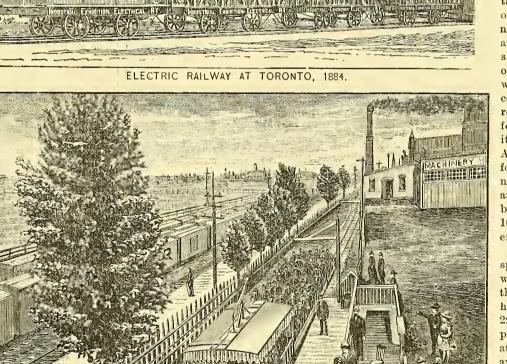
The Van Depoele Electric Railway System.

The Van Depoele Electric Railway system, now in successful operation at so

many places in the United States, is the invention of Mr. Charles J. Van Depoele, the electrician of the Van Depocle Electric Manufacturing Co., of Chicago, Ill.; and is the result of constant experimentiu geuerators, motors, and the transmission of power, commencing in 1874 and running down to the present time.

The Van Depoele generator is a model of simplicity. Several changes have been made from the ordinary Van Depoele dynamo to adapt it to the work of transmission of power.

The Van Depoele motors are of various sizes and styles, from a motor weighing one pound to an eighty horse power motor weighing eight



car was run at the Industrial Exposition at Chicago from an overhead wire. In 1884 a train was run at Toronto, Ontario, by the Van Depoele system. Using an under-

This train averaged 200 passengers per trip, at a speed of about thirty miles per

connecting the Exposition grounds with the

street railway, a distance of one mile, was equipped with a Van Depoele motor. This train consisted of three cars and a motor car. As there was only one track it was necessary to run at a high rate of speed. An overhead wire was used as a conductor, it requiring but a few days to put it in operation. Au ordinary forty-light dynamo was used, and was driven by a Doty 10×16 inch engine.

The average speed of trains was about thirty miles per hour, and from 225 to 250 people were carried at a time, the average num_ ber carried per day being over 10,000, with a coal consumption of 1,000 pounds per day. At South Bend, Ind., for

The cut illustrates thousand pounds. the largesized motors for running railway trains.

The first railway operated under the Vau Depoele system was in Chicago in the winter of 1882-3; and the current was conveyed ground conduit, this road was operated successfully, and carried passengers from the street car line to the Expositiou grounds, running as long as the Exposition lasted.

ELECTRIC RAILWAY AT TORONTO, 1885

The cut illustrates the train inuse at that time.

the purpose of conducting experiments, a portion of the South Bend Railway line was equipped in the fall of 1885, and several independent cars were run with small motors, the generator being driven by water power, the cars traveling in different direc-

by a wire. In the fall of the same year a

hour. In the fall of 1885, at Toronto, the road

SEPTEMBER, 1886.

tions from the same conductor. This road, however, has not been equipped, owing to change in management.

At New Orleans a train, consisting of three large cars, was run suecessfully until the collapse of the Exposition.

The Minneapolis, Syndale & Minnetonka Railway, of Minneapolis, have been obliged to discontinue the running of their locomotives in the more thickly settled portions of the city of Minneapolis, and an arrangement was made to bring the cars into the city and deliver them back to the steam locomotives.

This is being done successfully. The motor is located upon a cheaply constructed motor car, and takes the current from an overhead eopper wire. The generator is located quite a distance from the track, and



ELECTRIC RAILWAY AT MONTGOMERY, ALA.

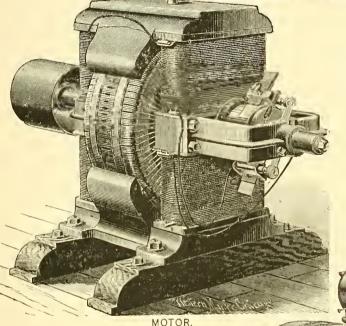
Commenting on the snccessful inauguration of this system the St. Paul Pioneer Press said: "The car was run up to Washington Avenue with only a few slight detentions caused by the partial disarrangement of some of the overhead wires. In the mean time the crowd of spectators increased until the

and forth several times between Washington Avenue and First Street, the platform of the car being covered with spectators and with enterprising curiosity hunters hanging to every available projection. Here the electric motor remained, until the four o'clock train arrived from the lake. The latter went out on its regular time, and after it had reached Third Street, Mr. Van Depoele crossed Washington Avenue and started in pursuit. The rate of speed on the outgoing trip was about equal to that made by the regular train, the electric machinery passing the switch above Fourth Street without detention, and making the

ascent at that point without apparent diffientry. As it passed out of sight toward the

lake, the crowd of spectators dispersed, each having seen a car drivon by electricity; a feat, which would have been considered utterly impracticable only a few years ago. That the electric motor will rnn at a fair rate of speed was satisfactorily demonstrated yesterday, and the Van Depoele Electric Manufacturing Company will now undertake to show that their motor can also overcome another obstacle in the shape of heavily laden passenger cars, and it is hoped that this important experiment will be fully as successful as that made yesterday after-If the lighter noon. grade of passenger ears

can be (pulled) moved by electricity and in such a manner as to meet all reasonable demands, it is safe to predict that great changes will be witnessed in Minneapolis



GENERATOR.

is driven by an old slide-valve engine, 12×18 cylinder, making 125 revolutions per minute. The consumption of coal is about 3,000 pounds for seventeen hours' run.

sidewalks were literally filled from First to Fourth Street, while an open air mass meeting was held at the corner of Washington Avenue. This motor was moved back

and St. Paul, Minn., within the next vear."

Forty-eight trains are run each way daily between 6 A. M. and 11.30 P. M.

These trains are composed of from three to four closed steam railway cars or coaches, weighing about eleven tons each

and of a smaller number of open cars, weighing six tons each.

As large a number as cight of these cars have been run at oue time, and this up . a grade of 31 per cent. with the cars crowded to their utmost capacity. The total weight of train is ninety-one tons.

At Montgomery, Ala., the Capital City Street Railway have been running two cars for some time. The grades are over seven per cent. and the distance more than one and a half miles.

The motors are placed on the platform of each car, and do the work well. The speed over the grade is six miles per hour. The cars run sixteen hoursper day and the generator is driven by an old-fashioned slide valve engine, stationed 250 feet from the boiler.

The amount of coal consumed per day is 3,000 pounds including getting upsteam from cold water.

As to the effectiveness and durability of this apparatus, there seems to be no question.

The company* claim that the work which they have performed with it

has most fully demonstrated its economy, and that their method, of doing work instead of selling stock, is now bearing fruit.

They are also making motors for transmission which are adapted to the Brush, Edison and other cleatric systems.

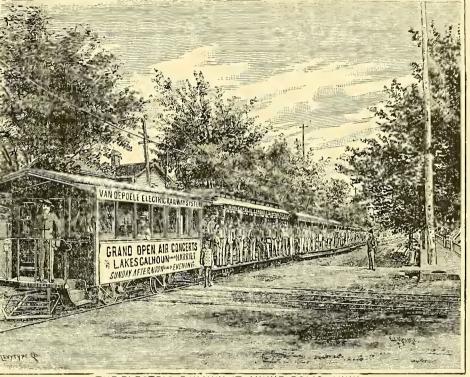
*Van Depoele Electric Mfg. Co, Chicago, Ill.

If you want supplies consult our advertiser's directory.

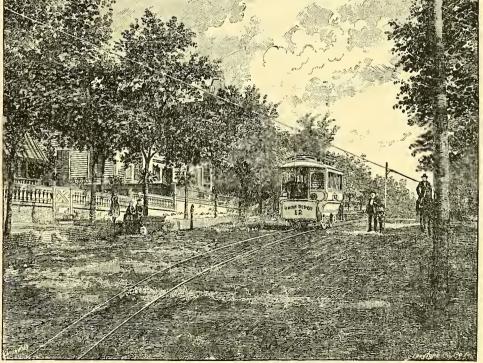
Veterinary Practice.

In the Ohio Farmer, Dr. Farr gives some practical directions for the care of stock that may be of interest to those of our readers who have the charge of small stables that will not warrant the regular employment of a surgeon.

borhood of the sore and applying acetate of lead in the proportions of one ounce to one quart of water three times a day. After the inflammation has subsided, it is well to apply iodine. In a case where the owner had applied hot vinegar, soft soap and caustic balsam, he condemns the practice,



THE ELECTRIC RAILWAY AT MINNEAPOLIS, MINN.



RAILWAY AT MONTGOMERY, ALABAMA, SHOWING GRADE,

He says, that when horses are troubled with corns on the inside of the foot, care should be exercised in not allowing the smith to cut too much off from the sole of the foot as that will only aggravate the trouble. That the foot should be relieved from all pressure, as far as it is possible, and be kept in plenty of moisture.

For the treatment of an ordinary collar gall, he recommends cutting off the hair close to the skin in the immediate neighthe feed, uutil the difficulty is relieved.

A Chicago newsboy was caught by the diamond shaped fender f a State street cable car and he was pushed along in frout for a block before the train was stopped. Meanwhile the boy was calling lustily for help. When taken outit was found that he had not received a scratch.

where there seemed to be a core to the wound, and the owner had applied castile soap and water, and also acetate of lead and water, without producing any beneficial results, he ordered an application of nitrate of silver for a few times, until the fibrous tissne was removed, and an avoidance of the use of the collar until the wound was healed.

For shoulder strains, where the animal is lame. with a shrunken breast and an enlargementuponthe outside of the shoulder, a blister of caustic balsam should be applied well down on the point of the shoulder, and the horse be given complete rest.

Where a horse has a severe cough with continued runnings at the nose, relief may be obtained by giving one table-spoonful of sulphate of iron and one of powdered digitalis twice each day in

This paper is only one dollar per year.

as serving merely

to irritate and ex-

cite the wound, and recommends

the application of

cold water to the

shoulder, and that

the callous parts should be cut out

with a knife. In another instance,

Chaplin Roller Bearing.

These bearings* are made in combination with the housings or boxes. The boxes themselves are made of the best cast iron and contain an oil well below the bearing proper which it is claimed will hold oil sufficient for one year They can, however, be filled with oil at any time through a hole in the top which is usually kept plugged with a tap screw. The interior of the box is so ribbed that the oil flows down around into the oil well.

As to the construction of bearing proper, a vulcanized washer one-eighth inch thick is placed in the end of the box uearest the

Where the two halves of the brass come together in the center, they are cut away, but not entirely through so as to reuder the touching of the rings that hold the rollers in place impossible.

After the first half of the brass box is in place the rolls are put in. These are 1-16 iuch in diameter for seven inch and one inch in diameter for six inch rolls, and are of steel finely fitted and case hardened, are neeked at centers to admit of a series of intermediate rolls, which are also of steel and case hardened; these are put togetber and the intermediates are of such size that they do not admit of the large rolls touching each other under any cirwork upon, before the whole is finally pnt together to stay.

After these brasses are in, another steel washer 3-16 iuch thick, that is cut out to admit the axle, is put in; then steel plates & inch thick, are set into a groove in the outer end of the jonrnal to take the end thrust and hold the axle in place. Around these plates there is a small round of leather which is fitted to a small groove in the cap. And finally the cap is put on and fastened with bolts, thus making the housing dust proof and preventing escape of oil.

The rolls are put together by two of them being shelled, which explains the apparent puzzle of holding the grooved rolls together with two solid bands. These beariugs have been in use on the Highland Street R. R. of Boston and a testimonial from the Superintendent states that they show no signs of wear. Advantages claimed are a saving in draft, oil and attention.

*Chaplin Manufacturing Co., Bridgeport, Conn.

wheel, and is so cut that it just clears the axle. Theu a felt washer cut in the same way but making a close fit about the axle and ; inclu thick is solidly pressed into place, and flually a 3-16 iuch steel washer that allows the axle to pass through it is placed against the felt. This last has a larger diameter than either the vulcanized or felt washer, and occupies the full size of the hole in the box and serves to hold the other two in position. When these three washers arc in place the brass box is solidly pressed into the housing and against the steel washer. This brass box is 9-16 inch thick and is ribbed like the honsing so that oil may be admitted from the oil hole, and allowed to circulate freely.

cumstances. They are held firmly together by two bands, which are of brass and are not welded. The inside ring is covered by the rolls so that it does not touch axle in revolving, as will be seen by a reference to the engraving.

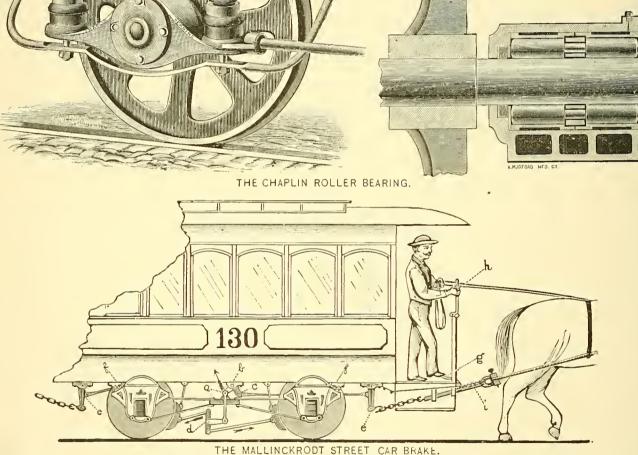
The outside ring is 3 inch thick and extends above rolls, as shown, but does not strike the brass bushing, as that is as already remarked recessed, so that neither of the rings hit axle or brass. After putting in first part of brass as described, then comes the set of rolls which are always held firmly together when out of the box. And after the rolls are in place the other half of the box is pressed in. The brass boxes are bored true on the inside for the rolls to

The Mallinckrodt Street Car Brake.

We give an illustration of a new street car-brake* that is in use upou some of the street railways in St. Louis, Mo. The principle upon which it acts is that of utilizing the weight of the car body with its load of passengers to set the brakes, and the draft of the horses to release them.

The entire weight of the car body with its load rests upon the four points (f.) These are the ends of the short arms of the main levers which pivot upon the axles, while the long arms work the brake.

In the cut, the brake is represented as being off, and the driver in the act of putting it on. The drawbar (i) is connect-



429

ed by chain, intermediate lever (e) and rod to the vertical lever (c) in the middle of the revolving shaft (b) which extends across the entire width of the car, and has a crank (a) at each end. The crank-pin bears upon the inner ends of the long arms of the main levers, which press upward with a force equal to one-fourth the weight of ear body with its load. As soon as the pawl which holds the drawbar out is disengaged, the upward pressure of the side-arms revolves the shaft, pulling in the draw-bar and at the same time working the three armed lever (d) which presses the shoes against the wheels. It is evident, therefore, that the heavier the load, the greater will be the pressure npon the shoes, and the more positively the brake will be set; while with the ordinary brake, the heavier the load the more difficult it becomes to stop the car.

When the brakes are to be released, the team pulls the drawbar out for about eight inches with a force equal to one-sixteenth of the load, thus revolving the shaft, depressing the crauk-pins and long arms of the main levers for about two inches, and raising the points which carry the lead about one-half an inch, and turning the double bell-crank (d) so as to release the shoes. The various parts are then held in this position by the pawl (g), which works in with the ratchet teeth on the drawbar.

The action of pulling out the drawbar also tends to start the car. The strain upon the team is at first only one-sixteenth of the load, which, it is claimed, is in most iustauces sufficient to start the car.

Whenever it is necessary to make a quick stop to avoid, or in case of an accident, the disengagement of the pawl (g), allows the weight of the car to instantly set the brakes with full power. A clamp is provided, as shown at (h), whereby the drawbar may be kept from going back too suddenly, and a gradual stop be made; or the drawbar may be held at any point, when it is necessary that the brake should be only partially set. There are also two devices not shown in the cut, one for locking the brake, when so desired, to guard against the danger from runaway teams; and one for releasing the brake by haud when the team is not hitehed to the car.

If, at any time, the ehain, the rod, or the lever connecting the drawbar with the revolving shaft, be broken, the brake will he set automatically.

The pressure ou the brake-shoes is regulated by the longest arm of the three-armed lever (d). The connecting stirrnp between the main levers and this arm is attached to the latter 7 inches from its center of motion. The rods connecting the shoes to the lever (d) are attached to the two short arms 2 inches from the eenter of motion; thus giving a leverage of 7 to 2, or 31 to 1; and as the neward force exerted at the point (a)is 1 of the load, the pressure upon the shoes is $3\frac{1}{2}$ times $\frac{1}{4}$, or $\frac{7}{8}$ of the load. This is always $\frac{1}{6}$ less than the full pressure upon the rail, consequently the friction at the shoe is always a little less than that on the rail.

The brake is of simple construction, eon-

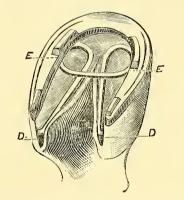
taining no delicate parts which easily get out of ordor, and every part is substantially made of the best material. It is claimed that no great amount of experience is useded in order to manipulate this brake, and that it will save the great fatigue which the drivers are now called upon to endure, besides giving the company the benefit of more effective work.

*Mallinekrodt Street Car Brake Co., St. Louis, Mo.

Roberge's Hoof Expander.

This hoof expander* is intended for the cure and prevention of contraction, quarter cracks, corns, etc., and consists of a peculiarly-formed spring contrivance, which is placed or introduced into the under portion of the hoof, and by exerting a constant and gentle pressure against the onter walls of the hoof, it prevents contraction and irregalarity iu form where there is a tendency in that direction, and assists in restoring the hoof to its natural shape where it has been cansed by careless shoeing or malformation. From contraction, or wiring in of the quarters, we have shortness of gait, soreness, and generally ac ompanied with corns, and frequently quarter cracks.

To prepare the feet for the expander they should be carefully soaked and poulticed so



that the hoof will yield readily to the pressure of the expander. For simple contraction the inventor recommends that the foot be lowered and the toe shortened as much as possible. In paring, the foot should be well cut from the point of the frog to the quarters, and also the bars. Open the heels back of the bars and as elose to the frog as possible. Cut or saw straight up so as to form a shoulder for the points of the expander to rest against, as shown in the eut. The expander is then introduced by placing one point in the open heel on one side, and then by pressing the opposite side of the expander abont three-fourths to one inch. It can be easily introduced. This will give about twelve to fifteen pounds pressure outwards against each quarter.

It is claimed that this expander will cure a case of contraction in from two to four months.

The shoe should be nailed around the front of the foot, leaving the quarters free, and keeping the heels of the shoe or quarters a little fuller than ordinarily, to allow for the expansion of the hoof.

*F. P. Hoberge, Veterinary Surgeon, 1741 Broadway, N. Y.

A Cable Splice.

Mr. Thomas C. Nash, of Chicago, Ill., has recently invented a method of splicing wire cables, which is of special value and interest at this time, when cable railways are acknowledged to be not only a suecess mechanically, but are admitted the most economical and advantageous of all the motive powers known and used, and the value of the iuvention will be apparent to the public, as well as the corporate bodies, when it is understood that a successful splice is vital to the operation of a cable railway.

At an annual meeting of the stockholders of the Chicago City Railway Co., Mr. C. B. Holmes, the President and Superintendent, says, after stating that all other splices known to the trade had proved a failure, "Mr. Nash, who has charge of our cables, introduced a method of his own and with anxious interest its operation was watched, until long continued use has determined its advantage and success. The difficulty was to secure a splice which would not increase the size of the cable and expose the splice to the abrasion by the grips, which would not draw out when a heavy strain was brought to bear, nor yet allow the ends to loosen when the action of the cars produced a slackness of the cable, one also which would not allow one strand to creep ahead of the others and project up for the grips to eut or tear it up.

"If nothing else had beer lone during the season in this department anal to discover a successful method of treating this important part of the system, it would have been a season well spent, for it is vital to the operation of cable roads "

Though not generally known to the publie, the Chieago system of cable roads with its costly and extensive plant, perfect in every other detail, would doubtless have proven a failure without the introduction of this splice, for prior to that time the cost of broken cables was so great as to consume a great portion of the profits of the company and not to speak of the great aunoyauce to the public.

The sphees used heretofore lasted at the most only about four weeks, but with the introduction of the Nash splice all this was changed, for by it a spliced rope was really made as secure as any other portion of the cable, that is to say the splice in all eases lasted the full life of the eable, namely about 12 months.

Mr. E. A. Hovey, of Chicago and latterly of San Francisco, one of the most successful of engineers in the construction of cable railways, says, "that while with this invention cable railways are a perfect success, no cable road can be operated successfully without this splice."

Briefly the splice is as follows: A cable eonsists of six strands, (in some cables there are 16 wires to the strand and in others 31 wires) wound about a eore of some fibrous or flexible material, and when a splice is to be made both ends of the cable are unlaid a distance of 17 feet, the strands are then interwoven one with the other, and then brought as close together as the laid portions will permit, with the unlaid strands of each end of the cable laid between the opposing ends of the other portion of the cable, which operation so far is the nsnal method employed in splicing wire cables.

Mr. Nash's invention, however, begins from this point and has to do ouly with the disposition of the meeting ends of the strands, in which all of the difficulties of splicing are encountered.

Each individual strand is composed of say 31 wires, 19 forming a core and the re maining 12 the outside wires, and when the ends of two strands are brought together the outside wires are in turn unlaid and the inside wires tied together, and the terminals or euds of both the inside aud outside wires of the two opposing strands are tucked in an untwisted condition in the body of the cable between the strands thereof, thus making at this point sixty-two (62) wires knotted and tucked or thirty-one more than belongs in the cable at this point, a complete strand in fact tucked away without any perceptible increase of diameter in the size of the cable at that point.

The Chicago City Railway Co. have purchased the right to use this splice on all of their lines.

This splice is also in use and endorsed by the Cincinnati, St. Louis, Kansas City, Hoboken, Philadelphia, and New York cable railways.

This splice will also be of considerable interest to mine and mill owners, particularly where wire cables are used for the transmission of power, with whom the breaking of a cable generally means the end of its usefulness for that purpose, and on whom a considerable and nunecessary expense is thus imposed annually.

The La Salle Street Tunnel of the North Chicago Street Railroad.

We are indebted to the Industrial World for the following doscription of the old La Salle street tunnel which has recently passed under the control of the North Chicago Street Bailroad, and will be used by them.

The transformation of the La Salle street tunnel, with its present dingy aspect, and humid atmosphere hovering like dank vapors within its walls, iuto a transit route where these obnoxious features will all disappear and a pleasant highway of travel be permaneutly established, cannot but be regarded in the light of a great desideratum. The change will be as radical as effective, and the rather repulsive condition of the tunnel as it now exists will be so improved as to re: der it both inviting and attractive. Passengers by the Fourth Avenue Line in New York enjoy with grateful satisfaction their ride through the cool aud shaded archways of the great tunnel that ends at the Grand Central depot, and pedestrians rather seek thau shrink from, a walk throug this convenient passage way, that is proof against the summer's heats or winter's storms, yet letting in the cheerful light of day through its systematically distributed apertures and illumiuated at night by the bright, incandescent glow of the

best appointed electric burners. The La Salle street tunnel, as it stands, seems a sort of nseless hiatus, a dreary yawn, or sleepy gap, in the very heart of a populous locality, and in the center of active business operatious, simply because it is unpatronized and ueglected. Converted into a cleanly thoroughfare, ventilated by the most approved sanitary methods, with a carefully constructed sidewalk for foot passengers, and brilliant at night with electric lights, the public will eagerly seek the cable cars that will transport them nuinterruptedly to their destination.

Irrespective of the increase of the value of property, which is a untural sequence of the very transit lines that annihilate distances and make remote points readily accessible, and naturally augmenting the amount of taxes, thereby adding materially to the city's revenues, this proposed cable line will insure to residents safe and reliable transit to the business portion of the city. It will also effect a great saving of time to parties forced to adopt the slow measures of pedestrianism as their only alternative, by conducting them by easy and rapid approaches to different localities. But what is paramount to all other considerations is that it will enable persons taking the Northwestern trains to make sure connections, "a consummation devoutly to be wished," in the face of the obstacles that now leave the matter involved in extreme doubt and uncertainty. The bridges, which may be an absolute necessity, spanning as they do the river which conrises through certain portions of the city, are usvertheless "stumbling- blocks" in the way of suburban dwellers, and must be serious obstruction to the general transportation of merchandise. The bridges are open for three hours betweeu 8 o'clock in the moruing and 5 o'clock in the afternoon, and it does not require any arithmetical calculation to determine the fact that here is an irretrievable loss of three hours to the actual transaction of business, to say uothing of the delays, anuoyances, and vexations to the traveling public and the denizeus along the lines of the different roads. All these difficulties are obviated by this proposed route, which is nothing more or less than the cable extension of the whole line of the North Chicago Street Railroad Co., running on La Salle street from Jackson to Illinois street, thence branching east and west and connecting with the road at Wells and Clark strue's

The enterprise is one in the regular order of the progress and development of the times, and if the projectors are to be pecuniarily benefited it will offer the most salient advantages to the public, compensating property owners in the higher appraisement and value of their property, rendering remote points easy of access, accommodating suburban residents, affording the people comfortable and more rapid transit. enabling the bridges to conform to their requirements and purposes, without an infringement of individual rights or a trespass upon personal convenience, and securing the pedestrian, who is either constrained to adopt or else elects this method of locomotion, a by-way at ouce inviting in its aspect and agreeable in its general accessories and surroundings. The illustration which we present will convey an adequate idea of its general appearance when occupied by the North Chicago Street Railroad Company.

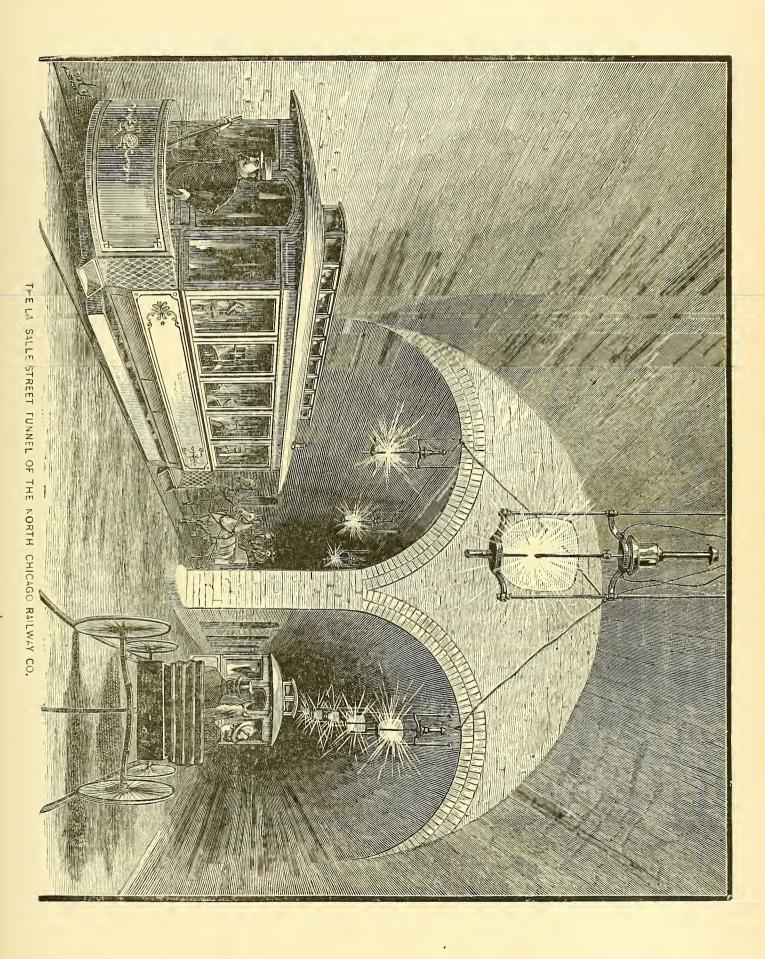
The First American Tramway.

At the last meeting of the Engineers' Club of Philadelphia, Dr. R. P. Robins read a paper on the First Permanent Tramway in America, a summary of which is given by the secretary of the club as follows:

The tramway was projected by Thomas Leiper. of Delaware county, Pa, in 1809, for the transportation of stone. After experimenting in the yard of the Old Bull's Head Tavern, Second street, above Poplar Laue. Philadelphia, as to the feasibility of such a roadway, he advertised in the Aurora of September 28, 1809, as follows: "I wish to contract for the digging part of a railway, from my quarries on Crum creek to my lauding on Ridley; the distance and level has been accurately ascertained by Mr. Reading Howell. The distance is exactly threefourths of a mile, and an accurate statement of the quantity of digging required may be seen from the plot in my possession, calculated by Mr. Howell. I also wish to contract for making and laying the rail part of the same, consisting of wood, a specimeu of which, as furnished by Messrs. Large & Winpenny, may be seen by applying to them at their manufactory, adjoining the Bull's Head on Second street, in the Northern Liberties. The scantling for the above will be furnished on the ground. I wish to progress in this work immediately."

Tie work of grading and building was immediately begun, the draft of the road being made by John Thompson; and the railroad was completed early in 1810. The ascents were graded inclined plancs, and the superstructure was made of white oak. with cross-ties and string pieces. The cars or trucks were very similar to those uow in use, the wheels being made of cast iron. with flanges. The road continued in active nse until 1828, when it was superseded by a canal after the plau made by Mr. Leiper, but not carried into effect until three years after his death, when his son, the Hon. George Gray Leiper, concluded the work which had always been nearest to his father's heart. The site of the old road can still be seen, though it is in ruins, nothing remaining except the deep cuts made by the cross-ties.

There has been a great deal of discussion of late years with regard to the claim of priority for this road, it having been laimed by various New England writers that an earlier tramway had been built in or near Boston. But, as nearly as I can arrive at any conclusion npon the subject, the only road constructed before the building of Mr. Leiper's tramway in Delaware county, was that on the western slope of Beacon Hill, which was designed and executed by Silas Whitney, in 1807, and which was about a quarter of a mile in length. It was used for the transporting of gravel from the top of the hill down to Charles street, which



was being filled up and graded. There were two trains of cars on the railway, so arranged that one train being loaded with gravel would in its descent pull up the empty train. While the full cars were being emptied the unloaded cars were being filled, and in their descent would haul up the first train, thus doing the work without horses. This road was, however, only temporary, and as the work of grading progressed was gradually removed. It is, however, entitled to mention as the first work of the kind in America, having been put into active operation at least two years before Mr. Leiper's preliminary and experimental railway in the yard of the Bull's Head Tavern. Mr. Leiper's road in Delaware county was, however, the first permanent tramway constructed in this country ; the next in point of date was that laid in Nashua, N. H., in 1825; the third was laid down at the Quincy granite quarries, in Massachusetts, in 1826-27; an I the fourth, the great enterprise at Mauch Chunk, Pa., nine miles long.

Making a Cable.

A San Francisco paper gives the following account of the manufacturo of a cable as carried on in the engine house of the Markot Street Railway. For contrary to the usual custom of cable roads this line manufactures its own cables.

This cable-making machine is a purely Californian invention, the inventor and patenteo being Mr. Henry Root, who, in fact, has invented about everything which has made the Market street system so nearly verfect.

The machine is situated in the extreme lear of the engine house, and runs from the basement clear up among the rafters of the building.

This machine takes a pieco of manilla rope and ono hu dred and fourteen wires, and in a few minutos places on the reel, ready for use, a cable of the most approved kind. As the work commences at the basement, or lowor deck, a description of the machine properly begins there. An iron column runs up from the foundation to the top of the machine, and in this is carried the three-quarter-inch manilla, or her n rope which forms the heart of the cable, and gives it "life,"-that is, pliability and elasticity. It will readily be understood by even a novice, that if the heart or coro of the cable was a wire, that it would make the rope stiff, brittle and hard to handlo. Before the manilla core euters the column. it passes through a box of tar, and becomes thoroughly scaked and saturated, so that it remains impervious to moisture and retains its pliaut nature.

In the basement is set the huge gearing which gives the machine its initial motion. Power is furnished from a small eugine that looks ridiculously inadequate to do the work, but which, however, twirls the bobbins and spindles around as if they were light as feathers. Passing from the basement to the lower deck or platform one beholds the beginnings of each strand of the cable. Six upright spindles are arranged about the main column and each spindle has seven bobbins; a wire from one bobbiu is drawn off to form the core of a strand and around it are twisted the other six wires. The system of gearing is so contrived as to give to the machine three separate, distinct and simultaneous motious. The whole machine revolves around the center column; each of the six sections or spindles has an independent twisting motion of its owu to form the heart of the strand; each bobbiu has an independent motion to take the twist out of the wire as the machine revolves. It is wonderful to watch and note one particular bobbin throughout an entire revolution of the machine. Never does the wire get into the strand with a twist in it.

This preserves the life of the wire by preventing the breaking and crushing of the molecules, as would be the case were the wire twisted out of shape. From this lower deck the six cores pass up through hollow columns to another deck where the strands are completed. By an arrangement similar to that on the lower deck, twelve bobbins unreel their wires around each core, thus completing the strand. By this it will be seen that each strand of the cable proper contains uineteen wires-seven forming the heart of each strand and twelve laid up around each heart. The work of the seventy-two bobbins on the second deck completes all the strands, and they then pass up over tension wheels to be laid up around the manilla rope which is to form the heart of the cable proper. The strands are passed over these tension wheels in order that each may have a uniform strain or tension, and thus avoid any irregularities in the fluished rope. The tension wheels are regulated by movable weights on levers which throw the wheels in or out as may be desired. From the tension wheels the strands lead up and are twisted about the manilla heart, and the whole cable then passes up through a die which forces auy irregularities there might exist down iuto the heart of the cable, leaving a smooth, evenly rounded surface and uniform diameter. This die is uot absolutely uccessary, but is used as an additional precautiou in case the tension wheels should have failed from any cause to maintain a uniform strain.

The cable, when it passes through the die, is finally drawn off from the machine by passing over two immense wheels, which are driven by power transmitted from the main shaft ou the lower floor by bevelled gearing connecting with a shaft ou the upper floor, on which is a worm-wheel running in a wheel connecting with the drawing off wheels. These latter wheels draw off the cable so that it retains the tension given it on the machine. Beside the drawing off wheels is placed a revolution coanter which records the number of yards of cable passing over the top of the wheel. From the drawing off wheel the cable passes through a box of tar and then down to the lower floor, where it is would on an enormous spool, ready to be laid in the street, for every-day use. This machine possesses the great advantage of requiring the material to be handled but once to complete the cable. In other cable-making machines the strands are laid up first, and then are put into another machine to lay up the rope. This machine lays up the strands and makes the rope by a continuous and uninterrupted process.

Superior advantages are also claimed for the cable itself, as it is so compactly twisted that it is well-uigh impossible for a strand or wire to be ripped out. The machine has the capacity of turning off a thousaud feet of finished cable per day. In making the cable, in order to preserve a uniform diameter, the ends of the wires are carefully brazed together. The length of time which a cable can be used on the Market street system depends largely on which road it is laid. The cable on Market street is used by all the cars of the system-the Valencia, McAllister, Hayes and Haight street cars. The cable usually lasts about eightmonths. The average duration of a cable is from six months to two years. Generally a cable wears out first where the splice is. A cable in use continually stretches, and this slack is taken up in the engine house by a movable carriage, and when the cable has stretched a certain amount the carriage is moved up, the old splice cut out and a new splico put in, which is expected to last as long as will the cable. The cablesmade by the Market Street Railway Company are 11-4 inches in diameter and weigh 21-2 pounds to the foot.

The Market street rope is 23,858 feet long, the Valencia street 23,700 feet long, the McAllister street 20,580 feet long, the Hayes street 23,385 feet long, the Haight street 20,452. The Fulton street rope is 5,580 feet in length and the auxiliary rope at the Valencia and Market street curve 480 feet long. When a cable is no longer fit for use on the road it is taken out and sold for old iron to junk men or whoever wants to buy it. At two and one-half pounds to the foot it will be seen that the Market street cable, which is tho longest rope, weighs on the reel nearly thirty tons. If any one who is not familiar with machinery wishes to become hopelessly bewildered, all he has to do is to go under Market street among the tunnels and chambers full of rumbling pulleys and swiftly passing cables where the Valencia street, Market street, Haight street and the auxiliary ropes come into and go out of the engine house.

Owing to the press of matter our street railway directory is necessarily omitted from this issue. The directory is now being thoroughly overhauled and corrected, so that when it is printed in the October number it will contain several now roads uot reported hitherto and many changes among the old ones, making it the most complete directory yet published.

We are informed by Mr. W. J. Richardson, Secretary of the Street Railway Association, that he is rapidly completing 1 is arrangements for securing reduced farcs to the Cincinuati convention.

Car Starter's Indicator.

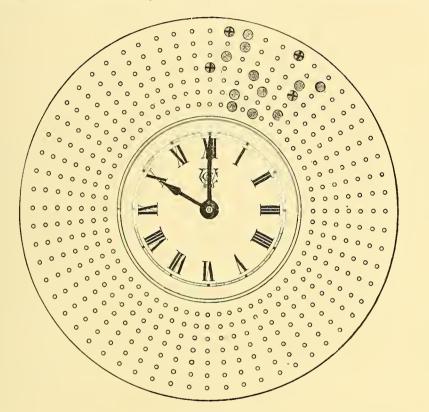
The car starter of the Brooklyn City R. R., at Fulton Ferry in Brooklyn, N. Y., is one of the busiest starters in the country. There are nine lines of cars centering there that are owned by the company in question. They all come down to the ferry on one line of rails and though there is siding room for seven lines they all converge into the up track before they have gone two short blocks.

During the busy hours of the morning and evening, many of these lines are run upon two minutes headway and none on more than five. It therefore frequently occurs that from fifteen to twenty cars are rows of holes, each row having a hole in a line radiating from each minnte point upon the dial of the clock.

There are one or two small wooden pins for each line of cars and the positions that these pins successively occupy, denote the time at which the car upon the line to which it belongs is to start.

We have shown the indicator with the pins in the position that they will occupy at ten o'clock in the morning, just as the headway is beginning to lengthen ont after the rush trips. Where two lines are run upon the same circular row the pins are marked so that they may be easily distinguished.

The nine lines of cars are the Fulton Ave.;



despatched in five minntes. As all of these cars are run upon a strict schedule time it is necessary that the starter should have some simple means of performing his duties.

He is placed in a small office in the corner of the ferry house, next to the down track and close to the cross walk where the cars stand while waiting for the signal to leave. He can thus note every car as it comes in and make a memorandum upon a slate of the trip upon which it belongs. The walls of the office are hung with time tables, all within easy reach, of the time of departure of every car for the twenty-four hours.

On the outside of the building there is a large gong; the number of strokes that are given upon it indicating the car that is to start.

In order to avoid confusion, and the necessity of making out a large time table that would soon be worn ont, the starter has an indicator of which we give a full face illustration. It consists of a plain marine clock, with a copper casing set around the outside. This case has seven circular Greene & Gates Aves.; Myrtle Ave.; Pntnam Ave. & Halsey St.; Greenpoint; Conrt St.; Flushing Ave.; Flatbnsh Ave.; and Third Ave. Of these the Fulton Ave. runs the most frequently, the Greene & Gates Aves. next, the others following after. In the rush trips during the morning and evening these cars run every two minutes, and are therefore stationed next the starter. As the heavy travel drops off they run on two and then four minutes headway, an extra car coming in every six minutes at the entrance of the East River Bridge, making the cars to run every two minutes upon the line.

At ten o'clock in the morning we find a car npon the fourth line of rails that is running upon six minntes headway. The gong strikes four times, the car pulls out and the pin occupying that hole will be placed in the twelve minutes hole on the same line. At one minute past there are two cars to start. In order to avoid confusion, both in starting and coming in upon the main up track, the starter sends one out a few seconds before 10:01 and the other a few seconds after the time. The same rule is followed for the four cars that should start at 10:02, and so on around the dial. The pins are jumped one over the other as in connting for a game of cribbage.

As the headway lengthens out the pins merely make a longer jump.

Besides the regular cars there is a continual arrival of extra ones. They are chartered for the conveyance of excursion parties, picnics, militia, etc., to and from the ferry; then they rnn extra to meet the theatres; and all these cars must be sent out without either blocking the line or running too near each other. So when a line that is running on four minnte headway has an accession of say three extra cars, the starter uses his own jndgment about shortening the time. The regular cars mnst run as nearly on their own time as possible. So if he shortens the headway to three minutes he can work one off every nine minntes and not have it noticeable along the line. Or he may despatch every two minutes and not disturb the running of the regular cars at all. If fewer extra cars come in then the work is simplified, if more it is made more complicated.

Any one who watches the precision with which the cars are sent out cannot fail to admire the system that is in vogue and the simplicity with which so many hundreds of cars are sent out over the same rails every twenty-fonr honrs. But the starter's duties do not stop with the mere ringing of the gong; he must see to it that the cars come up into line without delay. He must hurry up the laggards and if a car misses its lead in coming in npon the down track where its line joins the main track he must hold the car that is ahead of it at the switch until its driver can take his horses out and get his car in the line. Where there are so many cars there is a tendency on the part of the drivers to lag and not follow their leader too closely, and it is a part of this starter's duties to hold every man up to the rack at all times.

The present incombent has been there for twenty years and has all of the rontes, streets, time tables and other details of the work at his fingers' ends, and his duties are performed with a clocklike precision.

An order having been made by the General Term of the Supreme Court recently denying the motion of the Cable Railway Company that the report of the Cable Commissioners be confirmed, the company applied to the Court to have the order resettled, the object being to have the argument before the Conrt of Appeals confined to one point, namely, whether the General Railroad act of 1884 repealed the rights and privileges of the Cable Company, founded upon the act of 1875. The Court has denied the motion to resettle the order, saying that the opponents of the company are entitled to urge before the Conrt of Appeals the other legal grounds on which they resisted confirmation of the order.

THE UNION ELECTRIC Co. Phila. claim that they are operating their cars for \$1.84 per day, as against \$4.74 for horse cars.

Mechanical Traction upon Tramways.

It is our intention to present in this connection some general considerations upon the subject of this article, the importance of which for large cities is continually upon the increase.

It is evident that, if we meet on every hand a tendency to replace horses by mechanical methods of propulsion, it is because of the general recognition of the economy that will result; and this last is in reality the only consideration that can obtain in the choice between the several methods that are offered. Nevertheless, we are continually meeting those who claim that the cost of maintaining the traffic with horses is less than that of any other means that can be mentioned; and they support their opinion by a calculation upon the number of miles that a horse can traverse daily upon a trot.

Generally these speculations are those of an amateur, and are merely specious, because they are founded upon incomplete data, and neglect certain circumstances which practice imposes. It is nevertheless easy to nuderstand that we expose ourselves to a liability of serious error if we only take one unit of the service into consideration, that is to say, a single vehicle equipped or furnished with its motor, and that these errors will decrease as we carefully note all the details of the question.

Traction with horses necessitates a very complete cavalry organization, that is of a nature to greatly surprise those who only see the manipulation of the street railway as they come in contact with it upon the public streets.

Each car that is put into service requires a certain number, and at times a considerable number of teams which draw it by turns; the horses being given such rest after their work as the conditions impose. If the ground should chance to be uneven, and the traffic is heavy along the ronte followed by the car, the service will be very hard; while if the ground is level, and the streets are for the most part clear, the traction is easy and the stops are reduced to a regular number. It may be remarked, right here, that, in every well regulated organization, no stops are made to take up or let off passengers except at points designated to the public by posts; from which there results a great lessening in the strains that are placed upon the team, which would otherwise perceptibly cnt down their endurance.

The number of horses required, then, for each car, is subject to considerable variation, and is sometimes quite large. But besides those horses that are in the regular service, a certain number must be held in reserve, in order to meet the requirements of accidents, crowds and bad weather. Then we must count upon a certain proportion of sick ones, at grass or in the country at rest, which will afterwards come back into service and take the place of those animals that are broken down. Finally, we must not forget that mortality which always constitutes a figure of considerable loss, and presents a very serious item of expense.

All this requires a considerable collection

of conveniences: numerons buildings for stables, harness rooms and lofts for fodder, a large plot of ground in and another out of the city, a numerous corps of employees, and finally a veterinary surgeon to take charge. This constitutes a body that must be looked after, even to the remotest details.

The expenses which belong to the maintenance of this assemblage that we have just ennmerated are necessarily charged to the cost of traction, since they are inherent in this method of traction itself. It follows, then, that the work performed by a team costs according to the exactions and the particular circumstances of each case; varying not only among the different lines of the same system, but especially between the routes of different systems.

In general, traction by horses is very expensive; though it is possible, in exceptional cases, that it may be more economical than any other, when small cars with a single horse are employed, upon a short ronte with easy grades. We also find that in certain extensive systems, where the organization is perfect and the ground level. especially where the wealth of the passengers gives the enterprise the maximum of rcceipts, that they feel less sensibly the advantages that would accrue from reducing the fares. Bnt, in both cases, the advantage is continually threatened by the possibility of a partial or general epidemic that may fall npon the stock. It is hardly wise, then, to expose themselves to it, and we know that the management of certain street railways are only temporarily clinging to horse traction, and are waiting for some mechanical method of traction to free them from these encombrances, while at the same time the safety of the street traffic is maintained

It would therefore appear that the employment of mechanical motors reduces into one very important limit both the installation and the *personnel* necessary for the service; also, that the number of motors on the whole available force is far less than the number of teams or the total horse power. If we reflect that when these motors are not in use they are not consumers, we shall not be astonished to find that all these reductions in expense result in an economy in favor of the mechanical methods.

Divers systems of mechanical traction have been proposed and applied. They may be divided into two principal classes.

In one the means of locomotion is common to all the cars upon the line or circuit. It comprises traction by cable and electricity when the current is furnished by one station for the whole line, by means of a special conductor or of a line of rails.

We absolutely reject this class, for we can not allow that an accident, such as may at any time occur, the rupture of the cable or the circuit, shall cause the absolute stoppage of all the cars, and an interruption of the service that shall be more or less prolonged. While we withdraw this decision in certain particular cases, for small lines like that at Brighton for instance, or suburban roads like the one at Lichterfelde. which use electricity, or where the ground is very uneven, as at San Francisco, necessitating the cable, we still maintain that it is inadmissible upon important systems where the street traffic is very great. Here, least of all, would it be advisable to put all of one's eggs in the same basket, for, admitting that the system is more economical than any other, this reason should not influence the final determination until after the obligations of a public service have been respected.

We pass then to the class of independent motors.

When we determine upon the use of motors for street railway service, the type which presents itself to the mind is that of the steam engine, furnished with a boiler and carrying its own water and fuel. Many designs of this kind have been employed, both as separate motors and as motor cars.

The locomotive upon the motor car offers this advantage, that it permits regular trains to be drawn, while the space reserved for the motor upon these cars is kept within the limits of the power corresponding to the service of the car which carries it. The locomotive, then, better fulfils the requirements of those lines that do a heavy business or upon which there are frequent delays.

Whether the motor be a small locomotive or not, the presence of the firebox with the resultant production of smoke, ashes and burning coals, which are scattered along the route, constitutes a serious inconvenience if not an actual danger. The use of engines requiring a fire, then, is not only intolerable in cities, but is very rarely permitted.

On the other hand, the price of these machines is considerable, their maintenance very expensive and their consumption of fuel relatively high. Add to this that the conditions of draft necessitate some method of exhaust, the noise of which is very disagreeable and often becomes a cause of accidents, from the fact that horses, especially carriage horses, are with diffienlty accustomed to it.

Next to engines carrying their own fire, we look to the fireless steam engine and the one using compressed air, and finally to the electric motor using accumulators.

Our readers are familiar with the fireless engine; they know that the system presents none of the inconveniences of the ordinary engine, over which it guarantees, on the contrary, many advantages. We will afterward return to the question in discussing a very important application of the system.

Compressed air engines do not possess the inconveniences of the regular steam engines, but the system is inseparable from certain particular defects which the multitude of motors has not yet succeeded in surmounting.

As for electric motors driven by accmulators, if they seem to have resolved the problem of handling the car as though it were deprived of a motor, a d were placed under the control of an ideal force, they still embody objections of another order, which appear in the form of expense.

Now, for mechanical traction, as in every other enterprise, the cost of carrying on the business is the criterion upon which every comparison must rest. And here we mean the real operating expense, that is to say, the one realized in actual service, and not an exceptional result obtained from a series of trials, no matter how conscientiously they may have been conducted. It is for this reason that we have attached only a relative importance to a report, although drawn np very copiously, of the trials at the Antwerp Exposition with the ordinary engine, a compressed air engine and an electric motor. He must be absolutely without experience who would imagine that all the special conditions of au exposition could be repeated in practice, so that to be adapted to the latter they must be singularly modified

This report gives the palm for traction to the electric accumulators, and the interested parties are eager to scatter the news through those papers that will publish it, and even to insert it as an advertisement. It is, nevertheless, an unheard of proceeding that engineers should fix the operating expenses without having given particular attention to that important factor, the cost of maintaining the accumulators, and from the action of the electric motor on a selected route. It is the height of folly, and their appreciation of the other systems can no longer obtain serious attention, from the practical point of view. An exhibition of street railway engines can only be of value when it has, in addition to certain appreciable advantages of plans, or the sole representative of a system, or of designs officially established in some incontestable manner, some results of exploitation, and it can only be really conclusive when the local and particular circumstances are practically the same, as may be found on different routes. The machines need not be taken from the place where they are exhibited; for this set scene, dear to all exhibition juries, is absolutely superfluous, for they enter more in the form of an attraction to visitors than as a method of traction upon street railways.

Besides the operating expense for each system, where sufficient data are at hand to establish it, a simple reasoning suffices to show that it must really embody the two principal advantages, the economical production and utilization of the motive force.

Let us consider from this point of view the fireless engines, compressed air engines, electric motors using accumulators, and also the regular engine.

It is evident that in these last the utilization of fuel is deplorably deficient; this division into a series of small fireboxes offers such an obstacle that a regularity in steaming is difficult to realize. The small locomotive is the typical fuel waster, and this is the reason why it is avoided by careful managers. This serious defect is not enconntered in the three other systems that are occupying our attention. In fact, in all three, steam is generated in stationary boilers, which may be chosen from the most perfect of their type, and be run with the greatest possible intelligence and care. In the fireless engine, the heat of this steam is confined in the water of a reservoir that is well protected against external influences, in such a way that loss from this source may be neglected, and the machine will be found, hours after it has been charged, in practically the same condition as at first. The steam from the reservoir drives the motor, so that the energy furnished by the boiler is so utilized in the work done by the motor that it is only reduced by a single coefficient.

For the compressed air engine, we have first the steam engine and the air compressor, then the air motor upon the car, giving three appliances and as many coefficients of reduction. For the same amount of energy taken from the boilers, the work performed would then be very sensibly less than in the preceding system. We do not ignore the claims of the interested parties, produced for the support of the preteuded economy of the compressed air motors; but we are well aware that the figures furnished in opposition to those given by the fireless eugine relate to the traction of only a single car. whereas this last machine drew two upon the Lille-Roubaix line aud elsewhere. Furthermore, it appears from certain signs that the operating expenses are uot what they should be, in cousequeuce of certain transfers which materially lessened the traction account. The absence of official documents, which can not be obtained, warrauts then every suspicion, and statements without proof cau not cause us to change our appreciation of the effectiveness of the system.

It should be carefully considered that if the stationary plant of the fireless engines is reduced to the boilers with their attachments, that of the compressed air system includes besides the air compressors both in service and in reserve, their maintenance, interest and depreciation, constituting an important item in the cost of traction.

For the electric locomotive, the plant consists of a steam engine driving the electric generator, that is the dynamo which transforms the mechanical into electric energy, the accumulator which stores up the electricity, and the electric motor which transforms the electric energy into mechanical energy, so that four sets of machines are necessary for the utilization of the energy furnished by the boiler; that is to say, that this utilization must be subjected to a quadruple coefficient of reduction. Whatever may be the effectiveness of these different machines, the effectiveness of the system itself appears inferior to that using compressed air. The same remark can be further made npon the reserve machines and their maintenance, the interest and depreciation upon the plant, in adding those of the accumulators.

Another point that must uot be lost sight of is the importance of the capital invested in the plant, which is far greater for the electric and compressed air systems, than for that of the fireless steam engine. Besides, the more complex the installation the greater the number of employees that will be required.

It is easy to understand, then, how well founded is the surprise caused by the decision of the Antwerp jnry, among competent persons. We note from memory, that this jury paid no attention to the fireless engine, which was not represented at the trials; the trials were then limited, and it is important that the public should receive the proper cautions, in order that it may not be led into error by those who will be interested in scattering abroad the decision proclaimed regarding the generality of the systems of mechanical traction.

We can demonstrate that all of the material necessary for the nse of fireless steam engines costs far less than the simple purchase of the ordinary locomotives indispensable to accomplish the same service, and our demonstration will be based upon figures derived from a long practical experience with the system. The other systems at Antwerp, would be, we think very greatly embarrassed to fairly and squarely make the same demonstration, as much as they would be to justify their pretensions to the economic superiority of their service and their operating expenses.

The promoters of the electric, compressed air, cable and all those systems that have a stationary motor, have not yet spoken of using natural forces, but that will come. Only they know what the utilization of these natural forces really costs, especially in the investment in the plant. It is doubtful then whether this kind of application can ever become general, even where these forces are available, and it is still far less certain that they can employ the energy furnished in transporting it to any distance, whether by cable or electricity. The service will fall to a ridiculous figure and the expenses will increase in a way that will be entirely inacceptable. We only mention the possibility of such a project to show the foolishness involved in its accomplishment.

We have seen that the motor car cannot fulfill the requirements of the service in large cities, especially where the traffic varies between the termini. Beyond certain figures, the expense of rolling stock will be out of all proportion to the normal service; furthermore, the short intervals between the cars is far more troublesome in a busy street then the length of train.

These reasons, then, militate in favor of separate locomotives drawing several cars according to the traffic requirements; that is, in favor of trains.

The only serious objection that can be raised to this method of transportation in cities, is the difficulty of stopping a train as promptly as will be found necessary in the service of a city street railway; the moving mass being so great. Were there a brakeman npon each car it would be difficult for them to be constantly putting on the brakes, and furthermore, they could not apply the brakes upon the cars and engine simultaneously.

The objection falls to the ground if a good coutinuous brake is used, one that is

operated by the engineer and acts npon each car if necessary. For quick service upon street railways, the stopping might be made instantly. The solution of the problem lies then in this application. In our opinion the choice would fall upon the continuous and automatic Carpenter brake.

Finally, there is no longer any reason for maintaining the traction department of street railways with horses, economy aud security of service being guaranteed by a rational adoption of mechanical traction. — Moniteur Industriel.

Fungi and the Decay of Timber.

P. H. Dudley in the Popular Science Monthly for Augnst, gives an interesting account of the fungi that are active in producing the decay of timber, especially of that which is subjected to the peculiar exposure of railroad ties, stringers and telegraph poles. He states that timber cut in the spring growth, when the starch in the sap-wood is transforming, firmishes in this part of the wood a good media for the growth of various ferments which produce decomposition, and unless quickly checked will start the decay of the woody tissue.

It was the universal belief, until a few years since, and is still a common one, that the decay of timber was due to slow combustion. Improvements in, and the use of the microscope have shown, that the true cause of the decay of wood is due to the various forms of fungi. Many definite forms which cause fermentation have been traced and more are known to exist which are so small that they are beyond the definition of presont microscopes.

In defining the fungi the author calls them "a great group of a low order of leafless an l flowerless plants, destitute of chlorophyl, whose functions are under certain conditions to undo and return to the air and soil the elements assimilated by the higher plants and trees in their woody structure during growth," and of these fungi over fifty thousand species have been described.

When they grow on the underside of a plank, closely packed boards and railroad ties, they are usually similar to a series of fan-shaped stems and appear like skeleton leaves. As far as the actual decay of the wood is concerned the most important part of the fnugi is the mycelia, so called. These are small filaments ranging from 1-500 to 1.2500 of an inch in diameter, yet they are able to pierce the walls of the wood-cells when softened by moisture. Where this formation "has once run over the wood in a dense growth, it destroys its strength from one-eighth to three-quarters of an inch in depth, and if the wood dries, cracks and crumbles to pieces, it forms the seculled 'dry-rot' in timber, which is said to take place whon the wood is perfectly dry.

"This is, however, a popular misconception as it cannot commence unless there is some moisture and sufficient heat with a free access of air to supply the oxygen needed for the reduction of the tissue to lower compounds. If the wood does not dry, these filaments continue to grow until all of the wood cells are disorganized and fall

to pieces, or, in other words, are completely rotted. 'Dry rot' was named from the effect produced, and not the cause, to distinguish it from the so-called 'wet rot.' It has been an unfortunate designation, misleading many people, causing them to believe that timber will rot when dry, and proper precautious have not been taken to prevent decay, on the supposition that it would occur in any event."

"Hemlock inch boards can be completely rotted through in six weeks of July and August weather by the mycelia attacking both sides of the boards when damp, and piled up without air space between each. Cargoes of lumber and timber in long voyages are often badly injured by the growing mycelia between the pieces."

A little more care in piling and stacking green lumber by producers and consumers, permitting a circulation of air between each piece, would prevent this growth and annually save large quantities of valuable timber.

If moisture collects and remains on seasoned timber, the mycelia will also grow and destroy it. Large timber should be seasoned under sheds, otherwise the sun will season au outside layer, preventing the escape of moisture, and the internal growths of ferments and mycelia fungi will destroy the inside of the timber, a thin onter shell remaining sound for some time.

Experience has long since established the fact that wood kept perfectly dry will last for many hundreds of years, as has been the case in the roofs of foreign buildings, or when it is submerged in the water, as has been the case of piles used for foundations of the earlier bridges in older countries. Posts and telegraph poles can daily be seen which are decaying near the groundline, but are sound above after three to four years service. By comparing the different conditions of use, it can be seen how little change is required to render unstable what would be stable under other circumstances. In roofs, the conditions are dryness, circulation of air, plenty of spores, and sufficient temperature to germinate, but the necessary moisture is absent. In the case of submerged piles, plenty of water, sufficient temperature, but exclusion of air either to c: rry spores or to permit them to grow. In the case of posts and telegraph poles we have the spores, the moisture, and the necessary temperature in summer for germination, and decay ensues from the fact that these aro the essential conditions for the growth of the fungi whose work is to undo and liberate the compounds in the woody tissue.

Dammies in City Streets.

The following report of the proceedings taken against a street railway company for not complying with the strictest letter of the law will be interesting to our readers.

The Brooklyn City Railroad Company has been having trouble with the heirs and representatives of the estate of the late George F. Hussner for years, and so far the railroad company has got the worst of it at

every stage of the conflict. Hussner owned two lots of ground with buildings on the northwest corner of Twenty-fourth street and Third avenue. In June, 1877, the railroad company applied to the Mayor and Common Council for permission to use improved motors on Third avenue, between Twenty-fifth street and the city line. The request was granted, both the Mayor and Common Council joining in the consent. Shortly afterwards the Common Council passed another resolution giving the company permission to rnn down to Twenty-fifth street, but the Mayor never signed the resolution as required by the law of 1877. Ever since that time, however, the company has ruuits steam dummies down to Twentyfourth street, and up the street far enough to enable the trains to be switched down below Twenty-fourth street on Third avenue, and the engines turned around and put head on for the outward trip to Fort Hamilton. Hussner died a few years ago, and his administrator brought an action against the railroad company to recover damages to the real estate caused by the use of steam dummies. The case was tried before Judge Cullen, in the Supreme Court. and the jury gave the plaintiff a verdict for \$1,600 damages. The case was appealed to the General Term, and thence to the Conrt of Appeals, and resulted in a confirmation of the judgment, which the company had to pay, with costs and accumulations. About two years ago the heirs of Hussner brought another snit against the company for the damages they claimed to have sustained from the time the other suit was brought up to the time then ended. That suit was tried before Judge Brown, and resulted in a verdict for the plaintiff for \$1,100 damages. An appeal was taken to the General Teim, and at the session held within the last few weeks in Ponghkeepsie that tribunal affirmed the jndgment.

Notwithstanding all these adverse decisions, the company has persisted in using the dnmmies precisely as though nothing has happened. Since then an application has been made to Judge Cnllen, in Special Term of the Snpreme Court, for an injunction restraining the company from operating its dnmmy engines below Twentyfifth street. It was claimed that the proper consent had never been given the company to operate even an improved motor below the point named, inasmuch as the law of 1877 provides that both the Mayor and Common Council must join in the consent, which they did not do regarding the second resolution passed by the Common Conncil, and also that section two of the law of 1877 expressly provides that street railroads then in operation might be given by the authorities mentioned permission to operate "improved motive power, or motors," but as expressly forbids the use of the "ordinary steam dummy or box engine," such as is used by the Brooklyn City Railroad Company on Third avenue.

Standard Fireless Engine.

This engine* is inten led to operate with ammonia as a motive power for street and other cars, and also for other purposes.

The apparatus to be nsed is similar to that now in use for liquefying or distilling anmonia in the ice factories, where the absorption principle is employed but with essential improvements.

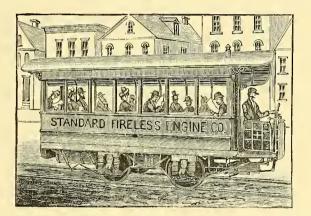
These improvements relate to the more complete elimination of the gas from the weak solution blown off from the bottom of the retort or still, and to ensure the more complete saturation of the strong solution being fed into the retort or still by the gas eliminated from the weak solution; also to the method of charging one portion of the apparatus on the motor or other machinery with the liquid ammonia, and the other part of the same with a portiou of the weak solution drawu off. To the methad of expelling atmospheric air, which may have leaked in through the connections, and to the appliances, machinery and apparatus therefor; also to the motor car itself and its machinery and appliances, and the method of operating the same.

When the car returns to the station this solution which has become concentrated by the absorption of the gas is withdrawn for reseparation and recondensation at the stationary apparatns. Therefore, there is no waste of the material. The cost of this system is measured by the cost of the fuel consumed at the stationary apparatus and the necessary attendance npou the same.

*Standard Fireless Engine Co., New Orleans, La.

Brooklyn's Rapid Transit Fight.

Iu 1879, the Mayor and the Common Council of Brooklyn, N. Y., granted permission to the Kings County Elevated Railroad Company to proceed with the construction of their line up Fulton street. Contracts were made for materials and labor, and ground was broken for the road; but by some sudden and, as yet, unexplained freak, the Board of Aldermen rescinded the franchise. The reason given, though palpably too weak to gain credence as the real one, was that the company had proceeded in an improper way in asking the grant from the Mayor in a matter where their majesties, the Aldermen, were concerned.



It is claimed that a car mile may be run on two gallons of liquid ammonia which iu turn requires four pounds of coal for its formatiou; and that ou a road rnnning fifty cars they may be operated for \$2.40 per day each.

The car is fitted with a pair of small 4x4 engines, not unlike locomotive engines, but with essential modificatious. It has also two tanks or receivers under the floor of the car, one within the other; the inner one is of special form and construction, and the outer one is a common tank containing wateror a weak solution. The material is prepared at a stationary apparatus at the depot, and the process consists in separating ammonia from water by heat and reducing it to a liquid under its own pressure.

The inner receiver on the car is charged with a portiou of this liquid ammonia, while the tank containing it is charged with a portion of the weak solution from which the ammonia was abstracted; and so charged, the car is ready for running by the opening of a valve. The gas, after operating the engine, is exhausted into this solntion in the onter tank and instantly absorbed, so that there is no escape in the atmosphere.

The representatives of the company and its frieuds were naturally somewhat indignant at such treatment, and they have tried, though ineffectually, to induce the board to reverse its arbitrary actiou. Eminent counsel were engaged and long arguments poured into the ears of the City Fathers. They were assured that the company was earnest in its intentions to complete the road as soon as possible, but the arguments were wasted.

Nevertheless, the company, feeling confident that the clouds would before many weeks roll away, erected a couple of arches at the coruer of Fulton and Boerum place and dug a few holes along the proposed route. Ono day however, au injunction was slapped upon the Kings County people and the work stopped. Tiresome arguments were heard day after day in Justice Culleu's court room, and finally a decision was rendered which was not calculated to please them. While a petition to the Court of Appeals was being talked of another bombshell landed in the camp. Notice was served upon the Kings County Company that the Attorney-General proposed to prove that its charter had lapsed. Counsel prepared most exhaustive arguments to repel this last attack, and the Judges at

Poughkeepsie sat for hours listening to the combative arguments of the chief lawyer of the State and those who endeavored to defend the corporatiou's rights.

It was hardly expected that a decision woull be rendered before fall, but a special sitting has been ordered at Poughkeepsie, as we go to press, which may clear matters up or may produce further entanglements.

While the Kings County men have been struggling in the courts a new candidate for rapid transit fame has been developed in the formation of the Union Elevated Railroad Company. Its original plans contemplated a most gigantic system. Rontes traversing nearly all the big thoroughfares in the city have been laid ont. The Common Conncil has granted permission to this corporation to proceed with the construction of its lines. Fifth avenue alone, as yet, has been surveyed, but the fun will undoubtedly begin when an attempt is made to build on Fulton street. Should the decisiou of the Court be favorable to the Kings County Company, and should it endeavor to resume building, it will not be surprising if the Union corporation applies for an injunction on the ground that whereas the rival company has had its grant rescinded, its (the Union's) is unassailable. Should the decision, on the other hand, be adverse to the Kings County people, an appeal will doubtless be taken. Thus will the fight continue in the conrts, the lawyers getting richer while the citizens grow madder.

And that this action upon the part of the citizens may not appear unreasonable, it may be well to recapitulate the state of affairs. The Brooklyn City Railroad control the line of rails running from Fulton Ferry to the City Hall and thence branching ont to the different sections of the city. They run their cars at such short headway over this line of rails that the heads of one team of horses are close to the rear dasher of the preceding car, and even with this service it is impossible to meet the demands that are put upon them during the evening rnsh trips. People living ou the hill, abont a mile and a half from the ferry, walk in great numbers to and fro every morning and evening. Under the circumstances an elevated railroad is an absolute necessity, and since the city is growing so rapidly, it is doubtful if the construction of an elevated railroad over the Fulton street line would materially injure it in the long run.

To have this desirable feature of rapid transit cut off at the mere whim of a board of meu, ou the ground that sufficient regard was not paid to the high and hor orable position which they occupy, is an absurdity that may well arouse the indignation of all citizeus who make the long tramp, or are obliged to travel in the overcrowded cars between the ferries and their homes.

A Street Car Episode.

The maid bewitching looked, and sweet; The thoughtful mau rose to his feet. He tipped his tile,

And with a smile.

Said, "You are welcome to this seat." He gave a startled look at her,

And from his face one would infer.

Confounded, dazed, Stunned and amazed, That sho had said, "I thank you, sir."

[Pittsburgh Commercial Gazette



Chicago, LAKESIDE BUILDING, E. L. POWERS, North western Manager.

Boston, Mass., 185 SUMMER STREET, H. M. SWET-LAND. Manager.

Philadelphia, 119 So. FOURTH ST. J. H. MCGRAW Manager.

The Cincinnati Convention.

Indications seem to point toward the conclusion that the coming convention of the American Street Railway Association, to be held at the Burnet House, in Cincinnati, Oct. 20th., next, will be a decided success. Cincinnati is a central point. The growing interest in street railway matters and in the association, will probably bring together a larger number than have ever met before, on similar occasions- Secretary Richardson is negotiating with railroads for special rates of fare, and we are assured by Mr. Kerper, representing the local committee at Cinciunati, that no pains will be spared to n: lo the convention interesting. The importance of the subjects to be discussed will be obvious to anyone who glance over the list given in these columns.

Better Cars.

It is a significant fact that the orders booked by the John Stephenson Co., last month, for new cars, which, by the way aggrogate the largest in the history of the company, had an average value, including one horse cars, of \$1050.00.

It is not merely a matter of goodtaste on the part of street railway mauagers, but is becoming obvious to the most casual obseror of street railway practice, that fine cars pay in dollars and cents even on lino where the traffic is comparatively light, to say nothing of those where the business is heavy.

In another column we publish a translation of au article on mechanical traction upon tramways, written by a French engineer. He discusses the problem of the various styles of motors with candor and upon a reliable basis, considered from a theoretical point of view, presenting the pros and cons of the discussion, though evidently from his particular standpoint. It is amusing, however, to see the coolness with which the cable and electric roads are put out of the race after the thorough demonstration of their effectiveness that has beeu made in this country. But for those who are interested in the subject of street railway motors, the article is worthy of attention.

Exhibition of Street Railway Appliances at the Cincinnati Convention.

For the convenience of manufacturers of railway appliances, and others who desire to exhibit goods at the convention of the American Street Railway Association, to be held at the Burnet House, in Cincinnati, Wednesday Oct. 20th., next, the publishers of the STREET RAILWAY JOURNAL have arranged with the proprietor of the Hotel for such space as may be required for that purpose, and will assign space for all articles for exhibit which the owners see fit to send to their eare.

By this plan which was snccessfully carried out last fall, at the Southern Hotel, in St. Louis, the exhibits may be attractively arranged, and unless desired by the exhibitor, need not be accompanied by a man in special charge. No charge will be made for space, and no expense need attend the exhibit excepting for transpotation and such incidental charges as unpacking placing in position, etc. Freight and express charges should be prepaid and goods sent to the owner in care of the STREET RAIL-ROAD JOURNAL, at the Burnet House, Cincinnati, Ohio.

Exhibitors will please advise our New York Office, as early as possible, giving an approximate idea of the amount of space required, and of the vature of the exhibit.

So far, as we are enabled to judge from inquiries thus far made, all those who participated last year, will take part in the exhibits at the coming convention, and donbtless numerous others. This is an especially desirable opportunity of bringing before a large number of representative railroad men, from all parts of the country, whatever is new and valuable in connection with street railway equipment.

Supply Men at the Convention.

It is evident that conventions of large purchasers of any kind of supplies are exceedingly popular among the dealers in these supplies. If they were not, the presence of so large a number of agents, salesmen and representatives, added to the willinguess manifested on the part of these samo representatives to spend money in a most open-handed way for the entertainment of the delegates, would be wholly unaccounted for. There may be a certain feeling of good-fellowship and unselfishness upon the part of the supply men, while actually pouring out their ducats; but the strong current that takes them there is profit. They go with the resolve to convince as many delegates as possible that they can build the best and the cheapest car or make the best and cheapest harness, halter or window attachment.

The delegates, on the other hand, go there for the express purpose of comparing notes and discussing the best methods of attaining success in the peculiar industry in which they are interested. There may be a few who look upon the affair as a kind of junket, but these may be counted out.

It follows, then, that as each member goes

away convinced that he has gained information from the experience of others that will assist in the management of his own affairs, so will he consider his time and money well spent. But if he finds that his time is wasted, that there is nothing new to be seen or learned, that he has neglected his business for no purpose, and that the money expended would have brought more pleasure or profit if spent in other directions, he will be disposed to regard the convention as a fraud, withdraw from the Association and drop the matter entirely.

The continuance of the meetings depends, therefore, upon the success of the convention from the standpoint of the delegate; aod, as the supply man's profit hinges upon this success, it behooves him to contribute toward it in every possible manner; to attend the meetings, listen to the discussions and know something about what has been done when it is all over. It may pe that the harness man would not be particularly interested in the ventilation of cars, but it would be a very queer convention that did not at least touch upon some topic that will interest. But for the supply men to go there, and use every endeavor to make the whole affair one big advertisement, is in reality an effort directed against their own interests, and for which they will pay by losses in the future. It is the skillful covering up of their real designs, and the attractive disgnising of the matter and at least a seeming enthusiasm in the proceedings in hand, that will push the convention onward in popularity, and the wily supply men will reap the profits which they so greatly desire.

It is curious to note how people will fight and people will swear to keep a street railway from laying its rails. But when they are once down and the cars have been run, the very same people are anxious to ride. If the road asks a privilege that has not been given, they look askance at the asker and like to refuse. But if there is talk of a removal of rails, a stoppage of cars or a less frequent service, the hands and the voices of the growlers are raised to keep the company up to a full service. After the fight for the right and its demonstrated value, one would naturally think that the Broadway line of cars would serve to choke off a few of these croakers. But a big New York daily, in commenting on the proposal to haul the Third avenue cars by means of a cable, says the people have rights, and may strongly object to the passage of trains or of single cars, even at the speeds that have been proposed by the company. Onr daily forgets, if ever it knew, that a cable car may crawl, and at less than snail's pace, through a street that is crowded, while the cable is running at ten miles an hour. And the control of these cars is so perfectly placed in the hauds of the driver that it has been clearly shown in Chicago and San Francisco that there is no greater danger to pedestrians and wagons than with the system (f horse propulsion. If the changes referred to should ever be made, the advantages accruing to the road and the public are so great and so perfectly apparent, in the better transit facilities that can be offered at a lower rate, that it seems a pity that there should be croakers in positions of sufficient influence to stir the public mind up against the scheme while it is yet in its infancy.

Guesswork Construction.

It does not take much engineering skill to nail an iron strap upon a plank, nor are the scientific attainments that are brought to bear in the digging of a ditch of a very high character. So when it comes to putting the plank in the ditch, and letting the edge project above the surface, the latest graduate from an engineering school considers himself fully competent to do it; and even the stible man or car washers see nothing so very big in that. But when the plank becomes the stringer and the strap the rail the first man that comes along who can handle a level and run a tangent, is put at the work, and made engineer of the proposed line, The company seeing no need of scientific skill or the services of an experienced contractor, proceeds to build its own road.

But the forces of nature are no greater idlers in the streets of a city than upon the plains or among the mountains. Expansion always follows the application of heat, and contraction its withdrawal. A spike can ent away the wood, create havoc with the strength of the stringer, and leave the strap rail loose as well as the T rail that is supposed to be fastened to the tie. Frost will heave the pavement; and these pavements will be found to possess all the peculiarities and sinfulness of the worst of ballast. The rain and sunshine conspire to destroy the road, cross-ties are loosened, knees fail to hold, the plates cut into the timber. and the stringers are crowded in and out until they are all askew.

And why? The timber may have been poor, and the paving worse, while there was no drainage given to the track at all. Bolts were put in holes too large to give a bearing, the seating of the stringers on the ties was not square, and the rails were not securely held. At first it seemed all right bnt though you could not shake the new-laid structure with your hand, it did not have those elements of strength, that only come from skillful workmanship; so when the rains fall and the frosts come and pry upon that track, it is loosened at every joint, the cars wander from the rails and a reconstruction is required.

Then the skilled constructor is called in, he digs, and tamps and hammers, and pries, until a good repair job is effected; then sends in a bill that rolls the outlay far beyond what would have been a fair original cost.

Companies cannot be too careful in this matter, of their track laying and construc, tion, and should learn that the road is something more than a log in a ditch, and a car requires a better roadway than a wheelburrow that will roll upon a plank. A good roadway means much to a new company. It means less power to haul its cars, a small expense for years to come in overhauling and repairs, a smoother riding car that will attract a larger patronage than the bumping box we too often see; and lastly, it may give a profit and a dividend where otherwise a loss that endeth in a sheriff's salemay stare them in the face. The moral then is:—All roads should be built by wellskilled men, and not by those who know nothing of the trade.

The Recent Strike.

There is a homely phrase about biting off more than one can chew, that is applicable to a great variety of human conditions. It is a feat that invariably causes inconvenience and at some times disaster to the biter, and and it requires strong jaws and a good digestion to come out of the trial unimpaired. It would seem to the casnal looker-on that the labor organizations have placed themselves in this same condition. They have repeatedly tried during the past few months to enforce unjust and unreasonable demands; they have resorted to violence wherever the slightest opposition has been offered; they have squandered, destroyed and wasted millions of property; they paralyzed in one case the industries of a large territory; they have been responsible for a large loss of life, and have been in almost every case unconditionally defeated.

It is true that the laboring man, so called, is poor, that his surroundings are not noted for their luxury and that he is subject to many and great sufferings. But his condition is far better than that of his predecessor, his wages are higher and their purchasing power is greater than they have been before. And if he would ameliorate his own condition and that of his kind it can be done by following two very simple rules of abstinence. Let him drink less whiskey and have fewer children.

The street railway lines have been the coaporations most bitterly attacked; probably because the grade of labor, that they employ is lower, and the men more ignorant and are therefore more easily influenced by the harangues of those demagogues whose very existence depends upon the troubles they can breed between the employer and the employed. They succeed ed in maintaining an unjust fight for several weeks with the Third Avenue Co., but were defeated, and now two hundred of the former employees are out of work.

No compromise was made, and the strikers have to stand the brunt. Now just as we go to press the Broadway road resumes its work af er a three days fight with hoodlums, roughs and strikers. The management put ont a new schedule, which the men claimed could not be filled in twelve hours work; and to this it was agreed that all overtime required should be paid for at an advance. But this could not be swallowed by the committee-men in charge, and so a strike was ordered. All men were then discharged and applicants came flocking in from every side to fill the vacancies thus formed.

For two days the streets were full of rioters and thieves, some few have lost their lives, and many have been carried home with broken bones and heads, cars have been demonshed, and the police bave had to fight all day. And now when the road has shown no disposition to withdraw from that position, which it first assumed, the organization yields and the men come back and ask for work. They come alone, and each one takes what he can get, and some are turned away because another has been taken on to fill his place. Then when the road was well at work the men propose that they give np twenty-five cents a day in pay, and have one less trip to make; to clinch the matter and reduce expense the road agrees.

The men who lose are those who blindly follow in the course that the masters bid them walk, and think because they dare to raise a riot in the streets, defy the law and bluster through a day, that they can overturn the law to which they owe their lives and make again those great unwritten laws of trade, by which all intercourse between those who come to buy and sell is regulated.

We are sorry for the men, and only hope that those who lose learn what, as a mob they never can, that they must first reform their lives and minds, and fit themselves to take a higher stand than they can ever fill while they allow their every action to be dictated by an irresponsible executive committee. And finally we add, that it seems strange that after the hard lessons that they've learned and blows they have received, they do not see that society is founded on a rock, and turn their backs upon those men whose dislike of work leads them to har angue for a reform in labor.

New York Railroad Revenues.

The reports of the gross earnings of corporatious for the year en ed June 30, 1886, continue to show a good many interesting facts not usually visible in a cold array of statistics. The city railroads show gains except the Third avenue, which presents a falling off in revenue of \$117,000, and the Forty-second street, which drops \$42,060, in its revenue as compared with its revenue of last year. In both these cases the loss is due directly to strikes. The immediate competing lines of the Third avenue, the Second and Fourth avenue lines, show respectively an increase, on the Second of \$98,000 and on the Fourth avenue of \$82,425. The city roads, as reported, are herewith stated:

	1885.	1886.
Fourth ave		\$922,438
Sixth ave		\$46,703
Forty-second st		377,835
Belt Line		768,623
Houston & Pavonia		229,748
Central Crosstown	117,888	201,569

The Brooklyn horse-railroads show a slight increase generally, while the Atlantic avenue, notwithstanding Deacon Richardson's labor troubles, shows the remarkable gain in revenue of \$34,265 during the year. The small parlor railroad at Coney Island called the Marine railway, of which it was once said that it paid heavier divi dends on its capital than any other railroad in the world, has evidently lost its grip since a walk was constructed between the two beaches of Manhattan and Brighton. It reports this year its gross earnings at \$16,010, as against \$150,242 last year.

Progress of Cable Roads.

The profitable investment that has been opened to the public since the introduction of street railways as a method of conveying passengers, who have not the means to own private conveyances, from one part of thickly populated towns and cities to another, has rendered their construction and growth a matter of interest to all classes.

It is well known that for years after it was discovered that a load could be drawn more easily upon rails than upon a rough or even a macadamized road, these tracks or tramways were used almost exclusively for the transportation of freight. And after the construction of the roadway received its one improvement of bolting iron straps or plates upon the wooden stringers that had previously been used, the track remained in that condition down to the latest practice, with the solitary exception of the introduction of the combined metallic rails and stringers that are now gradually coming into use.

The car is the same four wheeled vehicle with a short wheel base that it was when it was first used for carrying coals in the north of England in the last century. To be sure, the body has been lengthened out and the box made higher and broader, with seats and cushions, windows, shades, lamps and springs, yet the fundamental principles of construction are the same in the old coal car at Newcastle-on-Tyne and the elegantly upholstered ear of the Boston Back Bay line. The driver and the motive power are the same.

With the growth of our western civilization, it was found that there were places where the power of a horse was found to beinsufficient to haul paying loads. Under these circumstances recourse was had to the old idea that obtained such a strong support from theoretical engineers in the early days of steam transportation, and which made such a strong fight against the locometive before the efficiency of the latter had been practically demonstrated. The endless cable gave the means of seenring a positive motion from one point to another.

It remained then for our western engineers to put this eable out of the way so that while its own motion and free action is uninterrupted, it will not in any way block up or interfere with the traffic of a busy street. The underground condui with the narrow longitudinal slot in which the grip ean run, solved the problem; and after as many objections to its practicability as had been raised in its favor some sixty years ago, after long arguments to persuade capitalists to invest, and after hindranecs without number on every hand, the San Francisco road was finally completed and demonstrated itself to be a practical success. This was followed by others, in spite of the still tenacious objectors that the eables would soon wear out, that they would break, that the speed of the cars could not be regulated, and that they never would work when the ground was oovered with snow.

Encouraged by the success at San Fran-

eisco, Chicago began the construction of a eable road, and it was clearly demonstraed by all of the wiseacres that the snow would render their use an utter impossibility during the winter. But the winter came and piled its snow and ice and $e \rightarrow t$ and slush and mud upon the tracks. It was quickly swept aside and the cable-hauled ears ran with a speed and regularity that had never been dreamed of as a possibility with the horse lines.

Troubles and difficulties have existed from the first in every stage of the development. Cables have not always been what they should have been, the grip has cut the wires, slipped, broken, strained the cars and failed. But there has always been good enough behind it all to keep the project still alive and bring it into a high degree of usefulness.

As these details have been improved other eitics have taken the matter np, and New York, Kansas City and others have either begun or completed a cable system of tramway traction.

There is but one indispensable condition for the profitable employment of this method and that is a large service. A little one track road running through a thinly settled village for two or three miles and running six or eight one horse cars eannot afford the expensive plant required for cable work; but for the heavy traffic of our large eities. where the annual passenger list runs up into the millions, the universal testimony of those who have tried it is that it pays. So as we have seen the locomotive drive the through stage coach from the road and build up cities where the ancient vehicle had only located hamlets, so we may expect the cable to drive the horse from the street car in our cities, and leave him to haul the cars in small towns as he now hauls the stage coach over rough mountain roads and through sparsely settled districts where the traffic is not sufficient to warrant the investment of the capital necessary to the employment of stcam.

Graphite as a Lubricator.

In his report in the "Mineral Resources of the United States" for the year 1883-84, Prof. John A. Walker gave some very interesting data relative to the use of graphite as a lubricator, from which we find that " with the introduction of heavier machinery tho service demanded of a lubricant has become more and more severe. For much of this work it is found that oil will not answer at all, and for much more it answers only at great expense; hence, the uses of groases and the more solid lubricants. such as graphite, mica, soapstone, sulphur, etc. When graphite first began to be used as a lubricant, anything which gave a stove-polish luster when rubbed was assumed to be 'black lead' and fit for lubricating purposes. Experience soon proved it to give varied results-sometimes very good and sometimes the reverse; in fact, it was not reliable because of lack of uniformity, correct sizing and purity, and soon fell into disrepute among practical men, though continuing to be well spoken of in the books. In 1868, however, systematic experiments were begun in this country with a view to producing a reliable lubricant from graphite, and the final result has been very satisfactory.

"Water-dressed dry foliated American graphite is a little thin flake of graphite of extraordinary properties. Its superiority as a lubricant has been attested by all recent writers on friction. Its coefficient of friction is very low. Its enduring qualities are several times greater than those of any oil. Unlike either oil or grease, it is not affected by heat, cold, steam, acids, etc., and aets equally well under varying conditions of temperature and moisture.

"Many and earefully-conducted experiments in the laboratory with Professor Thurston's testing machine, and experience in shops, have shown that for the highest usefulness the flake must be of a certain size and dressed perfectly pure. Graphite never occurs of the proper size and purity for use. Its natural impurities contain substances fatal to anti-friction purposes. Its proper selection, sizing, and perfecting for lubricating purposes is a matter requiring large skill, much machinery, and great experience. The difference between a perfectly pure graphite and one almost pure, but still totally unfit for lubricating, ean not be detected by either sight or touch.

"It is recommended dry for steam and air cylinders, mixed with grease for heavy bearings, and mixed with oil for light bearings. On being applied to a bearing, it readily coats the surface with a shiny, unctuous veneer. These surfaces then slide on each other with very little friction. On being applied to heated bearings, the graphite soon fills up any inequalities of the bearing surfaces due to cutting, abrasion, etc., making them smooth and even, after which the bearing soon cools down. It is equally useful for wood or metal surfaces; in short, in all cases where friction exists. If the bearings are loose enough for tho introduetion of this thin flake graphite, it will prevent heated bearings, cool those already heated, and rednee friction better than anything else. In all cases where the service required of a lubricant is very severe, graphito will be found specially useful, as in mill steps, gears, heavy bearings, bed plates, etc.

TA	BLE	OF TES	TS.			
Lubricant.	Quantity in milli- grams.	Total pressure in pounds on bear- ing.	Temperature at the close, F°.	Average coefficient of friction.	Time in minutes till the bearings "squealed."	Total number of feet friction sur- face traveled.
Best sperm oll Graphitemixed with enough water to distribute it over	335	180	240	.0555	11	7,198
bearings Graphite mixed with	120	180		.0596	30	19,635
tallow	335	120	340	.0936	38	24,216

"This is the most rapidly growing use of graphite. In 1884 a single company sold 250,000 pounds of it for this purpose, branded as 'Inbricating graphite,' and probably as much more not so labeled, which was used for the same purpose." Appleton, Wis.

THE APPLETON ELECTRIC Rv. is nearly completed and will have five cars run separately on the Van Depoele system. The generator will be run by electricity. Baltimore, Md.

THE BALTIMORE & HALLS SPRINGS R. R. has been sold, and is now owned by the Baltimore City Passenger Ry. Co., and is operated in connection with their other lines.

Birmingham, Ala.

The exclusive right to build a street railway line to Elyton is claimed by the Burmingham and Pratt Mines Street Railway Co., and a notice has been served on the Birmingham Street Railway Company to that effect.

A street railway has been incorporated with a capital stock of \$50,000. J. T. Milner is President, and J. C. Westbrook and others are interested.

Boston, Mass.

THE HIGHLAND AND MIDDLESEX street railways have cousolidated. Chas. E. Powers is president of the new company.

Brooklyn N. Y.

THE BROOKLYN RAILWAY SUPPLY Co., 37 Walworth street, report that orders for sweepers are coming in much earlier than ever before. They are already busy with a moderate force filling orders for New York, Jersey City and Trenton. The business outlook is good. By their recent improvements in raising and lowering brooms on sweepers, the wear of the rattan and consequently the cost is reduced to a minimum.

C. J. Campbell, Manager of the Steinway & Hunter's Point R. R., has defaulted to the amount of \$3,200, and departed for parts unknown.

There is considerable dissatisfaction among the employees of the De Kalb avenue line over the change of schedule. A tie-up is feared, though nothing has been done as yet.

There has been a rumble and a grumble among the employees of the Atlantic avenue line for some time past. There have been complaints of varions kinds against the management, but no further trouble has yet occurred.

Since Justice Dykman's decision against the Kings County Elevated Company was made public the Union Elevated Company have had little trouble in securing the consent of property-owners along the line to build its structure. Rapid strides have been made in pushing forward the plans for beginning work. Surveys have been made on Fifth, Flatbush and Myrtle avenues and on Fulton street. It is expected that the road will be in operation from Lexington avenue to the Broadway ferries within a year. The charter fixes fares at not to exceed five cents between 5 and 8 P. M. and 4.30 and 7.30 P. M. on week days, and 7 A. M. and 10 P. M. on Sundays, and ten cents at other times.

Recently a car on the Nostrand avenue line could not be controlled because the brake was out of order, and it rolled down the hill from the Penitentiary to Malbone street. John Linker, the driver, drew the pin and turned his horses to the side of the street, jumping off the car to take care of the horses. Annie Dexter either jumped or was thrown from the car, receiving severe injuries, and is still confined to St. Catherine's Hospital. Linker was arrested and the case tried before Justice Kenna As there was no evidence against him he was discharged.

Permission has been granted to Pres. Richardson of the Atlantic Avenue R. R., to build a cable road along Park avenue. A franchise has also been granted A. H. Matheains for a cable road through Montague street from Wall street ferry to the City Hall.

Chicago, Ill.

The La Salle street tunnel has been granted to the North Side City Railway Co. The company is to erect two bridges, keep the tunnel in repair and pay a yearly rental for the latter.

The recently formed union of north side street car drivers and conductors complain of the discharge of men who have entered upon full pay, the compulsory purchase of uniforms from the company's tailor, and the exorbitant charges for the same, heavy security required for punches, long and irregular hours and insufficient pay. It is understood that the company has asked time to consider the complaints.

THE CROSSTOWN PASSENGER RAILWAY Co. of Chicago has been incorporated with a capital stock of \$1,000,000. They contemplate building fifteen miles of double track, and will commence business with seventyfive cars and from 500 to 800 horses. The present officers are, John J. Curran, Pres.; George P. Bunker, Treas.; James A. Taylor, Sec. The general office is room 18, 164 Washington street. It is as yet undecided when the road will be commenced or opened.

THE CHICAGO CITY RAILWAY Co. have issued a very convenient timetable for night cars. The tables are placed in boxes, of which there are 15,000 at all night drug stores, hotels, etc., so that any one belated can tell when a car will start on any line controlled by the company. They are now operating sixteen different lines, namely: the State Street, Wabash & Cottage Grove Avenues, Hyde Park Dummy, Indiana Avenue, Archer Avenue, Wentworth Aven ues, Hanover and Butler Streets, Ashland Avenue, Clark and Van Bnren Streets, Halsted Street Stock Yards, State and Sixty-third Street, Wentworth Avenue and Sixty-third Street, Halsted and Sixty-third Streets, Thirty-first Street and Thirtyninth Street.

The improvements made during the past season by the Chicago West Division Railway, consist of an additional line of double track on Division street from Mil-

waukee avenne to Humboldt Park (12 miles); stables and car-house buildings for that line; construction of an extension of the Lake street tracks from Garfield Park to Crawford avenue (2 mile;) construction of new car-house and stables on Clybonrne avenue (for Noble street line constructed last fall;) construction of car-house and stables at Kedzie avenue and construction of an extension of Van Bnren street tracks from Western avenue to Kedzie avenue (now in course of construction,) (1 mile;) construction of additional stable at Blne Island avenue and Leavitt street, and construction of double track extension of Halsted street lailway on Eighteenth street from Halsted street to Leavitt street (2 miles.) An addition of 400 horses and 66 cars has also been made since January first. Cincinnati, Ohio.

In is proposed to build an elevated railroad. A company has been organized and a charter applied for by E. Zimmerman, M. Ingalls and others. The name of the company is the Cincinnati Elevated Railway Co.

Cleveland, Ohio.

THE FULTON FOUNDRY has just closed a contract with Cincinnati St. Ry. Co. for the wheels to be used by them during the coming year. They have also recently shipped fifteen turn-tables distributed among the following roads: Council Bluffs St. Ry. [Co., Harrisburg City Pass. Ry., Central Pass. Ry. of Louisville, Utica and Mohawk St. Ry. and Erie City Pass. Ry Co.

The Fulton Foundry, of Cleveland, Ohio, of which Mr. S. M. Carpenter is the proprietor, has issued a very handsome leather bound catalogue of their street car wheels, curves, frogs, and turntables. The engravings are finely executed and describe themselves.

Clarksville, Tenn.

THE CLARESVILLE STREET RAILWAY Co. is now completed and has been opened to the public. The road is two miles long, and laid with 16 lbs. T rails. Two cars are in use and two more will soon be ordered. The officers are John F. Shelton Pres. and John W. Faxon Sec. and Treas.

Columbia, S. C.

Work is progressing rapidly upon the Columbia Street Railway, and it is expected that it will be opened about Sept. 15th. The road is laid with 32lbs. rails. The officers are Pres. J. S. Pierson; V. Pres. H. M. Pierson; Treas. W. E. Lawton and Sec. E. M. Cole; 32 Liberty St., New York City.

Covington, Ga.

W. C. Clark & Co. have in contemplation the construction of a line of street railway $1\frac{1}{2}$ miles long.

Deuver, Col.

THE DENVER CITY RAILWAY Co. are extending their tracks and enlarging their stable accommodation. The additional length of track will amount to four or five miles in all. At present the total mileage is 19.38. They have 306 horses and 52 cars. Fulton, N. Y.

The Fulton and Oswego Falls Railway

Co., was opened on August 14. The track is 6,000 feet long and is laid with Gibbon's metallic system of rail and stringers. Three cars and ten horses are used. The general office is 15 Broad St., New York city.

Galveston, Tex.

THE GULF CITY STREET RY. and Real Estate Co. have been refused an extension of time to complete their work.

Grand Rapids, Mich.

The city authorities have declared that nuless the present company begins work on certain streets immediately another street railway company will be granted the franchise. The road is considered a necessity. Halifax, N. S.

THE HALIFAX ST. RY. Co. (Lim.) have completed their track. It is seven miles in length and laid with 45 lb. rails. Fifteen cars have been ordered and are being built by the John Stephenson Co. The officers are: President, John R. Bothwell; Secretary and Treasurer, H. K. Adams. The offices are at present in the Drexel Building, New York City. It is expected that the road will be opened about September 15.

Mankato, Minn.

THE MANKATO STREET RY. Co., have now 1¹/₂ miles of track in operation and contemplate adding two miles more very soon. This certainly shows prosperity as the road was only opened on July 22. The officers are W. M. Faxon, Pres. and Man.; John C. Noe, Sec. and Treas.; with offices in South Front St., Mankato.

Melbourne, Australia.

The cables for the new cable railways have been made by Bullivant & Co., of Millwall, England. One is about 26,000 feet and another about 15,000 feet long. They weigh 24 and 16 tons respectively and are made with a hempen core, about which six wire strands are wound, each strand being composed of 31 steel wires. The circumference of these cables is $3\frac{3}{6}$ inches; and the breaking strain is said to be 150 tons per square inch of section. These figures are taken from "Iron" and are the highest we have seen. The Americans have, however, secured a contract for furnishing 280,000 feet.

New Bedford, Mass.

Justice Barrett recently refused to grant an injunction to the New Bedford & Fair Haven St. Ry, Co. restraining the Acushnet Railway from using the former's track in New Bedford, according to an order granted by the mayor. It was claimed this order was invalid.

New York, N. Y.

THE TENTH AVENUE CABLE line operated by the Third Avenue Co. are running cars ou two minutes headway; the traffic on this line has increased to so great an extent since the opening that the rolling stock is not sufficient to meet the demand. As the cars are now running down 125th st. to Eighth Ave. only, a car is run over from the East River and there coupled the grip car and hauled to High Bridge;

even with these accommodations the cars are crowded to overflowing on Sundays and holidays. The company are thoroughly pleased with their whole plant. The grip was recently put to a pretty severe test. The cable broke and there being no means of picking up the auxiliary cable all the cars were at a standstill until the car leaving the end of the route could pick them up. One car picked up no less than twelve of the helpless ones, and brought them to the engine house. Difficult es of this kind will be avoided in the future by placing manholes at the foot of each grade where the auxiliary cable may be taken.

THE TENTH AVENUE CABLE line is experimenting with an air attachment for operating the grip and brakes. Compressed air is used and is obtained from a compressor driven from the axle.

THE ST. NICHOLAS AVENUE & CROSS-TOWN R. R. have laid out an elaborate project of street railway network, but inasmuch as they have not yet secured their charter the plan cannot be said to have assumed what might be called tangible proportions. However, if none of their plans miscarry the following system will be the result: The proposed system begins in East One Hundred and Sixteenth street at the Harlem River and rubs through to Manhattan avenue, with double tracks to St. Nicholas avenue, to the northerly terminus of the avenue; also from St. Nicholas avenue at One Hundred and Twenty-sixth street, with double tracks along One Hundred and Twenty sixth street, to Lawrence street, to Broadway, and with a single track to One Hundred and Thirtieth street, to Twelfth avenue, to One Hundred and Twentyninth street, to Lawrence street, thence to connect with a double track at Broadway; also from St. Nicholas avenue at One Hundred and Thirty-first street, with double track along One Hundred and Thirty-first street, to Fourth avenue, to One Hundred and Twenty-eighth street to Second avenue; also from tracks at Third avenue and One Hundred and Twenty-eighth street, along Third avenue to One Hundred and Twentyninth street, through One Hundred and Twenty-ninth street, to connect with tracks at Fourth avenue; also from One Hundred and Twenty-ninth street and Fourth avenue with single tracks along Fourth avenue east of the Harlem Railroad to connect with tracks at One Hundred and Twenty-eighth street.

THE JOHN STEPHENSON Co., has just shipped two very fine specimens of street cars to Tom L. Johnson, Cleveland, and twenty more of the same pattern, are building for the Brooklyn cable railway which is to be operated by Mr. Johnson's system.

Edward Beadle, 1193 Breadway is successors to the firm of Beadle & Courtney, manufacturers, of the Eureka Folding Mat. Mr. Beadle having purchased the interest of Mr. Courtney is now sole manufacturer. He remains at 1193 Broadway, with factory at Cranford, N. J. Among recent orders for the Enreka mat, are twenty for the Buffalo eet railway, twenty for the Citizens'

Passenger Railway of Pittsburg; six for the Jersey City & Bergan. These mats seems to be giving growing satisfaction.

Omaha, Neb.

THE OMAHA HORSE RAILWAY Co. has obtained a temporary injunction restraining the Omaha Cable Co. from proceeding with its work of laying the cable. Exclusive rights on all streets are claimed by virtue of an act of the legislature.

Plainfield, N. J.

A street railway is to be built by a New York ompany.

Palatka, Fla.

The right of way for a street railway com pauy has been granted.

Philadelphia, Pa.

An electrical alarm system has been introduced on the Market street line of the Traction Co. It is intended for use in case of accident.

MESSRS, HALE & KILBURN report an increasing and satisfactory trade in their new patent seats for street cars. Among orders recently shipped, was one of 50 cars for the Chicago City Cable Railway. They have now orders for about 200 cars which they are filling.

THE EMPIRE PASSENGER Ry. Co. have a gauge of five feet two inches, and are running thirty-two cars with 250 horses. The total length of track is $8\frac{1}{2}$ miles. The officers are James McManes, Pres., and John J. Adams Sec. & Treas.

Pittsburg, Pa.

The Wilkinsburg and East Liberty Ry. Co. have completed their roadway and are waiting for cars and horses before beginning to run. The road is three miles long, and they are using the Johnson Steel street railway rail. They anticipate employing about five cars and 20 horses. The following are the officers. President Ed. Jay Allen, Sec. and Treas. Wm. H. Allen. The capital stock is \$15,000.

Plymouth, Mass

The PLYMOUTH AND KINGSTON STREET R. R. Co. has been incorporated with a capital stock of \$25,000. Mr. Jos. D. Thurber and others are interested in the scheme and if the money can be raised work will be commenced in the spring. The road is to be 2½ miles in length of four feet eight and a half inches gauge. It is intended to put on from six to ten cars, and draw them with horses. The officers have not yet been elected.

Quebec, Can.

THE ST. JOHN ST. RV. Co. Limited are running four busses ont four miles from the city limits in connection with their regular line.

Rutlund, Vt.

At the recent election of officers the old management was reinstated. The road has now eight miles of track, and runs eight cars with thirty horses. San Francisco, Cal.

A double track line of street railway has been constructed by the Market Street Cable Ry. Co., from the junction of Marke and Hayes streets, along Hayes to Stanyan street. The length is over two miles. It is to be operated as a cable line and will require thirty-five additional cars. The car house and engine house have already been erected

Scranton, Pa.

The pink eye has attacked the horses of the People's Strees Ry. Co. Three fourths of the horses are sick.

Springfield, 111.

The report that is being circulated to the effect that the Springfield Belt Railway Co. has been incorporated by Mr. Frank W. Tracey, is denied as being without any foundation whatever, and no such enterprise has been heard from. Scranton, Pa.

THE SCRANTON SUBURBAN Railway Co. have adopted the Van Depoele electric system for propulsion, and expect to have their road in operation by Oct. 1.

St. John, Zew Brunswick.

THE ST. JOHN CITY RY. Co., are about to commence the work of building seven miles of roal. The contracts are let, and a large force of men will be set at work immediate-The officers are: President, John H. Bothwell; Secretary and Treasurer, John J. Pyle,-with headquarters in the Drexel Building, New York. It is expected that the road will be opened to the public about November 1.

Stillwater, Minn.

THE STILLWATER ST. RY. Co. has been incorporated. R. F. Hersey, E. S. Brown, Samuel Matheres and G. A. Tormus are interested.

Syracuse, N. Y.

THE WALES MANUFACTURING Co. are running up to their fullest capacity in the manufacture of their improved street-car fare-boxes. The avantages of this invention are recognized wherever they have been tried. They are a protection against dishonesty, and economize the expense of operating street railroads. The saving of a conductor for each car is a matter of great moment, and this fact is attracting more and more attention. At a time when the question of labor is involved in so much uncertainty, this fare-box is proving its utility, and horse-railroad companies are adopting it as a protective measure. A single company has just placed its order for a large number of boxes, a step to which they were impelled by the recent strike, and their example is destined to be followed by many other lines. In evidence of the growing popularity of this system, it may be stated that for the present year, up to June 1st, the orders of this company have exceeded the entire orders of the past year. This system has just been adopted by the Montgomery, Ala., Electric Railroad Com-pany, with the greatest satisfaction. The superiority of the Wales box is attested by leading street-car authorities in all parts of the country.

Washington; D. C.

It it rumored that a cable railway company under the name of the Washington Cable Railway Co. is to be incorporated. West Troy, N. Y.

G. M. Clute reports an increasing demand for his patent double bottom car lamp and chimbeys.

The Jones Car Work, have two of the twelve closed cars for the Providence Street Railway in the paint shop. These cars are 16 feet long, equipped with Bemis Gear, and have five windows on the side each 28 by 36 with enameled plate glass, plate glass mirrors at the ends, and two Smith center lamps. The cars for the St. Paul road are 14 feet long. Windows extend to the op of car, 32 by 35. These cars are equipped with Slosson box and fare collector.

Winfield, Kansas.

THE UNION STREET RAILWAY Company have commenced work upon $2\frac{1}{2}$ miles of track and will make it $3\frac{1}{2}$ miles in the near future. The gauge is four feet $8\frac{1}{2}$ inches. future. The gauge is four feet $8\frac{1}{2}$ inches. Since June 6th, which has given good satis-Two cars are now in radiness to haul faction. The distance traveled is about two and it is intended to use eight mules. It is intended that the electrical The officers are H. B. Shuler, Pres-sident; H. E. Silliman, Vice President; John D. Pryor, Treas; and John B. Eaton, Sec. Work is being pushed and it is ex-sected that the road will be opened about ing their shops to meet the demand for mo-tion to the sected the demand for mo-September 15th.

Winsor, Ont. THE VAN DEPOELE MANUFACTURING CO. have been running a train upon the track of the Windsor Electric Street Railway Co., since June 6th, which has given good satis-faction. The distance traveled is about two miles. It is intended that the electrical apparatus shall all be in place as soon as the track is laid for the Detroit road. In addition to these, the company have sever-al other contracts on hand, and are enlargtors.

STREET RAILWAY STOCK QUOTATIONS.

Corrected by H. L. GRANT, 145 Broadway, N. Y. City.								
New York Stocks.	Par.	Amount.	Period.		Date.		Bid.	Asked.
Bleecker St. & Fulton Ferry	100	900,000	J. & J.	3/4	January, July,	1886		
1st mort.	1,000	700,00	J. & J.	7	July,	1900	113	116
Broadway & Seventh avenue 1st mort	100	2,100,000 1,500,000	QJ.	2 5	January, June,	1886) 1904	$\frac{280}{108}$	290
2d mort.	1,000	500,000	J. & J.	5	July.	1914	105	112 109
Broadway Surface Guaranteed	1,000	1,500,000	J. & J.	5	July,	1924	110	112%
Additional	1,000	1,000,000	J. & J.	5	July,	1905	106	107
Brooklyn City-Stock	10	2,000,000	QF.		February,	1886	205	210
1st mort Brooklyn Crosstown	1,000	800,000 200,000	J. & J. A. & O.	5 4	January, October,	1902 1885	106	110
1st mort bonds	1,000	400,000	J. & J.		January.	1885	$165 \\ 105$	175 112½
Central Park North and East river.	100	1,800,000	QJ.		January,	1886	141	142
Con. mort. bonds	1,000	1,200,000	J. & D.	7	December,	1902	122	125
Christopher & Tenth	100	650,000	F. & A.		February,	1886	132	138
Bonds.	1,000 100	250,000 600,000	A. & U.	7	October,	1898	110	116
Central Crosstown 1st mort	1.000	250,000	QF. M. & N.	6	January, November,	1886 1922	$\frac{162}{114}$	165 115
Dry Dock, East B'way & Battery	100	1,200,000	QF.		February,	1886	202	206%
1st mort consol	500	1,900,000	J. & D.	7	June,	1893	114	116%
Scrip	100	1,200,000	F. & A.		August,	1914	106	107
42d & Grand St. Eerry	100	748,000	QF.		February,	1886	255	260
1st mort. 42d St., Manhattan & St. Nich. av	1,000 100	236,000 2,500,000	A. & O.		April,	1893	111 45	116
1st mort.	1.000	1.200,000	M & S.	5		1910.	110	50 112
2d mort. In. bonds	1,000	1,200,000	J. & J.	6		1915	70	73
Eighth Avenue-Stock	100	1,600,000	Q.—J.		January,	1886	240	265
Scrlp.	100	1,000,000	F. & A.		Augast,	1914	105	110
Housten, West St. & Pavonla Ferry	100 500	1,000,000 250,000	Q —F. J. & J.		August,	1885	150	156
1st mort Second Avenue—Stock	100	500,000	J. & J.		July, January,	1894 1886	112 205	$\frac{113}{210}$
1st mort		1,862,000	M. & N.		November,	1909	108	110
Consol	1,000	550,000	M. & N.		May,	1888	106	108
Sixth Avenue	100	1,050,000	M. & S.		September,	1885	200	210
1st mort	1,000	500,000	J. & J.		July,	1890	112	116
Third Avenue—Stock 1st mort	100 1.000	2,000,000 2,000,000	Q.—F. J. & J.		February, January,	$1886 \\ 1890$	315 110	330 112
22d St.—Stock	100	600,000	F. & A.		November,	1885	280	300
1st mort.	1,000	250,000	M. & N.		May,	1893	110	113
Ninth Avenue	100	800,000			September,	1885	138	145
Chicago St. Rallway	100)			299	325

Phila. Street Railway Stocks.

Corrected by ROBERT GLENDINNING & Co., 303 Chestnut street, Philadelphia, Pa.

	1		1				
	Par.	Perlod.	Amount.	Rate.	Date.	Bld.	Asked.
Citizens'. Continental Frankford & Southwark Germantown . Green & Coates. Hestonville. Lombard & South. People's. Philadelphia & Gray's Ferry. Philadelphia & Gray's Ferry. Philadelphia & Gray's Ferry. Philadelphia & Traction Ridge Avenue Second & Third Secrenteenth & Nineteenth. Thirteenth & Fifteenth. Union. West Philadelphia.	$\begin{array}{c} 50\\ 50\\ 50\\ 50\\ 50\\ 50\\ 50\\ 50\\ 50\\ 50\\$	Q,J, J, & J, Q,J, Q,J, Q,J, J, & J, J, & J,	$\begin{array}{c} 500,000\\ 1,000,000\\ 750,000\\ 1,500,000\\ 500,000\\ 2,050,000\\ 500,000\\ 500,000\\ 100000\\ 500,000\\ 100000\\ 500,000\\ 100000\\ 100000\\ 100000\\ 100000\\ 100000\\ 100000\\ 100000\\ 1000\\ 10000\\ 10000\\ 1000\\ $			120 98 119 28 76 36 76 20134 150 183	126 9834 146 77 250 2025

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IIGIGS IUI OPECIAL HULLOS. Advertisements of Street Railway Property "Wanted" or "For Sale," "Positions Wanted" or "Men Wanted," or similar matter inserted under his heading at 10 c. per line, eight words to a line. The name of the advertiser kept confidential when desired. Replies may be addressed "Care of STREET RAILWAY JOURNAL," at its New York, Chicago, Philadelphia and Boston Offices, as is most conven-lent to the advertisers. Replies will be forwarded, if desired. Excellent results have been realized by ad-vertisements in this department. vertlsements in this department.

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SUPPLIES WANTED-We anticipate building short line Street Railroad, gauge 3% feet; need two or more light passenger cars and two or more flats and all supplies except Iron. Address, S. W. S., Alvardo, Tex.

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WANTED AT ONCE-Good second-hand cars, both one and two-horse. Address, BROOKLYN RALWAY SUPPLY Co., 37 Walworth St., Brooklyn

CARS FOR SALE-22 one-horse cars, all in good running order. Gauge 4 ft. 8% in. Length 10 ft. Stephenson running gear. Single step In rear. Fare boxes, change gates and money boxes complete. Address, WASHINGTON & GEORGETOWN, R. R. Co., Washing ton, D. C. ton, D. C.

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444

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BEARINGS.

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CARS, NEW

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CAR HEATERS.

The Mational Stove Co., 243 Water st., N. Y....417 The Michigan Stove Co., Detroit, Mich......447

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Lewis & Fowler, Brooklyn, N. Y.....462-463 AR WHEELS. AR WHEELS. A. Whitney & Sons, Philadelphia, Pa......46 Lewis & Fowler, Brooklyn, N.Y.....462-463 Frank H. Andrews, 545 W. 33d St., N.Y....468-469 Pugh & Russell, Stewart Building, New York...454 Wm. Wharton, Jr., & Co., Limited, Phila, Pa...455 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 453

- CAR WHEEL PRESSES. Watson & Stillman, 204 21 0 E. 43d St., N.Y.,447
- CAR SPRINGS.
- CAR SEATS.
- CAR SASH.
- CAR CEILINGS.

- CURVED RAILS-Pat. Steel Grooves. Wm. Wharton Jr. & Co. Limited, Phila, Pa....455

Page. CROSSINGS.

CHANNEL PLATES.

CABLE ROADS.

- EI ECTRIC RAILWAYS.
- BIGS.

- FARE BOXES.
- FARE REGISTERS, STATIONARY.
- Lewis & Fowler Mfg. Co., Brooklyn. N. Y... 462-463 Standard Index and Register Co, 138 Fulton St.
- FARE COLLECTORS.
- Lewis & Fowler Mfg. Co., Brooklyn, N. Y 462-463 FEED CUTTERS.
- E. W. Ross & Co., Springfield, O.....456 GUTTERS.
- GROOVED CURVES.

HARNESS.

- Watson & Stillman, 204, 210 E. 43d. St, N. Y.400,447 HORSE SHOES.

- KNEES.
- LUBRICANTS.

The Leib Lubricating Co., 196 Chicago Street, Baffaio.

- METALLIC RAILWAY. Wm. Wharton, Jr., & Co. (limited) Phila., Pa...455 Metallic Street Railway Supply Co., Albany N. Y 448 Humphreys & Sayce, 1 Broadway, N. Y.....445 D. F.Longstreet, Providence, R. I.........546 MATTING.
- Warneck & Toffler, 211 E. 22d st., N. Y......449 Lynn & Pettlt, 707 Market Street, Phila.....448 Edward Beadle, 1193 Broadway, N. Y......419 MOTORS-Steam.
- H. K. Porter & Co., Pittshurg Pa......448
- Frank H. Andrews, 545 West 33d St., N. Y., 468-469 Wm. Wharton, Jr., & Co., Limited, Phila, Pa., 455 PANELS!

RAILS. Page

STEEL RAILS.

 Carnegic, Phipps & Co.
 447

 Humphreys & Sayce, 1 Broadway, N. Y.
 445

 F. W. Jesup & Co., 67 Liherty st., N.
 445

 Wm. Wharton, Jr., & Co, Limited, Phila, Pa...455
 Johnston Steel Rail Co., Johnstown, Pa.....459

 Johnston Frog and Switch Co., 307 Walnut St.,
 Philadelphia, Pa.....454

 O. W. Child & Co., 155 Broadway, N. Y.
 449

SEATS & SEAT SPRINGS.

Hale & Kilburn Manuf'g Co..... 454 SWITCHES.

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M. W. Conway, 457 Monroe st. Brooklyn, N.Y. 445 STREET RAH.WAY SUPPLIES. Humphreys & Sayce, 1 Broadway, N. Y. 445 Metailic Railway Supply Co., Albany, N. Y. 445 Pugh & Russell, Stewart Bidg., N. Y. 454 F. W. Jesup & Co., 67 Liherty st., N. Y. 454 Wm. P. Craig, 95 Liherty st., N. Y. 452 Hers & Fowler, Brooklyn, N. Y. 452 Pichie & Fowler, Brooklyn, N. Y. 452 Brooklyn, Railway Supply Co., 37 Walworth St., Brooklyn, Railway Supply Co., 37 Walworth St., Brooklyn, M. Conway, 487 Monroe st. Brooklyn, N.Y. 445 Edward Beadle, 1193 B'dway N. Y. City. 449 STREET RALWAY TOOLS.

Wm. Wharton Jr. & Co. Limited, Phila, Pa,.... 455

- SNOW PLOWS.

- TURNOUTS.

TURN TABLES.

- TRACK CASTINGS.

- TRACK SCRAPERS.
- VARNISHES.

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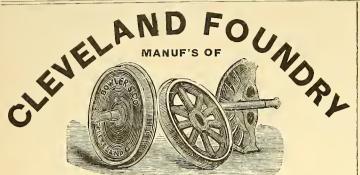
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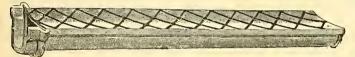


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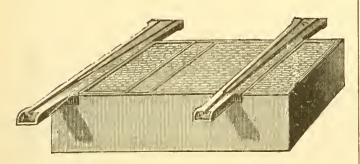
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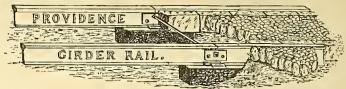
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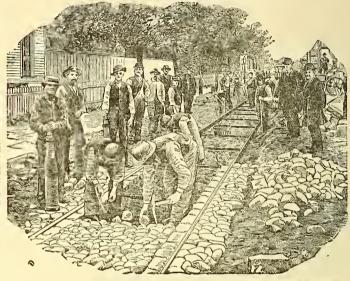


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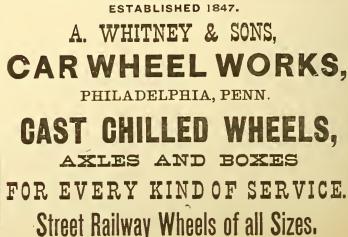
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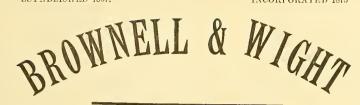




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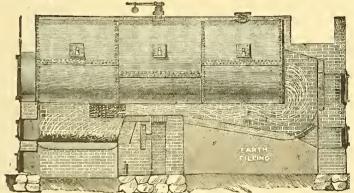
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J. M. JONES' SONS,

AGENTS.

Street Railway Car Builders

WEST TROY,

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PENNSYLVANIA COMPANY, STE

MANUFACTURERS OF

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Of T patterns, weighing from 16 to 76 lbs. per yard. CENTRE BEARING Street Patterns, 42 to 60 lbs. per yard, TRAM Street Patterns 45 to 47 lbs. per yard, and Street Patterns for STEAM ROADS.

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STREET RAILWAY SUPPLIES,

Carpenter's Patent Turn-tables and Transfer-tables,

Open Wheels of all sizes & weights.

Wheels and axles of all sizes fitted on short Notice.

Chilled curve rail, Turnouts, Switches, etc., etc. Blue prints and Bills Furnished on Application.

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453



BOX NO. 1. BOX NO. 2. CHARIOT PATTERN. One of the principal merits of these Fare Boxes over all others, consists in the fact that the fares are not turned out of sight at once by the drivers, leaving nothing but the bare word and memory of the parties as evidence of the payment, thereby making it easy for deception to be practised, even though an other is on nothing but the bare word and memory of the parties as evidence of the payment, thereby making it easy for deception to be practised, even though an other is on the car, and is endeavoring to see that the driver is falthfully performing his dutles. They are so constructed that the fares are kept in sight from one end of the road to the other, and at any point on the line an officer of the company, or indeed any other person, can tally passengers with the fares. The drops can easily carry from 75 to 80 fares, and can be counter without mistake, and counterfeit money can be easily detected. These boxes are very simple in construction, being carry from 75 to 80 fares, and can be counted without the fares and make the tally, without making himself conspicuous in the matter, if desirable. They are son sitting in the further end of car can readily count the fares and make the tally, without making himself conspicuous in the matter, if desirable. They are an ost as plain as by day. When the box is put in a car it can not be taken out or tampered with, unless the keys are obtained from the office, and can not he robbed without violence. Special attention given to correspondence on the subject of street raliway construction, equipment and operation. Address all cor-respondence to respondence to

A. A. ANDERSON, with TOM. L. JOHNSON, Indianapolis, Ind



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SEPTEMBER, 1886.

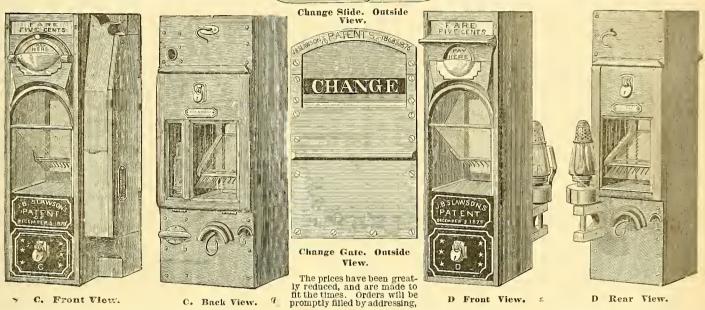
LAWSON'S PATENT FARE BOXES

These Boxes are of the latest and most approved pattern, and contain a front door, by opening which all of the glass inside 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 pur-pose. They are well made and not liable to get out of order, cannot possibly bepicked, 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-

HANGE PATENT 1877

6

TEM," and all of his Boxes, Change Gates and Drivers' Change Box are protected by several patents, and par-ties using them are not liable to claims for initinge-ments, 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 Ameri-ca, Europe, Asia, Arica and Australia-in fact, nearly all places where street cars are used.



MILTON I. MASSON, Agent, 365 AVENUE A, NEW YORK. or the JOHN STEPHENSON COMPANY, Limited, 47 EAST TWENTY-SEVENTH STREET, New York.

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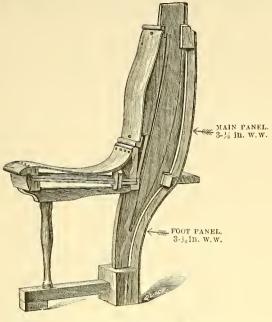
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CABLE RAILWAYS, GRIPS, And All Appurtenances.

The Oldest and Largest Manufacturers of Street Railway Track Appliances in the World. Responsible parties contemplating Building, Renewals or Extensions will find it to their interest to correspond with us.

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 raftway lines, which test has left them as firm and good as the day they were put in, we unhesitatingly place these sides in the market as a superior article. They are composed of three white wood (or poplar) veneers, each 1/2 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:

They are fully 75 per cent stronger, for they brace and stiffen the car

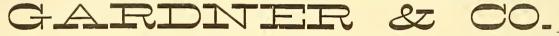
2nd. They are lighter, being only 3-8 inch thick, and so do not add so much dead weight to the car.

3rd. They will not check or split by change of atmosphere.

They will not split or crack when nailing into place, even mough 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.

Car. For repairing cars these sides have no equal. Our Three Ply Car Sears and Backs, so well known all over the world-are now the most popular seat and back in the market, and recommend them selves 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 merics. They are made either perforated or plain to suit customer. Birch is the wood most generally used. Today fully one-halt the railroads in the country are using these seats and backs. We would also call attention to our Vencer Ceiling for cars. They are made either plain, perforated or deconted, 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 general ly used are Birch, Birdscye Maple, Oak and Mahagany.



Manufacturers of Car Seats and Ceilings and Depot Seating,

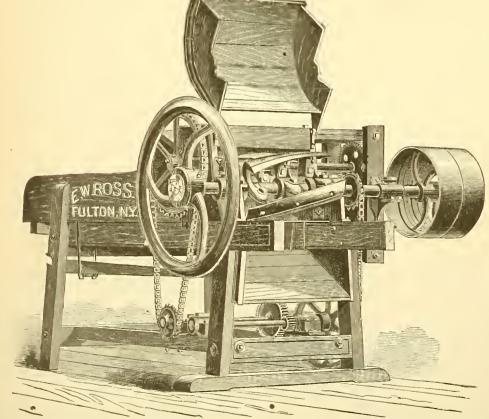
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Sample and Salesroom: 206 Canal St., cor. Mulberry.

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A FULL LINE OF CUT-TERS BUILT EXPRESSLY FOR STREET RAILWAY BARNS.

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ARE EASILY OPERAT-ED AND CAN BE RUN TO FULL CAPACITY RY SMALL GAS ENGINE.

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GUARANTEED TO BE THE BEST.

ILLUSTRATED CATALOGUE AND FULL PARTICULARS FURNISHED WHEN REOUESTED.

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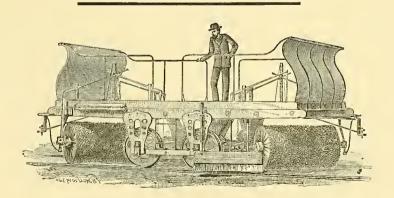
THE BBOOKLYN RAILWAY SUPPLY COMPANY. 37 WALWORTH ST., BROOKLYN, N. Y.,

U. S. A.

RAILWAY SUPPLIES.

Yellow Pine Timber for Track Construction of Best Quality. Knee Spikes and Joint Plates. Rail Spikes at Lowest Manufacturer's Prices, Made to Order, to Fit any Rail. Any Kind of Materials Promptly Furnished Responsible Parties and Satisfaction Guaranteed.

Second-hand Cars Selected by Experts for Parties at a Distance on Small Commission.



-SPECIALTIES.-----

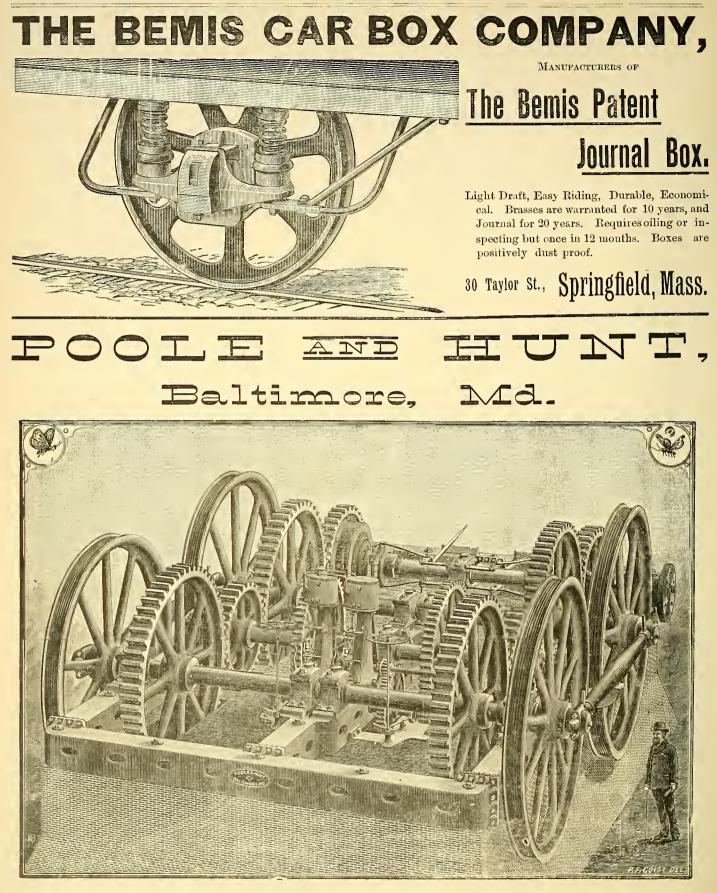
Latest Improved Snow Sweepers of OUR OWN MANUFACTURE. Now used in nearly all the principal Northern cities. Rattan for refilling Brooms. Snow Plows. Sand Cars.

We have several Sweepers of other makers, taken in exchange, which will be sold, thoroughly refitted, very low on early lers. Rattan lower than ever before; write for prices.

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Manufacturers of Cable Railway Plant. Machine Moulded Gearing for Mills and Factories. CORRESPONDENCE SOLICITED.

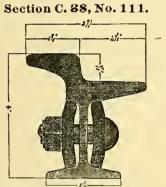
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THE GIRDER SYSTEM OUR SPECIALTY.

THE

Johnson Steel Street Rail Company.

JOHNSTOWN, PA.

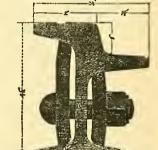


Patented February 20, 1883. Section E. 76, No. 117.



Patented January 29, 1884.



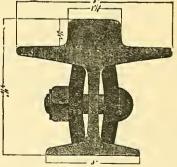


Section D. 45, No. 11.

OR

Section G. 58, No. 120.

Patented November 27, 1883.



Patented January 29, 1884.

Rolled Steel Switches, Frogs, Curve Crosses, Etc.

Large Assortment of different Weights and Sections.

We Furnish Every Detail Wanted in Track Work.

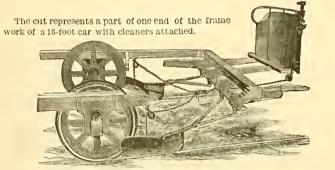
Our customers are guaranteed against all suits for infringements on goods purchased from us and we further undertake to defend the patents covering the details of our Girder System.

To those contemplating the use of the Girder System, we offer, FREE OF COST, to survey their routes, and after consultation as to the best and most economical construction, to furnish full and complete estimates of cost of the completed work. Send for Illustrated Catalogues.

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DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.

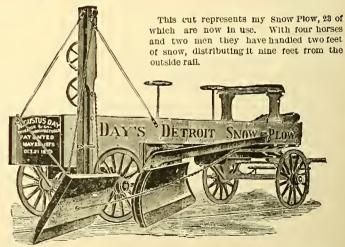


460

These Track Cleaners need no extended statement of their great superiority over allothers invested. The fact of over three thousand pairs heing now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. Clean Srow, ice, Mud and Stones from the rail. The driver can raise or lower them instantly with one hand. To secure the largest benefit they should be attached to every car. No estimate can be made of their advantage in saving of horsefiesh hand labor, sait, and the making of their advantage in saving of horsefiesh hand labor, sait, and the making of their advantage in saving of horsefiesh hand labor, sait, and the making of their advantage in saving of horsefiesh hand labor, sait, and the making of the instormy weather. Since their introduction new and valuable improvements have been made in their construction, mode of attachment, and convenience of handling. They are finished in a thorough, work-manike manner of the be-t material obtainable, the design heling to manufacture the most efficient article in proference to other considerations. Price includes right of use and is less than heretofore. Reference is made to a few of the roads using these Cleaners. Detroit city Ry, Chicago, Ill. 400 "Rochester Cly & Righton R, R. Rochester, N. Y. 75 " to have the solar of the sector R. 9 better News 100 " Storms News 100 " Storms News 100 " Storms News 100 " Storms 100 "

Albiny Ly., Albany, N. Y. Lynn & Boston R. R., Boston, Mass	68	+ 6
Boston Highland Ry., Boston, Mass.	46	46
Grand Rapids Street Ry	48	66
Numkelg Street Rv., Salem, Mass.	69	66
Bridgeport Horse Ry., Bridgeport, Conn	40	46
Cream City Rv., Milwaukre, Wis.	40	\$6
Mllwaukee City Ry., Mllwaukee, Wis	50	66
Buffalo Street Ry., Buffalo, N. Y.	32	66

AUGUSTUS DAY, 76 State Street, cor. Park Place,



It is adapted to single or double track roads, adjustable where necessary; built in the most thorough and substantial manner of the best materelal. The Plow is not intended to supply the place of the small Track Cleanrs, but he auxiliary to them. For execution in deep snow, case, and convenience inhandling, it sur-passes 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. Pe-troit, Mich. (Two plows.) Rochester City & Brighton R.R., Rochester, N. Y. (Two plows.) (Tream City Rv., Milwaukee, Wis. West Side Street Ry, Mil-vaukee, Wis. Chicago City Ry., Chicago, III. (Ihree plows.) Grand Rapids Street Ry., Grand Rapids, Mich. Highland St. Ry., Boston, Miss. Buffalo St. Ry, Buffalo, N. Y. (Two plows.) Johnstown Pass. Ry., Johnstown, Pa. Min-neapolis St. Ry., Minneapolis, Ninn. (Two plows.) st. Paul t. Ry. St. Paul, Minn. (Two plows.) Kalamazo ost. Ry., Kalamazoo, Wich. Worcester St. Ry., Worcester, Mass. South Bend Ry., South Bend, Ind. Milwaukee City Ry., Milwaukee, Wis, For Further Information and Price. Addresset

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MANUFACTURING

MANUFACTURERS AND OWNERS OF THE Latest Designs, Improvements and Inventions in Registers, Indicators, Classifiers and Punches, for the Recording of Fares Collected on Street and Steam Railroads.



JAMES McCREDIE, Pres., Buffalo, N. Y.

COMPANY.

This company owns over 100 Patents (mbracing all the Valuable Features of Fare Registers, Indicators, etc., and was awarded three Medals at the Chicago Exposition of Railway Appliances.

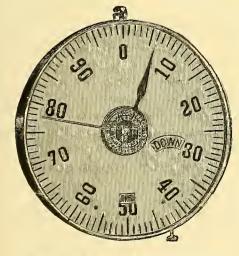
Benton Register.

The Alarm Registering Punch.

This Register, which is so generally used throughout the United States and Europe, we claim to be the most perfect check that has ever been placed before the public for the Collection and Registration of Fares on Street Railroads, especially where different rates

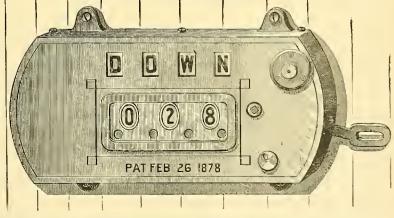
of Cash fare and tickets are to be collected.

The Monitor Register.



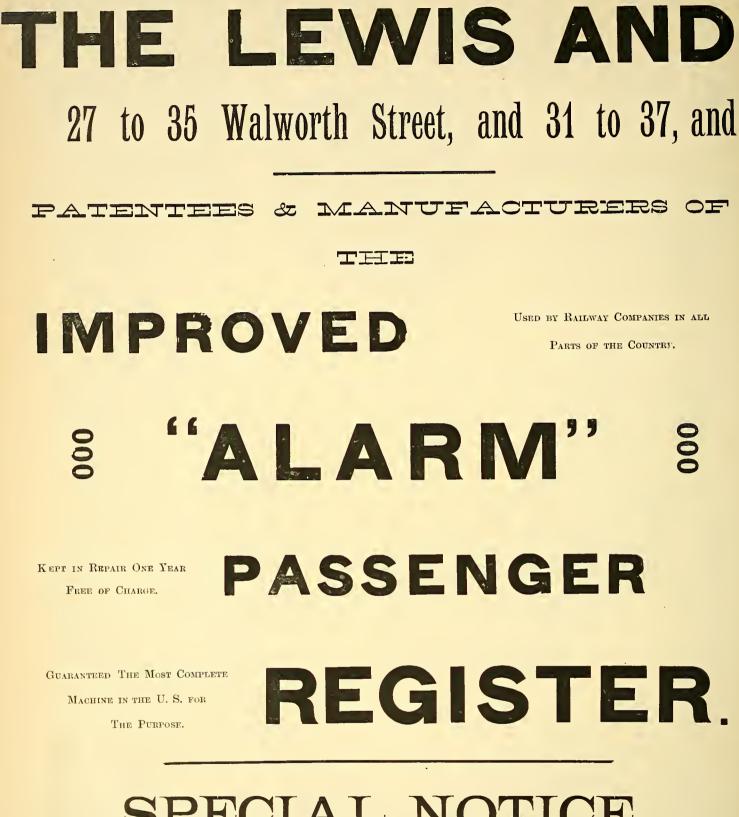
Railwa y com-panies desirng to use a Stationary Register will consult their own interest by examining this Register before adopting any of the cheap devices now offered as it is the most Reliable Register of its kind. For further particu-lars address The Pond Register.

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BEADLE & COURTNEY, Gen'l Agents, 1193 BROADWAY, NEW YORK. Branch Office, 423 Walnut St, Ph'a.

SEPTEMBER, 1886.



SPECIAL NOTICE

MANAGERS OF STREET RAILWAYS, WHEN VISITING THE EAST SHOULD SEE THE LARGE OPEN CARS ON THE PAVONIA HORSE RAILROAD, JERSEY CITY, WHICH ARE RUN BY THE DRIVER AND "SMALL'S AUTOMATIC FARE COLLECTOR." THEY ARE TWENTY-TWO FEET LONG, SEAT THIRTY-FOUR PASSENGERS, AND FREQUENTLY CARRY SEVENTY AT A LOAD.

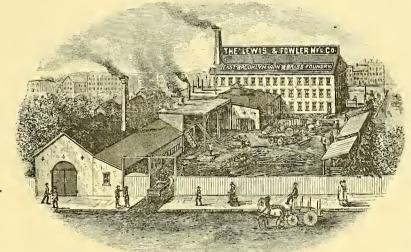
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FOWLERMF'G Co. 32 to 40 Sandford Street, BROOKLYN, N. Y Materials Furnished for

Street and Cable Railway Construction

Knees Spikes Channel Plates Frogs Points Tongue Switches Grooved Rails for Curves

Bent any desired radius.



Pedestals Oil Boxes Brake Shoes Wheels and Axles Brass Bearings Turntables Snow Sweepers Plows Etc. etc. etc.

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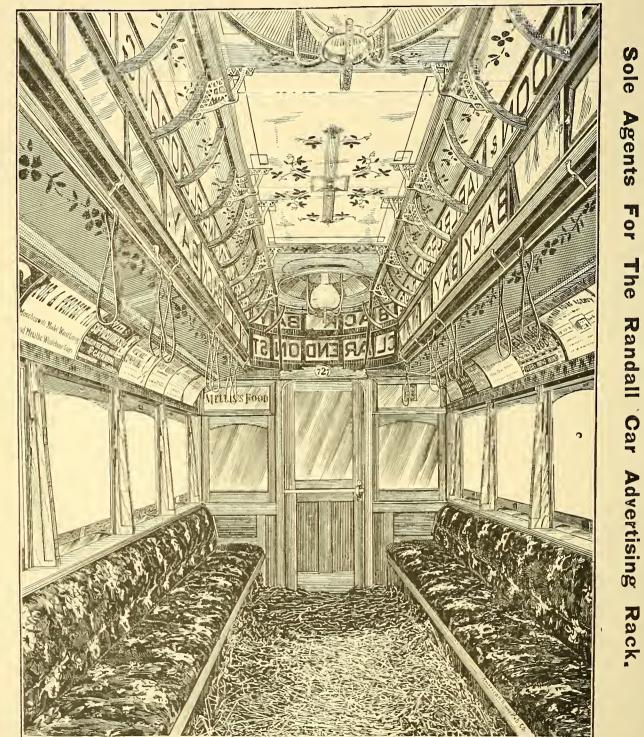
RAILROAD CASTINGS

Of every description and most approved patterns.

FOWLER'S IMPROVED RANDALL BOX & RUNNING GEAR.

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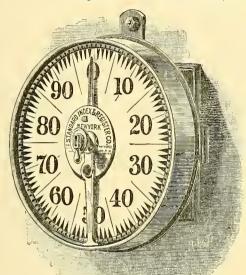
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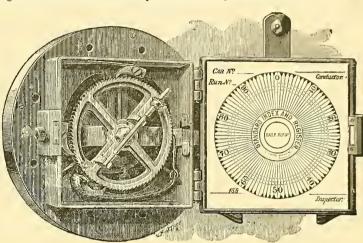


THE STANDARD INDEX & REGISTER CO., **NEW YORK.** SOLE LICENSEES AND MANUFACTURERS OF REGISTER. THE STANDARD INDEX

ADOPTED BY THE LEADING RAILROADS IN THE UNITED STATES,

For Indelibly Recording upon paper the number of trips made, and passengers carried for each trip as well as for any number of trips for any period of time, and sounding an alarm simultaneously with each registration made.





The recent decision of the U. S. Circuit Court in our favor after three years

It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway com-plicity efficiency and *infallibility* as an indicating and recording register. It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway com-plicity efficiency and fares collected, for the reason that, in addition to the visual dial and indicator, a permanent registration of each trip made, and the exact number of fares collected or passengers carried, is auto-preserved in the office of the company for reference and comparison with fares turned in by the conductor, and for filing for future nurposes. purposes.

TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY. PRESIDENT'S OFFICE. C. A. RICHARDS. 16 KILBY STREET,

ELI BALDWIN, ESQ., Prest. Standard Index & Register Co., New York, N. Y., Dear Sir, —In answer to your inquiry of March 3 I would most respectfully state, that after a trial of some months of the two hundred odd registers that you have placed in our cars, I feel that I do no more than exact justice to your com-pany in giving you in the strongest and most unqualified manner my entire ap-proval of them. They are in every way all that you claimed, and all that you promised me they would prove to be. In short, I like them. They answer my purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen. Very respectfully yours, &c., President Metropolitor Day

C. A. RICHARDS, President. CHAS. BOARDMAN, Treas. W. P. HARVEY, Secy. OFFICE OF

THE METROPOLITAN RAILROAD COMPANY, NO. 16 KILBY STREET,

BOSTON, March 23, 1886.

Bosron, March 23, 1886. E. BALDWIN, ESQ., Prest. Standard Index and Register Co.: Dear Sir,—We have now in daily use four hundred and twenty-five of your registers. They have by repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of four years we feel that we are justified in recommending them. Very respectfully yours, &c., C. A. RICHARDS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY.

G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Secy. and Treas. W. N. A. Harris, Supt. OFFICE, 10TH AVENUE, 53D AND 54TH STREETS,

New York, August 31, 1852. New York, August 31, 1852. The Standard Index Register instruments purchased from you about a year and a half ago have since that time been in constant use upou the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried by us. We believe from our experience that in their construction

and result they attain the object sought with accuracy and at the same time with a minimum Hability to external tampering or dishonest manipulation. Very respectfully, C. DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Treas. Howard Scribner, Secy. W. N. A. Harris, Supt. TENTH AVENUE, 53D AND 54TH STREET,

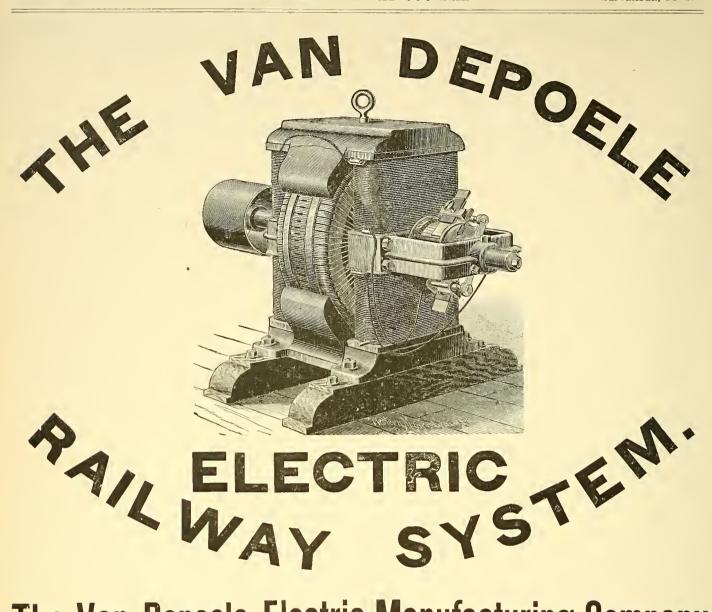
TENTH AVENUE, 53D AND 54TH STREET, NEW YORK, MARCh 24, 1886. ELI BALDWIN, ESQ., Prest. Standard Inder & Register Co. 138 Fulton Street, New York : My Dear Sir, —We have used about 150 of your "Standard Index Registers" for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inside paper dial are free from the danger of being tampered with. In a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you. Very sincerely yours, C. DENSMORE WYMAN, Vice President.

OFFICE OF THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY, COR. 7TH AVE. AND 50TH STREET,

COR. 7TH AVE. AND 50TH STREET, NEW YORK, March 25, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co: Dear Sir,—Concerning your inquiry as to the result of our experience in the use of the Standard Register furnished by your company and the satisfaction given I will state that after five years' test during which they have been in use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I chcertuily endorse them as the best registers that we have ever sean and have found them reliable and not easily put out of order. In short we would not be without them. The paper register or tablet upon which regis-trations are recorded of the number of passengers carried and trips made is an invatuable feature, producing as it does an infallible and indelible record of fares collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers on the cars of our roads at the present time. J. W. FOSHAY, President.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

465



The Van Depoele Electric Manufacturing Company

21 NORTH CLINTON STREET, CHICACO, ILL.,

Owning the Van Depoele Patents for Electric Railways and or Van Depoele Motors, are prepared to equip railways with their Electric System.

We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

Van Depoele Electric Manufg. Co.

RICHARD VOSE. 13 Barclay Street,

PATENTEE AND MANUFACTURER OF

Graduated Street Car Springs.

RUBBER CONE. Patented, April 15th, 1879.

ADAPTED TO THE

STEPHENSON.

BEMIS.

RANDALL.

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JONES.

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And all other Boxes.



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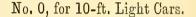






OD SENY

DEMAREST.SCINKY.



York.

No. 1, for 10-ft. Cars.

New

- 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.

TIMONI

MIDDLESEX RAILROAD CO., BOSTON, MASS.

RICHARD VOSE. Dear Sir,--We have had in constant use upon this road for several years the "Vose Grad-uated Spring," and they have given very general satisfaction. So much so that we shall continue to order them. Very truly, CHAS. E. POWERS, Prest.

NO. CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear SIR, —This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-tainly all that we desire. Yours Respectfully, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARD VOSE. Dear Sir, --We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They are undoubtedly the best in the market. Very Respliy. J. W. Foshay, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN, N. Y.

RICHARD VOSE, ESQ. Dear Sir, —Yours of May 27 to Mr. Hazzard, Prest., has been referred to me for reply. And would say that we have now in use about 600 sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. 'ours truly, A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear Sir,-Replying to your

using your Graduated Car Springs since 1881 and have increased the number, until at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

COL. RICHARD VOSE. Dear Sir. — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARD VOSE. Dear Sir,—Send us 6 more sets of your new pattern Car Spring, same as the lot we ordered of you last Sept. In every way. This is the best answer we can make to your question of "How we like them." Yours truly, J. M. DOHEKTY, Supt.

LYNN & BOSTON R.R. CO., CHELSEA, MASS.

RICHARD VOSE, ESQ. Dear Sir,—All I can say In favor of the Vose Spring is that we continue to apply them to most of our new cars. Have about 60 cars equipped and think very well of them. If they could be produced for less money should think better of them. Very Respectfully Yours, E. C. FOSTER, Supt.

CREAM CITY R.R. CO., MILWAUKEE, WIS.

Gentlemen,—Yours of May 28 at hand, with re-gard to your Car Springs. We find they are the best in use. They come a little higher than the Barrel Spring, but they are much the better springs. Yours truly, H. J. C. B. no, Supt.

LOWELL HORSE R.R. CO., LOWELL, MASS.

TO WHOM IT MAY CONCERN: We have used the Rich and Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwil-ling to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

DAYTON STREET R.R., DAYTON, O.

MR. RICHARD VOSE. SIT,—We have eighteen cars equipped with your Patent Graduated Spring, and will use your springs to replace all other kinds as fast as repairs are needed. Your springs give the best satisfaction to our company and *patrons* of any that we have ever tried. Yours Respectfully, A. W. ANDERSON, Supt.

FT. WAYNE & ELMWOOD RY. CO., DETROIT, MICH.

RICHARD VOSE, ESQ. Dear Sir, --For the past four years we have been using your Graduated Springs on all of our cars (30). Our Superintendent says that none of them have ever had to be repaired and that they are the best springs we ever used. Yours truly, N. W. GOODWIN, Secy.

DETROIT CITY RY., DETROIT, MICH.

RICHARD VOSE, ESQ. Dear Sir,—I have your favor of the 20th ultimo. We have about 70 cars equipped with your springs. Our excerience is that they wear well and give general satisfaction. Yours truly, GEO. HENDRIE, Treas.



SUCCESSOR TO

ANDREWS & CLOONEY,

F. T. LERNED, Gen'l Agent.

Manufacturers and Contractors for Constructing Street Railways.

THE BUILDING OF



AND FURNISHING MATERIALS FOR SAME, A SPECIALTY.

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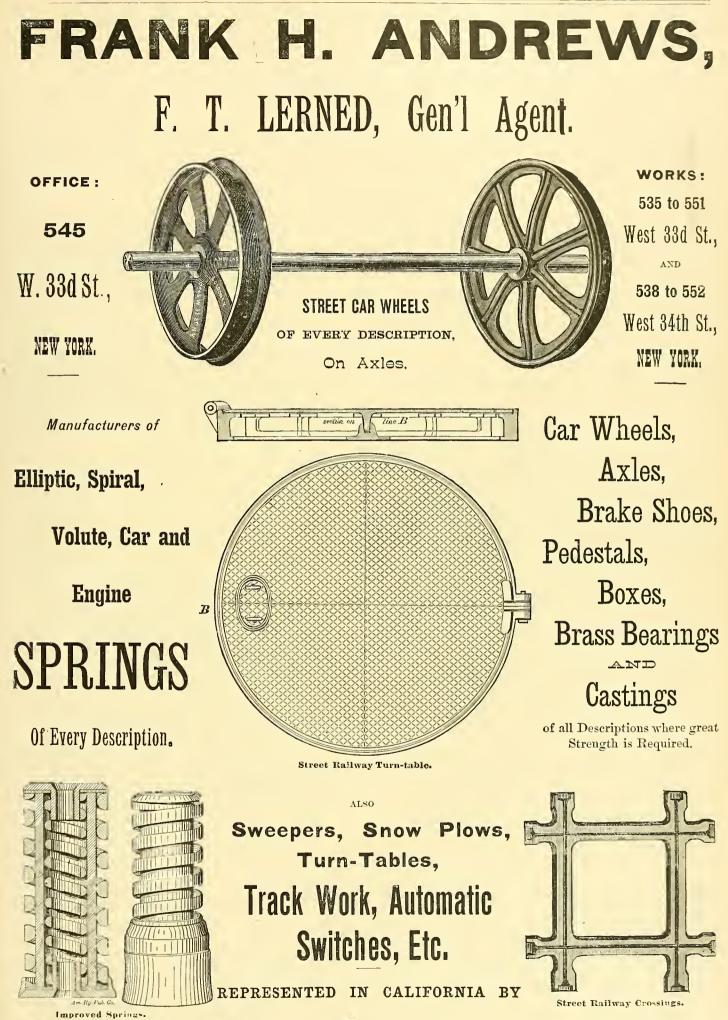
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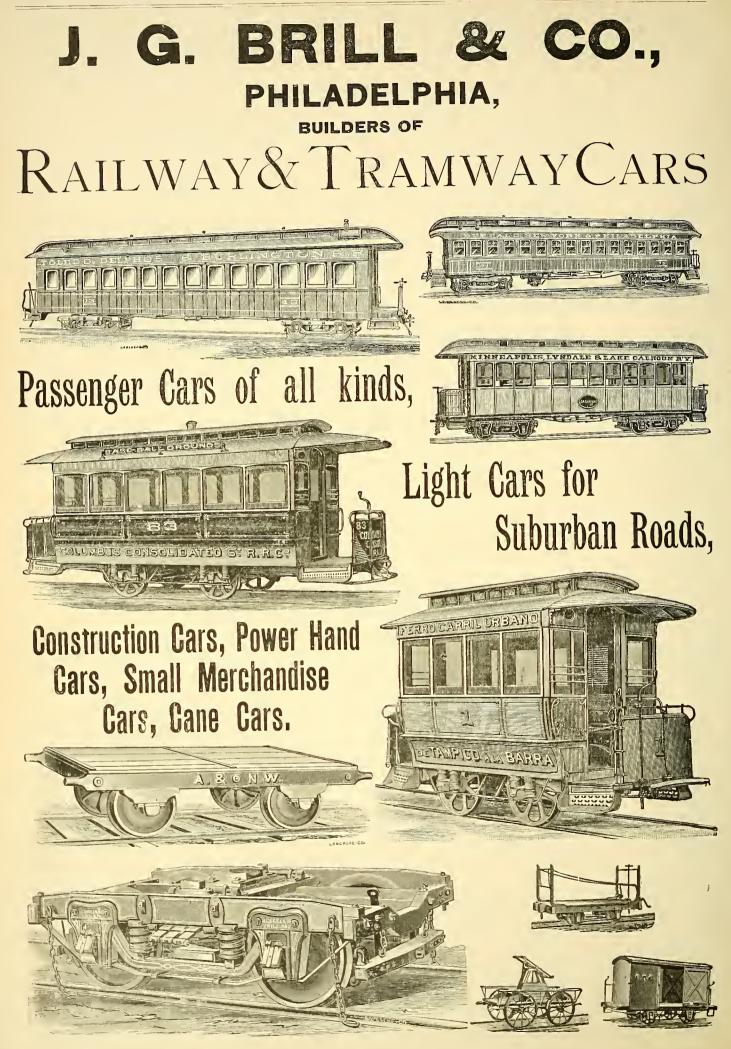
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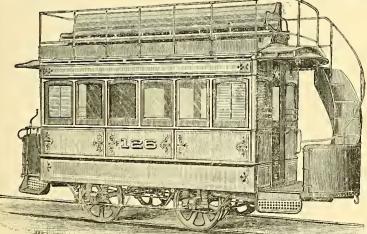


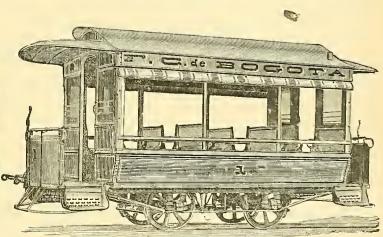
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New Orleans Exhibition of 1885, for Best Open Gold Medal at Cars.





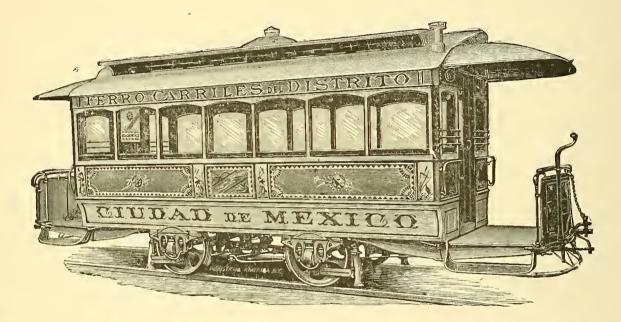
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TRAMWAY CARS

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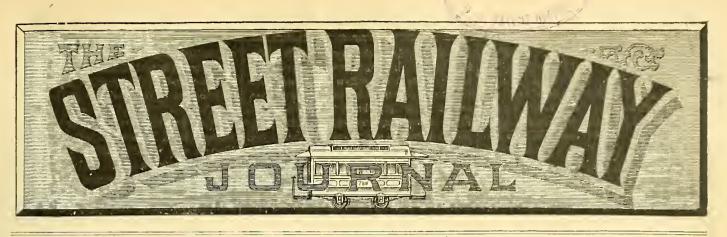
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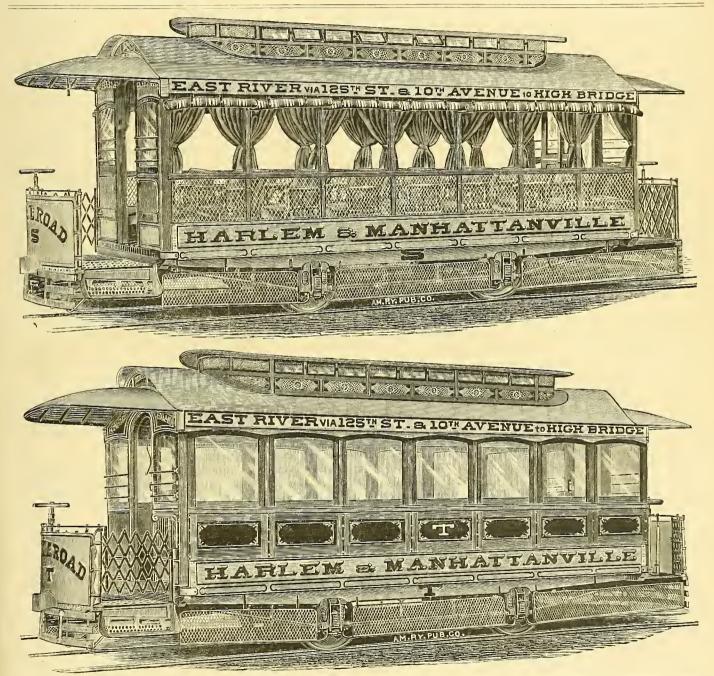
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VOL. II. {NEW YORK: 32 Liberty Street.}

OCTOBER, 1886.

{CHICAGO: Lakeside Building.} No. 12.



COMBINATION CAR, DESIGNED BY SUPT. JOHN H. ROBERTSON, AND BUILT BY J. G. BRILL & CO., FOR THE N.Y. CABLE ROAD.

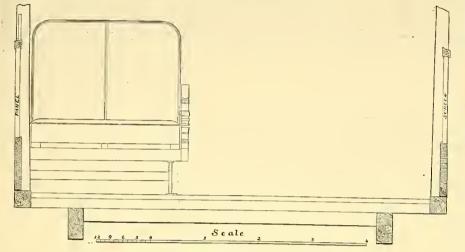
Snmmer and Winter Car.

We are enabled to give complete illustrations of a new car that has been designed by Mr. John H. Robertson, Superintendent of the Third Avenue R.R. Co., of New York, for nse upon the Tenth Avenue Cable Line, which is owned and operated by the Third Avenue Co. The principal

features of the car that are novel are the arrangement of the seats, the floor framing and the removable panels and windows, by which the car may be made into a close or open one, as the requirements of the season may demand. It will be readily understood that the ability to change from one to the other will effect a great saving, not only in the original outlay in the purchase of cars where open cars are used in Summer and close in Winter, but also in the expense of handling, storage and the construction of snitable shelters for those cars that are ont of use. Where a road has only two or three cars the strain is practically inappreciable, but when four or five hundred are idle, there is an enormons waste of interest on investment, and a necessity for storage rooms of the largest capacity. Mr. Robertson has overcome all of these difficulties in the simplest possible manner. He merely takes out the side panels and the windows, substitutes a wire screen for the one and curtains for the other, and an open car of large capacity is the result. In the Cars which we illustrate, the seats are ar-

from the window portion of car. It is also held in place by ordinary wood screws. It is therefore the work of a few moments only to change from one style to the other, and the material to be stored is reduced to the window sashes and panels, which may be piled away in a very small space.

While the arrangement of this car is in



ROBERTSON'S COMBINATION CAR .--- CROSS SECTION.

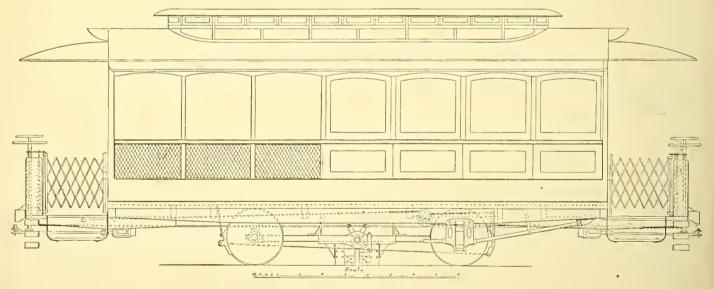
ranged as in an ordinary passenger coach of a steam road, and in order to do this there was of necessity a different arrangement of floor framing from that ordinarily in use in close cars. The regular framing was left unchauged, with the side sills taking the jaws or pedestals for the wheels. Upon this frame there is placed an auxilievery way satisfactory both to the company and the public, it is evident that a variation in the details may be made by which the rail may be removed and the car left exactly like an ordinary open car, with seats running all of the way across, if an intermediate seat be placed in the aisle. But for nse upon a cable line where the and seated, and very easy; the roof is of a strong and substantial design, and provided with double-deck lights and ventilators, as will be seen in the elevation and perspective views.

In winter the cars are to be heated by stoves placed in the corner of the car, though any other method of heating would answer as well. Light is provided by a handsome double center light that will enable passengers to read without excessive straining of the eyes in the evening. The builders of these cars were Messrs. J. G. Brill & Co., of Philadelphia, Pa., to whom great credit is due for the fine finish that they have given to the interior and the care that has been bestowed upon all of the details of the car.

The length of the body of the car is 22 ft., the width of the car 8 ft., the width of the main framing 6 ft., and the seating capacity thirty-two.

Glasgow Street Railways.

The street railways of Glasgow, Scotland, are owned by the nunicipal authorities and are worked on the principle of being a source of revenue to the rate payers of the city. In 1871 the Glasgow corporation obtained parliamentary powers to borrow money for the purpose of constructing a complete tramway system throughout the city, and when the lines were finished they were leased to the Glasgow Tramway Company for 23 years on the following terms: Payment of 1, the rate of interest on the



ROBERTSON'S COMBINATION CAR --- SIDE ELEVATION.

ary frame that projects beyond the main sills to the full width of the car. This framing is lighter than the other, and is made of sufficient strength only to keep the car body stiff and carry the load that may be placed within. Our side elevation and cross section show the method employed to hold the panels or screens in place. The former are held by lips that project over the posts, to which they are fastened by an ordinary wood screw. 'The wire screens have a frame work of $\frac{3}{4}x_1^{4''}$ iron that slips in between the parts and below the rail that is used to divide the paneled

cars are run more rapidly than with horses it is desirable that the speed should, in all cases, be diminished, at least, when passengers wish to enter or leave; and for this it is absolutely necessary that an aisle should be provided so that all entrances and exits be made by way of the rear platform.

The other arrangements of the car are of the latest and most approved designs. The cars are, of conrse, provided with conplers whereby they may be run in trains or handled by horses, if it should be necessary. The seats are reversible cane backed actual money borrowed to construct the works; 2, payment of 3 per cent. on the actual cost to form a sinking fund to wipe out the cost of the works by the expiration of the lease in 1894; 3, payment of, 4 per cent. to form a renewal fund, and 4, a rent in the form of £150 per annum for every mile of tramway in actual use within the city boundary. The tramway company also lodged with the corporation bonds on heritable property to the extent of £60,000 as a pledge that they would implement their bargain. The various payments the tramway company have to make to the city October, 1886.

authorities in terms of the lease amount in the aggregate to £29,000 per anuum or £560 a week. The permanent way is kept in order by the tramway company, who are reimbursed for any repairs they make out of the renewal fund lodged by them with the corporation. Practically the lines are not only a source of income to the corporation, but their cost is being gradually wiped out, and at the close of the present lease the city will be in possession of a valuable property that has not cost the citizens a single penny.

The tramway company, who work the lines and possess a complete monopoly of the street passenger traffic of Glasgow, is a good dividend paying concern, their highest distribution of profits being 11 1-3 per cent., and their yearly average from the beginning until the present date 6 per cent. Recently an underground railway was opened, but as yet it has had uo material effect on the drawings of the tramway company. The capital of the tramway company amounts to £315,000, the miles in operation 26 miles of double road (steel), and the passengers carried over S00,000 a week. A uniform charge of one penny (two cents) per mile is made for each passenger inside and outside the cars alike, and the city is marked off into mile and half-mile stations, so as to enable the conductors to levy the fares. Children between five and twelve years of age are charged half-fare, and a special service of workmen's cars is rnn at a reduced charge of one-half penny (one cent) pe mile. An elaborate system is in operation to prevent dishonesty on the part of employees, the salient features of which are the use of the bell-punch and the depositing of £2 by each conductor as security for his intromissions. The cars are drawn by horses, the directors of the company being of opinion that they can obtain better financials results in that way than by the use of steam. The company have everything within themselves; that is to say, they con struct cars, make harness for horses, and have shoeing forges and a block of dwelling houses for their workmen. Their stud consists of 2,507 animals (2,253 horses and 244 mules), and the distance run daily is about 121 miles by each team. Provender, an important item in tramway management, is dealt with in this way. Each horse is allowed 27¹/₂ pounds of food daily, made up as follows: Maize, 11 pounds; hay, 9 pounds; oats, 61 pounds; bran, 1 pound. and linseed, $\frac{1}{2}$ pound. In addition to the passenger fares, the company draw a revenue for advertisements displayed on their cars, the carriage of parcels, the carriage of mails between the different railway stations in Glasgow and the general Post Office by special vans, and the conveyance of letter carriers from the Post Office to the various delivery districts, also by special A limited number of cars are run on vans. Sundays. In one of the snbnrbs of Glasgow there is a tramway line worked by steam, but this is a comparatively small concern. The directors of the Glasgow company do not desire steam cars, but even if they did it is unlikely that parliament would sanction the use of steam in the streets of a busy city.—Bradstreets.

Street Railway Locomotives.

The well known English house of Messrs. Merryweather & Sons have for some years been at work in the introduction of a locomotive that is especially adapted to street railway service, and claim that they have succeeded in producing a machine that is both economical and serviceable.

Their first line opened was in Paris, where some forty engines were used to perform the tram service in place of horses. Since that time the amount of capital embarked in steam street railway enterprise has been steadily growing, and at the present time the mannfacture of street railway locomotives, and special cars for use in the streets, finds employment for no less than 3,000 mechanics. The use of these engines effects a saving in the running expenses of the street railway companies that have adopted them, amounting in the aggregate to \$145,000 per annum, and in addition gets rid of the unavoidable cruelty which is occasioned by the employment of horses for tramway work.

The North London Tramway Company was the first line in London to adopt steam. It has fifteen engines constructed by Messrs. Merryweather & Sons, and its example will donbtless soon be followed by other London lines.

The engine is apparently in favor, as the receipts are double those of the horse cars, which ran in course of their gradual introduction alternately ou the same line. The North Loudon street railways at present extend from Stamford Hill through the most populous parts of Tottenham and Edmonton to Ponder's End, and a branch is in course of coustrnction along Seven Sisters Road to Finsbury Park; there is a large amount of horse traffic over the whole of the route, but the use of the engines is not found to cause any inconvenience whatever. This engine is constructed for a gauge of 4 ft. 81 in., and is fitted with cylinders 74 in, in diameter by 12 in. stroke placed inside the frames, the whole of the motion being thoroughly accessible to the engine man on the road. The boiler is of mild steel, with copper fire-box and brass tubes 1ª in. outside diameter.

The ashpan is specially arranged to prevent dropping cinders or showing fire, but can be easily raked out when required; the ashpan is operated from both ends of the engine. The wheels are of steel with rolled steel tyres shrunk on and secured by screws. The condensing arrangements are so constructed that exhanst steam is never visible even when ascending hills. The condenser is of the type known as Merryweather's air condenser, and consists of a large number of thin copper tubes arranged across the roof, the ends being secnred which are in tnbe-plates, outside attached copper troughs for the passage of the steam; these troughs are fitted with diaphragms at regular intervals to cause the steam to cross and recross the condenser. The condenser is a feature of importance in a tramway engine, and its proper construction means a great deal monetarily in

wear. A well-made condenser has been shown to last seven years, whilst others have not lived three years. A condenser costs $\pounds 100$, therefore, in this one item the cost of maintenance in an engine can be readily gauged.

In order to meet the Board of Trade regulations, a powerful centrifugal governor is driven from the driving axle by gear direct, without chains or belts. The governor operates on a throttlo valve which closes when the speed reaches eight miles an hour. Should the speed not then be checked, as for instance in descending an incline, a small steam valve is opened giving steam to the brake cylinders and applying the brake. This acts automatically, and ceases to act when the speed has been reduced below the given limit. An ordinary screw-brake is also provided with a handle at each end of the engine, and the steam brake, besides being actuated automatically by the governor, can be applied by the pressnre of the driver's foot on the treadle. The car-brake is operated by a lever admitting steam to a brake cylinder which acts on the brake blocks through the medium of a chain. In this engine, all car-handles, regulator, engine, car brakes, etc., necessary for working, are in duplicate, so that a man may always drive the engine standing at the forward : nd.

Messrs. Merryweather & Sons were the pioneers in Eugland for steam railways in the public streets, and engines of their mannfacture are now running on lines in England, Anstralia, New Zealand, India, France, Germany, Spain, Holland, etc. The cost of working on two of the first established English lines equipped with these engines is as follows: Stockton and Darlington, four years at work, 6¹/₄ cents per mile.

The following report has also been submitted by the engineer:—

Stockton & Darlington Steam Tramways Company, Limited. Cost of repairs and running of engines for six months, from January 1st to June 30th, 1885.

Number (f miles run		25,286
Drivers', steam-raiser, and		
cleaners' wages	\$1,598.88	3.029
Renewals	898.16	.016
Fuel (coke and coal)	746.08	.013
Oil, waste and other stores.	170.72	.003
Water and gas	108.00	.002
_		

Total......\$3,521.84 \$.063

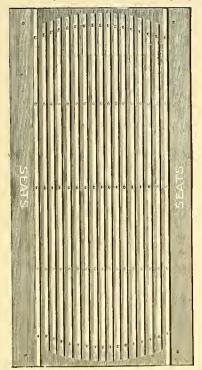
Consumption of coke per mile 9.52 lbs. Total mileage from commencing to run, 356,340.

No firm has had so lengthened an experience in cost of running engines, and no company, we believe, can give results from so extended an experience as they cau with the Merryweather engine, as will be seen by referring to the results of working published from time to time.

THE DAFT ELECTRIC LIGHT Co. have just issned a new illustrated catalogue of their machinery as adapted to the propulsion of street cars. The data given are very full and complete in every respect.

Everit's Street Car Floor.

The floor, whose general appearance is shown in our illustration, is designed to take the place of the mats of wood or cocoa that are now in general use. It consists simply of strips of ash or other hard wood, three-quarters of an inch wide and one-half an inch thick, screwed or nailed rigidly to



the floor, and having their ends trimmed off to allow for sweeping out. When using these strips, the floor is first painted and the strips laid straight through the middle and spaced equally on each side. It will be seen that with this device there are no obstructions to sweeping out or washing the car from end to end.

*W. L. Everit, New Haven, Conn.

The Cambridge, Mass., Consolidation.

The consolidation that was practically made some time ago has at last been legally effected, under these conditions: First—The name of the consolidated com-

First—The name of the consolidated company is to be the Cambridge Railway Company.

Second—The consolidated company will have a capital stock equal to the combined capital of both the said companies, to wit : A capital of one milliou, niue huudred and fifty thousaud (\$1,950,000), divided into 19,500 shares, of the par value of \$100 each. Third—The consolidated company will

assume and pay both principal and interest, the outstanding funded debt of both roads.

Fourth—The consolidated company will own all the property of every description whatever, real, personal or mixed, including lands, buildings, leases, tracks, horses, cars, equipments, supplies, cash and cash assets, notes, causes of action, together with all the franchises, locations, rights, powers and privileges of each road.

with all the franchises, locations, rights, powers and privileges of each road. Fifth—The Boards of Directors of the two roads, namely: Preutiss Cummings, Joseph H. Tyler, Israel M. Spellman, Edwin Dresser, Otis S. Brown, Francis J. Parker, Charles E. Raymond, Edmund Reardon and Henry F. Woods will act as board of directors of said consolidated compauy.

When this agreement was presented to the stockholders, 10,703 shares were cast in favor of, and 47 against the consolidation.

Road and Rail Vehicles.

Although most tramway companies, espe-

cially worked by steam traction, have the right to carry goods as well as passengers over their lines, few or none appear to avail themselves of the privilege. The reasons for this state of things are various, but one of them lies in the difficulty of transporting the goods from the nearest point of line to its ultimate destination. Even if the goods have to be delivered in the same street as the tram line passes through, the wagou cannot remain long enough to be unloaded, as it would delay all their tramway traffic meanwhile. Unlike a road lurry, it cannot be drawn to one side clear of the line and close to the door of the consignee. In most cases, moreover, the goods have to be brought from some point outside the tramway system and delivered to some other point without the limits of the system, which would in the ordinary course of things meau two transhipments of goods. To overcome the difficulty several vehicles that will either run upon tram rails or upou the streets and roads have been invented, although hitherto with little practical success. In Perrett's plau the wheels are made with a loose flange, which, by means of an eccentric arrangement, can be dropped below the tread of the wheel or withdrawn at pleasure, the flange only projecting at the bottom, In another somewhat similar wheel the flange is made in segmeuts, which can be projected or withdrawn all round the wheel, as required. The latest, and perhaps the best device of the kind, however, is patented by Mr. Alfred Dickinson, the general manager of the South Staffordshire and Birmingham District Steam Tramways, which consists of a strong road lurry or other vehicle carrying two sets of wheels, one set adapted for road and the other for tramway traction. The latter revolve in bearings at the end of arms or levers, which are rigidly secured to the axle of the road wheel. When not in use the arms carrying the tram wheels, which project beyond the periphery of the road wheels, are inclined, so that they do not reach to the level of the rails, but when they are required to run they are brought down verpendicularly, so as to stand exactly beneath the road axle. By this means the lnrry, together with its road wheels, is lifted 2in. or 3in. higher, the weight being borne by the tram wheels, which are made of a suitable gauge to the tramway upon which it is intended to be used. The working apparatns by which the wheels are raised or lowered consists of a horizontal screw running longitudinally beneath the lurry, tnrned by a movable winch handle placed at the side near one end, motion being communicated by means of byvel wheels. The nut of the screw traverses to and fro, and is connected by a series of levers to an arm on each of the road axles, the rotation of which lifts or lowers the arms carrying the tram wheels and axles. When running npon the tramway the swiveling forecarriage of an ordin-

ary road vehicle is not required, so that in this instance provision is made by which it can be prevented from swiveling by means of a locking pin. The shafts for horses also not being required are made easily removable. On the other hand provision is made for coupling to an engine by a suitable draw arrangement attached to the front axle. One of these lurries has been constructed, and tried upon the tramway with satisfactory results, being run up and down at speeds varying from five to twenty-five miles an hour. The time occupied in detaching the engine, putting on the windlass handle, and lowering the lurry for use on the road was one minute, whilst the operation of attaching the shafts and putting in the horse occupied two minutes more, so that the whole business of substituting road for tram traction occupied only three minutes. The gross weight of the lurry, including the shafts, is 82cwt., its capacity being five tons, which, however, would necessitate two horses for road traction. The diameter of the tram wheels is 1ft. 5 in.; that of the road ones being 3ft. 4in. The extreme length of vehicle is 10ft. 6iu.; width, 5ft.; height of side, Sin.; and the extreme height from rail, 4ft. liu.

Although this wagon may be found to overcome the difficulties it is intended to surmouut in an efficient manner, there are one or two points of detail which appear to be objectionable. The great strain thrown upon the screw and nut apparatus when running upou rails through the vehicle being perched up so high without being stayed in any other way than by the levers attached to the apparatus in question will probably be found to be one of them, whilst another lies in the small size of the wheels, 1ft. 5in., which is 10in. smaller than the usual size of tramcar vehicles. The difficulty of fixing an efficient breadth, which will probably be insisted upon by the Board of Trade if used ou steam tramways, is also another point which must be looked to.

Iu Hamburg omnubuses adapted to run either upon road or rail have been in use for some years, aud a vehicle of this description was recently made by the Lancaster Wagon Company for use on one of the Holloway routes. The apparatus in these instances consists of a guide wheel which runs before the front wheel on one side of omnibus, and drops into the groove of the tram rail. By simply pulling a lever the driver can lift or lower the wheel at pleasure, so that when running on the rails, if any obstruction takes place, if on a single line he meets another tram vehicle, he can instantly raise the guide wheel and take to the road, as there are no flanges to the wheels, which are of the ordinary road type made of the right gauge to run on the top of the rails.

The guide wheel is carried by a strong arm pivoted upon the front axle so that when down it also locks the fore-carriage of the vehicle and prevents it from swivelling. As bearing upon this subject it may be remarked that many of the omnibuscs which run alongside the line of docks at Liver-

pool have wheels which adapt them to either run on the rails or upon the road. In this case the wheels are made very broad, 6in. or 7in., for the purpose of running on ordinary railroad rails which are laid down with guard rails alongside. The wide wheels of the omnibuses bear upon both rails, and the concavity of the tyres is sufficient to keep them on the track without binding them should a railway wagon or other obstruction be in the way. The great saving of power by using smooth iron rails instead of rough stone is enormous, and any invention which will help to bring about the substitution of one for the other is to be welcomed, as it is a matter of considerable and increasing importance. The proposed plateway between Liverpool and Manchester is an instance of a scheme having this end in view, and although never carried out in consequence of the Manchester Ship Canal Bill passing, yet the idea, which was to lay down flat iron or steel plates alongside the road upon which ordinary road vehicles might be drawn either by traction engines or horses, is undoubtedly a good one, and will possibly come to the front again in some other direction, perhaps in the busy streets of our large towns.

A New Electric Engine for Street Cars.

A new electric tram engine was shown recently at the station of the North Metropolitan Tramway Company, Stratford, England. This is a center at which fair trials have always been accorded to any new motor and it is understood that in the event of the new inventors and the tramway company agreeing upon terms, a practical experiment of no small importance will be made in electric tramways upon the new line to Ilford. The electrical engineers in. this case are the Electric Locomotive and Power Company (limited), who claim to have solved the problem of economical working by combining the electrical power with the mechanical aid of the lever principle. The electro-motor is connected by pinions horizontally with a large stationary rack and vertically with the wheels. When the electrical engine is started the pinion of the horizontal armature gears into the stationary rack, and so causes the motor itself to revolve. The motor then becomes by the action of its fixed vertical shaft, the driving axle and communicates its motion to the wheels of the car. By means of clutches a backward or forward motion can be secured without reversing the direction in which the electro-motor is revolving. The electricity is supplied from fifty cells of, say, a total of 280 amperes. It is claimed that the average discharge is from 40 to 45 amperes per hour, and that an engine consuming only two tons of coal per week, will charge batteries sufficient to do the work of fonr cars requiring at present forty-four horses per week. Apparently the engine is controlled with perfect ease, and though at present it is fitted up separately from the car itself, so as to take the place of

horses and utilize existing cars, the company claims that it can in future easily be constructed as a part of the passenger car. Electric Review.

Splicing Cables.

EDITOR STREET RAILWAY JOURNAL :

In your September number you make some reference to the method of splicing the wire cables of the cable railway system, and it is stated in that article that the splice used lasts only about *four weeks*, but with the introduction of the described splice all this was changed, and the splice lasts *twelve months*, etc.

In the cable now in use on the Presidio and Ferries Cable Ry. Co. of this city, a splice put in by us has lasted *twenty-four* months, and on the Clay Street Hill R.R. Co.'s line we have just taken out a rope that had been in constant operation for sixteen months, and the splice was the same as when put in by us sixteen months ago.

In the California Street Cable Ry. Co. our splices last as long as the ropes, and we do not find any trouble in making splices that will last as long as the cable and cables of our make have lasted from *nineteen* to *twenty-four months* in constant use.

We have made almost every conceivable splice, and, as we understand it, the same as you describe, but have come back to the simple splice we now use, and which, by its simplicity and durability, has recommended itself to the owners of all the cable roads using our wire cables.

CALIFORNIA WIRE WORKS.

Elevated Railroads in Paris.

A lecture was delivered at the Conservatory of Arts and Trades by M. Banderali,, Engineer-in-Chief of the material and the movement of the Northern Railway, ou the New York Elevated Railway system. The lecturer began with a summary of the several systems of tramways used in American cities. He explained the economical and topographical reasons for adopting the "aërial" or elevated system in New York. Although a considerable portion of the future Paris Metropolitan will be above ground, still, it is said by the lecturer, the manners and temper of the French would hardly favor a system which consists in making trains to travel over metallic spans supported by cast-iron pillars, at ten, fifteen, or even twenty-five metres above the public roadway. Mr. Banderali explained that a subterranean road would have cost 11,000,000 francs per kilometre, nearly \$4,000,000 per mile (a mile is equivalent to 1,609 metres, or about one and two-thirds kilometres) while the elevated only cost 3,500,000 francs, about \$700,000. What most pleased the audience was the explanation of the improvements found and applied by the practical and inventive genius of the Americans, in regard to the building, and especially the method of running, the elevated road.-Ex.

Railway vs. Street Lines.

When the elevated roads were first projected for New York, it will be remembered that there was a great hue and cry raised by the street car lines that their occupation would be gone indeed if these terrible overhead roads were permitted to be built. They fought well but were overcome, and have had an unexampled era of prosperity ever since. That they have not been alone in this experience will be seen from the following quotation from the London Financial News: When the Metropolitan Railway was opened in 1863 there were far-seeing people who predicted that in a few years the last omnibus would disappear from the streets of London. To the omnibus people themselves it seemed as if the world was coming to an end. They gave up improving the plant, and every penny worth of paint spent on their clumsy ramshackle vehicles was considered to be practically thrown away. Our street conveyances, both 'buses and cabs, were, perhaps, never so bad as in the decade which followed the opening of the Uuderground Railway. Horses fell 30 per cent. in value, and it was thought to be only a question of time when they would follow the omnibuses to the limbo of extinct fashions. The stock of the London General Omnibus Company fell below par, and for a considerable time it might have been bought between 80 and 90. Oxford street and the Strand were once more to be rustic lanes, and the West end squares to be as silent as graveyards.

But it has not fallen out as people predicted; Oxford street and the Strand are to-day busier thoroughfares than ever ; the West end squares are bright and gay compared with what they used to be; London contains half as many more horses as it did wheu the Underground Railway first threatened to abolish them; there are now two omnibus lines for every one that existed 20 years ago; the vehicles are larger, roomier, and better appointed that any ever seen on the streets before; the street traffic of all kinds has grown almost as rapidly as the underground traffic, and the antiquated omnibus holds its own, or rather more, against the railway. We have actnally lived to see complaints made in railway reports of omnibus competition, and of passeugers being carried by horse-power at fares which the steam-horse cannot descend to. It is a contrary world altogether, and that is one of its paradoxes. No one ever suspected that the triumphant progress of steam traveling would sustain a check like this. It was to go forward conquering and to couquer and there was to be no conceivable limit to its growth.

Every succeeding report of the two Metropolitan Railways throws fresh donbt ou the boasied elasticity of their traffic. Neither of them shows the growth it onght to do. In the case of the District line there is actual retrogression, and though the Metropolitan traffic continues to creep up it is at a diminishing rate. The gross receipts keep up an appearance of progress, but the receipts per mile and the receipts per head

The London Railway System.

Iu Londou the common methods of passenger transportation are carried on by means of railways, street railways, omnibus lines and steamboats.

While in Paris the railways play only a secondary part in the transportation of the public, they occupy in London the first place.

METROPOLITAN AND SUBURBAN RAILWAYS.

In spite of the great additions that have been made to the metropolitan and suburban railways, during the past fifteen years, it is very certain that the end is not yet, and that more extensions will be added in the future.

In extending in all directions as they have these railways have contributed largely to the development of London.

This development, which could only have been the work of time with the old methods of locomotion, has been very rapid, thanks to the city roads which traverse London and its suburbs in every direction. Certain parts of the city, which the omnibus lines did not touch, because they could not find therein sufficient traffic to pay their expenses, offer, since they have been crossed by the railways, an amount of life and traffic that was not counted upon. Property that formed a few years ago the outskirts of London, now constitutes a part of the great metropolis. The city has grown so that these outskirts now begin some ten miles from Charing Cross.

In 1870 the population of London was about 3,200,000, while a recent census gives the population at 3,955,000.

The greatest length of London is from east to west, from Blackwall to Hammersmith, a distance of something more than ten miles.

The only available means for traversing this distance a few years ago was by the use of the omnibus lines or the steamboats upon the Thames. By either one of these two methods of transportation the passage would have required at least two hours. It was at first reduced to one honr by the construction of the circular lines running to the north, and this has been still further reduced by the Metropolitan Railway from Blackwall to about forty minutes.

The advantages of speed and the low fares, together with the certainty of departure and arrival at the advertised hour, is greatly appreciated by a population like that of London, to whom time is money. For this reason the Metropolitan and Snburban were not slow in gaining their welldeserved popularity with the public.

The patronage is derived for the most part, during the morning and evening, from business men, employees and workmen, whose business does not oblige them to reside in the City or the West End, and who, for the sake of better accommodations or economy, live in the new outskirts or suburbs.

During the day, the traffic is derived from those, whose business or pleasure

takes them into distant portions of the metropolis. During pleasant weather, the London population deserts the city on Sunday, and goes in mass to Greenwich, Kew, Richmond, and to other localities dear to the heart of Londoners, and which are well known to all those who have visited the English capital. The nearness of the termini to the center of the city facilitates these excursions; and as all of the routes are connected together either directly or indirectly, the public is not obliged as in Paris, to take a long walk before reaching a depot from which the cars may be taken.

An examination of a map of the London roads shows, however, that these lines have not been laid out on any thoroughly well conceived plan, and that in many cases the roads have been duplicated or paralleled to the detriment of their action, and at an unnecessary expense.

The London system is similar in this respect to that of all the rest of England. Manufacturing is so flourishing at almost every point of the kingdom and the taste for speculation is so thoroughly well developed, that there is not only no locality that is not provided with its railroad, but there are frequently several which unite it to the metropolis.

The manufacturing and commercial ceuters, like Manchester and Liverpool, are united by four great lines running to London, namely : the Great Western, the Great Northern, the London and Northwestern and the Midland.

For the sake of developing their resources the London companies do not hesitate at any combination, any expense which can in any way bring about this result. If the state of their finances or their credit does not permit them to construct new branches, or necessary accommodations for the preservation or development of their traffic, they find a syndicate that will undertake the construction of the work for them, and to whom they pay an annual rental. London offers nnmerous examples of this kind. The Victoria and several lines known as Junction have been built npon this system.

Now, among the means used to attract the public, the companies have thought that the most efficacious means is to run their termini into London, and thus avoid the long distance that the traveler would otherwise be obliged to traverse in order to reach an outgoing depot.

It is known that in London carriages are not paid for by the trip, but by the distance traversed. The old stations were separated some distance from the center of the city, and the cab hire often exceeded that of the railway passage ticket. Under the old regime, a traveler going from Moorgate street into the city to Windsor by the Great Western, would have to pay 2s. 6d. (60 cents), besides the cabman's fee for taking him to the Paddington station, and 2s. 10d. (68 cents) for a second-class ticket from Paddington to Windsor, a distance of a little more than 21 miles. In going from Moorgate station upon the Metropolitan Ry. the train runs direct to Windsor and

both exhibit a marked decline. In the first 10 years all three made enormous strides year by year. The number of passengers carried in 1863 was under 9,500,000. In the following year there was an increase of fully 2,250,000, iu 1865 of over 4,000,000, in 1866 of 5,500,000, in 1867 of nearly 2,250,-000, in 1866 of over 4,250,000, in 1869 of over 9,000,000. The 'ncrease wentsteadily on at an average of 2,000,000 to 3,000,000 a year till 1873, when it suffered a sharp check. In 1875 it started again and from 2,000,000 to 4,000,000 a year were added to the number of passengers till 1882, when a second reaction began. In 1883 the St. John's-wood railway receipts were included in those of the Metropolitan, and the comparison is no longer exact. It shows roughly, however, that the large additions of mileage brought in by the St. John'swood line, the City extension, and the Harrow extension, have barely maintained the rate of progress which the original Metropolitan enjoyed when it stopped at Aldgate.

Instead of bringing in floods of new traffie, as they were expected to do, the extensions have poured in only driblets just sufficient to offset the loss which the parent line might have shown in their absence. It would be rash to say that the Metropolitan Railway has reached the length of its tether, but it has certainly passed the first bloom of its youth and prosperity. With street competition, both omnibus and tramway, cutting into it at so many points, it will have to fight harder for its future increase, and possibly even to keep what it has got. The Metropolitan District is still harder struck by its road competitors. There are more of them, and they run parallel to it almost all its length The traveling public in London seem to be returning in a remarkable degree to their old love. For varions reasons of health, comfort, and economy they prefer au omnibus earrying them direct to their destination to an underground train which they have to go out of their way for, and again out of their way to get away from. The battle of railway versus omnibus inclines at present decidedly in favor of the old fashioned vehicle.

Los Angeles Cable Road : A Correction.

Editor Street Railway Journal:

Please oblige us by correcting the statement made in August number of STREET RAILWAY JOURNAL in which you say "The Temple Street Cable Railroad, Los Angeles, Cal., is operated and constructed under the patents of S. O. Brown." Such is not the ease. Mr. Brown is our superintendent of construction. But this Company operate entirely under the original (Hallidie) patents, and is licensed by the Pacific Cable Railway Co. of this city

J. M. THOMPSON, Pres't. San Francisco, Cal.

Thes to the number of 5,369,000, were used in France in 1884. About one-fourth of the ties used were imported from foreign conntries, chiefly from Sweden, Galicia, Italy, etc. Wood has been the only material used for ties until the present.

We could multiply examples of this kind, bnt prefer to return to the subject in the conrse of our discussion, showing the great advantage, from this point of view, of the London system.

The system of the Metropolitan and Suburban Railways owe their existence to the co-operation of the main railways which center in London.

The branch from Dalston street to Broad of the North London, which gives the London and Northwestern access to the city, the subterranean line from Paddington to Farrington street, the point of departure of the Metropolitan Railway, that from Charing Cross to Cannon street and to London Bridge, and still others which we could cite, have had their origin in the struggle of the London and Northwestern with the Great Western, and that of the Southeastern with the London, Chatham and Dover.

In order to penetrate those quarters where circulation is very active, as in the West End and the City, there were only two systems possible: the subterranean system adopted by the Metropolitan Railway, and the elevated system followed by the Sontheastern, the London, Chatham and Dover, etc. This last method is more practicable in London than in Paris, since the houses are not so high. Nevertheless, in both cases the expense is very great.

As these expenses were ont of all proportion to the amount of traffic which they could expect from long'distance travelers, the companies thought that they could make an omnibus connection between the incoming and outgoing depots.

The rivalry between the companies, whose interests are not hostile to each other, should bring about some arrangement which would permit them to have several points of departure and exploit several lines in common.

These arrangements were not the same in all cases.

Some ran their trains upon the rails of friendly companies, either by a reciprocity of title or by a regular toll. Others run cars in their trains belonging to the other companies with which they connect. These cars, carrying passengers whose destination is upon the branch lines, are detached at the junction points often without stopping the train, and are attached to the connecting train which stops at the station or junction, and which is its point of departure. This system, which was formerly employed by the Compagnie de l'Ouest in France for the Argenteuil trains, which are detached at Asnieres from those for Saint-Germain, is frequently employed for subnrban service in London.

More frequently, however, the connection between line and line is accomplished by a change of cars. Here was the greatest inconvenience that was met in the exploitation of the London railways. In many cases the traveler is obliged to change cars several times on a short trip, and upon lines where the trains are run at long intervals, he is liable to find no place on the connecting train, and to lose in the attempt the time which he would gain by taking the railway in preference to the omnibus or the steamboat.

The companies use the city and suburban lines to carry passengers between the city and the suburbs; to start the trunk line trains from the several stations in the city; and to carry passengers across London who only wish to pass from an incoming station to one from which they can leave the city and continue their route.

It is from these three points of view that we will consider the advantages that will accrue to a city from having some method of steam transportation, after we have taken a brief glance at the older and principal London lines.

THE TWO GROUPS OF LONDON BAILWAYS.

The railways by which London and its suburbs are served may be divided into two groups, and are embraced by a radius of from seven to eight miles, namely: The circular group upon the right and left banks of the Thames and the central group. The circular group comprises:

1. The North London, which runs from Poplar to the east, then north by Bow and Victoria Park, crosses Hackney, Hammerton, Dalston, Camden Town, and ends at Chalk Farm upon the London and Northwestern.

2. The London and Northwestern, Hampstead and City Junction Railway, which commences at Camden Town upon the North London, crosses Gospel Oak, tunnels under the hills of Hampstead, leaves the main lines of Finchley and Edgeware, and rejoins the London and Northwestern at Willesden Junction.

3. The West London Extension Railway, which connects with the London and Northwestern at Willesden Junction, and runs along the Thames by way of Kensington, West Brompton and Chelsea, crosses the river at Battersea and rejoins the London, Brighton and South Coast Railway, connecting also with the London aud Southwestern Railway and with the London. Chatham and Dover Railway.

From Clapham Junction three circular lines runs to London Bridge, all three being exploited by the Brighton.

The first, the West End and Crystal Palace Railway, runs from Victoria across Clapham Junction, where it runs beside the Southwestern, turns to the southeast by Balham, Streatham, Lower Norwood, passes below the Crystal Palace, and finally connects with the principal Brighton line at Lower Sydenham at the foot of Sydendam hill.

The second line, the South London, is shorter and is more used between Victoria and London Bridge. It does not connect directly with the West London.

The third is composed of a portion of the West End and Crystal Palace, of the branch from Streatham to Peckham Rye, and the remainder of the South London.

South London, which passes under the Thames by way of the old tunnel constructed by Branel, serving Deptford and Rotherhite. The East London is in connection at New Cross with the Brighton and Southeastern lines.

The central group comprises :

1. The metropolitan net work, composed of the Metropolitan Railway, as it is properly called, which starts from Moorgate street and connects at the Brompton station with the District Railway, which originally stopped at the Mansion House.

2. The Metropolitan extension which connects with the Metropolitan at Farringdon street and at Aldersgate street, passes by Ludgate Hill, crosses the Thames, serves Blackfriars, Elephant Castle, Camberwell, and rejoins the South London at Brixton, establishing, in this way, a communication between the Metropolitan system and the circular group on the south.

3. The city lines of the Great Northern and the Midland connects with the Metropolitan at King's Cross, which connects in turn with the system of the south, forming in this way a great iron road from Brixton to Kentish Town and to Finchley Road.

4. The line from Charing Cross to Cannon street and to London Bridge giving a direct communication between the West End, the City and Southwark, meeting the Southwestern at Waterloo Junction and uniting at London Bridge with the Greenwich, Woolwich and Gravesend lines as well as that running to Brighton.

5. The line from Fenchurch street to Blackwall, starting from the city and connecting with the North London at Bow and Poplar.

6. The line from Bishopsgate to Stratford Junction which connects with the North London by a branch from Stratford Junction to Victoria Park.

7. The branch of the North London from Dalston to Broad street, giving this road a statiou in the city.

8. The portion of the London and Northwestern comprised between its terminus at Euston Square and Willesden Junction.

9. The portion of the Great Western. from Paddington, its principal point of departure, to its connection with the West London.

10. The branch from Baker street to Swiss Cottage.

11. The loop of the Metropolitan from Kensington (H. S.) to Kensington (A. R.) and from Brompton to West Brompton.

Most of these lines are merely radiating lines, which run from the Metropolitan system to the circular group on the right and left bank.

In order to make the system complete we must add to these roads, the lines of the Southwestern debonching from the two banks of the Thames to the suburbs on the west and southwest of London, as well as the London and Crystal Palace Railway (high level hine), and the small branch At the Old Kent Road station of the from Nunhead to Blackheath Hill (Greenwich), these two last lines having been exploited by the Chatham Company.

If the course of the roads which we have just enumerated were followed out upon the map it would be found that they almost all reunite in four points, where they connect with one another. These points, which play an important role in the exploitation of the city and suburban lines of London, are : Stratford Junction in the southwest; Willesden Junction in the northwest; Clapham Junction in the southwest; and New Cross Junction in the southeast.

These connections, in permitting the passage of trains from the high level to the low level lines, offer a great variety of combinations of connections which the companies can establish according to their needs.

The most important connecting point among those which we have just mentioned is that of Clapham.

The crossings of the five companies which meet there cannot be upon the same level, hence they must adopt a system of different levels analogous to that which obtains on the roads between La Chappelle and Saint Denis, except that in the system of the north, the orossings are made obliquely. At Clapham they are operated at a right angle either above or below the roads with which they connect a short distance away. Thus, the West London connects on one side with the line of the Southwestern, and on the other with the Chatham line, where it runs below the former. The connection of the West London with the West End and Crystal Palace takes place under the same conditions.

Therefore, in spite of the connections of the different lines of the circular group, it has been impossible to establish about London, a complete circular service taking the traveler to his point of departure, because of the gap existing between East London and Blackwall.

A traveler who starts from Poplar and follows the circular lines to their actual termini at East Loudon, takes two hours and twenty-three minutes to traverse thirty-fonr miles, that is to say, one minute less than the trains of the Parisian Belt lines require to run twenty-two miles. And nevertheless there is a connection on the Parisian lines between those on the right and those on the left bank of the river.

But if these lines which compose the circular or belt lines of London do uot present the unity of action of the Parisian Belt lines, they render to the public and the companies with which they connect a far better service.

OIBCULAR GROUP ON THE LEFT BANK OF THE THAMES.

We will now take as an example the ciroular group on the left bank of the Thames which plays in the exploitation of the London system a role to which the Parisian Belt hine may be compared.

The connecting station at Stratford, where all the trains of the Great Eastern, both in entering and leaving London, pass, and that of Willesden, where all the freight trains whose destination is Euston Square stop, are connected with each other by a branch from Stratford to Victoria Park upon the North London by the North London and by the Hampstead Junction line.

This last line, connected with the West London at Willesden as well as the North and Southwestern Junction Railway, gives access to the important stations of Kensingtou (A. R.) and of Victoria, and permits Acton, Kew, Hammersmith, Richmond, etc., to be served. These roads pass above those of the Northwestern, and the connection is established between the two lines, running the trains either by means of the upper or the lower station. Besides this, the roads which cross the Northwestern at Willesden Junction connect with it, and also allow the trains to pass from one line to another.

If we add to those roads which form the belt lines of the north, the branch from Dalston to Broad street, we can understand how those companies, which have the same interests and objects, that of drawing travel from their rivals, cau bring their lines together and make communications between the east and the west and southwest, by having one point of departure in the city at Broad street, and two in the West End at Kensington (A. R.) and at Victoria.

NORTH LONDON.

In this combination of common service at the head of which the Northwestern is placed, the North London plays an important role, for it is the means of communication between the systems of the east and the west.

Its length including the Dalston branch is about twelve miles.

It was constructed to avoid the transhipment of freight passing from the eastern lines to that of the Northwestern and to draw into the station of Camden Town the products of all kinds that are unloaded upon the docks of the Thames. It has been utilized for a great many years for the transportation of passengers.

For this purpose they have built at Camden Town, where the tickets for the trains of the main lines are taken up, a station for passengers to which the name of Chalk Farm is given in order to distinguish it from the freight depot of the Northwestern which is just before it. It is in conuection with Euston Square by a service of thirty daily trains over the main and suburbau lines.

The service of the North London is as follows: Trains leave every fifteen minutes from Broad street, on one side for Chalk Farm and on the other for the Bow where they connect with Fenchnrch street and for Poplar and Blackwall. Passengers going from a station at the east of Dalston to one at the west change cars at the branch, or junction point.

As the trains of the North London connect at Victoria with those running from Stratford (this connection generally tak ing place by means of a train running between these two stations) for North Woolwich, Cambridge, Epping, Ipswich, and the whole east, passengers can go from Chalk Farm or Broad Street to any of these localities. The line from Blackwall to Chalk Farm, which is somewhat more than eight miles in length with thirteen stations, is traversed in 54 minutes. The fare is eleven and oue-half cents for first class and seven and oue-half cents for second class from Fenchurch to any station on the North London. From Blackwall the fare is increased by four cents. Tickets for the round trip are sold at a reduction. Round trip tickets from Fenchurch to Chalk Farm cost 17 ceuts for first class, and 11¹/₂ cents for second class.

LONDON AND NORTHWESTERN.

The Northwestern has in its turn three trains per hour from Broad Street to Willesden. These trains are semi-direct from Broad Street to Camden Town, where they take up passengers that are brought from the east by the North London and are also taken by omnibus from Camden Town to Willesden. Of these trains two run every hour to Kensington (A. R.) and to Victoria and the third to Acton, Kew, Hammersmith, and Richmoud by the North and Southwestern Junction Railway, which is run conjointly by the Northwestern, the North London and the Midland.

The trip from Broad street to Willesden, making eight stops, takes thirty-two minntes, and that from Willesden to Victoria, making six stops, takes twenty-seven minutes. Trains from Broad Street to Victoria and vice versa cennect at Willesden with the trains runuing up aud down the line of the Northwestern. Travelers from the city and the West Endare therefore not obliged to go to Euston Square in order to go to the north of England. They buy their tickets and take the trains of the Northwestern at Broad Street, at Kensington or at Victoria. There is also a service between Broad Street and the Mansion House by way of Willesden Junction, Earls Court, etc. The trains from Broad Street to Victoria connect at the latter station with those from Brighton, Chatham and the South. The same is done at Kensington, (A. R.) between the Northwestern and the Southwestern.

Travelers find in the Victoria Station buffets and toilet rooms and all other conveniences that are usually found in English stations.

The different services which we have just enumerated result in bringing the quarters of the east and north into communication with the suburbs of the west and southwest; in giving to the Northwestern two stations more central and less isolated than that of Euston Square; in permitting travelers from the east and the west to cross London and to pass from one line of railway to another without leaving the railways. We can jndge of the importance of these

We can jndge of the importance of these services by the following figures: The Broad Street station sends out and receives 446 passenger trains daily; 186 trains pass Stratford Junction and 238 trains take up and deposit passengers at Willesden Junction.

In such an extended system as the one which we have in hand, it will be seen that it is impossible to enter into all of the details of its operation, and there are many other combinations that are of less interest, but which all serve to add to the efficiency of the London system. When new lines are opened and shorter routes offered to the public they are not slow in finding out which will best serve their individual interests, and every consideration is subordinated to the all important one of the saving of time, which is money.

(To be Continued.)

The Milwaukee Granulator.

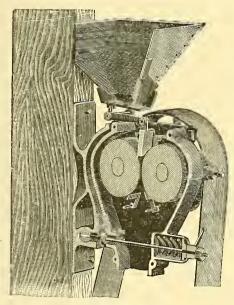
We illustrate a perspective and section view of a grannlator* for grinding feed that is especially adapted for use in street railway stables. The machine is a complete roller mill, with all necessary adjusting devices, yet so simple in operation and management that any one can run it, even though they never saw a roller mill before.

As roller mills have shown their superiority over all other systems for making flour, they are now showing their superiority for grinding corn meal, feed, and all the miscellaneons grinding required to be done in a feed mill, or custom flour mill as well. In Europe stones have been entirely discarded for feed purposes, and rolls substituted. It is only a question of time when the same will be done in this country.

This machine is especially designed to grind corn for meal or feed, screenings, grass seed, oats, barley, rice, rye, wheat cockle or any mixture of these grains.

The rolls used are of chilled iron, snitably corrugated for the work to be performed and are identical with those used in flour mills, being corrugated on the same machines.

The construction of the machine makes it very dnrable, easily managed and capable of doing snperior work. With a buhr mill an experienced man has to be kept to dress the stone and keep it in order, which is not only expensive bnt necessitates the stone being idle about one-tenth of the time. The granulator can be rnn by any one and as the rolls require no dressing, they can be



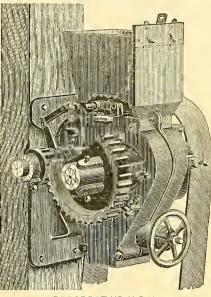
SECTIONAL VIEW.

kept constantly at work and need no repairs of any kind nntil the finely corrngated rolls wear smooth, which will be in from two to four years where machines are need steadily, but for ordinary feed grinding, if properly handled, it is claimed that the rolls should never require replacing.

By means of the hand wheel in front of the machine the rolls can be quickly and easily settogether or apart, and kept in the same position given them whether grain is passing through or not.

As there are always more or less foreign

substances finding their way into the grain, such as nails, screws, nuts, bits of wire, stones, etc., which would be liable to cause damage to the rolls, there is provided a spring to permit the rolls to yield momentarily and allow the foreign substance to



PERSPECTIVE VIEW.

p iss through with the minimum amount of injury to the rolls, the spring returning the rolls to their former position. One or two twenty-penny nails have been known to pass through the machine without any perceptible injury to the rolls, and in one case an eight-inch three cornered file was run through two grannlators, without cansing any damage, except a slight V shaped cut in the rolls. However, the manufacturers do not advise any such experiments.

All millstones and disc mills, whether horizontal or vertical, have a crushing, mashing and tearing action on what passes between their surfaces. The grain entering the eye of the stone is thrown by centrifugal force to the skirt, and iu passing ont undergoes a constant rubbing and tearing between the surfaces of the stones or discs. The grain becomes heated and the life is ground ont of it, and instead of a granular and clean product, a hot, pasty mass, full of flonr, is produced.

The rolls of this granulator are corrngated spirally, one roll running abont three times as fast as the other, the teeth of the slow roll pointing np, while the teeth of the fast roll point down.

Grain passing between the rolls is thus sheared or cut, instead of mashed, and the point of contact being so small, there is no chance for heating. Feed ground on this mill will be found sharp and granular and of an even fineness, with but little flour in it, making, when mixed with water, a good, wholesome feed, and not a pasty mass as when the feed contains flour.

*E. P. Allis & Co., Milwaukee, Wis.

We have received the annual report of the Birmingham and Aston Tramways Co. (Limited), and regret that its failure to give the mileage and number of horses, renders some otherwise very interesting data unavailable for comparison with the results of American practice.

The Haycox Door Fastener.

This device* is intended to hold a door open or shnt according to the requirements of the time being, and thus obviate that disagreeable tendency on the part of a car door to work open on a cold and stormy night, or shut on a hot summer's day. It acts upon the principle of the knee joint, where a slight weight suspended from the center is sufficient to bring an e.ormous pressure to bear upon the ends.

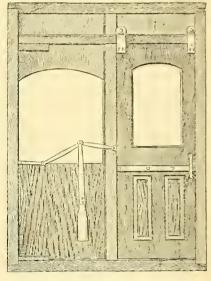


FIG 1.

Fig. 1 shows the door closed and the weight hanging from the center of the joint while Fig. 2 shows the apparatus with the door open, and it will be seen that it has a tendency to swing the arms back and thus hold the door open.

In nse it is placed between the inner and onter panelling of the car, and is conse-

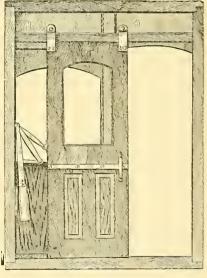


FIG 2.

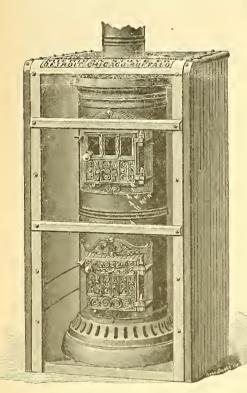
quently out of sight, and the passengers are ignorant of its presence. It does not hinder in any way the movement of the door, but simply tends to open or close it, according as the weight is before or behind the point of snpport of the back lever.

* Haycox Door Fastener Co., 1158 Euclid avenue, Cleveland, Ohio.

The "Garland" Street Car Heater.

So many attempts have been made to produce a street car heater constructed upon scientific principles, with the assurance of the manufacturer that it would do everything but pay the fare of the passenger, that it is refreshing to call the attention of onr readers to a car heater for which the manufacturers claim nothing whatever except that it is a simple, plain, operating stove, without anything in its construction more than is to be found in any other plain draft heating stove.

The "Garland" car heater is certainly a



THE GARLAND STREET CAR HEATER.

most artistically desioned and beautifully decorated stove of its kind The cut shown herewith illustrates the stove in a polished, hard wood box, the frame of which covering the top and front is beautifully nickel plated. The feed door and lower door are so arranged that they are securely locked so as to prevent accident. It is intended to burn either anthracite or bituminous coal, and the experience of the street car lines in Detroit who have been using them is that the cost of running each stove is less than ten cents per day.

The manufacturers have recently constructed a new base, so arranged as to receive a capacions ash pan, the price asked for the new stove being but a trifle more than for the stove shown in the illustration.

The manufacturers of this stove are among the largest manufacturers of stoves and ranges in the world, which of itself should be a guarantee that their production is meritorions, and well adapted for the purpose for which it is intended. They are prepared to furnish the stove as shown above, or, if desired, can furnish the stove separate from the casing and frame, or they will furnish the stove and nickel plated

frame so that their patrons may build the casing if they desire.

*The Michigan Stove Co., Detroit, Mich., Chicago, Ill., or Buffalo, N. Y.

Good Construction.

EDITOR STREET RAILWAY JOURNAL:

Your article in the September number on guess work construction, is good and to the point. A part of my business is the taking np and repairing of botch work, that has been put down by inexperienced, unskillful men. Such work would be dear if done for nothing. Railroad officials are getting their eyes open, and see the folly of practicing what they have called economy, in bnying cheap material and employing unskilled labor. The demand is greater today than ever before for the best material and the most competent men to use it. I can name a number of roads which a few years ago were run on the patchwork plan and did not pay a cent, and which now, with fifty or s'xtylb. steel rail, Florida pine stringers and other material to match, have a good track and are paying dividends. The Presidents of these roads will endorse what I say, and probably give you more information to the same effect.

A few snggestions may be in place just here. ; Firstly, have a good heavy steel rail; the center-bearing pattern is the best. Secondly, in laying the stringers cure should bet ken to place them so that the joints of timber will not come nearer than four fect to the joint of the rail, also making broken joints, that is, the timber joint on one side should be nearly opposite the center of the stringer on the other side, The rails should be laid on the same principle. The channel joint plate is best, and should be ent in with great care; and in double track the plate should be so punched as to place two-thirds of the plate under the drop or running rail. This is an important thing in order to get the most wear out of both rail and plate. It is safe to say that joints so arranged will wear twice as long as those placed in the center of the plate.

The plate should be at least eighteen inches long, half an inch thick, and made of steel.

When railroad companies get to that point of experience and intelligence which will demand the very best material to be obtained, and require it to be laid in the best possible manner, they will then receive the greatest returns for their investment. I have said many times to different railway officials, that it would pay them to borrow money sufficient to put their roads in first class condition and that by so doing they would increase the value of their roads fifty per cent. I do not know whether they borrowed the money or not, but I do know that some of them improved the condition of their roads, and the result was in accordance with my prediction.

The chief point to be considered in building a new road is to secure the best and most durable track. The expense of maintaining such a track will not exceed one-quarter of the cost of maintaining a cheap and poorly built track. This is an established fact, and I know of many companies that have paid dearly to find it out.

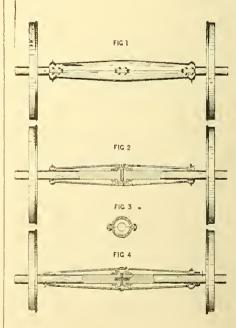
As regards paving, small cobblestone, uniform in size, with a row of block stone on each side of the rail, makes the best paving for street railway track, and if properly laid it will keep in place as long as any other paving. It is the opinion of all railroad officials of my acquaintance that this is the best stone pavement for horses to travel on, less likely to get smooth and slippery, and horses travel on it with more freedom.

I am well satisfied that most of the unprofitable roads now in operation are nonpaying, not because there are no people to ride, but because the road is in arongh condition, has poor and dirty cars and broken down old houses, and the whole business is conducted on a cheap scale. My advice would be to bond such roads for sufficient money to put them in first class condition and I am confident that the net profit would be increased fifty per cent.

WM, P. CRAIG.

White's Divided Axle.

The device,* illustrated in this connection, is a new attempt to solve the loose wheel problem that has been attracting the attention of railroad men for somany years. Instead of requiring an entirely new and separate apparatus in the construction of the independent wheels; the ordinary wheels and axle are taken and the latter di-



vided .n the ce der. A wrought iron band, about one inch square, is then shrunk upon each end, and the axle upset so that there is no danger of them working off or loose. The amount taken out of the axle at the center by the entting tool is made up by inserting a washer that is held in position by a dowel pin extending into each end as shown in Fig. 4.

The sleeves used for joining the two free ends of the axle, are made of steel castings ribbed on the inside, having bearings in the center over the wrought iron bauds that are shrunk upon the axle ends. They have also a short bearing at each end which are provided with oil holes and enps, as shown in Figs. 1 and 2.

The sleeves are made in two halves which are bolted together, as shown in Figs. 1 and 3.

A felt packing is placed between these sleeves in order to make a tight joint and prevent the leakage of oil. One end of the sleeve may be attached rigidly to the axle, and the other allowed to revolve; or both may be left loose as the constructor may desire.

The extra weight added by these sleeves is from 50 to 75 lbs. for each axle.

* R. T. White, 148 High street, Boston, Mass.

The Nelson Car Heater.

We illustrate an outline of a heater* which has been adapted to supply the requirements of street car heating, without occupying the space required for seating, and also to assist in ventilation. The stove

stables, where a fire is maintained, and from which live coals are taken for kindling the fires in the small stoves. This is found to be more economical than building a fire with kindlings in each stove.

Besides the Second Avenue line, already referred to, the heater is in use in Newark, Jersey City, St. Louis, and elsewhere throughout the country.

*Pugh & Russell, 51 Stewart Building, New York. -

The Berlin Metropolltan Railway.

At this time when the question of rapid transit is attracting such extended attention in all the large cities of the world, it may be interesting to inquire into the principal features of some of the systems that have been used abroad.

In Europe, London and Berlin have their completed systems; while at Paris and Vienna the project is under consideration.

The railways within the limits of London have been well known for a long time, while there is less familiarity with the works that have been executed during the

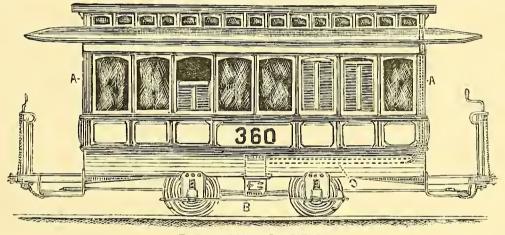
after the events of 1870-71; and opened it in sections in 1872.

Finally the Metropolitan Road (Stadtbahn) has just finished the work that was at that time begun, It was opened F.b. 7, 1882. Thanks to this new line, the trains can cross the capital without being broken up or traversing the line the second time, as easily as they would pass through the smallest station in the empire.

CONSTRUCTION, VIADUCT, TERMINI.

The Berlin Metropolitan Railway is elevated throughout its whole extent. The viaduct is almost entirely built of brickwork masonry, except the street crossings and bridges, which are for the most part metallic.

It is a sinuous line, which crosses the city from east to west, following practically the major axis of the ellipse formed by the belt line. It is separated only a short distance from the Spree River, which it crosses three times. Its length between the two termini (Schlesischer Bahnhof and Charlottenberg), is about nine and three-eighths



flooring of the car and hung from a casting screwed to the floor. It drops far enough below the sills to admit of being fired from the outside, and projects up into the car to close under the seat. The only changes necessary for its adoption are the cutting of a square hole in the floor and the screwing down of the castiron plate already referred to. The stove is then lifted up through the opening and set upon lugs, where it is held by a pin. Outside the stove proper there is an air jacket, opening at the bottom, outside, and at the top, into the car. There is thus a constant circulation of fresh air upward and into the car, this air becoming heated in its passage by the hot surface of the stove.

The products of combustion are led off through a pipe running from the upper drum of the stove under the seats, and up to an ontlet at the end of the car, thus securing the maximum amount of heating surface, coupled with ventilation, and with no demands made upon the pure air of the car for use in the stove.

The stove is designed to burn anthracite coal. On the Second Avenue Railroad in New York, where the stove is in use, a large portable furnace is placed outside the the Belt Railway (Ringbahn) immediately hydraulic elevators.

THE NELSON CAR HEATER.

theless, owing to their recent construction, and the considerations which led to their completion, worthy of the highest interest to the engineer.

At Berlin, it is almost useless to state, the considerations referred to which led to the construction of this metropolitan road were almost entirely of a strategic nature. When the Prussian State Department took the work in hand, it did not have for its principal object the replacing of the several omnibus and street railway lines, which were amply sufficient for a city of moderate size; it looked farther; it desired to make complete connections between the lines running to the east and those running west, in order to give a possible mobilization of the army, the assurance of absolute success.

In 1870, Berlin did not even possess a belt line or railway. A single line, running transversely and somewhat separated from the city, united the centering lines. The concentration of the eastern troops upon the west, although well executed, was not accomplished without thoroughly proving the real difficulties of the task.

Moved by the obstacles raised by such a situation, the Prussian government built

consists of a small box placed below the past few years in Berlin. They are, never- miles. The radii of the curves vary from 900 feet to 1,650 feet. The grades are from 2 to 8 in 1,000. The line has four tracks throughout its whole length, occupying an average breadth of 50% feet. The two north ern tracks are reserved for local traffic, while the two on the south are traversed by passenger trains from the trunk and suburban lines; the two services being absolutely distinct.

> Besides the two termini, the Metropolitan has eight stations. Three of them are so constructed that they are used for both the trunk line and local traffic; they are, in going from east to west, Alexander Place, Frederick Street, and the Zoological Gardens.

All of the termini and stations are rcmarkably well designed. As the line is an elevated one, the stations are naturally of two stories. The lower story, on the street level, contains the ticket-taker's gate, the waiting rooms, the buffet, etc. Large staircases give access to the upper platform, which is on a level with the road and covercd. Baggage is only received at the stations used by the trunk lines. The baggage rooms are also upon the ground floor, the baggage being raised to the platforms by

Остовек, 1886.

The construction of the termini is also of brick masonry. These bricks are partly dull and of different colors, and partly enamelled upon their exposed faces, giving the architecture a rather pleasing appearance, while it is, at the same time, somewhat peculiar. Stone (granite and brown freestone) has only been employed very quietly, and for the sole purpose of decoration.

The metallic imitation of woodwork which is used, varies in design for each station. It is usually remarkable for its lightness. Lighting is accomplished from three sides at a time; vertically from above and laterally from two sides where windows are placed. The rest of the carpenter's work is covered with corrugated iron.

The immense vaulted hall at the Frederick street station is worth mentioning; it is 230 feet wide and 492 feet long. Those at Alexander Place and at the Schlesischer station are equally remarkable.

There are as yet only a limited number of streets running parallel to the viaduct; but this matter has been provided for, and they are being increased from year to year. Where they do exist, the vaults of the viaduct are rented at a price that compares v ell with the rental of the finest locations in Berlin. They are especially desirable for wine cellars and restaurants, which are fitted up with the greatest luxury under the Metropolitan. There is no doubt but that the number of these establishments will increase with the opening of new lateral streets.

The bridges over the streets are of a very different type from those over the water. A description of them would occupy too much space. Those which are of especial merit are, in going from the east to the west: The viaduet near the station of Jannovitzbrucke (in masonry.) At this point, in order to avoid considerable expense, the hine passes along the bed of the Spree for a distance of from 1,650 to 1,950 feet.

The diagonal bridge over the Sprce, of stone, between the station of Börse (the exchange) and that of Frederick Street.

The iron bridgo over the Spree, just beyond the Frederick Street station.

The metallic viaduct over the Hnmboldt Basin, before the *Lehrter* station.

The iron bridge over the Spree near Bellevue station.

THE ROAD; SIGNALS.

The roadway is built on the Haarmann system, which is so generally used upon German railroads. The rail is of steel of the Vignole type, $16\frac{1}{2}$ feet long, and weighing 60 lbs. to the yard. It rests on a stringer stamped from a metallic plate, which is one foot wide at the base, and $2\frac{1}{2}$ inches high. This stringer is completely imbedded in the ballast.

The rails are fastened to the stringers by bolts, spaced about the same as the spikes in our fastenings to crosst-ties. The rails are fastened together by cross ties.

Moving trains are protected by the block system in general use upon the German railways. The signals consist of semaphores with movable arms, and are of the Siemens system.

TRACTION; ROLLING STOCK; MOVEMENT OF TRAINS.

The locomotives in use upon the local service of the Metropolitan Railway are provided with a tender and have four wheels coupled. Two types differing very little from each other are actually used.

The oldest have a weight of 40 tons, equally distributed upon three axles. They are provided with a condenser, and with an arrangement of the firebox, and an exhaust which avoids the production of smoke or escape of steam.

The engines more recently put into service weigh 36 tons. They have no condenser, experience having proven that no inconvenience arises from allowing the steam to escape while traversing the city.

The fuel used consists of briquettes, which produce only very little smoke.

The trains consist only of second and third class carriages. There are no vans; and a guarantee against accident is granted only for one reserved compartment at the head of the train.

All of the trains are provided with a continuous compressed air brake of the Carpenter system.

For the local traffic the trains are run during the week at ten minutes intervals in each direction, from five o'clock in the morning to midnight. On Sundays and holidays they are run under five minutes headway.

The stops at the stations average thirty seconds each; and the average speed of the local traffic is about fourteen miles per hour, including stops and slow running.

MOVEMENT OF PASSENGERS AND FREIGHT.

The city of Berlin, which is in the full vigor of its growth, and whose population is every day increasing, contained at the last census 1,230,000 inhabitants.

It is difficult to determine the number of passengers which are carried over the Metropohtan railway in the trains of the trunk lines. Their numbers can only be found in the general statistics of the different lines.

For the local traffic the average circulation is from 25,000 to 30,000 passengers per day.

Below, we give the exact number of passengers carried since the opening of the road.

1882.	•	•	•		•		•	•	•	•	•	•	•	•		•		• •	•	• •	• •	•	•	8,324,348
1883.										•	•			•		•						•		.10,116,826
1884.																		•				•	•	9,158,762
1885.				•		•		•	•	•							•						•	.10,296,028

We see from this that the increase has not reached one million per year, except for the year 1883, during which the travel was very heavy, owing to an exposition which was very popular with the Berlinese.

The price of third elass tickets from one station to another is 2.4 cents, and for a through ticket 9.6 cents. In second class the corresponding charges are 2.4 cents more. Commutation tickets are sold to workmen at a reduced price, but they are only good from seven o'clock in the morning to six o'clock in the evening in winter, and from six o'clock in the morning to seven o'clock in the evening in summer. Freight trains are not run over the tracks of the Metropolitan Railway, but are sent over the Belt line.

EXPENSES; RECEIPTS.

As we have already had occasion to state, it is the Prussian government who eonstructed the Metropolitan Railway.

The figures given as the total first cost of construction are 75,085,000 marks, or \$17,870,230; (1 mark=23.8c.) divided as follows:

Right of Way, 35,199,000=\$8,377,362. Construction, 39,886,000=\$9,482,868. Total expenses, 75,085,000=\$17,870,230.

The actual annual expenses amount to about \$868,200. The receipts, deducting the traffic derived from the trunk lines, amount to \$772,000. It is therefore from thereceipts of the trunk lines, all of which belong to the State, that the deficit of \$96,200, as well as the interest on the capital sunk in the construction, must be made up.

Although the financial condition of the Metropolitan is in a crippled condition, at the outset, it is nevertheless improving. More could not be expected of a line which, at the time of its construction, presented only a strategic interest, and while the necessities of Berlin traffic required no such exploitation.

CONCLUSION.

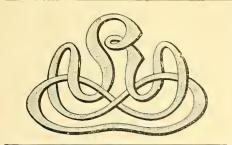
There is a strong sense of admiration that will be felt, when the Berlin Metropolitan Railway is earefully studied.

We may criticize many of its features, and dispute the artistic value of the several parts, but it is none the less true that the whole is exceedingly remarkable, as well for the conception of the work, as for the great care taken in the execution of the smallest details. Furthermore, aside from its strategic importance, the Metropolitan has become in a few years indispensable to the Berlinese population. It has enriched certain parts of the city, heretofore poor and neglected; and thanks to it, entire quarters have been built upon portions that were formerly worthless. Several thousand workmen, clerks and other employees ean now, without loss of time, dwell in cheap and healthy houses outside of the city. If at any time the service of the Metropolitan stopped, it would be a misfortune that would strike the entire population. Suffice it to say the Berlinese are proud of their Metropolitan, and have a right to be .--Chronique Industrielle.

For Halter Pullers.

Make large slip-noose around horse's body, draw moderately tight, pass end between front legs through bridle or halter and hiteh. Undo halter strap and put around neck. This is used for bridle pullers, for leading horses, or for teaching a colt to be hitehed or led. For every high lived horse put noose around body in front of barrel; for ordinary horse, just behind barrel, and for very obstinate ones as far back as you can put it.





American Street Railway Association. Officers, 1885-6.

President:-JULIUS S. WALSH, President, Citizens' Railway Company.

First Vice-President:—WILLIAM WHITE, President, D. D., E. B. & B. R.R. Company, New York, N. Y.

Second Vice-President:-CHARLES B. Holmes, Presideut, Chicago City Railway Company, Chicago, Ill.

Third Vice-President:—SAMUEL LITTLE, Treasnrer, Highland Street Railway Company, Boston, Mass.

Secretary and Treasurer:--WILLIAM J. RICHARDSON, Secretary, Atlantic Avenue Railroad Company, Brooklyn, N. Y.

Executive Committee:—President, Vice-Presidents and Calvin A. Richards, Pres., Metropolitan R.R. Co., Boston, Mass.; John Kilgour, Pres., Cincinnati Street Railway Co., Cincinnati, O.; John Maguire, Pres., City Railroad Company, Mobile, Ala.; Thomas W. Ackley, Pres., Thirteenth and Fifteenth Street Railway Company, Philadelphia, Pa.; Chaurcey C. Woodworth, Sec., R. C. & B. R.R. Co., Rochester, N. Y, The next wards proceeding of the Access.

The next regular meeting of the Association will be held in Cincinnati, Ohio, the third Wednesday in October (the 20th),

SUBJECTS FOR DISCUSSION AND SPECIAL COMMITTEES,

Cause, Prevention and Settlement of Accidents:--Mr. Calvin A. Richards, Pres., Metropolitan Railroad Company, Boston, Mass.

Sanitary Condition of Street Cars: Mr. Edward Lusher, General Man'gr, Montreal City Passenger Railway Company, Montreal, Canada.

Ventilation, Lighting and Care of Cars: Mr. Walter A. Jones, Vice-Pres., New Williamsburg & Flatbush Railroad Company, Brooklyn, N. Y.

• Progress of Cable Motive Power:-Mr. Edward J. Lawless, Supt., Kansas City Cable Railway, Kansas City, Mo.

Progress of Electric Motive Power:--Mr. T. C. Robbins, General Manager, Baltimore Union Passenger Railway Company Baltimore, Md.

Secretary's Circular to American Street Railway Association.

The following circular letter has been sent out by Secretary W. J. Richardson to the members of the Street Railway Association.

Dear Sir: The fifth regular annual meeting of the American Street Railway Association will be held at the Burnet House, Cincinnati, Ohio, the third Wednesday in October (the 20th), 1886, commencing at 10'clock, A.M.

Committees will report on the following important subjects, viz: "Cause, Provention and Settlement of Accidents;" "Sanitary Condition of Street Cars;" "Ventilatiou, Lighting and Care of Cars;" "Progress of Cable Motive Power;" "Progress of Electric Motive Power."

As the reading of the reports and the discussion thereon will consume considerable time, it is hoped that delegates, so far as practicable, will be in the city on the previous evening, in order that the meeting may commence promptly at the hour named, so that the preliminary work may be disposed of with as little delay as possible.

The Association has a membership of one hundred and thirty-seven companies, a list of which is sent herewith.

The New York Central & Hudson River Railroad Company has again very generously granted special rates to delegates and their wives; the cost of round trip tickets being as follows: Boston, \$25.25; Springfield, \$22.50; Worcester, \$25.25; New York, \$22.50; Albany, \$21.70; Schenectady, \$21.70; Utica, \$21.45; Syracuse, \$20.35; Rochester, \$18.20.

Negotiations are in progress with the Central Traffic Association for coucessions similar to those made to the Association last year, namely: the full rate to be paid to Cinciunati from any point, and one-third of the full rate from Cinciunati home. Application should be made to the Secretary without delay, by those who wish to avail themselves of the reduced rates.

In order to obtain the best available accommodation at the hotel, it is advisable for you to write to the Burnet House at your earliest convenience, stating the number of delegates that will represent your company. For that purpose, please find herewith au addressed envelope.

A delegate's card is enclosed. Will you please promptly acknowledge the receipt of this letter by return mail, and forward the card duly filled out.

We trust your company will be represented on that occasion, as a very profitable and eujoyable time is expected.

W. J. RICHARDSON, Sec. Brooklyn, Sept. 20, 1886.

Street Railway Insurance.

In connection with the approaching couvention, it would be well, perhaps, for the members to reconsider the plan of mutual insurance against fire that was presented for their consideration by their Secretary, Mr. Richardson, some two years ago. His scheme was based upon carefully collected data from all over the United States and Canada, and the figures proved that the street railway companies only received in return about thirty-three per cent. of the premiums paid out. As all insurance is really based upon a mutual foundation of the aggregate membership making np au individual's loss, with the usual intervention of a middle man in the shape of a great insurance company that can pay high salaries and big dividends on the commissions rcceived; and as many large property holders find it to their pecuniary advautage to insure themselves, there seem to be uo good reasons except in the arrangement of details, why the street railways of the country, owning property widely separated, cannot formulate a schedule of rates that will drop far below anything that is offered by the regular companies, and give one another complete and satisfactory protection.

If this is done there is no doubt but there will be, not only a direct saving of expense, but that in addition to this, those roads who are so unfortunate as to have a fire, will experience less of the delay and annoyance in the adjustment of their losses, than falls to the lot of those roads who are insured and try to make collections under the present system.

Membership of the Street Railway Assoeiation.

From the official list of street railways that are now members of the association, we find that there are 137 roads represented in that membership, distributed as follows, among 28 States and Territories and Canada :

naua.		
Alabama	1	road
California	1	6.6
Canada	4	6.6
Colorado	1	6.6
Connecticut	4	4.5
District of Columbia	$\frac{2}{1}$	64
Georgia	1	4.6
Illiuois	6	+ 4
Indiana	$\frac{1}{5}$	6.6
Iowa	5	٤.
Kansas	1	× 4
Kentucky	$\frac{4}{2}$ 17	6.6
Maryland	2	s
Massachusetts	17	6 =
Michigan	6	+ 6
Minnesota	3	6.6
Missouri	10	4.4
Nebraska	1	• •
New Hampshire	1	••
New Jersey	6	4.6
New York	23	1 E
Ohio	2	• 6
Pennsylvania	16	**
Rhode Island	1	* -
Tennessee	$\frac{1}{2}$	4 E
Texas	1	• •
Utah Territory	1	6.
Virginia	$\frac{2}{2}$	4.5
Wisconsin	2	4 6
Total	137	Roads.

European Street Car Rail.

The rail used in most European cities for street railway purposes, differs very essentially from that in use in this country. The iron is in the shape of a broad flat bar about six inches in width and one and one-half inches thick.

The upper side is slightly crowned or rounded, and midway along is a concave groove of about seven-eighths inch depth and seveu-eighths or oue inch width. This groove takes the flange of the car-wheel, aud the tire or broad part of the wheel runs upon the upper surface of the rail. An important part of the method is in having the rail the full breadth of the upper edge of the timber on which it rests, This permits the paving blocks to be crowded up against the edge of the rail.

The advantage claimed is that it offers a comparatively unbroken surface to street traffic.

Advancement of all Employees.

BY WM. E. PARTRIDGE.

Persons who employ large numbers of men at small wages, in occupations calling for little skill, complain that they can do little or nothing for the permanent advance of their men. They hold that improvement of condition is not possible if it is to be continued over a number of years; that in the trades but little removed from day labor there is no opportunity for a man to become more valuable as the years go by, and hence he cannot expect, nor in justice be given a steady advancement. The street car drivers have been instanced as belonging to a class to whom regular increase in earning power is not possible. These men may improve for a year or so bnt beyond that one man is as good as another.

It is generally admitted by those who have given the labor question most careful thought that the best results from labor are to be obtained where the men have an interest in their work and where they see before them a prospect of steady and regular gain or advancement of some kind. Many indeed believe that the true solution of all our labor troubles is to be found in devising means by which the laboring man may attain greater earning power and correspondingly increased wages.

Several street roads in the Eastern States have taken np this idea and are working on schomes founded on the idea that an old and steady man is worth more than a new and green hand. The men begiu on small wages and are advanced fifty cents per day at the eud of each six months till after abont two years service the maximum rate is reached. The question comes up, Has a driver reached tho limit of usefulness after two years of service? Is there uot still something for him to learn in regard to the handling of his team and in the manner of doing his work?

Upon one of the lines in New York there is, or was not long since, a driver, the behavior of whose team and whose method of driving frequently attracted the notice of horsemen. Contentment was written all over the animals. They paid no attention to bells nor to their snrroundings but their ears were shirp for the driver's voice. He spoke to them an instant before he moved the brake and they slackened their traces; when the bell struck to goahead they made no move until he called. The lines swung lightly in his fingers but the horses did uot surge forward in the traces. The voice turned them out square across the track for vehicles that obstructed their way, and brought them back again. A ride ou the front platform was a lesson in driving which a lover of animals could not soon forget. Inquiry brought out the fact that as soon as this man got a team it usually began to improve at once; that all his teams were in good condition and that those which were rnn down, were often turned over to him to bring up. Incidentally it may be remarked that this is a confirmation of a

conclusion which is gnite evident to passengers as well as superintendents, that a heavy percentage of the wear and tear of live stock comes from the platform quite as much as from the work of hanling the car. The incident is suggestive because it shows that by study or instruction the value of the men may be greatly increased, that attentiou, kindness and a desire to do well may make a material saving to the company iu wear and tear. If, among car drivers. wide differences are to be found, showing that with long experience may come iucreased knowledge, skill and earning power, practically, there can be no class of laborers of whom the same is not true.

With this fact for a basis or starting point the first step to be taken is to devise some plan or system by which it may be made for the interest of the men to improve and advance. It is argned over and over that nothing can be doue for drivers, conductors and day laborers; that the work which has been attempted in the past, has time out of mind been rejected and failed to be appreciated. The discussion of the failures, and the causes which operated against the well intended but fntile plans, cannot be discussed here. One thing only need be stated in regard to them, the result or benefits which they aimed at conferring upon the men were very insignificant.

European experience extending over many years has shown that all workers may be made to share in the profits, and by this participation the earnings may be increased in a geometrical rather than a simple ratio, In establishing a participation system, however, something valuable must be given if any value is to be expected in return. Failures have come to such schemes in the past because of the grand words and promises and ridiculously small results. One large house in this city, fifteen years since established a co-operative feature in the basiness. There was to be a general participation in profits and all the employees were to have a substantial interest in the success of the establishment. During the first year there was uo small amount of curiosity and speculation on the part of the men. When the books were adjusted, those who had been receiving \$600 per year found that the uew arrangement had increased their income for the year by nearly \$6, or about 12 cents per week. The result was too petty, too insignificant to deceive even the office boys. It was apparent to all that the scheme had been elaborated as a means for getting extra work done without increasing the force. The comtempt with which it was treated the second year was outspoken, and it failed completely as a means of extracting extra work or of enabling departments to be run short handed.

It is possible to devise systems by which men may actually participate in the success of an establishment. Some of the greatest and most successful of the so called French co-operative associations are only large business or manufacturing concerns, in which the operatives have a substantial interest in the net earnings. Capital gets its

interest and the profit is divided upon a basis which assumes each mau's wages to be the interest upon a certain capital invested. The business management is in the hands of the capitalist, but the supervision of details belongs to the workmen. Under such circumstances, economy penetrates each corner, waste in the most trivial manner is cut off and success is permanent. In view of the restless condition in which labor of all kinds is found and the great disasters which organized masses of w. rking men may cause to capitalists, it is evident that some precautions must be taken for protection. These may be of two kinds only. There can be organization of capital and with a decidedly hostile intentiou. For a time this, though somewhat costly, will be snccessfnl. Unfortunately as the voting power is in the hands of the men this method of attack and resistance must soon be abandoned. The other method is that of co-operation. It is quite within the power of labor employers to devise such schemes for increase of earning power that the men will feel and see that it is for their interest to stick to the company. Until they have this feeling the roads will le to a large extent in the hands of the demagogne who happens to have the ears and the confidence of the employees.

Newsboys Must Keep Off.

A prerequisites of a successful conductor or driver on the Third avenue road related to the prescribed treatment of newsboys. The old hands knew about the regulation and ignored it. The new men didn's know how they ought to treat the little felows who make a dollar or two a week selling newspapers on cars, until July 21, when Superintendent Robertson brought ont the regulation and had it pasted np in the company's office at Third avenue and Sixty-fifth street.

Conductors and drivers must prohibit all children under sixteen (16) years of ago from selling newspapers and all persons from selling lozenges, books, pictures, flowers, or articles of any description.

For any violation of this rule the conductor or driver will be immediately discharged.

The attention of the conductors and drivers was called to it, and Snperintendent Robertson, in explaining the revival of the order, said that it was for the protection of the company. There had been a number of hurts to the smaller boys, and rather than take any more risks he had decided not to let them get on the cars at all. The newsboys did not know of the order nutil along in the afternoon. Then they were already loaded up with the afternoon papers. Many papers were left over ou their hands. Sorrow, indignation, and all sorts of resentful feeling wero shown by the boys against the railroad company.

The new store box recently gotten out by Mr. Fow.cr, of the Lewis & Fowler Manufacturing Company, is compact, neat in appearance, and is well and economically built.

Operating Expenses.

Recently, Mr. W. H. Milliken, of San Francisco, Cal., on behalf of the City Railroad Company of that city, made a thorough investigation of the different systems for propelling street cars. From his comprehensive report the following is quoted : "The City Railroad Company has a present week day service of twenty single horse cars on the main line, and fourteen single horse cars on the branch line, with a varying number of extra cars, both single and double horse, during certain hours and on Sundays. The length of the road is $4\frac{1}{4}$ miles on Mission street from the water front to Thirty-first street; and the short branch leaving main line at Fifth street, pussing through and down Market street, and on Dupont street as far as Sntter street thence down Sutter to Market, gives an additional length of 11 miles, making a total length of $5\frac{3}{4}$ miles, for the entire line."

"The number of horses provided for the service, including those to take out 'extras,' and in place of sick and disabled animals, is 285; and by a fair method of calculation, I find the average expense per day of providing the propelling power for your cars, is somewhere abont eleven dollars (\$11) for double horse cars and six dollars and fifty cents (\$6.50) for single horse cars, exclusive of the wages of driver and condnetor, but including the wages of hostlers and shoers and costs of horses, harness, general wear and tear, and all items properly coming under the head of 'cost of propelling power.'

"The grades on your line are not steep, those on Mission street being practically level."

"The following table offers what is con sidered as an approximate estimate of the cost of construction and operating each system, exclusive of such items as taxes, licenses, engine house cr stable rent, drivers' and officers' salaries, &c. For these items being common to all systems, they may be omitted without impairing the accuracy of the comparison.

"COMPARATIVE TABLE,

"Showing Cost of Providing and Operating Various Systems."

SYSTEM.	MAIN	LINE.	BRANCI	H LINE.
H. P. Cable Electric Coal Gas H. Press Air L. Press Air	Cost. \$50,000 450,000 375,000 130,000 175,000 105,000	D'ly Ex. \$150 00 203 00 165 00 200 00 164 00 125 00	Cost. \$21,250 * 45,000 66,000 40,000	D'ly Ex \$63 75 * 120 00 55 00 53 00

* Not available.

"I do not burden this report with detailed calculations, but will explain that I have charged the horse power system in the above table with about 200 horses, at eighty cents each per day to coverfeeding, shoeing, grooming, and wear and tear of animals, with an item of wear and tear of cars, and interest on capital used in providing animals and rolling stock, the branch line being charged with eighty-five horses, and other items in proportion.'

An Improved Device Introduced by the Philadelphia Traction Company.

The Traction Company have for some time been experimenting, in order to improve the running of their cable system, particularly to obviate the sudden jerks of the cars in turning curves, like those at either end of the Market street bridge. The matter was placed in the hands of J. G. Brill & Co., who tried one device after another without success, but finally hit upon an entirely novel contrivance in the way of a truck. It was apparently a solution of their difficulties, and the firm at once proceeded to cover their invention with letters patent, on which and the various improvements they already have five. Experimental trials were made of the new invention, which is called the "Patent Cable Trnck," on Friday and Saturday last.

On Monday the Traction Company placed car 104 on the line, fitted with the new system of trucks, and it has been running regularly since. It turns all the sharp enrves without disagreeable and dangerous jerks. The conductor said yesterday that the car had worked nicely, and turned the curves with the greatest ease. Mr. Brill, in speaking of the invention yesterday, said: "The great difficulty in our experiments was the fact that the grip arrangement interfered with the use of a king-bolt, or center-bearing. By this device we are enabled to dispense with a king-bolt and get a swing motion without the nsc of links. There are springs on each end of the bolsters, which take off all lateral thrust and jar of the car, and, instead of the king-bolt, we have a circular slot bearing, which permits the truck to turn easily in going round curves, and is better than a king-bolt in that the car does not tilt or rock. The company has for some time been considering the introduction of double-deck, open, excursion cars on their Market street line. What their conclusion will be I do not know, but there can be no doubt that they would be a great improvement. The cars are much longer and have a seating capacity of sixty below and forty on the upper deck."-Phila, Ledger.

Cost of Feeding Horses.

We are indebted to Snpt. Duty, of the East Cleveland Street Railroad Co., for the following data, concerning the cost of feeding horses, per day, during the past six years, in the stables of this company. The figures include merely the cost of the feed, without that of attendance and stable labor.

The cost was, for

1880	21	cents
1881	$22\frac{1}{2}$	6.
1882	24 1	5.6
1883	19^{-}	66
1884	$19\frac{1}{2}$	6.6
1885	18 <u>ş</u>	4.6

These figures should be especially interesting to street railway men, and it would be interesting if we could procure similar data from other roads, together with the cost of stable labor. This will, of conrse, vary with the number of horses, for the larger the number up to certain limits, the less will be the cost per horse. We see, also, that the cost in feed decreases in the figures given in the last years. This is probably due, to a certain extent, to the increase in the number of horses, which is now somewhat more than five hundred.

.... Electric Railway at Vienna.

It is about a year since the work of extension of 4900 feet upon an electric railwayin Vienna has been completed.

The first section of this road was opened on October 22, 1883, some of the visitors to the electric exhibition being present at the time. A short time afterwards, April 6 1884, the remainder of the road was opened, and finally within a few months, they have opened the remainder of the road, which it was decided to add to the original project, so that the line starts from the station of the Moedling Railway to run to Hinterbruhl.

In order to judge of the favor this new method of trasportation meets with the public, it should be known that this extension will not be the last, and that the Viennese will soon count among the number of their attractions, that of an electric way across the pictnresque valley of the Bruhl and the Helenthal, which will end at Baden near Vienna.

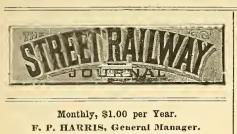
That portion of the road last opened does not contain curves of as short radius as the old road. Since this extension was only 4900 feet in length an l it was necessary to cross a brook, they limited the mimimum radius of the curves to 260 feet, while upon the old road they used carves upon high embankments in crossing ravines of 110 feet.

The cost of this new line was \$15,500 for the roadway and \$1,600 for the buildings. The right of way and embankments alone cost \$14,500.

It was not desired, this time, to place the road in the street, as previous experience, when this was an ortunately permitted. has shown that the least negligence, often even a mere inattention, has resulted in a great deal of trouble.

Two more dynamos have been added. These machines were constructed in the workshops at Sudbahn, under the direction of Dr. Dolinar, electrician to the road, who took for his models the apparatns manufactured by Slemens and Halske. Two cars have also been added to the rolling stock, only one of them, however, being provided with a motor. The total cost of this extension including purchase of right of way, construction and material, reached the sum of \$46,950.

Vienna will, without doubt, have another electric railway. For Messrs. Siemens and Halske propose to undertake the construction of a steam road around the city, which will have a connection in the shape of an electric road, besides the street roads already in existence.



American Railway Publishing Co., 32 Liberty Street, Lakeside Building,

New York.

Chicago, LAKESIDE BUILDING, E. L. POWERS, Northwestern Manager.

Chicago.

Boston, Mass., 185 SUMMER STREET, H. M. SWET-LAND, Manager.

Philadelphia, 119 So. FOURTH ST. J. H. MCGRAW, Manager.

Lighting, Heating, and Ventilation of Cars.

This subject is to be taken into consideration at the coming convention of the Street Railway Association and there is certainly no topic that is of more interest to the public, and one in which they are more vitally concerned. And just in proportion as the individual takes interest in the matter in just that proportion does it affect the receipts of the companies. For let the cars be hadly equipped with apparatus designed for the comfort of the passengers, and the sure results will be that the pedestrians upon the street will increase in numbers to the direct loss of the railways.

The open summer car needs no heat and its veutilation is perfect, but in the evening little or no attention is paid toward the lighting. Of this, however, we will speak later on.

The close car on the other hand presents a prohlem of no mean difficulty to the constructor in order to fulfill all of the requirem nts of health and comfort. In the first pluce we have to contend with the natural perversity of human nature, that same perversity that leads a man to choose the dainty titbits of the French cook rather than the substantial nourishment of the New England kitchen; the same that closes doors and windows, heats the air to the poiut of suffocation, enfeebles the lungs and weakens the constitution rather than breathe the free air of heaven or stand in a draught. So while the public clamor for free ventila-' ion, the individuals of which it is composed, demand that the fresh air shall be admitted so imperceptibly that the most sensitive skin, and lungs that have become weakoned by long exposure in overheated, illy ventilated offices, shall not be able to detect the slightest draught, and further, that however much fresh air is admitted, it must iu no manner lower the stifling temperature of car's interior.

In considering the methods of doing this work, the constructor must look first to the cuhic contents of his car, and then to the amount of air required to supply the demands of the average rush trip load. His sixteen foot car contains empty, about eight hundred and thirty-two cuhic feet of air. When loaded with thirty-two passengers the air space is reduced hy two and one-quarter enbic feet per passenger, or to seven hundred and sixty cubic feet. Each one of these thirty-two passengers requires eight cubic feet of air per minute or two hundred and fifty-six cubic feet for the load. In short, if his car were hermetically sealed, the enclosed air would support the life of the load for a trifle less than three minutes.

Under these circumstances then, when all the air of the car must he renewed at least once every three minutes in order to support life, we can readily understand of what importance is every loose window sash, every chink in the doors, the ventilation of the roof, and of what actual vital importance is the entrance and exit of every passenger, when the door must be opened and some fresh air admitted.

The ventilation of the car that is to accomplish the best results must he placed outside the control of the passenger and must be so located that it will he impossible for the average individual to discover its whereabouts. Deck lights are not to be thought of; for they will be closed or if fastened open newspapers will he stuffed into the openings. The veutilated ceiling approaches most nearly to the typical device for baffling the suicidal attempts of the passenger. And if some means can be devised by which the pure air can he forccd in, a loug line of disconteuted passen gers who love the pure air will rise up and call the inventor " blcssed."

Heating is most nearly associated with ventilation, and indeed every fire heater that is placed inside the car must from the nature of its construction and action, partake more or less of the character of a ventilator. It draws the air from the bottom of the car, and compels a stream of pure air to he forced iu through the chinks and erevices to take its place. But there is this great disadvantage, the air near the floor is usually, in a heated car, the purest in the whole interior, and as oxygen is what fire needs in order that it may burn, it is doubtful whether very much really pure air is drawn iu and placed at the disposal of the lungs of the passengers.

There is no doubt that the sign "*This* car is heated," would attract many passengers away from a rival line, and it therefore in the course of competition, becomes necessary for each road to heat its cars, though in some very large places this has not yet been done. But in selecting a heater, it would he well for the management to look for one that will at least tend to facilitate veutilatiou, and not mercly heat and reheat the foul air that is contained in the car.

Lighting is prohably of the least importance. There is no doubt that a brilliantly lighted car is very attractive and will serve to draw passengers, but whether the increased traffic will pay for the increased e_x pense remains for the management to decide. From the passenger's standpoint, heyond the attractiveness of the well lighted car, the ahility to read is the desidera-

tum. But it is doubtful if this will prove under any circumstances an advantage to the eyesight, for the strain is necessarily very great, when one is subjected to the jolting of the car, however brilliant and steady the light may he. For those who wish it, there are many excellent car lights and it only remains to make the choice; but to ventilate and heat, that is the trouhle, and that is the difficulty that the constructor is called upon to meet.

Street Railway Stocks.

It will be noticed by a comparison of our quotations that there is an almost universal decline iu all street railway securities in New York, while in Philadelphia the market remains about stationary with a slight upward tendency. It seems to be a matter of pure sympathy iu very many cases, and the general effect of the strikes. In others it is due to a falling off in the dividends or to the competition prospective or already realized of the elevated roads. Some roads are beginning to feel iu advance the coming reduction of the Manhattan fares; and though managers and dealers in securities express themselves as confident that the injury to the receipts of the surface roads will only be of a temporary character, buycrs of the stocks are holding off and hence the decline. In other cases, where no trouhle has yet heen experienced with the employees, no cut been made in the divideuds and the whole husiness of the road remains ou as secure and well established a hasis as ever, the stock has fallen off out of pure sympathy with other roads who have had trouble, and the feeling on the part of the public that street railway stocks are hazardous investments. This state of affairs will, however, be undoubtedly of a temporary character only and after the immediate effects of past troubles have died out the steeks will again go up. There will, of course, be an apparent exception in the case of those roads whose receipts are cut down by the action of the elevated roads. The rise of these will he slower; yet experience has proven that the receipts do finally recover all that was at first lost hy the traffic that went from them to their over head competitors.

Jacob Sharp is responsible for the followivg on street railway taxation:

" You know that the street railroad companies ought not to pay any taxes to New York. The largest taxis paid by them, and who does it come out of? Why, the poor people. The nabobs do not ride in street cars; they have their carriages, or go on the elevated roads. So, you see, the poor are paying the taxes of New York and the rich are going scot free. Now if some of you 'wise men of the East' who come to Alhany every winter to show the members and Senators how to run reforms would frame laws exempting street railroads from taxatiou and compel them to reduce their fares to two or three cents a trip then the public would be benefited and the poor equalize their taxation with the richer."

Street Railway Journal.

With this issue the STREET RAILWAY JOURNAL closes its second year. The paper has grown from twenty to sixty-four pages. An idea of the character, variety and amount of matter published in its columns during the past year is given by the index to the present volume, published in this number.

The paper is not all it should be, nor all its founders intend to make it, but time is necessary to accomplish this result. That the measure of success already attained is abundantly appreciated is very evident from our advertising pages and otherwise. The paper is read by nearly every live street railway official in this country, if we judge correctly from our correspondence and subscription list. Our advertising pages show another thing, and that is the enterprise of a class of people who are catering to the street railway interests of the country. To this class of people is due very largely the progress and advancement of the street railway interests in the United States, and it is with no small degree of satisfaction that we call attention to their enterprise as shown by our columns.

Dirty Street Cars.

A New York paper recently expressed itself somewhat vigorously upon the subject of dirty street cars. We quote it below: " Of all the annoyances to which the public of New York has to submit daily and hourly, dirty street cars are the most disgusting. This evil has become more marked recently, and The World is constantly in receipt of letters from indignant passengers. For filth, dilapidation and a general appearance of squalor and slovenliness some of the street car lines of this city cannot be surpassed in the civilized world. Ladies and gentlemen are compelled to sit down on seats sticky with nastiness, breathe loathsome air and look out of cracked windows that are splashed with dirt from one end of the year to the other. Some of these cars are washed only by the rain.

"There is not a street car line iu New York that does not pay a handsome profit. There has not been a street line in this city within the memory of man that has not paid well. Some of the lines pay on their real investment more than a hundred and fifty per cent annually. The public has dealt with these lines in a spirit of princely generosity. It has made practically a free gift of its great franchises and yielded up with scarcely a murmur, the finest thoroughfares. New York is the richest field in the world for horse car enterprises. This is admitted by very one who knows anything at all about the subject.

"In return for all this generosity the beneficiary corporation exhibit an also incredible spirit of greed and brutal rapacity. With four or five worthy exceptions the companies provide cars that are fit only for cattle.

"We recently made a computation showing how these corporations rob the public. The figures showed that if they were only allowed to earn 10 per cent. on a high estimate, of their invested capital, there would be due to the city each year nearly \$4,000,-000.

"We have in mind one road that may be regarded as the worst sample of the lot. Its carsare a disgrace. In riding in one recently it was noticed that its once white ceiling wasplastered with filth, its windows were foul and its seats and floors were covered with dirt. The iron dash boards were battered and rusty. Three or four big rents appeared in them. The sides of the car were masses of tin patches nailed on to cover breaks and keep the weather out. A disgusting odor saluted the nostrils. A more dilapidated, rickety, ramshackle old hen-roost on wheels could hardly be imagined."

Personal.

Speaking of Col. Thos. Lowry, who has been so instrumental in the development of the St. Paul (Minn.) street railways, the St. Paul and Minneapolis Pioneer Press says:

"The franchise and other property of the Street Railway Company is largely the creation of Mr. Lowry's untiring activity and business sagacity. We cannot, in this connection, pay a tribute too high to be deserved to the management of Mr. Lowry. He first gave to St. Paul a system of street passenger transportation worthy of the name. When he came into possession the service was, in almost every essential. wholly unsatisfactory. He systematized and extended his lines in every direction. He adopted the latest improvements and supplied the finest equipments to be had. Although each year required new investments instead of returning dividends, the accommodation of the public was diligently sought. He closed his regime as owner by incorporating the cable line feature with the street railway system, and thus turned over to his financial successors one of the most magnificent properties in any city of the country. And the reward of this large and generous policy is found in the immense increase in value of the street railway company's franchise and equipments since the time when they first passed into the hands of Mr. Lowry."

Mr. John Brill, of J. G. Brill & Co., has returned from his European trip. He booked some important orders while across the water. Also Mr. Edward Brill, of the same firm, who has been abroad during the summer, is seen again on Philadelphia streets.

We referred last month to the beuefits that are to be derived from the various class conventions that are held by associations that are formed for the mutual benefit of the members; and we wish to reiterate what we have already said, and urge every one who can and who is in any way interested in street railway progress and development to attend the Cincinnati convention. Notes and Items.

Boston, Mass.

THE CONSOLIDATED STREET RAILWAY COM-PANY, of Boston, are having built at the Jones car works, West Troy, N. Y., a few *specially* fine cars for their Back Bay service.

"The cars," says the Boston Herald, "are to be of the most elegant design, and to snrpass in workmanship and finish, any cars ever before built in this conntry." The cars will be delivered on or abont November next.

Brooklyn, N. Y.

THE BROOKLYN RAILWAY SUPPLY Co. are preparing patterns for a simple and improv ed style of street or dirt sweeper, to be operated by either one or two horses, and which they propose to put upon the market at a low figure. They are busy filling orders for both sweepers and plows for various cities. They use cylinder brooms on all their sweepers, and have letters patent giving them the exclusive right to use the same on snow sweepers. They are also working up an improved sand car for use on paved streets.

THE LEWIS & FOWLER MANUFACTURING Co. have received an order from Kansas City Cable Railway, for a sufficient number of registers to equip all its cars. Also from Julius S. Walsh, an order forsixty to equip the Citizens Line, this making all the cars controlled by Mr. Walsh.

THE ATLANTIC AVENUE R. R. Co. have completed all of the preliminary arrangements for cabling the Park Avenue line. There have been no contracts let as yet, as they are waiting to secure the consent of the Common Council to the scheme. The property holders along the line are willing that the change should be made, and no trouble is anticipated in securing the consent of the City Fathers. When this is granted work will be commenced at once, and the whole hurried through to a completion. The Johnson system of cabling will be used.

Bridgeport, Conn.

BRIDGEPORT HORSE Rr. Co. will extend their line one mile, through Fairfield avenue to Park avenue.

BRIDGEPORT & WEST HARTFORD HORSE Ry. Co. are extending their line, which will give them 25 per cent additional track.

THE CHAPLIN ROLLER BEARING Co. have just received an order for their Tramway Car Box and Gear to go to Bnenos Ayres for the city of Buenos Ayres Tramway Co. They report that their box and gear is meeting with much favor, and every road on which it has been placed is pleased with its neat appearance, easy draft, etc. Catasaugua, Pa.

'THE BRYDEN FORGED HORSESHOE WORKS Limited, of Catasauqua, Pa., have lately made marked improvements in the variety of design and in the finish of the horse and mule shoes manufactured by them. As a mark of appreciation, by their customers, of the efforts of

THE STREET RAILWAY JOURNAL.

this company to furnish a first class shoe, we may meution that their works are at present running at their full capacity on orders. This company furnishes horseshoes to the principal railroads of New York City, Philadelphia, Brooklyn, Chicago, and many other of the largest cities in the United States. Letters patent have just been secured for a new design of horseshoe, by this company, a description of which will appear in a future issue.

Chicago, 111.

THE NORTH CHICAGO Co. have ordered four cars with Small's Automatic Fare Collectors placed in them.

Cleveland, Obio.

THE EAST CLEVELAND ST. R. R. Co. have just added six handsome new cars to their stock. These are equipped with the Hale & Kilburn patent spring seat; the Boswick journal box, and the new Haycox door fastener. Fulton Foundry furnished the wheels.

Connecticut.

The following roads have received charters in the State of Connecticut, some of them being constructed at the present time:—

Between Waterbury and Merideu; the incorporators are C. L. Blackwell, President First Nat. Bank, Waterbury, and Leander Turuer.

In Danbury they are building 4 miles of road between Danbury and Bethlehem. The contractors are Haynes Bros., and the name of the road is the Danbury St. Ry. Co.

In New Britain, the "New Britain Tramway Co." has been chartered by C. S. Lander.

In New London the New London Horse Ry. Co. has been chartered. Chas. A. Willis and John Tebbetts are interested.

A new road has been chartered this year in Stamford by J. B. Curtis and W. W. Jillisbee.

The "Trip Horse R. R." has been chartered by W. J. Clark and Charles Duraud. They are just about to build.

Des Moines, Iowa.

THE DES MOINES ST. RV. Co. have ordered the Lewis & Fowler Mfg. Co. to equip their cars with 20 of their Improved 12-in. "Alarm" Passenger Register in place of the Demorest Register now used by them, and six for new cars now building by Joues.

Peorla, 111.

THE CENTRAL CITY P. Ry. Co., of Peoria, Ill., have just placed an order with the Lewis & Fowler Mfg. Co. for their Improved 8-in. "Alarm" Passenger Register. East Sngiuaw, Mich.

THE EAST SAGINAW SOUTH RAILWAY COM-PANY have bought out the old company, and taken possession within the past three months. They have constructed five miles of new track, put on four 16 open cars, and are doing a prosperous business.

Kansas City, Mo.

KANSAS CITY ELECTRIC RY. Co. have completed one mile of track, laid to the

standard gauge with heavy girder rails. Work has been in progress since the 1st of August; the engine house is completed, and the engines and boilers in position, with cars delivered, and it is expected that the road will be opened as we go to press. They will run four trains of two cars each, and will use electric motors constructed under the patents of Mr. John C. Heury, which are four in number, of 20-horsepower each. Grades are heavy, running as high as 6 per cent. The officers are as follows : President. W. W. Kendall ; Vice President, Hugh McElroy ; Secretary and Treasurer, Warren Watson.

THE GRAND AVENUE COMPANY are constructing eight miles of double cable road, in addition to their present facilities.

Louisville, Ky.

The report that the Fourth Avenue Park Ry. Co. has been organized is not true. The incorporator asked for a charter while the Legislature was in session, but nothing further has been done, so the company is not yet in existence.

Milwankec, Wis.

MILWAUKEE CITY ST. Ry. are building a new barn and car house, at the corner of Chestuut and Twenty-seventh streets, at a cost of about \$18,000.

THE CREAM CITY R.R. Co., of Milwaukee, have ordered from the Lewis & Fowler Mfg. Co. 14 sets of Small's Automatic Fare Collectors to be placed in 14 new 14-foot cars now building by the Brownell & Wight Car Co., of St. Louis. This company, after having tried the device for some time, have decided to equip all their cars with them.

Nashua, N. H.

THE NASHUA Sr. Rv. Co., Nashua, N. H., have been operating 4 miles of track and 5 cars since June first. They make 20 minute trips between Nashua Junction and Nashua. I. A. Willard, Superintendent. New Bedford, Mass.

THE ACUSHNET STREET RAILWAY Co. have recently adopted the Dux Lubricant, and we understand that after a thorough test are much pleased with it. The Dux people report numbers of inquiries as the result of their advertisement in the STREET RAILWAY JOURNAL.

New Britain, Conn.

A street railway company has been formed with a capital of \$25,000, and will commence building a road at once. Lorin F. Judd is interested, and the contract has been let to A. J. Hutchinson, who is already building the Meriden and Waterbury roads. The line is to be three and one-half miles long. New York City, N. Y.

JOSEPHINE D. SMITH, 352 Pearl street, has on file an order from J. M. Jones' Sons, agents, for 120 center car lamps, also one from the John Stephenson Co. for fifty, for cars now building for the Broadway, (N. Y.) line. She is also fitting out twelve new cars with two center lamps each ior the Union R. R. Co., Providence, R. I., and is snpplying center lamps for the six new cable cars now being built in the company's shops for the Tenth Avenue (N. Y.) cable road.

A. J. HUTCHINSON writes that he is very busy building the Waterbury (Conn.) R. R., $5\frac{1}{2}$ miles long, and that he has the contract to build the street railway in Meriden," which will be of about the same length. Both are to be completed this fall.

RUFUS MARTIN & Co., 13 and 15 Park row, is a new firm engaged in the business of street railway contracting, equipping, and furnishing supplies. Their contract work includes the building of new roads, making repairs, alterations and equipment, and will embrace the furnishing of everything, including horses, and any supplies in the general line will be cavried. They will also supply a special brand of axle oil, and Martin's Pateut Change Belt.

THE NATIONAL STOVE Co., whose car heater has been fully described in these columns, now furnishes stoves for all lines in Brooklyu, also for Albany, Bostou, Harrisburg, Minneapolis, Pittsburg, Syracuse, New York and various other points.

Norwalk, Coun.

THE NORWALK HORSE RY, Co. will extend their line this season to Winnapauk. This will give them 2 miles of additional track, and will require extra rolling stock. They are now making 59 round trips a day between Norwalk and South Norwalk, connecting with all the trains, over one of the finest roadbeds in the country.

Omaha, Nebraska.

THE CABLE TRAMWAY COMPANY of Omaha, has commenced work upon its roadway, and it is expected that the road will be opened abont December 1. The track is being laid to a standard guage, and ten cars will be run at first, each being furnished with a grip. The officers are: Presideut, S. R. Johnson; Vice President, L. B. Williams; Secretary and Treasurer, C. E. Yost; Engineer, Robert Gillham. The general office is at 215 South Thirteenth street. Pawtucket, R. I.

The track is being laid and stable is in course of erection for the new narrow gauge street railway of the Pawtncket (R. I.) St. Railway Company.

About eight miles of track will be operated by this company in the city of Pawtucket, and towns of Lincoln and Cumberland. The system used is the Providence pattern Girder Rail, gauge four feet. Messrs. Payson & Co., of Boston, Mass., are coutractors for laying the rail, and Andrew J. Jones is doing the pavement. The road will be equipped with twenty-four onehorse bobtail cars, requiring about 140 horses, and it is expected the road will be in operation by November 10.

Philadelphia, Pa.

WM. WHARTON, JR., & Co., mention the following among their orders for supplying steel grooved rails for curves: Globe Street Ry. Co., Fall River, Mass.; Louisville City Ry. Co., Louisville, Ky.; F. S. Stevens, Worcester, Mass.; Pawtucket Street Ry. Co., Pawtucket, R. I.; Lowell & Dracut St. Ry. Co., Lowell, Mass.; Philadelphia Traction Co., Philadelphia; New Bedford & Fair Haven Street Ry. Co., New Bedford,

Mass.; Chicago West Division R. R., Chicago, Ill.; North Woburn Street Ry. Co., Woburn, Mass.; People's Pass. Ry. Co., Philadelphia; Buffalo Street Ry. Co., Buffalo, N. Y.; Central City R. R. Co., Syracuse, N. Y.; St. Charles Street Ry. Co., New Orleans, La.; Bridgeport Horse Ry. Co., Bridgeport, Conn.; Springfield Street Ry. Co., Springfield, Mass.; Federal Street & Pleasant Valley R. R. Co., Pittsburgh, Pa.; Reading City Pass. Ry. Co., Reading, Pa.; Brockton Street Ry. Co., Brockton, Mass.; City Railway Co., Trenton, N. J.; Seventh Ward Railroad Co., Syracuse, N. Y.; Acushnet Street Ry. Co., New Bedford, Mass.; Metropolitan Horse R. R. Co., Washington, D. C.; La Crosse Street Ry. Co., La Crosse, Wis. They have also finished the building of about 11 miles of track for the Camden Horse R.R. Co., with Johnson Girder rail; about two miles of track for the Chambers St. and Grand St. Ferry R.R. Co. of New York; also the track curves and castings for a large car house for the same company, corner of East and Cherry streets. They have also just furnished the track curves and castings for a depot for the People's Pass. Ry. Co., of Philadelphia, and a depot for the Brooklyn City R.R. Co. on Third Avenue, Brooklyn, N.Y.

J. G. BRILL & Co. report more orders on their books at present than ever before at any one time. They have just shipped five different lots of cars to Mexico. They have ten orders for Cuba, are completing a lot of mining cars for a silver mine in Mexico. An order from South America, consisting of 130 small tramway freight cars and 26 horse cars, of the latter four are double deck open cars, 20 are regular 16' cars, and two are sleeping cars, much like the ordinary sleeping cars in this country. An order of six cars for Spain. Also they are furnishing cars for new roads as follows: York, Pa.; Reading, Pa.; Chattanooga, Tenn.; Mountainsburg, N. Y.; Danbury, Ct.; Birmingham; North Adams, Mass.; Lockport, N. Y.; Yonkers, N. Y. Richmond, Va.

THE RICHMOND & MANCHESTER Co. asks for the privilege of running its line up Seventh street to Marshall, up Marshall to Fifth, out Fifth to Clay, up Clay to Lcmbardy and along Lombardy to Main. The same company petitions the Supervisors of Henrico county for the right to run the line to the Reservoir Lake, and also for the right to run a branch road to the Soldiers' Home.

THE RICHMOND ST. RY. Co. asks the Council for the privilege of running its line up Ninth to Leigh, up Leigh to Brook avenue, and for the privilege of extending the Main street line to the western limits. The Council has shown that it will grant the petition of the company only upon the condition of its building a line to Church Hill and Oakwood Cemetery via the Church Hill avenue. The advantages which the proposed enterprise would be to Richmond cannot be too highly estimated. Houses would be built all along the line of the route between West Main street and

the reservoir, and the people who have to remain in the city all Summer would be able for ten cents to ride to the country once a day and breathe the fresh air. San Francisco, Cal.

Articles of incorporation have been filed for the Powell & Jackson St. R. R. Co., and the officers elected are W. J. Adams, President; H. H. Lynch, Vice President; W. H. Martin, Treasurer; G. H. Waggoner, Secretary. The road will be 11 miles long, and 3 ft. 6 in. gauge. It is to run through Powell, Jackson and Washington streets, and will be operated by a cable. Work is to be commenced at once.

Springfield, Mass.

THE BEMIS CAR BOX Co. has orders for the Bemis Box for the Cream City (Milwaukee) road, for Wichita, Kansas, and for Springfield, Ill.

St. Paul, Minn.

The financial control of the St. Paul St. Ry. Co. has been placed in the hands of St. Paul capitalists. Col. Thos. Lowry has disposed of a part of his interest, and the majority of the stock is now owned by the parties referred to. Col. Lowry still retains a one-fifth interest, while the remainder is in the hands of outside parties. The cable feature, which has been incorporated with the horse lines, will be extended. Abundant capital is pledged to the undertaking. St. Joseph. Mo.

THE UNION RY. Co. will increase their length of double track and make a T railroad.

Syracuse, N. Y.

THE SYRACUSE & GEDDES RY, Co. are now building a new stable and car house.

THE THIRD WARD RAILWAY Co., of Syracuse, owing to opposition from rival lines, is debarred from building by action of the "Cantor Bill," passed at the last session of the legislature.

The bid for right to build the road was run up to 100 per cent by the opponents of the enterprise.

At the next session of the legislature relief will be asked from this measure, and efforts will be made to build the road in the early spring. Right of way has been secured from the property owners and from local authorities, except three-quarters of a mile, which comes under the jurisdiction of the city authorities, and which was bid up as before stated. The parties having this road in hand are euergetic, and will leave no work undone to carry the project to a successful issue. The line extends three miles, from the center of the city to the Solway Process Works. Officers of the Company are : President, W. B. Cogswell; Treasurer, W. S. Wales.

THE CENTRAL CITY RAILWAY Co., of Syracuse, are relaying a portion of their track and making other improvements. The line extends two miles from the center of the city to the lake.

THE BUTTERNUT STREET RAILWAY CO., of Syracuse, have secured the right of way, and placed themselves under \$60,000 bonds to build. The road will be built in the spring, and will extend two miles, from the

center of the city to Woodlawn Cemetery. This will be a very popular Sunday route.

THE SYRACUSE AND SOUTH BAY STREET RAILWAY, of Syracuse, N. Y., will be opened for public patronage Oct. 5. The track is now ready, and the managers are only waiting for the cars, which are promised by Jones of West Troy by the 3d.

Taunton, Mass.

TAUNTON ST. Ry. Co. have just commenced an extension of their road.

Tampa, Fla.

The controlling interest in the Tampa street railway is owned by Martinez, Poor & Co. Mr. George T. Chamberlain is Secrefary.

Winsted. Conn.

A charter is to be applied for at once for a horse railway in Winsted. George S. Rowe and others are interested. Utien, N. Y.

THE UTICA BELT LINE RAILWAY COMPANY will begin track laying on the 22nd instant, and the line will be completed by the 1st of December. It will comprise eight miles of ordinary tramway and stringer track, with five minute switches, in a circuit of the main streets of Utica, and will be equipped with (15) Jones' closed cars. The officers of the Company are as follows: President, Dr. C. Tefft; Vice President, A. Jones; Secretary and General Manager, Isaac J. Griffith; Treasurer, Charles W. Mather.

Special Rates to the Convention: A Correction.

Just as we go to press we are in receipt of the following note from Secretary Richardson, of the Street Railway Association, showing that the special rates spoken of in his circular, printed on page 485 of this issue, have not been granted.

EDS. STREET RAILWAY JOURNAL :

In further reply to yours of the 23d inst. would say that I am this day definitely advised that the Central Traffic Association will not give reduced rates to delegates this year, and that by reason of their failure to grant the reduction, the Trunk Line Passenger Committee (which includes the N. Y. C. & H. R. R. R.), which was desirous to give us the reduced rates, have this day been forced to withdraw their special rates, as being unable to issue them without concurrence on the part of the Central Traffic Association.

WM. J. RICHARDSON, Secretary.

In another column we publish an article by Mr. W. E. Partridge, relative to the promotion of the street railway employee, and an increase of wages in proportion to his competency. There is no doubt but that this method would have much to do in smoothing off and doing away with the present belligerent attitude of the men, and seems to be well worthy of a careful trial.

A WORN CAR WHEEL TREAD, examined under the microscope, shows that the snrface of the metal comes off in thin flakes or scales.

OCTOBER, 1886.

Mutual Pecuniary Liability as a Cure for Labor Troubles,

An officer of one of our large railway systems gives in the "Open Letters" department of the September Century a plan for harmonizing the relations between employers and workmen. It is, in effect, that contracts shall be executed by the employer with each of his employees in which he shall agree to employ the workman for a specified length of time at a certain rate, a.d in which the workman shall bind himself to give an equivalent of labor for the pay which he is to receive. In this contract, it is further proposed, shall be set out plainly the acts on the part of the workingman which shall be regarded as breaking it, such as drunkenness, negligence, etc. And in order that the employer may have some protection against the employee who violates his contract, the writer suggests that a certain proportion of the weekly or monthly wages shall be held back by him until the contract is carried ont.

Whatever may be thought of the practicability of the plan outlined by Mr. Church, it is certain that he has detected and called attention to the reason why it is so difficult to adjust the relations between employers and employees. The root of the difficulty lies in the fact that the law, as it now exists, does not put the two on au equal footing, but places the employer at a disadvantage The workman cau enforce his claim against those who hire him, if it be a legal one, to the last cent. More than this, if he is injured by some defect in the machinery of the shop in which he works, the chances are the shop in which he works, the chances arc that a jury will give him heavy damages, and that the supreme court will refuse to disturb the verdict. But suppose the work-man who has agreed to stay in a shop for three months, leaves at the eud of the month, or that he comes to his work half drunk and spoils the job which he has in hand, or that he goes to sheen when he hand, or that he goes to sleep when he should be attending to his furnace and gauges and causes a boiler explosion—what remedy has the employer? He can collect damages neither for the breach of contract nor for the damages, simply because either the workman has nothing at all, or else what he has is hedged about by exemption laws. He is "execution-proof." Jack Smith may forget to thrn a switch, and as a result the railway company may have to pay \$50,000 for cars wr cked, express matter burned and passengers killed and maimed, not one cent of which can it recover from the negligent employee. But if Jack Smith gets his thumb cut off under circumstances which in the eye of the law constitute negligence ou the part of his employer, he may get \$5,000 for it. There has been at least one such verdict in this country. When it comes to willful damage com-

When it comes to willing damage committed by employees against employers the disadvantages under which employers labor appear still more startling. The writer above referred to says: "In a recent railroad strike a large amount of property was destroyed by violence, and when a proposition was made by the workmen to submit their grievances to arbitration the other party put the question as to who would pay for these losses. On the refnsal of the labor organization to assume this burden the peace negotiatious were stopped." When during the last great strike on the southwestern roads—probably the one referred to in the extract jnst given—it was reported that the Missonri Pacific Railway Company would sue those of its striking employees who had aided in the destruction of its property and makethem pay damages to the extent of their possessions, every one was startled. It was almost a new idea that workmen should be held liable, pecuniarily, for the damage done to their employer's property, or the property of other employers, during the strike. And yet who could successfully dispute the jnstice of such action? The instances in which employers are made to suffer great loss without having any remedy against the workmen or their representatives who canse the loss are innumerable. Only a day or two ago we met a car manufacturer whose work, including several contracts, the enlargement of his shops and the putting in of new machinery, had been brought to a standstill for many days because his foreman had "gone off on a drunk." This meant the absolute loss to the manufacturer of thousands of dollars. In how many cases during the last two or three years have all workmen snddenly left the manufactory at the command of some officer in a labor organization, although they were perfectly satisfied with their circumstances. If a business concern should treat those with whom it deals in that way, damages could be recovered from it at law. But the employer in such cases can only pocket his losses. He has no remedy.

The remedy indicated by the facts would seem to be one which shall place employers and employees upon an eqnal footing, making the latter pecuniarily responsible for violations of express or implied contracts, as the former are already. This cau only be done through organized associations of workmen. These organizations must not only have a legal existence and be capable of suing and being sued, but must also have a sufficient amount of capital to make them practically responsible. If the knights of Labor had a paid up c.pital of one million dollars not one out of fifty of the strikes which its officers have ordered would ever have taken place, because the leaders would not have risked suits for damages. Similarly, if the organizations which have instituted boycotts were pecuniarily responsible — if judgments at law for damages could be collected of them—there would have been very little boycotting. The existence of labor organizations capable of causing great financial loss to outside partics by illegal methods and yet utterly without financial responsibility, is an anomaly among our institutions.—Railway Review.

INDEX TO VOLUME TWO.

Accident, A Sivgular Car	5
Activity in Street Railway Building	245
Adams, Mass., Notes from	158
Advancement of all Employees	486
Air in Stables, Cubic Space of	84
Air Motor, New Compressed	239
Albany, N.Y., Notes from	79
Alleviation Not a Cnre, An	332
Alloy, A New	198
	*282
American Street Railway Ass'n	340
American St. Ry. Asso. Officers 387,	
American Street Railway Convention	7
Amesbury Street Railway Company	288
Andrews & Clooney's New Car Spring	*42
Andrews & Clooney's Snow Plow	*3
Application of Animal Power to Cars,	149
	*334
	441
Arcade Franchise	387
Arcade Railroad Company	288
	249
Ashtabula, Ohio, Notes from	203
Athens, Ga., Notes from	14
Atlanta, Ga., Notes from 47, 203,	
Atwood, J. E., Obitnary	386
Aurora, Ill., Notes from	249
Austin, Texas, Notes from	158
Labores, Loads, LOUCS HOLL	100

Aylo White's Divided	*100
Axle, White's Divided	*482
Ayers' Anti-Rattler	*334
Ayers' Patent Sash Holder	344
"Back Bay" Car, A Boston	*282
Baker's Patented Car Link	77
Baltimore, City Passenger Railway Co	. 202
Baltimore, Md., 115, 158, 249, 292	
	, 111
Banquet, The	
Battle Creek, Michigan, Notes from	341
Bearing, Chaplin Roller	*428
Beaver Falls, Pa., Notes from 204	, 249
	, 292
Bench on Strikes, The	201
Berlin City Railroad	198
Berlin Metropolitan Railway, The	*483
Bessbrook Electrical Tramway, The	77
	7, 79
Birmingham, Ala., 47,115,204,207,388	, 441
Birmingham Cable Roads	154
Bismark, Dakota, Notes from	115
Bloomington, Ill., Notes from	204
'Bobtail" Cars vs. Two-Horse	154
Boston, Cable Roads for	161
Boston Conductors	111
Boston, Mass., Notes from 47, 80, 115,	158,
203, 249, 292, 341, 388, 441	
Boston Street Railway Consolidation	387
Bostou Scene, A	502
Bowling Green, Ky., Notes from	158
Brake Reel Attachment, Improvement	in 4
Brake, The Mallinckrodt Street Car	*428
Brayton Girder Rail, The	76
Brenham, Tex., Notes from	115
Bridgeport, Conn.	489
Bridgeport, Conn.	
Bridgeton, N. J., Notes from	341
Broadway, N. Y., StreetR il way	244
Broadway Railroad Suit, The	388
Brockton, Mass., Notes from 14,	115
Brockton, Mass., Notes from 14, Brooklyn Bridge Management The	
Brooklyn Bridge Management, The	83
Brooklyn Bridge Management, The Brown's Cable Road	83 386
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in	$83 \\ 386 \\ 14$
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158	$83 \\ 386 \\ 14 \\ , 204$
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441	$83 \\ 386 \\ 14 \\ , 204$
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441	83 386 14 , 204 , 489
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight	83 386 14 , 204 , 489 437
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad	83 386 14 , 204 , 489 437 336
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of	83 386 14 , 204 , 489 437 336 290
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292,	83 386 14 , 204 , 489 437 336 290 341
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for	83 386 14 , 204 , 489 437 336 290 341 241
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, Ia., Notes from	83 386 14 , 204 , 489 437 336 290 341
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for	83 386 14 , 204 , 489 437 336 290 341 241
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, Ia., Notes from	83 386 14 , 204 , 489 437 336 290 341 241 158
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Burlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r er	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Chr er Grip A New	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Chr er Grip A New Grips	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r er Grip A New Grips Making a	83 386 14 204 437 336 290 341 241 158 47 154 *74 82 432
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust.	83 386 14 , 204 437 336 290 341 241 158 47 154 *74 82 432 387
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of	83 386 14 204 437 336 290 341 241 158 47 154 *74 82 432
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust.	83 386 14 , 204 437 336 290 341 241 158 47 154 *74 82 432 387
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways in Massachusetts	83 386 14 , 204 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal, Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r er Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways in Massachusetts Railways, The	83 386 14 , 204 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Bnrlington, I.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways in Massachusetts Railways, The Railway, The Kingsbridge 189	83 386 14 , 204 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 387 *242 334 5 , 203
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, V., Notes from Burlington, V., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Bnrlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Bnrlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Road, The Tenth Avenue	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Bnrlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 387 *242 334 5 , 203 386 *105 145 329
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Bnrlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Bnrlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, V., Notes from Burlington, V., Notes from Cable Ch r &r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Experience in SanFran'sco	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153 5 329
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, V., Notes from Burlington, V., Notes from Cable Ch r &r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Experience in SanFran'sco Roads for Boston	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153 119 161
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Experience in SanFran's of Roads for Boston Roads, Progress of	83 386 14 204 489 437 336 290 341 241 154 *74 82 387 *242 334 5 203 386 *105 145 329 153 119 161 440
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Experience in SanFran'sco Roads tor Boston Roads, Progress of Roads, San Francisco	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 387 *242 334 5 , 203 386 *105 145 329 153 9 161 440 *188
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Railways, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Economy in Roads, Experience in SanFran'sco Roads tor Boston Roads, San Francisco Road withont Grips, A	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153 119 161 440 *188 146
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Economy in Roads, Experience in SanFran'sco Roads tor Boston Roads, San Francisco Road withont Grips, A Splice, A	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153 145 329 153 119 161 440 *188 146 429
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Economy in Roads, Experience in SanFran'sco Roads tor Boston Roads, San Francisco Road withont Grips, A	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 387 *242 384 5 , 203 386 *105 145 329 153 119 161 440 *188 146 429 119
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r & r Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Economy in Roads, Experience in SanFran'sco Roads tor Boston Roads, San Francisco Road withont Grips, A Splice, A	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 334 5 , 203 386 *105 145 329 153 145 329 153 119 161 440 *188 146 429
Brooklyn Bridge Management, The Brown's Cable Road Brooklyn, Cable Road in Brooklyn, Notes from 47, 80, 115, 158 292, 341, 388, 441 Brooklyn's Rapid Transit Fight Brooklyu Union Elevated Railroad Brnssels, Tramways of Buffa N. Y., Notes 158, 249, 292, Bnffal , Three Cent Bill for Burlington, J.a., Notes from Burlington, Vt., Notes from Cable Ch r er Grip A New Grips Making a Railway for Melbourne, Aust. Railways, Gould's System of Railways, The Railways, The Railways, The Railways, The Railway, The Kingsbridge 189 Road, Brown's Road, TenthAve.Motive Power Roads, A. S. Hallidie on Roads, Economy in Roads, Experience in SanFran'sco Roads tor Boston Roads, San Francisco Road withont Grips, A Splice, A System in Chicago, Success of	83 386 14 , 204 , 489 437 336 290 341 241 158 47 154 *74 82 432 387 *242 387 *242 384 5 , 203 386 *105 145 329 153 119 161 440 *188 146 429 119

1 ____

A	a	9
- 22	J	0

Cambridge, Mass., Notes from 14,204	, 292	D
Cane Car Seats	77	D
Canton, Ohio, Notes from	158	D
Capital and Labor	17	D
Caps, Goldmann's Uniform	*43	D
Car, A Boston "Back Bay"	*282	
An Electric When go to the Paint Shop,	$\frac{240}{112}$	D
	, 383	
Motor, Freese's Automatic	, 000	
Muster Painters' Asso. in Toronto,		
Painting	152	D
Starter's Indicator	433	D
Ventilation	200	D
Cars, Better	438	D
Fourth Avenue	244	D
-	377	D
Repainting	115	
Slipping Cutosenano, Bo	$\frac{288}{489}$	
Catasauqua, Pa. Center Bearing Rail	$\frac{409}{386}$	
Channel Plates & Rails, Improvements		E
	*428	E
1 0	116	
Charlotte, N. C., Notes from	14	Ea
Chattanooga, Tenn., Notes from	249	E
Chester, Pa., Notes from	204	E
Chicago Electric Elevated Railroad	377	Ec
Chili, Street Railways in	84	E
Chicago, Ill., Notes from 47, 80, 115,		Ec
204, 249, 341, 389, 441,		Ec
Chicago Ahead of Philadelphia, Where Cincinnati, O, Notes 204, 292, 389, 438,		Ef El
City Passenger Ry. Co., Baltimore	$\frac{441}{202}$	El
Clarksville, Tenn., Notes from	441	El
Clean Cars	386	El
Cleveland, O., Notes 80, 159, 204, 441,		El
Clifton, Ontario, Notes from.	292	El
Colic, 1ts Symptoms and Treatment	339	\mathbf{El}
Columbia, S. C., Notes from	441	El
Columbus, Ohio, Notes from	204	El
Compressed Air Motor, New Conception, Argentine Republic	239 204	El El
Condemning Running Cars Sunday	338	El
Conductors' Bonds	154	Ele
Conductors Dispensed with	386	\mathbf{El}
Conductors' Hours in Brooklyn	46	El
Conductors' Manners	245	Ele
Consecutive Strikes	290	El
Consolidation, Boston Street Railway	387	Ele
Consolidation, Effect of upon Travel	148	Ele Ele
Construction and Management Construction, Good	$\begin{array}{c c} 247 \\ 482 \end{array}$	Ele
Construction, Street Bailway	*16	Ele
Continent, Street Railways on the	295	Ele
Convention, American Street Railway	7	El_{\S}
Convention Briefs	13	ED
Convention, The Cincinnati	438	\mathbf{En}
Corporations and Employees	113	\mathbf{En}
Corrugated Nails	77	
	487	En
Cost of Street Rys. for Small Towns 45,		En
Covington, Ga., Notes from Covington, Ky., Notes from	$\frac{441}{204}$	En Eq
Cure for Labor Tronbles,	492	Eq
Cutters, The Ross Hay	*73	
Danbury, Conn., Notes fr m	116	\mathbf{Er}
Daversport, Mass., Notes from	292	Eu
Danville, Ill., Notes from	204	Eu
Davenport, Ia., Notes from	14	Eu
Dayton, Ohio, Notes from	204	Ev
Dead Weight	113	Ex Ex
Decatur, Ill., Notes from Decision, An Important	204 157	Tax
,		

_		
2	Destruction of Metropolitan Shops	333
7	DeKalb Avenue Stables, The	245
8	Denison, Texas, Notes from	249
7	Denver, Col., Notes from 80, 249, 341,	441
3	Des Moines, Ia.	490
2	Detroit, Mich., Notes from 292, 341,	389
0	Digest of Returns	244
2	Directory of Manufacturers and	
3	Dealers in Street Railway Ap-	
6	pliances, and Index to Adver-	
7	tisers $164, 212, 260, 297, 344, 392, 444$,496
$\overline{2}$	Directory, Street Railway	244
3	Directory of Street Ry. Appliances	114
0	Directory of Street Railways, Onr	113
8	Dirty Street Cars	489
£		[*] 481
	Driving, Economy in	338
5	Drivers, Rules for the Conduct of	335
3	Duluth, Minn., Notes from 116,	204
9	Duties and Remunerations of Street	0.00
3	Railway Employees	202
3	Early Electric Motor, An	195
3	Earnings and Expenditures of the	000
3	Third Avenue Railroad Co.	288
£	East Manchester, N.H., Notes from East Saginaw, Mich., Notes from 204,	389
)	East Sagmaw, Mich., Notes from 204, Eau Claire, Wis., Notes from	
ŧ 7		389 239
E	Economy in Cable Roads	
E	Economy in Driving	$\frac{153}{338}$
3	Economy in Material	ээо 386
3	Effects of Strikes and Riots	13
1		77
		107
		240
	Electric Engine for Tram Cars 78,	
)		194
	Electricity for Street Railways *	185
	Electric Motor, An	239
.		195
	Electric Motor, The Van Depoele	18
	e e	487
		337
	Electric Railways	43
	Electric Ry. System, Van Depoele 283, Electric Railway under Broadway	$\frac{425}{120}$
	· · · ·	$\frac{120}{336}$
	Electric Tram-car, Reckenzaun's	83
		290
1	Electricity, Progress in RunningCars by	
		109
	Elevated Railroads, Cable Traction for	6
		190
		378
		477
	Elgin, Ill., Notes from	81
	Elkhart, Ind., Notes from 159,	
	1 0 /	486
	Employees, Duties and Remunera-	000
		202
		114 114
	and the second second to second se	$\frac{114}{285}$
		289 332
	Equipping a New Road Temporarily	001
		244
		204
	Euphony and Right Names	6
		284
	-	485
		159
		386
1	Exhibit at the Convention, THE STREET	
1	RAILWAY JOURNAL	13

n Shops 333	Exhibition of Street Railway Ap	
he 245	ances at Cincinnati Conventi	on 438
n 249	Expenses, Operating	497
80, 249, 341, 441	Fall River, Mass., Notes from	292
490	Fare Box and Lantern Combined	200
292, 341, 389	Fare Box, Improved	*103
244	Fare Collector	343
rers and	Fare Register for Tramcars	Ę
lway Ap-	Feeding Horses, Cost of	487
o Adver-	Fireless Locomotives	377
344, 392, 444, 496	First American Tramway	430
244	First Count the Cost	e
pliances 114	Fitchburg, Mass., Notes from	159, 292
ys, Onr 113	Fixing Fares	105, 252
489		
	Floor, Everit's Street Car	*476
x *481	Florence Marryatt's Advice	2
338	Forged Steel Wheels	239
net of 335	Fourth Avenue Cars	211
116, 204	Floor, Everit's Street Car	*466
of Street	Fort Smith, Ark., Notes from	204
202	Freeport, Ill., Notes from	159
195	Freese's Automatic Car Motor	76
es of the	Fulton, N. Y., Notes from	441
Co. 288	Fungi and the D. cay of Timber	436
tes from 389	Galesbnrg, Ill., Notes from	204
from 204, 490	Galveston, Texas, Notes from	249, 442
m. * 389	Garland street Car Heater, The	*482
*239	-	
153	Gauge of Wheels Geneva, N. Y., Notes from	386
		81, 116
338	Germantown, Pa., Notes from	389
386	Glasgow, Scotland, Street Railwa	
13	Gloucester, Mass., Notes 116, 204	
Bessbrooke 77	Goldmann's Uniform Caps	*43
way, etc. *107	Good Construction	482
$\rightarrow 240$	Gould's System of Cable Railway	
ars 78, 477	Gould's Track Support, Trac	tion
194	Cable and Electric Conduct	ors
ys *185	Conduits	4
239	Grand Rapids, Mich., Notes from	
195	Granulator, The Milwaukee	*481
epoele 18	Graphite as a Lubricator	440
487	Great Britain, Street Car Propulsi	
oolis 337	Greenbush, N. Y., Notes from	
43		116
	Grip, A New Cable	*74
epoele 283, 425	Grips, Cable	82
adway 120	Grip, The Jonson	*111
idelphia 336	Grip, The Miller	*252
uun's 83	Growl, A Horse Car	383
290	Guaranteeing Car Wheels	295
ningCars by 42	Guesswork Construction	439
Power by 109	Halifax, N. S., Notes from	442
raction for 6	Hallidie, A. S., on Cable Roads	329
190	Halter Pullers, For	484
y *378	Halter, The Eclipse	*239
477	Hamburg, Street Railways in	244
\$1 S1	Hame, Lewis Reversible	*75
159, 209	Hamilton, Ontario, Notes from	116
fall 486	Haunibal, Mo., Notes from	
		204
munera-	Hasey's Rail Joint	*150
202	Havana, Cuba, Notes from	249
ailway 114	Haverhill, Mass., Notes from 204,	
114	Hawes' Adjustable Shoe	*42
ssiou 285	Haycox Door Fastener, The	*481
332	Heater, Hunter's Car	*42
porarily	Heater, Street Car	*149
244	Heater, The Garland Street Car	*482
204		
C	Heater, The National Car	*42
6		* <u>42</u> *483
*284	Heater, The National Car Heater, The Nelson Car	*483
	Heater, The National Car	* 4 83 on
$^{*284}_{485}$	Heater, The National Car Heater, The Nelson Car Heating, Lighting and Ventilati of Cars	*483 on 488
$^{*284}_{485}$ 159	Heater, The National Car Heater, The Nelson Car Heating, Lighting and Ventilati of Cars Helena, Montaua, Notes from	*483 on 488 250
$^{*284}_{485}$ 159 386	Heater, The National Car Heater, The Nelson Car Heating, Lighting and Ventilati of Cars Helena, Montaua, Notes from Holyoke, Mass., Notes from	*483 on 488 250 15, 205
$^{*284}_{485}$ 159	Heater, The National Car Heater, The Nelson Car Heating, Lighting and Ventilati of Cars Helena, Montaua, Notes from	*483 on 488 250

THE STREET RAILWAY JOURNAL.

Horse Clipping 198 Horse Expense of Street Railways 245Horse Shoeing 331Horseshoe with Movable Calks *75 Horses, Car 383 330 Horses' Hoofs, Rasping and Greasing Horses, Mad 200Horses, Pneumonia in Car 196 Hose Rack, Swinging *75 Hnnter's Car Heater *42Hyde Park, Ill., Notes from 205Hydranlic Press, 3 487 Improved Device *109 Improved Fare Box Indianapolis, Ind., Notes from 116, 205 Indicator, Car Starter's 433Insurance, Street Railway 485Ireland, Electricity in 194Iron Car Wheels 285Jaehne, Alderman 290Jamestown, N. Y., Notes from 205, 293 Jersey City, N. J., Notes from 48, 116 Joint, Street Rail *112 Jonson Grip, The *111 Junctions and Crossings, Tramway 18Kalamazoo, Mich., Notes from 250Kansas City Cable Co., 14 Kansas City, Notes from 81, 205, 250, 293Kingsbridge Cable Railway 189Kissimmee, Fla., Notes from 341Knights of Labor 244, 288Knoxville, Tenn., Notes from 250Labor, Capital aud 17 Labor Saving Office Devices 47 La Crosse, Wis., City Railway Co. 14 La Crosse, Wis., Notes from 205, 293 La Salle Street Tunnel, The *430 Lampasas, Tex., Notes from 389 Lancaster, Pa., Notes from 205Lantern, Combined Fare Box and 200Lateral Stiffness of Street Ry. Track 17 Law of Snpply and Domaud, The 291Lawrence, Kan., Notes from 48, 205 Lawrence, Mass., Notes from 205Le Grange & Green's Car-Axle Box *41 Letter-Copying Process, A New 50Lewis & Fowler Mauufacturing Co.'s New Shops, Tho 161, 287 Lewis' Reversible Hame *75 Lewis, Samuel 14 Liabilities, Street Railway Companies 241 License Fees, Recovering 202Lighting, Hoating & Ventilating Cars 488 Lighting of Cars, Tho 294Light Locomotives 295Lincoln, Neb., Notes from 159, 205 Link, Baker's Patent Car 77 List of the Street Railways in the United States and Canada, Ofcial, 18, 50, 84, 122, 207, 254, 298, 345, 393 Lockport, N. Y., Notes from 205Locomotives, Fireless 377 Locomotives, Light 295Logansport, Ind., Notes from 389 London Railway System 478Long Island City, N. Y., 116, 159, 205 Los Angeles, Cal., Notes from 341, 389, 478 Louisville, Ky., Notes from 205, 490 Lowell, Mass., Notes from 341, 390 Lubricating Oils, Test for 383 Luminous and Musical Cars 17 Lynchburg, Va., Notes from +48Lynn, Mass., Notes from 48, 159, 250 Machine for Removing Snow 244

Mack Elevated Railway 190 Macon, Ga., 48, 117, 205, 341, 389 Madison, Wis., Notes from 117 Mahogany 294 Mallinckrodt Street Car Brake *428Mankato, Minn., Notes from 159, 250, 442 Manners, Conductors' 245Massachusetts, Cable Railways in 334Massachusetts in 1885, St. Rys. of 155Mat, Eureka Folding *284 Maysville, Ky., Notes from 48Mechanical Traction upon Tramways 434 Medicine in the Stables 45Meeting, The Next Regular 387 Melbourne, Aus., Cable Railway for 387 Melbourne, Ans., Notes from 14, 341, 442 Melting Snow with Salt 287Membership of the St. Ry. Asso'n 485Memphis, Tenn., Notes from 14, 159 Meriden, Conn., Notes from 117 Metallic Way vs. Stringer Track 146Metallic Way vs. Timber Track 253,331,338 Method of Laying Rails, New 296Methods of Propelling Street Cars 1 289 Metropolitan Repair Sheps, The Metropolitan Shops, Destruction 333 Metropolitan Street Railway of Boston 107 Mexico, Street Cars in 150, 502 Michigan City, Mich., Notes from 293, 341 Middletown, Conn., Notes from 293, 341 Middletown, Ohio, Notes from 250 Miller Grip, The *252, 294 Milwaukee Granulator, The *481 Milwankee, Wis., Notes 117, 159, 205, 490 Minneapolis, Minn., 159, 250, 293, 341 Minneapolis, The Electric Railway at 337 Mobile, Ala., Notes from 159, 205, 250 Model Stable, A *233 Montgomery, Ala., 14,117,205, 250, 293, 390 Montreal, Can., Notes from 14, 205, 389 Mortgages, Street Railway 284Motive Power of the Tenth Avenue Cable Road *105 Motor, Steam Street Railway *252Monnt Vernon, N. Y., 81, 159, 293, 390 Mules in Northern Minnesota 45 Multiplication of R. R. Facilities 202Muscatine, Ia., Notes from 48Musical Cars, Luminous and 17My Rights 197 Nails, Corrugated 77 Natchez, Mass., Notes from 159Natick, Mass., Notes from 250, 390 National Car Heater, The *42Neeuah, Wis., Notes from 390 Nelson Car Heater, The *483 Nevada, Mo., Notes from 205Newark, N. J., Notes from 250Nashua, N. H., Notes 117, 205, 390, 490 Nashville, Tenn., Notes from 205,250 New Bedford, 48, 81, 117, 205, 390, 442 New Britain, Conn., Notes from 159New Brunswick, N. J., 159.390 Newburg, N. Y., Notes from 159, 205 New York, Bleecker Street Line, Notes 14 New York City, Notes from 14, 48, 81, 117, 159, 205, 250, 293, 342, 390, 442, 490 New York Cross-Town Line Franchises 14 New York Elevated Snits 14 New York Railroad Revenue 439 New York Strike The 246Niagara Falls and Suspension Bridge Railway Company 205Niagara Falls, N. Y., Notes from 205

North Adams, Mass., Notes from 160,	293
North London Tramway Companies	156
New Departnre in Laying of Track, A	82
0	377
New Form of Street Railway Track	*76
New Haven, Conn., 14, 205,	390
New Letter Copying Process, A	50
New Marlboro, O., Notes from New Orleans Exposition, Notes from	390 14
	293
New Rochelle, N. Y., Notes from	390
Newsboys Mnst Keep Off	481
Newton, Mass., Notes from 118,	346
Norwalk, Connecticut	4 90
Obitnary, Atwood, J. E.	386
Obitnary, Clooney, Benj. A.	290
Officers, American Street Ry. Asso.	387
Ogdensburg, N. Y., Notes from 118,	
Olean, N. Y., Notes from	118
Onaha, Neb., Notes from 391, 442,	
Operating Expenses, Oswego, N. Y., Notes from	489 49
Ottawa, Canada, Notes from	49 391
Ottawa, Ill., Notes from	250
Onr Startling Age	200
Paducah, Ky., Notes from	160
Painesville, Ohio, Notes from	391
Painting, Car	152
Paint Shop, When should a Car go to	112
Palatka, Fla., Notes from 391,	
Patents, Recent, 287, 336,	391
Pavement, Street Railway	289
Pavements, Wooden Street	$\overline{77}$
Paving, Resurfacing Wood	146
Pawtneket, R. I., Notes from 293, 342,	490
Peoria, Ill., Notes from	293
Personal, 113, 156, 253,	481
Philadelphia, Electric Street Cars in	
Philadelphia, Pa., Notes from 81, 118,	160
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442,	$160 \\ 490$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from	$160 \\ 490 \\ 15$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsburg, Pa., Notes from 14, 81, 206,	$160 \\ 490 \\ 15 \\ 251,$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsburg, Pa., Notes from 14, 81, 206, 294, 342,	$160 \\ 490 \\ 15 \\ 251, \\ 442$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391,	160 490 15 251, 442 442
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses	$160 \\ 490 \\ 15 \\ 251, \\ 442$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses	160 490 15 251, 442 442 196
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway 	160 490 15 251, 442 442 196 *107
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, 	160 490 15 251, 442 442 196 *107 442
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity 	160 490 15 251, 442 442 196 *107 442 338
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway	$160 \\ 490 \\ 15 \\ 251, \\ 442 \\ 442 \\ 196 \\ *107 \\ 442 \\ 338 \\ 251 \\ 290 \\ 285 \\$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To	160 490 15 251, 442 442 196 *107 442 338 251 290 285 336
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity	160 490 15 251, 442 196 *107 442 338 251 290 285 336 42
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ *107\\ 442\\ 338\\ 251\\ 290\\ 285\\ 336\\ 42\\ 1\end{array}$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill.	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ *107\\ 442\\ 338\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490 \end{array}$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ *107\\ 442\\ 338\\ 251\\ 290\\ 285\\ 336\\ 42\\ 1\end{array}$
Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ *107\\ 442\\ 338\\ 251\\ 290\\ 285\\ 336\\ 42\\ 1\\ 490\\ 503\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ 196\\ 8*107\\ 442\\ 2338\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149 \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Cars 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ 196\\ 8*107\\ 442\\ 2338\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149 \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ 196\\ 8*107\\ 442\\ 2338\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149 \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Proyent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Prospectns of the Kingsbridge Cable Railway Co. Providence, R. I., Notes from 206, 	160 490 15 251, 442 196 *107 442 338 251 290 285 336 422 1 490 503 149 327 203
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Prospectns of the Kingsbridge Cable Railway Co. Providence, R. I., Notes from 206, Purchase of Uniforms 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ 196\\ 285\\ 338\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Proyent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Prospectns of the Kingsbridge Cable Railway Co. Providence, R. I., Notes from 206, Purchase of Uniforms Qnebec, Can., Notes from 160, 206, 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 196\\ 196\\ 285\\ 338\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Prospectns of the Kingsbridge Cable Railway Co. Providence, R. I., Notes from 206, Purchase of Uniforms Qnebec, Can., Notes from 160, 206, Quebec Street Railway Co., The 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 196\\ *107\\ 442\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Proyent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Quebec, Can., Notes from 160, 206, Quebec Street Railway Co., The Rail, European Street Car 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 196\\ *107\\ 442\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Praetice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Qnebec, Can., Notes from 160, 206, Quebec Street Railway Co., The Rail, European Street Car Rails, Improvements in 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 196\\ 190\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ 76\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Proyent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Qnebec, Can., Notes from 160, 206, Quebec Street Railway Co., The Rail, European Street Car Rails, Improvements in Rails, New Method of Laying 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 130\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ 76\\ 296\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Proyent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Quebec Street Railway Co., The Rail, European Street Car Rails, Improvements in Rails, New Method of Laying Rail, The Brayton Girder 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 132\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ 76\\ 296\\ 76\\ 76\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Quebec, Can., Notes from 160, 206, Quebec Street Railway Co., The Rail, European Street Car Rails, Improvements in Rails, New Method of Laying Rail, The Brayton Girder Railway, The Berlin Metropolitan 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 130\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ 76\\ 296\\ 76\\ *483\\ \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Proyent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Quebec, Can., Notes from 160, 206, Quebec Street Railway Co., The Rail, European Street Car Rails, Improvements in Rails, New Method of Laying Rail, The Brayton Girder Railway vs. Street Lines 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 138\\ 251\\ 290\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ 76\\ 296\\ 76\\ *483\\ 477 \end{array}$
 Philadelphia, Pa., Notes from 81, 118, 206, 250, 293, 342, 391, 442, Philadelphia Traction Co., Notes from Pittsbnrg, Pa., Notes from 14, 81, 206, 294, 342, Plainfield, N. J., Notes from 160, 391, Pneumonia in Car Horses Pneumatic Subway and Railway Plymouth, Mass., Notes from Policy, Street Railway Portland, Oregon, Notes from 49, Possibilities of Electricity Practice, Street Railway Prevent Wheels Slipping, To Progress in Rnnning by Electricity Propelling Street Cars, Methods of Peoria, Ill. Personal Proper Application of Animal Power to Tram Cars, The Propulsion in Great Britain, Street Car Providence, R. I., Notes from 206, Purchase of Uniforms Quebec, Can., Notes from 160, 206, Quebec Street Railway Co., The Rail, European Street Car Rails, Improvements in Rails, New Method of Laying Rail, The Brayton Girder Railway, The Berlin Metropolitan 	$\begin{array}{c} 160\\ 490\\ 15\\ 251,\\ 442\\ 442\\ 196\\ 130\\ 285\\ 336\\ 422\\ 1\\ 490\\ 503\\ 149\\ 327\\ 203\\ 342\\ 386\\ 442\\ 151\\ 485\\ 76\\ 296\\ 76\\ *483\\ \end{array}$

THE STREET RAILWAY JOURNAL.

7	Ę.	0	5
2	E	U	υ

Receipt for Preserving Ties			
	000	Graning Gall Mars (0, 110, 101, 077	101
	288	Springfield, Mass., 49, 118, 161, 251,	
Recent Strikes and " Tie Ups "	244	Springfield, Mo., Notes from 206,	251
Reckenzaun's Electric Tram Car	83	Springfield, Ohio, 14, 81, 118, Stable A Modul	
Recover License Fees	202		233
Register, The Duplex	46		$\begin{array}{c} 245 \\ 157 \end{array}$
Relieving Rush on "Bobtail" Lines	10		335
	011	Starters, St. Car	337
with Two Horse Cars	244		382
Repainting Cars	115	Staten Island, N. Y., Notes from 118,	
Repair the Streets, The Street Rail-			252
way Companies Must	200		290
Repair Shops, The Metropolitan	289	Steel Rail Discussion, The	382
Resurfacing Wood Paving		Sterling, Ill., Notes from	14
÷ 0	146		109
Result of the Recent Street Railway		Stillwater, Minn., Notes from 206, 343,	443
Strikes	202	Stock Quotations, Street Railway 343,	443
Richmond, Va., Notes from 161, 251,	491	Stocks Street Railway 488, 502, 120, 163,	
	*285		491
Right or Left Hand Tracks	82		491
			206
	*378		$\begin{array}{c} 251 \\ 437 \end{array}$
Riotous Actions	338		$\frac{407}{149}$
Riotous Street Car Strike, Another	155	Street Car Propulsion in Great Britain	
Road and Rail Vehicles	476		151
Roberge's Hoof Expander	429		112
Rochester, N. Y., Notes from 118,		Street Cars in Mexico 130,	
			337
Rockland, Me., Notes from	342		112
Rome, N. Y., Notes from	118		202
Roofs, Street Car	151	Street Railway Appliances at the Cin-	
Room of one Passenger, The	156	cinnati Convention, Exhibition of	438
Rope Railway in Austria, A	83	Street Railway Association, Membership	485
Ross "Giant" & "Little Giant" Cutters		Street Ry. As. Sec. Circular to American	485
Pulos for the Car last (D :			244
Rules for the Conduct of Drivers	335		245
Rutland, Vt., Notes from	442		241
Saginaw, Mich., Notes from	206	Street Railway Companies must repair	
St. Catharine's, Ont., Notes from	206		200
St. John, New Brunswick,	443	Street Ry. Construction and Manage-	o
			247
St. Joseph, Mo., Notes from	118		*16
St. Louis Backbone and Generosity	6	Street Railway Directory	$\frac{110}{244}$
St. Louis, Mo., 81, 118, 206, 251, 294, 343	,391		114
St. Paul, Minn., 118, 161, 251,			244
Salem, Mass. 161, 206, 342,			485
Salina, Kansas, Notes from	161	STREET RAILWAY JOURNAL	503
Salina, N. Y., Notes from		STREET RAILWAY JOURNAL Exhibit at	
	342	the Convention, The	13
Salt, Melting Snow with	287	Street Railway Locomotives	475
Salt on Track	154	Street Railway Mortgages	284
Sandusky, Ohio, Notes from	160	Street Railway Patents	287
San Francisco Cable Roads *187	491	Street Railway Pavements	289
San Francisco, Cal., 49,160,257,294,391	119	Street Railway Policy	338
		Street Railway Practice	
San Francisco Experience in Pupping			285
SanFrancisco Experience in Running C		Street Railway Securities	202
San Francisco Experience in Running C Roads	119	Street Railway Securities Street Rys. for Small Towns, Cost of	$\begin{array}{c} 202 \\ 45 \end{array}$
SanFrancisco Experience in Running C		Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili	202
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car	119 342 *112	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States	$\begin{array}{c} 202 \\ 45 \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car	119 342 *112	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the	$202 \\ 45 \\ 84$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New	119 342 *112	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398,	$202 \\ 45 \\ 84 \\ 497$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A.	119 342 *112 244	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885	$202 \\ 45 \\ 84$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway	119 342 *112 244 485	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398,	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ $
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from	119 342 *112 244 485 202	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ $
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161	119 342 *112 244 485	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Railways, Our Directory ofStreet Ry. Stocks120, 163, 211, 488,Street Railway Strikes201,	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ 502 \\ 248 \\ $
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seventh Avenue Stables, The	119 342 *112 244 485 202 161	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Bailway Taxes	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ 502 \\ 248 \\ 290 \\$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seneca Falls, N. Y., Notes from Seneca Falls, N. Y., Notes from Seventh Avenue Stables, The Sharp, Jacob	$119 \\ 342 \\ *112 \\ 244 \\ 485 \\ 202 \\ 161 \\ , 206 \\ 157 \\ 488 \\ 157 \\ 488 \\ 157 \\ 488 \\ 157 \\ 488 \\ 157 \\ 488 \\ 100 \\ 1$	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ 502 \\ 248 \\ 290 \\ 17 \\ 17 \\ 17 \\ 15 \\ 155 \\ 295 \\ 17 \\ 155 \\ 290 \\ 17 \\ 17 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 1$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251	119 342 *112 244 485 202 161 , 206 157 488 , 294	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Streets and Roads	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ 502 \\ 248 \\ 290 \\ 17 \\ 50 \\ $
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from Shoe, Hawes' Adjustable	119 342 *112 244 485 202 161 , 206 157 488 , 294 *42	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car	$202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ 502 \\ 248 \\ 290 \\ 17 \\ 50 \\ 155 \\ 15$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seneca Falls, N. Y., Notes from Shore, Jacob Sherman, Texas, Notes from Shoe, Hawes' Adjustable Shoeing, Horse	119 342 *112 244 485 202 161 , 206 157 488 , 294 *42 331	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car Strike at St. Louis, The	$202\\45\\84\\497\\155\\295\\113\\502\\248\\290\\17\\50\\155\\6$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of	119 342 *112 244 485 202 161 , 206 157 488 , 294 *42 331 *3	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Strikes 201, Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car Strike at St. Louis, The Strike in Brooklyn	$\begin{array}{r} 202 \\ 45 \\ 84 \\ 497 \\ 155 \\ 295 \\ 113 \\ 502 \\ 248 \\ 290 \\ 17 \\ 50 \\ 155 \\ 6 \\ 338 \end{array}$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse	119 342 *112 244 485 202 161 ,206 157 488 ,294 *42 331 *3 *109	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Streets and Roads Strike Another Riotous St. Car Strike at St. Louis, The Strike and Riots, The Effects of	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 6\\ 338\\ 13\\ \end{array}$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seneca Falls, N. Y., Notes from Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable	$\begin{array}{c} 119\\ 342\\ *112\\ \hline \\ 244\\ 485\\ 202\\ 161\\ ,206\\ 157\\ 488\\ ,294\\ ,*42\\ 331\\ *33\\ *109\\ 16\\ \end{array}$	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car Strike at St. Louis, The Strike in Brooklyn Strike and Riots, The Effects of Strikes, Consecutive	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 6\\ 338\\ 13\\ 290\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car	$\begin{array}{c} 119\\ 342\\ *112\\ \hline\\ 244\\ 485\\ 202\\ 161\\ ,206\\ 157\\ 488\\ ,294\\ *42\\ 331\\ *109\\ 16\\ 196\\ \end{array}$	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car Strike at St. Louis, The Strike and Riots, The Effects of Strikes, Consecutive Strikes, Results of the Recent St. Ry.	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 6\\ 338\\ 13\\ 290\\ 202\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255	119 342 *112 244 485 202 161 , 206 157 488 , 294 *42 331 *109 16 196 5, 295	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Taxes Street Ry. Track, Lateral Stiffness of Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car Strike at St. Louis, The Strike in Brooklyn Strike and Riots, The Effects of Strikes, Consecutive Strikes, Results of the Recent St. Ry. Strikes, Street Railroads in	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 505\\ 6\\ 338\\ 13\\ 290\\ 202\\ 202\\ 202\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from Seneca Falls, N. Y., Notes from Seneca Falls, N. Y., Notes from Shore, Jacob Sherman, Texas, Notes from Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255 Singular Car Accident,.	$119 \\ 342 \\ *112 \\ 244 \\ 485 \\ 202 \\ 161 \\ 206 \\ 157 \\ 488 \\ 294 \\ *42 \\ 331 \\ *38 \\ *109 \\ 196 \\ 196 \\ 3, 295 \\ 5 \\ 5 \\ 195 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. Stocks 120, 163, 211, 488,Street Railway Strikes201,Street Ry. Track, Lateral Stiffness ofStrike and RoadsStrike, Another Riotous St. CarStrike in BrooklynStrike and Riots, The Effects ofStrikes, ConsecutiveStrikes, Street Railway201,Strikes, Street Railoads inStrikes, Street Railway201,Strikes, Street Railway201,Strikes, Street Railway201,Strikes, Street Railway201,Strikes, Street Railway201,Strikes, The Bench on	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 505\\ 6\\ 338\\ 13\\ 290\\ 202\\ 202\\ 202\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255	119 342 *112 244 485 202 161 , 206 157 488 , 294 *42 331 *109 16 196 5, 295	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. Street Rys. Our Directory ofStreet Railways, Our Directory ofStreet Railway Strikes201,Street Railway TaxesStreet Ry. Track, Lateral Stiffness ofStrike, Another Riotous St. CarStrike in BrooklynStrike and Riots, The Effects ofStrikes, Results of the Recent St. Ry.Strikes, Street Railway201,Strikes, Street Railroads inStrikes, Street Railway201,Strikes, The Bench onStrikes, The New York	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 6\\ 338\\ 13\\ 290\\ 202\\ 248\\ 201\\ 246\\ \end{array}$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 258 Singular Car Accident,. Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ 157\\ 488\\ ,294\\ *42\\ 331\\ *109\\ 16\\ 196\\ 196\\ 5,295\\ 5\\ 206\\ 6\\ 196\\ 196\\ 288\end{array}$	Street Railway Securities Street Rys. for Small Towns, Cost of Street Railways in Chili Street Railways in the United States and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398, Street Rys. of Massachusetts in 1885 Street Rys. on the Continent Street Railways, Our Directory of Street Ry. Stocks 120, 163, 211, 488, Street Railway Strikes 201, Street Railway Strikes 201, Street Railway Strikes 201, Street Railway Strikes 06 Street Ry. Track, Lateral Stiffness of Streets and Roads Strike, Another Riotous St. Car Strike at St. Louis, The Strike in Brooklyn Strikes, Consecutive Strikes, Results of the Recent St. Ry. Strikes, Street Railway 201, Strikes, The Bench on Strikes, The New York Strike, The Recent	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 68\\ 338\\ 290\\ 202\\ 202\\ 248\\ 201\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoeing, Horse Shoeing, Horse Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255 Singular Car Accident,- Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars "Slow Time" Flag	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ 157\\ 488\\ *109\\ *109\\ 6\\ 3,295\\ 5\\ 206\\ 154\\ 288\\ 381\end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Oficial List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Ry. Stocks 120, 163, 211, 488,Street Railway Strikes201,Street Railway TaxesStreet Ry. Track, Lateral Stiffness ofStrike and RoadsStrike and RoadsStrike in BrooklynStrike and Riots, The Effects ofStrikes, Results of the Recent St. Ry.Strikes, Street Railway201,Strikes, Street Railway201,Strikes, The Bench onStrike, The RecentSubjects for Discussion and Special	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 63\\ 83\\ 290\\ 202\\ 202\\ 248\\ 201\\ 202\\ 246\\ 439\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoeing, Horse Shoeing, Horse Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255 Singular Car Accident, Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars "Slow Time" Flag Snow from Street Railway Tracks	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ 157\\ 488\\ *109\\ *109\\ 6\\ 3295\\ 5\\ 206\\ 154\\ 288\\ 381\\ , \end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Ry. Stocks 120, 163, 211, 488,Street Ry. Track, Lateral Stiffness ofStreet Ry. Track, Lateral Stiffness ofStrike and RoadsStrike at St. Louis, TheStrike in BrooklynStrikes, ConsecutiveStrikes, Street Railway 201,Strikes, Street RailwayStrikes, The Bench onStrikes, The New YorkStrike, The RecentSubjects for Discussion and SpecialCommittees387,	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 155\\ 6\\ 338\\ 290\\ 202\\ 248\\ 201\\ 246\\ 439\\ 485\\ \end{array}$
SanFrancisco Experience in Running O Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single Rail Car Singular Car Accident, Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars '' Slow Time'' Flag Snow from Street Railway Tracks Machine for Removing	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ 157\\ 488\\ *294\\ *331\\ *331\\ *331\\ *331\\ *331\\ *331\\ *331\\ *331\\ *333\\ *109\\ 16\\ 196\\ 196\\ 196\\ 5206\\ 154\\ 288\\ 381\\ *331\\ *331\\ *333\\ *109\\ 16\\ 196\\ 5333\\ *109\\ 16\\ 196\\ 5333\\ 10\\ 244\\ *333\\ 10\\ 244\\ *333\\ 10\\ 244\\ *333\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10\\ 10$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. oth ContinentStreet Rys. Our Directory ofStreet Ry. Stocks 120, 163, 211, 488,Street Ry. Track, Lateral Stiffness ofStrike and RoadsStrike, Another Riotous St. CarStrike at St. Louis, TheStrike, ConsecutiveStrikes, Street Railroads inStrikes, Street Railroads inStrikes, Street Railroads inStrikes, The Bench onStrikes, The New YorkStrike, The RecentSubjects for Discussion and SpecialCommittees387,Success of the Cable System in Chicago	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 1555\\ 295\\ 502\\ 298\\ 290\\ 175\\ 502\\ 248\\ 290\\ 155\\ 6\\ 338\\ 13\\ 2900\\ 2022\\ 248\\ 201\\ 246\\ 439\\ 9\\ 485\\ 9\\ 119\end{array}$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single Rail Car Single Rail Car Single Rail Car Single Rail Car Single and Car Single Schwaab's New Secon Slawson, J. B. Slipping Cars "Slow Time" Flag Snow from Street Railway Tracks Machine for Removing Snow Plow. Andrews & Clooney's	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ ,202\\ 161\\ ,204\\ *32\\ 331\\ *109\\ 16\\ 196\\ 5,295\\ 206\\ 154\\ 288\\ 381\\ \cdot\\ 244\\ *3\end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. Stocks 120, 163, 211, 488,Street Railway Strikes201,Street Ry. Track, Lateral Stiffness ofStreet Ry. Track, Lateral Stiffness ofStrike and RoadsStrike in BrooklynStrike and Riots, The Effects ofStrikes, ConsecutiveStrikes, Street Railway201,Strikes, Street Railway201,Strike, The Bench onStrikes, The New YorkStrike, The RecentSubjects for Discussion and SpecialCommittees287,Success of the Cable System in ChicagoSummer and Winter Car	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 295\\ 502\\ 295\\ 502\\ 295\\ 502\\ 295\\ 502\\ 295\\ 202\\ 248\\ 290\\ 202\\ 202\\ 202\\ 202\\ 202\\ 202\\ 202$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255 Singular Car Accident,. Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars ''Slow Time'' Flag Snow from Street Railway Tracks Machine for Removing Snow Plow, Andrews & Clooney's South Bend, Ind., Notes from	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ ,206\\ 157\\ 488\\ ,294\\ *42\\ 331\\ *109\\ 16\\ 196\\ 196\\ 295\\ 5\\ 206\\ 8\\ 381\\ 154\\ 288\\ 381\\ \cdot\\ 244\\ *3\\ 118 \end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. Stocks 120, 163, 211, 488,Street Railway Strikes201,Street Ry. Track, Lateral Stiffness ofStrike and RoadsStrike, Another Riotous St. CarStrike and Riots, The Effects ofStrikes, ConsecutiveStrikes, Results of the Recent St. Ry.Strikes, Street Railway201,Strikes, The Bench onStrikes, The New YorkStrike, The RecentSubjects for Discussion and Special CommitteesCommittees387,Success of the Cable System in ChicagoSummer and Winter CarSupply and Demand, The Law of 156,	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 295\\ 502\\ 295\\ 502\\ 295\\ 502\\ 295\\ 202\\ 248\\ 290\\ 202\\ 202\\ 202\\ 202\\ 202\\ 202\\ 202$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 258 Singular Car Accident,. Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars "Slow Time" Flag Snow from Street Railway Tracks Machine for Removing Snow Plow, Andrews & Clooney's South Bend, Ind., Notes from	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ ,206\\ 157\\ 488\\ ,294\\ *331\\ *109\\ 16\\ 196\\ 3,295\\ 5\\ 206\\ 196\\ 381\\ 154\\ 288\\ 381\\ 154\\ 288\\ 381\\ 118\\ n 14\\ \end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. Street Rys. Our Directory ofStreet Ry. Stocks 120, 163, 211, 488,Street Ry. Stocks 120, 163, 211, 488,Street Ry. Track, Lateral Stiffness ofStreets and RoadsStrike, Another Riotous St. CarStrike in BrooklynStrikes, ConsecutiveStrikes, Results of the Recent St. Ry.Strikes, Street Railroads inStrikes, Street Railway201,Strikes, The Bench onStrike, The RecentSubjects for Discussion and SpecialCommitteesSupply and Demand, The Law of 156,Supply Men at the Convention	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 155\\ 6\\ 33\\ 3290\\ 202\\ 248\\ 439\\ 201\\ 246\\ 439\\ 4485\\ 9\\ 119\\ 473\\ 296\\ 438\\ \end{array}$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 258 Singular Car Accident,. Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars ''Slow Time'' Flag Snow from Street Railway Tracks Machine for Removing Snow Plow. Andrews & Clooney's South Bend, Ind., Notes from South Chicago St. Ry. Co. Notes from Special Notices	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ 157\\ 488\\ *109\\ 161\\ 196\\ 295\\ 5\\ 206\\ 154\\ 488\\ 881\\ 16\\ 196\\ 295\\ 5\\ 206\\ 154\\ 288\\ 381\\ 124\\ 4\\ 310\\ 118\\ 118\\ 340\\ \end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Ry. Stocks 120, 163, 211, 488,Street Ry. Track, Lateral Stiffness ofStreet Ry. Track, Lateral Stiffness ofStrike and RoadsStrike, Another Riotous St. CarStrike at St. Louis, TheStrikes, ConsecutiveStrikes, Street Railway 201,Strikes, Street Railroads inStrikes, The Bench onStrikes, The RecentSubjects for Discussion and SpecialCommitteesSubjects of the Cable System in ChicagoSummer and Winter CarSupply Men at the ConventionSupply Men at the Convention	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 202\\ 248\\ 201\\ 246\\ 439\\ 202\\ 248\\ 201\\ 246\\ 439\\ 473\\ 296\\ 485\\ 297\\ 438\\ 287\\ \end{array}$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 255 Singular Car Accident, Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars '' Slow Time'' Flag Snow from Street Railway Tracks Machine for Removing Snow Plow. Andrews & Clooney's South Bend, Ind., Notes from South Chicago St. Ry. Co. Notes from South Chicago St. Ry. Co. Notes from	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ ,202\\ 161\\ ,157\\ 488\\ ,294\\ *331\\ *109\\ 16\\ 196\\ 5,295\\ 206\\ 154\\ 288\\ 381\\ ,244\\ *3\\ 118\\ n 14\\ *340\\ 340\\ 0,477\end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. on the ContinentStreet Rys. othe ContinentStreet Rys. Our Directory ofStreet Ry. Stocks 120, 163, 211, 488,Street Ry. Stocks 120, 163, 211, 488,Street Ry. Track, Lateral Stiffness ofStrike, Another Riotous St. CarStrike, Another Riotous St. CarStrike at St. Louis, TheStrike, Street RailwayStrikes, ConsecutiveStrikes, Street Railroads inStrikes, Street Railroads inStrikes, The Bench onStrikes, The New YorkStrike, The RecentSubjects for Discussion and SpecialCommitteesSupply and Demand, The Law of 156,Supply Men at the ConventionSupply Men at the ConventionSuface Railroad Facilities, Multion of	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 1555\\ 295\\ 502\\ 298\\ 290\\ 175\\ 502\\ 248\\ 290\\ 155\\ 6\\ 338\\ 13\\ 2900\\ 202\\ 248\\ 201\\ 246\\ 439\\ 9\\ 473\\ 296\\ 438\\ 297\\ 485\\ 485\\ 297\\ 485\\ 485\\ 485\\ 485\\ 485\\ 485\\ 485\\ 485$
SanFrancisco Experience in Running C Roads Santa Anna, Cal., Notes from Seats, Street Car Second Hand Cars, Equipping a New Road Temporarily with Secretary's Circular to A. S. R. A. Securities, Street Railway Seguin, Texas, Notes from Seneca Falls, N. Y., Notes from 161 Seventh Avenue Stables, The Sharp, Jacob Sherman, Texas, Notes from 251 Shoe, Hawes' Adjustable Shoeing, Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shoeing, Schwaab's New Method of Shoe, The Stevens Horse Shovel, Wharton's Patent Durable Single Rail Car Single vs. Duplicate Cables 198, 258 Singular Car Accident,. Sioux City, Ia., Notes from Slawson, J. B. Slipping Cars ''Slow Time'' Flag Snow from Street Railway Tracks Machine for Removing Snow Plow. Andrews & Clooney's South Bend, Ind., Notes from South Chicago St. Ry. Co. Notes from Special Notices	$\begin{array}{c} 119\\ 342\\ *112\\ 244\\ 485\\ 202\\ 161\\ ,202\\ 161\\ ,157\\ 488\\ ,294\\ *331\\ *109\\ 16\\ 196\\ 5,295\\ 206\\ 154\\ 288\\ 381\\ ,244\\ *3\\ 118\\ n 14\\ *340\\ 340\\ 0,477\end{array}$	Street Railway SecuritiesStreet Rys. for Small Towns, Cost ofStreet Railways in ChiliStreet Railways in the United Statesand Canada, Official List of the18, 50, 207, 254, 298, 345, 398,Street Rys. of Massachusetts in 1885Street Rys. on the ContinentStreet Ry. Stocks 120, 163, 211, 488,Street Ry. Stocks 120, 163, 211, 488,Street Ry. Track, Lateral Stiffness ofStrike and RoadsStrike, Another Riotous St. CarStrike at St. Louis, TheStrike, Another Riotous St. CarStrikes, ConsecutiveStrikes, Street Railway201,Strikes, Street Railroads inStrikes, Street Railroads inStrikes, Street Railroads inStrikes, The Bench onStrikes, The New YorkStrike, The RecentSubjects for Discussion and Special CommitteesCommitteesSupply and Demand, The Law of 156,Supply Men at the ConventionSuburban Rapid Transit RailroadSurface Railroad Facilities, Multion ofSweeper, The Allyn	$\begin{array}{c} 202\\ 45\\ 84\\ 497\\ 155\\ 295\\ 113\\ 502\\ 248\\ 290\\ 17\\ 50\\ 202\\ 248\\ 201\\ 246\\ 439\\ 202\\ 248\\ 201\\ 246\\ 439\\ 473\\ 296\\ 485\\ 287\\ \end{array}$

	Springfield, Mass., 49, 118, 161, 251, Springfield, Mo., Notes from 206,	$\frac{491}{251}$
	Springfield, Ohio, 14, 81, 118,	161
	Stable, A Model *	233
		245
		$\frac{157}{22\pi}$
		$\frac{335}{337}$
		382
	Staten Island, N. Y., Notes from 118, Steam Street Ry. Motor *	
	Steam Street Ry. Motor *	
		290
		$\frac{382}{14}$
	Sterling, Ill., Notes from Stevens Horse Shoe, The *	109^{14}
	Stillwater, Minn., Notes from 206, 343,	443
	Stillwater, Minn., Notes from 206, 343, Stock Quotations, Street Railway 343,	443
	Stocks Street Railway 488, 502, 120, 163,	211
		491
		$\frac{491}{206}$
		251
	Street Car Episode, A	437
	Street Car Heater *	149
	Street Car Propulsion in Great Britain	
		$151 \\ 112$
	Street Car Seats * Street Cars in Mexico 130,	
		337
		112
		202
	Street Railway Appliances at the Cin-	10.0
	cinnati Convention, Exhibition of	438
	Street Railway Association, Membership Street Ry. As. Sec. Circular to American	480 485
	Street Railway, Broadway, N. Y.	$\frac{100}{244}$
		245
	Street Railway Companies' Liabilities	241
	Street Kallway Companies must repair	
		200
	Street Ry. Construction and Manage- ment	017
		$247 \\ *16$
		110
	Street Railway Directory	244
	Street Railway Employees, Duties	114
:	Street Railway in Hamburg	244
	Street Railway Insurance	485
	STREET RAILWAY JOURNAL STREET RAILWAY JOURNAL Exhibit at	503
2	the Convention, The	13
	Street Railway Locomotives	475
ŀ	Street Railway Mortgages	284
)	Street Railway Patents	287
L	Street Railway Pavements Street Railway Policy	$\frac{289}{338}$
2	Street Railway Practice	285
Э	Street Railway Securities	$\overline{202}$
)	Street Rys. for Small Towns, Cost of	45
2	Street Railways in Chili	84
2	Street Railways in the United States	
	and Canada, Official List of the 18, 50, 207, 254, 298, 345, 398,	497
£	Street Rys. of Massachusetts in 1885	155
ŧ Š	Street Rys. on the Continent	295
2	Street Railways, Our Directory of	113
2	Street Ry. Stocks 120, 163, 211, 488,	502
5 7	Street Railway Strikes 201, Street Railway Taxes	$\frac{248}{290}$
4 2	Street Ry. Track, Lateral Stiffness of	17
3 7 8 4	Streets and Roads	50
2	Strike, Another Riotous St. Car	155
1	Strike at St. Louis, The	6
8	Strike in Brooklyn Strike and Riots, The Effects of	$\frac{338}{13}$
9 6	Strikes, Consecutive	290
6	Strikes, Results of the Recent St. Ry.	202
	Strikes, Street Railroads in	202
55	Stuilton Street Bailway 201	248
6	Strikes, The Bench on Strikes, The New York	201
48	Strikes, The Bench on Strikes, The New York Strike, The Recent	$\frac{246}{439}$
$\frac{8}{1}$	Subjects for Discussion and Special	109
-	Committees 387.	485
4	Success of the Cable System in Chicago	119
3	Summer and Winter Car	473
8	Supply and Demand. The Law of 156, Supply Men at the Convention	
$\frac{4}{0}$	Suburban Rapid Transit Railroad	$\frac{438}{287}$
7	Surface Railroad Facilities, Mul'tion of	F 202
2	Sweeper, The Allyn	*282
3	Swinging Hose Rack	*75

Swing System, The334Sash Holder, Ayres' Patent334Schenectady, N. Y., Notes from161Schwaab's New Method of hoeing*3Scranton, Pa., Notes from443Seats, Cane Car77Seats on Top46Syracuse, N. Y., Notes from206, 443, 491Tamme, Ela401 Tampa, Fla. 491 Tannton, Mass., Notes from 161, 251, Taxes, Street Railway 491 290Technical Training 79 Tenth Avenue Cable Road, The *145 Tenth Avenue Caple Road, The Terre Haute, Ind., Notes from Test for Lubricating Oils Third Avenue Cable Third Avenue Stand Third Avenue Street Railway System, 161 383 387 228 191 Three Cent Bill for Bnffalo 241Ties, Receipt for Preserving Tie, The Whipple Metal Railway Timber, Fungi and the Decay of 288 *106 436 Timber Track vs_Metallic Way, 253, 331, 388 Toledo, Ohio, Notes from 49, 161, 206, 251 Toronto, Canada, Notes from 20 Track, New Form of Street Railway 206, 294 ay *76 Track, New Form of Street Railway *76 Tracks, A New Departure in Laying of 82 Tramways, Mechanical Traction npon 434 Track Support, Traction Cable, and Elec-tric Conductors Conduits, Gould's 4 Track Sweepers, Improvements in *194 Tracks, Width of Carriage 78 T Bail T Rail 154 Tramway Junctions and Crossings 18 Tramways of Brussels 290Tramway, The First American 430 Transmission of Power by Electricity 109187 Trenton, N. J., Iron Co., The Trenton, N. J., Notes from 25 Troy, N. Y., Notes from 16 Twelve Hours Work and \$2.00 a Day 15 251. 391 161, 343 199 Uniform, Purchase of 386 Union, Union Elevated Railroad, Brooklyn 288 336 Use of Licenses 154 Utica, N. Y., Notes from 207, Van Depoele Electric Motor, The 207, 294, 49118 Van Depoele Electric Ry System, The 425Van Depoele Electric System, The Van Depoele Manf. Co., Notes from 283 294Ventilation, Car 200Ventilation of Cars, Lighting and Heating Veterinary Practice 488 427 Vicksburg, Miss., 49, Vienna, Electric Railway at Wabash, Minn, Notes from Wailing Baby, There was a Walker, Dr. Mary et al Wash, Julius S. 49, 118, 207, 251 48714 5 47, 70 *1 Walsh, Julius S. *1 Washington, D. C., Notes from 118, 161, 207, 251, 294, 391, 443 Waterbury, Conn., Notes from 118, 391 Waterloo, Iowa, Note from 251 Watson & Stillman's Hydraulic Press 3 Waster M. Water from 161 Westport, Mo., Notes from 161 West Troy, N. Y., Notes from 48, 118, 443 Wharton's Patent Durable Shovel 16 Wharton's Patent Durable Shovel Wheels, Forged Wheels, Gange of Wheels, Guaranteeing Car Wheels, Iron Car Wheels Slipping, To Prevent Whipple Metal Railway Tie, The White's Divided Axle Wichita, Kan, Notes from Width of Carriage Tracks Winsted, Conn. 239 386 295 285 336 *106 *482 49.119 78491Wilmington, Del., Notes from 207, 251 Windsor, Ont., Notes from 251, 294, 443 Winfield, Kan., Notes from 443 Witmar's Car Starter *382
 Woburn, Mass., Notes from
 207

 Wooden Street Parements
 77

 Worcester, Mass., 15, 49, 161, 207, 391

 Worn Car Wheel Tread
 491
 Wrecking Plant, Light Wymore, Neb., Notes from Yonkers, N. Y., Notes from 155 14, 294 119, 161 282 *75 York, Pa., Notes from 207

Directory of Manufacturers and Dealers in Street Railway

Appliances, and Index to Advertisers.

BRAKE RODS. Lewis & Fowler, Brooklyn, N Y.......528 29-30-31 Wm. Wharton, Jr., & Co, Limited, Phila., Pa...517 Mallinckrodt St. Car Brake Co., St. Louis, Mo...504

Mainnekrödt St. Car Brake Co., Sc. Bourshottood BRAKE SHOES. Frank H. Andrews. 545 W. 33d St., N. Y....533-533 Wm. Wharton, Jr., & Co., Limited, Phila., Pa., 517 Lewis & Fowler, Brooklyn, N. Y......528-29-30-31 BRAKE CHAINS. Covert Mig. Co., West Troy, N. Y......508

CABLE GRIP. J. H. Gould, 9th and Market sts., Phila., Pa. .. 513

CABLE ROADS. J. H. Gould, 9th and Market sts., Phila., Pa., 513

CAR STARTERS. C. B. Broadwell, 169 Laurel st., New Orleans, La. 507

CAR LAMPS. Geo. M. Clute, W. Troy, N. Y. 508 Josephine D. Smith, 350 & 352 Pearl St., N. Y. 508 Pugh & Russell, Stewart Building, New York. 516 Lewis & Fowler, Brooklyn, N. Y. 528-29-30-31

CAR CEILINGS. Gardner & Co., 643 to 657 W. 43th st., N.Y......518 Lewis & Fowler, Brooklyn, Y. Y......528-29-30-31

Lewis & Fowler, Broak, a, Friend, C., 507 Bowler & Co., Cleveland, O., 507 F. W. Jesup & Co., 67 Liberty St., N. Y., 506 A. Whitney & Sons, Philadelphia, Pa., 507 Wm, P. Craig, 95 Liberty St., N.Y., 528-29-30-31 Frank H. Andrews, 545 W. 33d St., N.Y., 522-533 Wm, Wharton, Jr., & Co., Limited, Phila, Pa., 517 Way Foundry Co., 23d & Wood Sts., Phila., Pa. 515

CURVED RAILS-Pat. Steel Grooves. Wm. Whatton Jr. & Co. Limited, Phila, Pa.....517

CROSSINGS.

CHANNEL PLATES.

CABLE ROADS.

E. W. RULLS. FEED MILLS. Edward P. Allis & Co., Milwaukee, Wis 506 Nordyke & Marmon Co., Indianapoils, Ind.... 509

FRI GS.

FARE BOXES.

FARE COLLECTORS. Lewis & Fowler Mfg. Co., Brooklyn, N. Y528-29-30-31

HARNESS.

LUBRICANTS. The Leib Lubricating Co., 196 Chicago Street,

MOTORS-Electric. Van Depoele Electric Manufg.Co.,208 Van Buren St., Chicago, Ill...... 520

PEDESTALS. Frank H. Andrews, 545 West 33d St., N. Y.. 532-533 Wm. Wharton, Jr., & Co., Limited, Phila. Pa... 517

PANELS Page Gardner & Co., 183 Canal St., N. Y......518 RAILS

Page

TURNOUTS.
Wm. Wharton, Jr. & Co., 25th St. & Washing-ton Ave., Philadelphia, Pa.
Frank H. Andrews, 545 West 33rd st., N. Y.532-533
Way Foundry Co., 23d & Wood Sts., Phila., Pa. 515
Bowler & Co., 14 Winter st., Cleveland, O.
507

Bowler & Co., 14 Winter st., Cleveland, O.....507 **FRACK CASTINGS.** Humphreys & Sayce, 1 Broadway, N. Y......503 Frank H. Andrews, 545 West 33rd st., N. Y. .532-533 Wm. Wharton, Jr., & Co., Limited, Phila, Pa..517 Augustus Day, Detroit.....523 Way Foundry Co.. 23d & Wood Sts., Phila, Pa. 515 Johnston Frog and Switch Co., 307 Walnut St., Philadelphila, Pa.....515 O. W. Child & Co., 150 Broadway, N. Y.....509 Bowler & Co., 14 Winter st., Cleveland, O......507 Lewis & Fowler, Brooklyn, N. Y.....528-29-30-31

WIIEEL PRESSES. Watson & Stillman, 204, 210 E. 4d3 st., N.Y.....508 Wm. Wharton, Jr., & Co., Limited, Phila., Pa..517

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 rail to the yard; c, cars; h, horses; mu, mules. Officers' addresses are the same postoffice as the company unless otherwise specified.

AKRON, O.-Akron St. Ry. & Herdic Co. 2% m, 6c, 31 h. Pres. Ira M. Miller, V. Pres. James Christy, Treas. B. J. Dodge, Sec. F. M. Atterhoit, Supt. John T. McBany, N. Y.-Watervilet Turnplke R.R. Co. 7% m, 26-45 lb r, 27 c, 143 h. Pres. Chas. Newman, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St. The Albany Ry. 10 m, 4-8% g, 33-47 lb r, 61 c, 194 h. Pres., Supt. and Treas. John W. McCanara, Sec. Jas. H. Manning. Offices 3 & 5 N. Pearl St. ALLEGHENY CITY, PA.-Federal St. & Pleas-ant Valley Pass. Ry. 4.8 m, 5-2 g, 50 l r, 20 c, 145 h and mu. Pres. Wm. McCreery, Sec. R. F. Ramsey, Supt. Wm. J. Crozler. Office, 129 Taggart street, People's Park Pass. R. R. Co. 4.2 m, 5-2 g, 50 lb r, 10 c, 70 mu. Pres. Wm. McCreery, Sec. R. F. Ram-sey, Supt. Wm. J. Crozler. Office, 129 Taggart st. ALLENTOWN, PA.-Allentown Pass. R.R. Co. 3% m, 6 c, 28 h. Pres. Samuel Lewis, Treas. & Sec. Joseph E. Balliet, Supt. Edwin Yeager. Capital, 45,260.

\$45,260. ALTON, ILL.—Alton & Up. Alton Horse Ry. Co. ALTOONA, PA.—City Pass. Ry. Co. of Altoona. 3% m, 5-3 g, 43 lb r, 17 c, 38 h. Pres. John P. Levan, Sec. & Treas. L. B. Reifsneider, Supt. John J. Bucb. Capital, \$68,000.

AMSTERDAM, N. Y.—Amsterdam St. Ry. Co.
 1% m, 4-8 g, 25 lb r, 3 c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. Leased to Jas. R. Snell.

1% m. 4% g, 25 bb r, 3° c, 10 h. Pres. Henry Herrick, Treas. David Cady, Sec. M. L. Stover. Leased to Jas. R. Snell.
APPLETON, WIS.—Appleton Electric St. Ry. ASHTABULA, O.—Ashtabula City Ry. Co. 4 m, 4% g, 40 bb r.9°, 60 h. Owner & Prop. Jno. N. Stewart.
ATCHISON, KAN.—Atchison st. Ry. Co. 5% g, 20:010 r, 19°, 60 h. Pres. K Gen, Man. J. H. Beeson, Treat. H. M. Jackson, Sec. J. P. Adams. Gate City St. dt. R. Co. 2% m, 48% g, 16 ib r, 7°, 26 h. Pres. L. BeGive, Sec. & Treas. John Stanbens, Solicitor, A. Remharat. Metropoltan St. R.R. Co. 2% m, 48% g, 20 bi r, 6°, 6°, 40 m c. 2000, N. Pres. L. DeGive, Sec. & Treas. John Stanbens, Solicitor, A. Remharat. Metropoltan St. R.R. Co. 2% m, 48% g, 20 lb r, 6°, 34 m c. ... J. D. Turner, V. Pres. T. L. Langston, Sec. & Treas. B. H. Brumhead, Man. & Pur. Agt. Jno. S. Brumhead.
ATLANTA, GA.—Atlanta St. Ry. Co. 13 m, 4.8% g, 42 lb C. B. rall, 40 two b cars, 150 borses. North Atlanta Lhe 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. Mest 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. Office, 49 Line st.
ATLANTIC, N. J.—Atlantle City Ry. Co. 11% m, 48% g, 28-30 lb r, 4c, 13 h. Pres. D. M Osborne, Sec. & Treas. C. B. Kosters, Supt. B. F. Andrews.
AUGUSTA, GA.—Augusta & Summerville R.R. Co. 11% m, 48% g, 28-30 lb r, 3c, 42 h. Pres. Patk Walsh, Supt. East Genesee & Seward Ave. Ry. Co. 21% m, 48% g, 28 h. Pres. David M. Osborne, Sec. & Treas. C. B. Kosters, Supt. B. F. Andrews.
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m, 4-9 g, 60 lb f, 3 c, 3 h. Pres. W. F. Norton, Sec. Jos. M. Sammis, Treas. John R. Reid, Supt. David S. S. Sammis. BALTIMORE, MD.-Baltimore & Powhatan Ry. Co. 6 m, 5-4% g, 4 c, 17 h. Pres. & Treas. E. D. Freeman, Sec. R. B. Clark, Supt. I. M. Ketrick. Baltimore Otly Pass. Ry. Co. 40 m, 6-4% g, 46 & 47 lb r, 160 c, 1076 h. Pres. Oden Bowle, Treas. John Bolgiano, Sec. S. L. Bridge. Baltimore & Catonsville Ry. Co. 5 upt. T. C. Robbins. Baltimore & Catonsville Ry. Co. 6 m, 5-4% g, 35 lb r, 15 c, 51 h. Pres. J. C. Robbins, Supt. & Pur. Agt. G. W. Appleby. Office Pratt St. & Frederick av. Baltimore & Pimilco & Pikesville R.R. Co. Central Ry. Co. 6 w, n, 5-4% g, 40 br, 22c, 180 h. Pres. Peter Thompson, Sec. & Treas. Walter Blakistone. Cittzen's Ry. Co. 20 m, 5-4% g, 46 lbt 3 4 c, 360 h. Pres. Jos. S. Hagarty, Treas. Wm. Hammersley, Supt. C. C. Speed. Higblandtown & Point Breeze Ry. Co. City Div. 6 m, 5-8 g, - lb r, 16 c, 9. b. Pt. Breeze Div. 3 m, 1 lov. 0, 4 c. Pres. Howard Munnikhuysen, Treas. David Baltimore Passenger Ry. Co. 11 m, 5-4% g, 5 lb. 1, 7 2 c, 400 h. Pres. Jas. L. McLane, Treas. David. Foley, Sec. Thos. J. Wilson. People's Ry. Co. 50 m, 5-4% g, 42-45 lb r, 30 c, 200 h. Pres. As L. MacLane, Treas. David. Foley, Sec. Thos. J. Wilson. People's Ry. Co. 50 m ove to Druid Hill ave. York Road R.R. Co. BATTLE CREEK, MICH.-Battle Creek Ry. Co. 5 m_2.-6 s, 29 lbt, 8 h. 3 mu. Pres. Geo. Det-

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BATTLE CREEK, MICH.—Battle Creek Ry, Co.
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Co. 2½ m, 3-6 g, 25 fb, r, 5 c, 13 h. Pres. D. Lockwood, Bec., Treas. & Man. S. Lockwood.
RELIVILLE, ILL..-Cltizen's St. Ry. Co. 1¼ m, 5 c. Pres. D. P. Alexander, Man. & Treas. H. A Alex-ander, Sec. J. E. Thomas.
BEREA, O.-Berea St. Ry. Co. 1¼ m, 3-6 g, 28 lbr, 12 c, 2 h. Pres. C. W. D. Miller, V. Pres, T. Chinchward Sec. & Treas. A. H. Pomeroy, Supt. A. W. Bishop. BINGHAMTON, N. Y.-Washington Street & State Asylum R.R. Co. 4¼ m. 4 g, 16-25 lb r, 13 c, 23 b. Pres. R. H. Meagley, V. Pres. Geo. Whitney, Sec. G. O. Root, Treas, F. E. Ross, Supt. Wm. Whitney, Binghamton Central R.R. Co. 3½ m (2½ iaid,) 3, 28 lb r, 6 c. Pres. Geo. L. Crandall, Supt. Nelson Stow, Sec. Chas. O. Root, Treas. H. J. Kneeland. Offices 65 Court St. 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. City 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. Wan, Court & Chenango St. R.R. 5 m, 48 g, 40 lb r, 10 of Wr. 6 U. Pres. V. J. Conborn. Charact 10 forces 10 forces

Mah, R. H. Meagley, Supt. Win. Witthey. Office, 216 Fortst.
Main, Court & Chenango St. R.R. 5 m, 4.8g, 40 lb r, 10 c, 25 h. Supt. & Lessee, N. L. Osborn. Offices 83 Washington st.
BHRMINGHAM, ALA.-Birmingbam St. Ry. Co. 55 m, 4.8g, 16 lb r, 13 c, 40 m. Pres. Geo. L. Morris, Supt., Sec. & Treas. W. H. Morris.
Highland Avenue R. R. 6½ m, 4.8½ g, 20 lb r, 9 c, 28 h. Pres. H. M. Caldwell, Supt. W. J. Milner, Owners The Elyton Land Co.
Birmingham & Pratt Mines St. Ry. Co. 6 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 & Bioomfield R. R. (See Newark, N.J.)
BLOOMINGTON, LL.-Bioomington & Normal

R. (See Newark, N. J.)
BLOOMINGTON, ILL.—Bioomington & Normal Horse Ry. Co. 5% m. +3% g, 361b r, 10 c, 600. Pres. & Proprietor A. H. Moore, Sec. Edw. Sharp.
BOONE, IA.—Boone & Boonsboro St. Ry. Co. 13% m. 3 g, 20 lb r, 3 c, 10 h. Pres. L. W Reynolds Treas. Ira B. Hodges, Sec. and supt. A. B. Hodges. , BOONSBORO, IA.—Twin City Des Moine s River Motor St. Hy. Co. 3 m. 3-6 g, 2 motors, 3 c. Pres. & Supt. J. B. Hodges, Treas. A. B. Hodges, Sec. S. K. Huntsinger.
BOSTON, MASS.—Boston Consolidated St. Ry. Co. 51% m, 4-8% g, 48-50 lb r, 359 c, 1720 h. Pres. Chas. E. Powers, Treas. Sam'l Little, Ass, Treas. John H. Studley, Jr., Gen. Supt. Julius E. Rugg. Capital, \$1,700,000. Office, Tremont row, cor. Pem-berton 80.

John H. Studiey, Jr., Gen. Supt. Julius E. Rugg. Capital, \$1,700,000. Office, Tremont row, cor. Pemberton Sq.
Albany St. Freight Ry. Co. .93 m, 4-8% g, 90 lb r, no c, no h. Pres. Chas. L. Pierson, Treas. Geo. F. Cbild. Office, 439 Albany st.
Lynn & Boston. 34% m, 4-8% g. 25-48 lb r, 114 c, 614 h. Pres. Amos F. Breed, Treas. & Sec. E. Francis Oliver, Supt. Edwin C. Foster.
Metropolitan R. R. Co. 80 m, 4-8g, 50 lb r, 700 c, 3600 h. Pres. C. A. Richards, Sec. H. R. Harding, Treas. Chas. Boardman. Office, 16 Kilby st.
So. Eoston Ry. Co. 13 m, 4-8g, g. 42-50-60 lb r, 193 c, 900 h. Pres. Chas. H. Hersery, V. Pres. Jas. C. Davis, Sec. & Treas. Wm. Reed, Supt. Daniel Coolidge.
Somerville Horse R. R. Co. (Operated by the Middlesex R.R. Co.) Pres. Sam'l E. Sewail, Treas. & Clerk, J. H. Studley, Jr. Office, 27 Tremont row.
Winnisimmet R. R. Co. 195 m, 4-8% g, 43 lb r, no c, no b. Pres. Wm. R. Perantan, Chelsea, Mass. Treas. & Clerk, E. Francis Oliver. Office, 13 Tremont row. mont row

mont row. BRADFORD, PA.—Bradford & Kendall R.R. Co. 1½ m, 4-8½ g, 38 lb r, 3 c, 4 h. Pres. James Brodey, Sec. Geo. H. Moon, Gen. Man. & Supt. Enos Parsons.

Sec. 566. H. Moor, Gen. Mail. & Supt. Babs 1 alsons.
 Capital. \$12,000.
 BRENHANI, TEX.—Brenham St. Ry. Co. 2 m, 4g. 20 ib r, 3 c, 22 nu. Pres. J. Pampeli, Sec. John A. Randle, Treas. D. C. Glddings.
 BRIDGEPORT, CONN.—The Bridgeport Horse R.R. Co. 5 m, 4-8½ g, 42 lb r, 16 c, 80 b. Pres. Albert Eamer, Sec. & Treas. F. Hurd, Supt. B. F. Lashar. Bridgeport & W. Stratiord Horse R. Co. 234 m, 4-8½ g, 45 lb r, 10 c, 40 h. Pres. David F. Hullister, Sec. & Treas. Henry D. Drew, Man. Henry N. Beardsley.
 BROCKTON, MASS.—Brockton St. Ry. Co. 11½ m, 4-8½ g, 35 lb. r, 32 c, 150 h. Pres. W. W. Cross,

Beardsley. BROCKTON, MASS.—Brockton St. Ry. Co. 11% M, 4-8 & g, 35 lb. r, 32 c, 150 h. Pres. W. W. Cross, Treas. Z. C. Kelth, Supt. H. B. Rogers. BROOKLYN, N. Y.—The Atlantic Avenue R. R. Co. of Brooklyn. 32% m, (leased and owned). 4-8% g, 50-60 lb r, 228 c, 955 h. Pres. William Richardson, Sec. W. J. Richardson, Treas. Newbery H. Frost. Office cor. Atlantic & Third Aves. Broadway R.R. Co. 12 m, 4-8% g, 45-50-60 lb r, 166 c, 657 h. Pres. Edwin Beers, Sec. & Treas. Robert Sealey, Supt. Joshua Crandall. Office 21 Broadway, E. D.

Sealey, Supt. Joshua Crandall. Office 21 Broadway, E. D.
Brooklyn Cross Town R.R. Co. 16 m, 4.8½ g, 40-60 lb r, 72 c, 400 h. Pres. Henry W. Slocum, V. Pres. Ezra B. Tuttle, Sec. & Treas. John R. Connor, Supt. D. W.
Sullivan. Offices 585 Manhattan Ave.
Bushwick R.R. Co. 28 m, 4.8½ g, 45-50-60 lb r, 172 c, 600 h. Pres. Frank Cromwell, V. Pres. Wrn. H. Hus-ted, Treas. & Sec. S. D. Hallowell, Supt. W. M. Mor-rison. Office 22 Broadway, N. Y.
The Brooklyn, Bushwick & Queens County F.R. 11 m. 4.8½ g, 42-47 lb r, 41 c, 117 h. Pres. Richard H. Green, V. Pres. James W. Elwell, 59 South st. N. Y.
Sec. John D. Elwell, Treas. Wm. W. Greene.
Brooklyn City R.R. Co. 57 m, 4.8½ g, 60 lb r, 761 c, 30-45 h. Pres. William H. Hazzard, V. Pres. William M. Thomas, Sec. & Treas. Danlel F. Lewis, Asst. Sec.
Francis E. Wrigley. Offices 8 & 10 Fulton st. Brooklyn City & Newtown R.R. Co. 13½ m, 4-5½ g, 45-60 lb r, 123 c, 419 h. Pres. Jouls Fitzgeraid, N. Y. City, Sec. & Treas. H. A. Schuz, Supt. H. W. Bush. Office cor. DEKalb & Central Ares. Calvary Cemctery, Greenpoint & Brooklyn Ry. Co. Concy Island and Brooklyn R.R. Co. 18:45 m, 45 lb r, 4-5½ g, 103 c, 316 h. Pres. James Jourdan, Sec. Ed. F. Drayton, Supt. William Farrell. Office cor. Smith & Huntington sts. Coney Island, Sheepshead Bay & Ocean Avenue R. R. Co. 232 m, 4-53 g, 4 c. Pres. A. A. McClemer, V. Pres. Daniel Mone, Sec. John McMahon, Sheepsyland

497

bead Bay, Treas. Horace Valkulyh. Office 16 Red Hook Lane. Crosstown Line, Hamilton Ferry to Bridge. Grand St. & Newtown R.R. Co. 18 m, 4-8½ g, 54-50 lb r, 72 c, 250 h. Pres. Martin Joost, Sec. & Treas. Wm. E. Horwill, Supt. Walter G. Howey. Office 129 First at First st. Grand Street, Prospect Park & Flatbush R.R.

Grand Street, Prospect Park & Flatbush R.R. Co.
Grand Street, Prospect Park & Flatbush R.R. Co.
11½ m, 4-8½ g, 50 lb r, 75 c, 244 h. Pres. Louis Flats
geraid, 120 Broadway, N. Y., See, & Treas, Duncan B.
Cannon, Supt. Jno. L. Heins. Offices Franklin Ave.
and Prospect Place.
Greenpoint & Lorimer St. R. R. Co. 5½ m, 4-8½ g,
50 lb r, 36 c, 198 h. Pres. Geo. W. Van Allen, sec.
wm. B. Walt, Treas. C. B. Cottrell, Supt. Chas. E.
Harris. Office, cor. Nostrand and Park aves.
Prospect Park & Coney Island R. R. Co. 25 m,
45-50 lb r, 4-8½ g, 69 c, 214 h. Pres. A. R. Culver
Treas. A. C. Washington, Sec. George H. Smith, Eng.
Supt. R. Schermerhorn, Supt. Hobert Antlesey.
Offices 16 Court st. (Leased to Atlantic Ave. R. H.

Prospect Park & Flatbush R.R. 3 m, 4-8½ g, 34 ib r. 70 c, 360 h. Pres. Loftis Wood, Sec. & Treas. Sami Parkhill, Supt. Loftis Wood. Offices 45 Broad-

Prospect Park & Flatbush R.R. 3 m, 4-8% g, 34 ib r, 70 c, 360 h. Pres. Loftis Wood. Sec. & Treas. Sam'l Parkhill, Supt. Loftis Wood. Offices 45 Broad-way. South Brooklyn Central R.R. Co. 8% m, 4.8% g, 60 b r, 42 c, 192 h. Pres.Wm. Richardson, Sec. Wm. J. Richardson, Treas. N. H. Frost, Supt. James Rud-dy. Offices, Atlantic & 3d aves. The New Williamsburgh & Flatbush R. R. Co. 17% m, 4-8% g, 47-50 ib r, 74 c, 255 h. Pres. Geo. W. Van Alien, 54 Ann St., New York, Sec. W. B. Waltt, 24th St. & 6th Ave, New York, Treas. C. B. Cottrell, 8 spruce St., N. Y. City, Supt. Chas. E. Harris, Nost-rand Ave. Carroll st., Brooklyn. The Union Rallway Co. of the City of Brooklyn (not in operation). 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. BUFFALO, ILL.-See Mechanicsburg, III. BUFFALO, N. Y.-Buffalo St. R.R. Co. 17% m, 4-8% g, 50 lb r, 96 c, 510 h. Pres. Henry M. Watson, V. Pres. P. P. Frat, Sec. S. Spaulding, Treas. W. H. Watson, Supt. Edward Edwards. Buffalo East Side St. R.R. Co. 278 m, 4-8% g, 42 br, 47 c, 218 h. Pres. S. Spaulding, V. Pres. Joseph Churchyard, Sec. H. M. Watson, Treas. W. H. Wat-son, Supt. Edward Edwards. Office 346 Main st. BURLINGTON, LA.-Burlington City R.R. Co. 284 m, 4-8% g, 32 lb r, 9 c, 30 h. Pres. John Patterson, Sec. & Man. C. T. Patterson. Union St. Ry. Co. 8% m, 4-8% g, 7ardous r, 19 c, 55 h. Pres. Geo. E. Rust, Sec. & Supt. F. G. Jones. BURLINGTON, VT.-Winooski & Burhington Horse Ry. Co. 3% m, 4-8g, 25 lbr, 7 c, 24 h. Pres. B. Walker, Treas. L. E. Woodhouse, Clerk, G. W. Walls. Office, Winooski are. CAMBRIDGE, MASS.-Cambridge R. R. Co. 51-59 m, 4-8% g, 25 lb r, 255 c, 1428 h. Pres. Frentiss Cum-ming, Treas. X. Clerk Sec. H. Schulze. CAMBRIDGE, MASS.-Cambridge R. R. Co. 51-59 m, 4-8% g, 50 lb r, 255 c, 1428 h. Pres. Frentiss Cum-ming, Treas. S. Clerk Kraklin Perrin, Exec. Com. I. M. Spelman, P. Cummings, O. S. Brown, Clerk of DI-rectors, O. S. Brown,

Charles River St. Ry. Co. 12.15S m, 4-3% g, 50 lb r, 60 c, 356 h. Pres. Chas. E. Raymond, Corp. Clerk C. E. Harden, Treas. Daniel U. Chamberlin, Supt. John N. Akarman.
CAMDEN, N. J. – Camden & Atlantic St. Ry. Camden Horse R.R. (0. 9 m, 5-1 g, 35-47 lb r, 26 c, 85 h. Pres. Thos. A. Wilson, Sec. Wilbur F. Rose, Treas. & Supt. John Hood.
[‡CANTON, O.-Canton St. Ry. Co. 4½ m, 4 g, 25 lb r, 11 c, 55 h. Pres. & Treas. G. E. CooK. Sec. John F. Clark, Supt. John Mood.
[‡CANTON, O.-Canton St. Ry. Co. 4½ m, 4 g, 25 lb r, 11 c, 55 h. Pres. & Treas. G. E. CooK. Sec. John F. Clark, Supt. John Mood.
[‡CANTON, O.-Canton St. Ry. Co. 4½ m, 4 g, 25 lb r, 11 c, 55 h. Pres. & Treas. G. E. CooK. Sec. John F. Clark, Supt. J. Stanton. Office, 4 E. 7th st. CAPE MAY, N. J.-Cape May & Schellenger Landing Horse R. R.
CARTHIAGE, MO.CEDAR RAPIDS, IA.-Cedar Rapids & Marton Ry., 12½ m, 4-8½ g, 27 and 35 lb r, 17 c, 40 h. Pres. W. Greene, V. Hres, O. T. Richmond, Sec. N. B. Consign, 7treas. G. Greene.
CHAMPAIGN, ILL.-Champaign R.R. Co. Urbana & Champaign St. R.R. Co. (See Urbana).
CHARLESTON, S. C.-Charleston Cliy Ry. Co. 5½ m, 4-5½ g, 33-42 lb r, 22 c, 84 h. Pres. Jno. S. Riggs, Treas. Evan Edwards, Sec. Frank Whelden, Supt. Jno. Mohenhoff.
Enterprise R.R. Co. 12 m, 5 g, 42 lb r. 14 c, 51 h. Pres. A. F. Ravenel, Sec. & Treas. U. E. Hayne, Supt. T. W. Pasatialgere.
Middle street Sullivan Island Ry. Co. 2 m, 6 c, 12 md. Pres. B. Callaghan, Sec. & Treas. Frank F. Whilden, Supt. B. Buckley.
CHATTANOOGA, TENN.-Chattanooga St. R. Co. 5½ m, 4-5½ g, 254-51 b r, 12 c, 64 h. Pres. and Treas, J. H. Warner, Sec. C. R. Gaskill.
CHESTER, P.A.-Chester St. Ry. Co. 55 m, 4-5½ g, 41 lb r, 14 c, 66 h. Pres. Richard Peters. Jr., Treas. Sam't H. Seedis, Sec. & Manager E. M. Connell.
CHATTANOOGA, TENN.-Chattanooga St. R. Cheas, Sec. G. Hannes, Sec. Hames, Sec. A. Ranager J. Co. 57 m, 4-5½ g, 45 lb r, 567 c, 1,416 h. cable doing work of

Mechanic J. Miller. CHILLICOTHE, O.—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, Snpt. Ewel 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. Hill, Cincinnati St. Ry. Co. Pres. Jno. Kilgour. V. Pres. Albert G. Clark, Treas. R. A. Dunlap, Sec. & Audi-tor, Jas. A. Collins, Supt. Jno. Harris, Pur. Agt. B F. Haughton.

498

Columbia & Cincinnati St. R.R. Co. 3½ m, 3 g, 35 lb r, 3 c, 6 dummy c. Pres. C. H. Kligour, V. Pres. John Kligour, Treas. B. F. Branman, Sec. A. H. Weler, M. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.

John Kingour, Treas, E. F. Brahman, Sec. A. H.
Meler, Mt. Lookout, O. Supt. J. J. Henderson, Mt. Lookout, O.
Mt. Adams & Eden Park Inclined R.R. Co. 3% m, 5-2% g, 42 lb 7, 40 c, 320 h. Pres. & Treas, J. P. Kerper, Sec. J. R. Murdock, Supt. Chas. Whitten.
So. Covington & Clincinald. (See Covington, Ky.)
CLARKSVILLE, TENN.-Clarksville St. Ry.
Co. 2 m, 4-3% g, 16 lh 1-r, 4c, 16 mu. Pres. John F.
Shelton, Sec. & Treas, John W. Faxon. Capital, 56,250. Office, Farmers' & Merchants' Nat. Bank.
CLEVELAND, O.-The Brooklyn St. H.R. Co. 8% m, 4-5% g, 52 lb 7, 66 c, 375 h. Pres. Tom. L. Johnson, V. Pres. A. J. Moxham, Sec. J. B. Hoefgen, Treas. John McConnell, Supt. A. L. Johnson.
Broadway & Newburg St. R.R. Co. 6 m, 4-8% g, 10 (, 160 h. Pres. & Supt. Joseph Stanley, V. Pres. Sam'l Andrews, Sec. & Treas, E. Fowler.
Superlor St. R.R. Co. 15 m, 4-8% g, 45 lb r, 46 c, 225 h. Pres. Frank De H. Robison, V. Pres. John Koch, Sec., Treas, & Supt. M. S. Rohison, Jr. The East Cleveland R.R. Co. 20 m, 4-5% g, 53-40 lb steel r, 110 c, 545 h, 1 electric motor. Pres. A. Iteast (14, V-Pres, M. C. B. Chas. Wason, Sec. & Treas, H. A. Everett, Supt. E. Duty. Offices, 1154 & 1158 Euclid Ave.
Woodland Avenue & West Side St. R.R. Co. 40 m, 4-5% g, 43-45 lb r, 128 c, 605 h. Pres. M. A. Hanna, V. Pres. C. F. Emery, Sec. & Pur. Agt. J. B. Hanna, Gen. Supt. George G. Mulhern. Office, cor. Pearl and Detroit sts.
South Side St. R. R. Co. 3% m, 3 g, 40 lb r, 8 c, 60 h. Pres. Tom L. Johnson, Supt. A. L. Johnson, Sec. & Treas, J. B. Hoefgen.
St. Call Street Ry. Co.-m-g,-lhr-c,-Pres. Chas Hathaway.

Hathaway. CLIFTON, CAN.-Nlagara Falls, Wesly Park and Clitton Tramway Co. 3% m, 4-8% g, 30 lb r, 8 c, 46 h. Pres. J. H. Mooney, 286 B'way, N.Y. Treas. John N. Hayward, 52 B'way, N.Y. Sec. John H. Bache, Nlagara Falls, Ont. CLINTON, IA.-Lyons & Clinton Horse R.R. Co. (See Lyons), IA.-Lyons & Clinton Horse R.R. Co.

CLINTON, IA.-Lyons & Chubbs Level (See Lyons.) COLUMBIA, S. C.-Columbla St. Ry. 4½ m, 4-3½ g, 30 lh r, 6 c, 18 h. Pres. J. S. Plerson, New York, V. Pres. H. M. Plerson, New York, Treas. W. E. Lawton, New York, Sec. E. M. Cole, 32 Liberty st. New York. Capital, \$50,000. COLUMBUS, GA.-Columbus St. R.R. Co. 3 m, 4-8½ g, 16 lh r, 6 c, 25 h. Pres. Cliff B. Grimes, Sec. L. G. Schnessler, Treas. N. N. Curtls, Supt. J. A. Ga-bourgh. COLUMBUS, O.-Columbus Consolidated St. R.R.

L. G. Schnessler, Treas. N. N. Curtis, Supt. J. A. Ga-bourgh. COLUMBUS, O. - Columbus Consolidated St. R.R. Co. 19 m, 5-2 g, 30-52 lb r, 92 c, 350 h. Pres. A. Rodg-ers, V. Pres. H. T. Chittenden, Sec. & Treas. E. K. Stewart, Supt. J. H. Atcherson. Glenwood & Greenlawn St. R.R. Co. 4% m, 3-6 g, 24 lb r, 9 c, 25 c. Pres. A. D. Rodgers, V. Pres. B. S. Brown, Sec. R. R. Rickly, Treas. S. S. Rickly, Supt. Jonas Willcox.

Jonas Willcox. CONCORD, N. H.—Concord Horse R.R. Co. 8 m, 3 g, 30-33 lb r, 10 c, 14 h, 2 steam motors. Pres. Moses Humphrey. Treas. H. J. Crippin, Clerk E. C. Hoag. CORTLAND, N. Y.—Cortland & Homer Horse Ry. Co. 4 m, 4-84 g, 25-30 lb r. Pres. Chas. II. Gar-rison, Troy, N. Y. Sec. J. M. Milne, Treas. S. E. Welch, Supt. S. E. Welch, (Leased to D. N. Miller.) Office 23 No. Mercer st.

Weich, Supt. S. E. Weich, (Leased to D. N. Miller.)
Office 23 No. Mercer st.
COUNCIL BLUFFS, IA.—Council Bluffs St. R.R.
COVINGTON, KY.—So. Covington & Cincinati
St. Ry. Co. 17% m, 5-2% g, 43 lb r, 46 c, 296 h. Pres.
F. F. Abhott, Sec. J. C. Bcuton, Treas. G. M. Abbott.
DALLAS, TEX.—Dallas St. Ry. Co. 4½ m, 4-8%
g, 20-38 lb r, 12 c, 4 h, 72 mu. Pres. Wm. J. Keller, Sec.
Harry Keller, Supt. C. E. Keller.
Commerce & Erray St. R.R. 1½ m, 4-8% g, 20 lb r, 5 c, 24 mu. Pres. A. C. Ardrey, Sec., Trea. & Man. H.
W. Keller.

DANVILLE, ILL.—Citizens' St. Ry. Co. 4 m, 4 g, 20 lb r, 8 c, 35 mu. Pres. Wm. P. Cannon, V. Pres. & Gen. Man. Wm. Stewart, Sec. & Treas. Adam R. Samue

Samuel. DAVENPORT, 1A. - Davenport Central St. Ry. Co. 3 u, 4.8½ g, 201b r, 14 c, 24 h,15 mu. Pres. Whit. M. Grant. V. Pres. W. L. Allen, Treas. J. B. Fidler, Supt. J. W. Howard, Sec. O. S. McNell. Davenport Clty Ry. Co. 3% m, 4.8% g, - 1b r, 14 c. 46 h. Pres. C. S. Watkins, Sec. and Treas. S. D. Bawden

DAVION, KY.-Newport & Dayton St. Ry. Co. 2 m, 5-2% g, 44 lb r, 9 c, 56 h Pres. & Supt. W. W. Bean.

DAYTON, O.—Dayton St. R.R. Co. 7½ m, 4-5½ g, 411b r, 24 c, 50 h and mu Pres. J. W. Stoddard, V-Pres. H. S. Williams, Sec. C. A. Cralghead, Supt. A. W. Anderson.

Pres. H. S. Williams, Sec. C. A. Craigneau, Super A. W. Anderson.
Fitth St. R. R. Co. 7 m. 4-Sy 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. Onlice, 7 E. 3d st.
Oakwood St. Ry. Co. 6 m. 4-Sy g, 38 lb r, 14 c, 66 h.
Pres. Charles B. Clegg, Sec. H. V. Perrine.
The Wayne & Fitth St. R. R. Co. 3M m, 4-Sy g, 34 lb r, 5 c, 30 h.
Pres. Geo. M. Shaw, Sec. & Treas.
Eugene Winchet, Supt. N. Routzahn.
DECATUR, ILL.-Decatur Horse Ry. Co.
Cittzens' Street R.R. Co. 2 m, 4-Sy g, 20 lb T, 7 c, Cittzens' Street R.R. Co. 2 m, 4-Sy g, 20 lb T, 7 c, Supt. A. E. Kinney.
DENISON, TEX.-Denison St. Ry. Co. 3 m.

DENISON, TEX.-Denison St. Ry. Co. 3 m,
DENISON, TEX.-Denison St. Ry. Co. 3 m,
Sef g, 1610 r, 5 c, 22 mu. Pres. C. A. Walterhouse,
Supt. S. A. Robinson.
DENVER, COL.-Denver City Ry. Co. 16 m, 3-6
gj, 161 br, 5 c, 250 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.
Denver Electric & Cable R. R. Co.
Denver Tramwar Co. 3½ m, 3-6 g, 161 b r, 7c. Run
Dy clectricity. Pres. Rodney Curtis, V. Pres. John
J. Ruthman, Sec. Wm. G. Evans.
DES MOINES, IA.-Des Molnes St. Ry. Co. 10

m, 3 g, 25-30-38-52 lb r, 18 c, 100 h. Pres. M. P. Tur-ner, Sec. M. A. Turner. Des Moines & Sevastopol St. Ry. Co (See Sevasto-

ner, Sec. M. A. Turner.
Des Moines & Sevastopol St. Ry. Co (See Sevastopol, 1a).
DETROIT, MICH.—Fort Wayne & Elmwood Ry.
Detroit City Ry. 30 n, 48% g, 40-43% lb r, 130 c, 150 c, 160 h.
Includes Jefferson Ave. line, Woodward Ave.
ine, Michigan Ave. line, Gratiot Ave. line, Brash 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, Grand River St. Ry. Co. 2% m, 4-5% g, 43 lb r, 13 c, 10 h. Pres. & Treas. Jos. Dailey, Sec. J. W. Dailey, Supt. C. M. Dailer, Treas. Jos. Dailey, Sec. J. W. Dailey, Supt. C. M. Dailey, Office, 92 Griswold st.
DOVER, N. H.—Dover Horse R.R. Co. 5 m, 3 g, 20 lh r, 4 c, 14 h. Directors, Z. S. Walingfor, Chas.
H. Sawyer, Jas. E. Lothrop, C. W. Wiggin, Harrison Haley, Frank Williams, Cyrus Littlefield, Treas.
Huethan, Supt. J. J. Linehan.
DULUTH, MINN.—Duluth St. Ry. Co. 5% m, 3-6 g, 32-45 lb r, 18 c, 92 mu. Pres. Sam't Hill, V. Pres.
T. P. Wilson, Sec. & Treas. A. S. Chase, Supt. T. W. Hoopes.
EAST OAKLAND, CAL.—Oakland, Brooklyn &

pes. AST OAKLAND, CAL.-Oakland, Brooklyn &

Fraitvale R.R. Co. EAST SAGINAW, MICH.—East Saginaw St. Ry. Co. — m, 4-5½ g, 30 and 43 lb r, 23 c, 70 h. Pres. Walter A. Jones, Sec. and Treas, Chas. F. Shaw,

EAST ST. LOUIS, ILL.-East St. Louis St. R.R. C

Co. EASTON, PA.—The Easton & So. Easton Passen-ger Ry. Co. 1% m, 5-2% 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

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 CLAHL, WIS.-Eau Clair City Ry. Co. ELGIN, HLL.-Eigin City Ry. Co. 2 c. Pres. Sec.
Treas. Supt. & Owner, B. C. Payne.
ELIZABETH, N. J.-Elizaheth & Newark Horse R. R. Co. 14 m, 5-2½, 4-10½ g, 30 lb r, 24 c, 74 h. Pres.
& Treas. Supt. & Owner, B. C. Bickel, Treas. A. R. Burns.
ELMIRA, N. Y.-The Elmira & Horseheads Ry. O. 10 m, 4-5½ g, 25-3040 lh r, 18 c, 34 h. Pres. & Treas. George M. Diven, V. Pres. Geo. W. Hoffman, Sec. Wm. S. Kershner, Supt. Henry C. Silsbee. Offi-cers, 212 E. Water St. E. L. PASO, TEX.-El Paso St. Ry. Co. 2½ m, 4-8½ g, 20 lb r, 8 c, 25 h. Pres. B. H. Davis, Vice Pres. J. F. Croby, Treas. C. R. Morehead, Sec. & Supt. H. W. Marks.

H. W. Marks.
H. M. Marks.
EMPORIA, KAN. – Emporia City Ry. Co. 3½ m., 5g, 2010 r, 6c, 23 m. Pres. Van R. Holmes, Treas.
A. F. Crowe, Sec. & Man, J. D. Holden.
ENTERPRISE, MINS. – Enterprise St. Ry. Co. 1½ m, 3-6 g, 24 10 r, 2c, 6 h. Pres. John Kampe, V. Pres. E. B. Gaston, Sec. & Treas, J. W. Gaston.
ERIE, P.A. – Erle City Passenger Ry. Co. 5½ m, 4-8½ g, 30-40 45 10 r, 20 c, 85 h. Pres. Wm. W. Reed, Jreas. Wm. Spencer, Sec. W. A. Demorest, Supt. Jacob Berst.

EUREKA SPRINGS, ARK .-- Eureka Springs City Ry. Co.

CLY RY, Co.
EVANSVILLE, IND.-Evansville St. RY. Co. 12
EVANSVILLE, IND.-Evansville St. RY. Co. 12
M. 48 g, 28 lb r, 31 c, 190 mu. Pres. John Gilbert, Sec.
P. W. Raleigh, Treas. John Gilbert, Supt. W. Bahr.
FALL RIVER, MASS.-Globe St. RY. Co. 12 m, 48% g, 40-46-47 lb r, 40 c, 160 h. Pres. Frank S. Stevens, Treas. F. W. Brightman, Sec. M. G. B. Swift, Supt. John H. Bowker, jr.
FAR ROCKAWAY, N. Y.-Village Ry. Co. 1 m, 4-8% g, 47 lb r, 5 c, 10 h. Pres. C. A. Cheever, Treas. D. L. Halght, Sec. J. S. Armbach, Supt. Ruius Martin.

FITCHBURG, MASS.—Fitchburg St. Ry. Co. 3% m, 4-8½ g, 6c, 31 h. Pres. H. A. Wills, V. Pres. H. J. Wallace, Ireas. B. F. Wallis, Sec. H. C. Hartwell, Supt. Wesley W, Sargent.

Supt. Wesley W. Sargent. FORT SCOTT, KAN.-Bourbon County St. Ry. Co. 1 m, 4g, 22 lh r, 2 c, 4 m. Pres. Isaac >tadden, V. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph. Ra

N. Pres. Benj. Files, Sec. Wm. Perry, Treas. J. H. Randolph.
FORT SMITTI, ARK.—Fort Smith St. Ry. Co. 2 m, 3-6 g, 16-28 lb r, 5 c, 16 h. Pres. Sam'l M. Loud, Sec. & Treas. Goo. T. Sparks.
FORT WAYNE, IND.—Clitzens' St. R.R. Co.
FORT WORTH, TEX.—Fort Worth St. Ry. Co. 7% m, 4 g, 25-38 lb r, 16 c, 78 m. Pres. K. M. Vanzandt, Treas. W. A. Huffman, Acting Sec. & Gen. Man. S. Mims, Supt. J. T. Payne.
FRANKFORT, N. Y.—Frankfort & Ilion Street F. Co. 2% m, 5 g, 4 c. Pres. A. C. McGowan, Frankfort, Sec. D. Lewis, Ilion, Treas. P. Remington, Ilion, Supt. Fredk, Gates, Frankfort.
FREDONIA, N. Y.—Dunkirk & Fredonia R.R.Co. 3% m, 4-10 g, 25 lb r, 5 c, 8 h. Pres. Wm. M. McCinstry, Sec. & Treas. M. N. Fenner, Supt. Z. Elmer, Wneelock.

by, set X treas. M. N. Fenner, Supt. Z. Eimer, Wheelock. FULTON, N. Y.-Fulton & Oswego Falls St. Ry Co. 6,000 ft, 4 Sy G, Glbbon's metailic stringer and r, 4 c, 12 h. Pres. Joseph Walker, Jr., V. Pres. N. N. Stranahan, Sec, and Treas. Chas. Lyman. Capital, \$15,000. Office, 15 Broad st., New York. GAINSVILLE, FLA.-Galnsville St. Ry GAINSVILLE, TEX.-Gaussville St. Ry. Co. 2% m, 3-6 g, I7 lb r, 4 c, 12 h. Pres. C. N. Stevens, V. Pres. J. T. Harris, Sec. & Treas, F. R. Sherwood. GALESBURG, ILL.-College City St. Ry. Co. 3 m, 4-% g, 18-20-48 lb r, 4 c, 16 h. supt. Geo. S. Clayton. GALESTON, TEX.-Galveston City R.R. Co. 18 m, 4-8% g, 30 lb r, 68 c, 169 mu. Pres. Wm, H. Sin-clatr, Sec. & Treas, F. D. Merrit, Snpt. M. J. Keenan.

Gulf City St. Ry. & Real Estate Co. 15 m, 4 g, 20-30 br, 30 c, 90 mu. Pres. J. H. Burnett, Sec. & Treas. F. D. Alfen. GLOUCESTER, MASS.—Gloucester City R.R. Gloucester St. Ry. Co. Pres. & Supt. Morris C. Fitch, V. Pres. Walter A Jones, Treas. Francis W. Homans, Sec. David S. Presson. GRAND RAPIDS, MICH.—Street Ry. Co. of frand Rapids, Mich. 14% m, 45% g, 25-40 br, 29 c, 190 h. Pres. C. A. Otls, Cleveland, O., V. Pres, L. H. Withey, Grand Rapids, Treas. C. G. Swensberg, Grand Rapids, Stee I. M. Weston, Grand Rapids, Supt. A. Bevier, Grand Rapids. GREEN CASTLE, IND.—Green Castle City St. Ry. Co. 2 m, 45% g, 23 br, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas. Rudolph Rogers.

A. Bevier, Grand Rapids.
 GREEN CASTLE, IND.-Green Castle City St. Ry. Co. 2 m, 48% g, 23 lb r, 3 c, 12 h. Pres. & Supt. D. Rogers, Sec. James S. Nutt, Treas, Rudolph Rogers.
 GREENVILLE, S.C.-Greenville City Ry. Co. 1 m fs g. - lb r, 5 c, 20 h. Proprietors, Gireath & Harris, HAMILTON, 0.- The Hamilton St. Ry. Co. 4 m, g, 28 lb r, 11 c, 12 h. Pres. James F. Griffin, Sec. 0. V. Parrish, Treas. H. L. Morey, Supt. J. C. Bigelow, HANNIP AL, MO.-Hamilal st. Ry. Co. 2 m, 48% g, 36 lb r, 6 c, 22 h. Pres. & Supt. M. Doyle, Sec. & Treas, James O'Hern.
 HARTISBURG, PA.-Harrisburg City Pas-senger Ry. Co. 5 m, 5-2% g, 42-47 lb r, 22 c, 65 h, Pres. H. A. Keiker, V. Pres. Daniel Epply, Sec. John T. Ensminger, Treas. R. F. Keiker, Supt. S. B. Reed. Capital, 425,500. Office, 27 South 2d st.
 HARTFORD, CONN.-Hartford & Wethersfield Horse R.R. Co. 12 m, 4-8% g, 45 lb r, 49 c, 250 h. Pres. & Treas. E. S. Goodrich, Sec. Geo. Sexton.
 HAVERHILL, MANS.-Haverhill & Groveland St. Ry. Co. 4% m, 44% g, 30 lb r, 12 c. 30 h. Pres. & Gen. Man. Jas. D. White, Treas. Join A. Colby. Pentucket St. Ry. Co.
 HELENA, ARK.-Helena St. Ry. Co.
 HELENA, ARK., N. Y.-Herkimer & Mohawk St. Ry. Co. 1% m, 45% g, 25 lb r, 3 c. Pres. J. M. Ans-men, Sec. Joah Smahl, Treas. H. D. Alexander.
 HOBOKEN, N. J.-North Hudson County Ry. Co. 16% m, 4-7 g, 50-60 lb r, 16 c, 630 h. Pres. John H. Bonn, Sec. F. J. Mallory, Treas. Fredk. Mickel, Union, Supt. Nichoias Goetz, Union.
 HOLYOKE, MASS.-Holyoke St. Ry. Co. 2 m, 48% g, 25 lb r, 1 k, 20 h. Pres. Wm. A. Chase, Treas. C. Fayette Smith, Supt. H. M. Smith..
 HOT SPRINGS, ARK.-Hot Springs R.R. Co. 3 m, 4 g, 25 lb r, 1 k, 20 h. Pres. Wm. A. Chase, Treas. C. E. Auarice, Supt. J. L. Butterfield.
 HOUSTON, TEX.-Houston City St. Ry. Co. 1400, N. Y. -Frankfort & Hilon Ry. Co. 24 m, 5 g, 25 lb r, 4 c, 0 h. Pres. Heran H. Smith. Houston, Supt. Henzy Freund, Houston, Sec. & Treas. E.

JACKSONVILLE, ILL.-Jacksonville Ry. Co.

JACKSONVILLE, ILL.—Jacksonville Ry. Co. Supt. B, F. Sthert.
JAMAICA, N. Y.—Jamalca & Brooklyn R.R. Co. 10 m, 4-8½ g, 56-60 lb r, 29 c, 56 h. Pres. Aaron A. Degrauw, Sec. Marthn J. Durea, Treas. Morris Fosdick, supt. Wm, M. Scott.
JAMESTOWN. N. Y.—Jamestown St. Ry. Co. 3667m 4-8½ g, 30-42 lb r, 13 c, 15 h. Pres. R. N. Marvin, Y. Pres, F. E. Gliford, Treas. A. N. Broadhead, Supt. G. E. Mattby, Sec. & Atty. C. R. Lockwood.
JEINSEY COTY, N. J.—Jersey & Bergen R. R. Co. 21 m, 4-10 g, 60 lb r, 73 c, 494 h. Pres. Chas. B. Thurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Newark, Supt. Thos. M. Sayre.

Thurston, V. Pres. Wm. Keeney, Treas. C. B. Place, Sec. Warren E. Dennis, Newark, Supt. Thos. M. Sayne,
JOHNSTOWN N. Y.—The Johnstown, Gloversylde & Kingsboro Horse R.R. Co. 5½ m, 4-8½ g, 26 lb r, 6 c, 16 h. Pres. James Younglove, V. Pres. R. Fancher, Sec. & Treas. J. Mc Laren.
JOHNSTOWN, PA.—Johnstown Pass. R.R. Co. 7½ m, 5-3 g, 41-43 b r, 13 c, 73 h. Pres. James McMillen, Sec. B. L. Yeagley, Treas. W. H. Rosensleet, Jr., Supt. D. J. Duncan. Capital. \$100,000.
JOLIET, HLL.—Joliet City Ry. Co. 3½ m, 4-8½ g, 30 lb Johnson T r, 16 c, 30 h. & mu. Prop. J. A. Henry, Supt. D. J. Duncan. Capital. \$100,000.
JOLIET, HLL.—Joliet City Ry. Co. 3½ m, 4-8½ g, 30 lb Johnson T r, 16 c, 30 h. & mu. Prop. J. A. Henry, Supt. A. Bischman, Treas. J. Huisizer.
JOPLIN, MO.— HCH.—Kalamazoo St. Ry. Co. 16 m, 4-8½ g, 35 lb r, 25 c, 80 h. Pres. Fred Bush, Sec. J. W. Boynton, Treas. P, H. Brown.
KANSAS CITY, MO.—Kansas City Cable Ry. Co. 2½ m, 4-8½ g, 45 lb r, 10 pass, carts. 10 dummy cars. Pres. Wm. J. Smith, Sec. W. H. Lucas, Eng. Robert Gilham. Supt. Edward J. Lawless.
Corrigan Consolidated St. Ry. Co. 20 m, 4-1g, 30 lh r, 80 c, 350 h. Pres. Bernard Corrigan, Gen. Man. Thos. Corrigan, Sec. Jas. T. Kelley, Gand Avene Ry. Co. 6 m, 4-5½ g, 40 lb r, 25 c, 145 h. Pres. C. F. Morse, V. Pres, and Gen. Man. W. H. Holmes, Engineers, Knight & Bontidon, Auditor, T. J. Fry, Supt. C. F. Holmes.
Jackson County Horse R. R. Co. Kansas City Zelectic Ry. Co. 118, 48 g, heavy girder r. S. c. 4 electric motors (Henry system). Pres. W. W. Kendall, V. 1 res. Hugh L. McElroy, Sec. X. Treas. Warren Watson. Office, 1189 E. 5th st. Capital, \$10,00.

Kansas City & Rosedale St. Ry. Co. KEOKUK, LA.-Keokuk St. Ry. Co. 4 m, 4-8% g,

27 lb stoel r, 12 c, 40h. Pres. Jas. H. Anderson, Sec. Wm. E. Anderson.
KINGSTON, ONT., CAN.-Kingston St. R.R. Co. & 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. Co. 2
m, 4-534 g, 22 lh r, 5 c, 2 hacks, 30 h. Pres. W. P. Chamberlain, Sec., Treas. & Supt. T. L. Beanan. Mahry Bell Ave. & Hardee St. Ry. Co. Pres. R. N. Hood, Sec. B. L. Smith.
Market Sq. & ASylum St. Ry. Co. Pres. Peter Kern, Sec. W. H. Simmonds.
LACONIA, N. H.-Laconia & Lake Village Horse R.H. 24 m, 3 g, 34 lhr, 5 c, 17 h. Pres. A. G. Folsom, Treas. Edmund Little, Man. Bela S. Kennilston.
LA COSSE, WIS.-La Crosse City Ry. Co. 5 m, 4-54 g, 45 lb r, 16 c, 65 h. Pres. B. E. Edwards, V. Pres. Geo. F. Gund. Treas. Fred Tillman, Sec. Jas. T. Daggart, Supt. (North Division), Peter Valler, Supt. (South Division), Geo. F. Smith.
LAFYETTE, IND.-LaFayette St. Ry. 24 m, 4-54 g, 35 lb r, 6 c, 38 h. Pres. F. B. Caldwell, LaFayette, Sec. & Treas. E. G. Jones, Decatur, Ill., Supt. F. Greer, LaFayette.
LAKE CITY, FLA.-Lake City St. Ry. Co.
LANCASTER. PA.-Lancaster & Millersville St.

LAKE CITY, FLA.-Lake City St. Ry. Co.
LAMPASAS SPRINGS, TEX.-Lampasas City Ry. Co. 34 m, 4-8% g, 22 lb r, 6 c, 15 h. Receiver, —-Maddox.
LANCASTER. PA.-Lancaster & Millersville St. Ry. Co.-m, 4-8% g, 30 lb r, 4 c, 14 h. Pres. J C. Hager.
V. Pres. H. S. Shirk, Sec. & Treas. Chas. Dennes. Lancaster City St. Ry. Co. 1, m, 5-2 g, 38 lb r, 6 c, 4 h. Pres. W. D. Sprecher, Treas. J. H. Baumgardner. Sec. Thos. B. Cochrane, Man. J. B. Lang. Gen. Office, 129 North Queen st.
LARCHMONT, N. Y.-Larchmont Manor Co. 1 m, 4-8 g, 52 lb r, 2 c, 8 h. Pres. C. H. Murray, Treas. S. H. French, 38 East Fourteenth St., N. Y. City.
LAWRENCE, KAN.-Lawrence Transportation Co. 5 m, 4-1 g, 38 lb r, 7 c, 34 h. Pres. H. Tisdale, Sec. W. H. Bangs.
LAWRENCE, MASS.-Merrimack Valley Horse R.R. Co. 5 4 5 m, 4-8% g, 48 lb r, 20 c, 70 h. Pres. Wm. A Russell, V. Pres. Jas Walton, Methuen, Clerk & Treas James H. Eaton, Supt. A. N. Kimball, Lawrence.
LEWISTON, ME.-Lewiston & Auhurn Horse R.R. Co. 7% m, 4-8% g, 32 lb r, 16 c, 45h. Pres. Frank W Dana, Lewiston, Clerk, H. C. Little, Lewiston, Treas. H. C. Packard, Auburn, Supt. E. P. Stinchfield, Auburn LEXINGTON, KY.-Lexington City Ry. Co. 5 m, 410 g, 20 lb r, 20 c, 85 h. Pres. John Cross, V. Pres. C. R. Diver, Sec. & Supt. Bert. Cross.
LEXINGTON, MO.-Lexington St. Ry. Co.
LIMA, O.-Lima St. Ry. Co.
LIMA, O.-Lima St. Ry. Co.
LINCOLN, NEB.-Capital City Ry.Co. 4m, 48 1-2 g, 25 lb r, 9 c, 64 h. Pres. K. Teasa. E. B. Durfee, Sec. & Supt. H. B. Durfeee.
Lincoln St. Ry. Co. 6% m, 10 c, 60 h. Pres Frank L; Sheldon, Supt. L. P. Young.
LITTLE ROCK, ARK.-Little Rock St.Ry. Co.
My 6 n. Supt. M. P. Jaques. Office, Urhana, HI. Yood, Supt. H. B. Durfee.
LOGANSPORT, IND.-Logansport Ry. Co. 2 m, 4g, 25 lb r, 6 c, 29 mu. Pres. Frank. G. Jaques, Sec. M. Jaques, Supt. Wm. P. Jaques. Office, Urhana, HI. LONDON, CAN.-London St. R.R. Co. 3 m, 48% g, 30 lb r, 12 c, 30 h. Pres. V. Cronga

Patrick J. Gleason, Supt. Michael Conway. Oncess 112 Front St.
LONGVIEW, TEX.-Longview & Junction St Ry. 34m, 3-6g, 2c, 4 h. Pres. F. T. Rembert, Sec R. B. Levy, Treas, F. L. Whaley, Supt. C. W. Booth LOS ANGELES, CAL.-Boyle Heights R.R. Co. Central R.R. Co. and the Sixth & San Fernando St, R.R. Co. 7 m, 3-6 g, 161br, 13 c, -h. Pres. E. T. Spencer, Sec. F. X. Paimer, Supt. J. A. Fairchild. City & Central St. Ry. San Fernando St, P.R. Co. 7 m, 3-6 g, 161br, 13 c, -h. Pres. E. T. Spencer, Sec. F. X. Paimer, Supt. J. A. Fairchild. City & Central St. Ry. Co. 4½ m, 3-6 & 4-8 g, -1br, 2g cars, 167 h. Pres, I. W. Hellman, Sec. Fred Harkness, Supt. Wm, Hawks.
Los Angeles & Allso Ave. St. R.R. Co. Main St. & Agricultural Park Ry. Co. Pres. W. J. Broderick, Sec. Col. John Wheeler, Supt. Wm Hawks. Second St. Cable Ry. Co. 6 c and 6 grip c. Pres. Second St. Cable Ry. Co. 8 c. and Sgrip c. Pres. Walter S. Maxwell, Supt. and Man. Col. A. H. Wands
LOUISVILLE, K. Y. –Kentucky St. Ry Co. 5 m.

Wands LOUISVILLE, K Y.-Kentucky St. Ry. Co. 5 m, 5-2 g, - lb r, 22 c - h. Pres. T. J. Minary, Sec. & Treas. Thos. Donigan. Central Pass. R. R. Co. -m, -g, -lb r, -c, -h, Pres. -, V. Pres. Thos. J. Minery. Crescent Hill Ry. Co. Louisville City Ry. Co. 63 m, 5 g, 58 lb r, 214 c, -mu. Pres. Maj. Alexander Henry Davis, Syracuse, n Y., V. Pres. St. John Boyle, Sec. & Treas. R. A. Watts, Supt. H. H. Littell. LOWELL, MASS.-Lowell Horse R. R. Co. 6 m.

LOWELL, MASS.-Lowell Horse R. R. A. Watts, Supt. H. H. Littell.
LOWELL, MASS.-Lowell Horse R. R. Co. 6 m.
8½ 5, 28-47 lb 7, 28 c, 100 h. Pres. Wm. E. LlvIng-ston, Gen. Man. J. A. Chaşe.
Lowell & Dracut St. Ry. Co.
LYNCHBURG, VA. - Lynchburg St. R.R. Co.
2 m, 5-1 2, 26 lb 7, 6 c, 31 h. Pres. Stephen Adams, Treas. John L. Adams, Supt. William M. Payne.
LYONS, IA.-Clinton & Lyons Horse Ry. Co. 4 ½ m, 3-8 g, 19-20 lb 7, 15 c, 40 h. Pres. D. Joyce, V. Pres. & Man. R. N. Rand.
MACON, GA.-Macon & Suburban St. R.R. Co. 6½ m, 4-8½ 42, 20 lb T r, 20 c, 100 mu. Pres. John S. Bransford, Nashville, Tenn., Sec. and Supt. Jno. T. Voss. Office, Elm St.

MADISON, IND.—Madison St. Ry. Co. 2½ m, 4 g, 15 lh r, 7 c, 8 h, 10 mu. Pres, Jacoh Wendle, V. Pres. Peter F, Robenius, Supt. & Treas. Chas. F, Tuttle. MADISON, WIS.—Madison St. Ry. Co. 2½ m, 3 g, 23 lb r, 8 c, 7 h, 24 mu. Pres., J. K. Tenney, Sec. and Treas. B. W. Jones, Snpt. A. R. Kentzler. MANCHESTER, N. H.—Manchester Horse R.R. 5½ m, 3-½ g, 27-34 lh r, 14 c, 55 h. Pres. S. N. Bell, Treas. F Smyth, Clerk J.A. Weston, Supt.A. Q. Gage. MANK ATO, MINN.—Mankato St. Ky. Co. 2m, 3-bg, 27 lh steel r, 3 c, 10 h, Pres. and Man. W. M. Farr, Sec. and Treas. John C. Noe, Capital, 30,000; office, So Front Street. MARSHALLTOWN, IA.—3 m, 4g, 25 lb r, 7 c, 20 h. Pres. B. T. Frederick, Treas. T. E. Foley, Sec. C. C. Gillman, Supt. A. E. Shorthill. MARYNILLE, CAL.—Clty Pass. R.R. Co. MAYSVILLE, KY.—Maysville St. Ry. & T. Co. 3 m, 20 lb r, 4-Sk g, 6 c, 32 mu. Pres. L. W. Rohertson, sec. & Treas. W. S. Frank. MECHANICSBURG, ILL. — Mechanlesburg & Buffalo Ry. Co. 3% m, 3-10 g, 16 lh r, 3 c, 4 mu. Pres. J. N. Fullenweider, Treas. A. T. Thompson, Sec. H. Thompson.

J. N. Fullenwelder, Treas. A. T. Thompson, Sec. H. Thompson. MEMP418, 'TENN.-M' mphls Clty R.R.Co. 15 m, 5 g, 38-40 h r, 66 c, 320 h. Pres. R. Dudley Frayser, V. Pres. Thos. Barrett, Supt. W. F. Shippey. MERIDIAN, MISS.-Meridian St. ky. Co. 2 m, 4-S g, 161b T, 5 c, 11 mu, Pres.Geo.S. Conant, V. Pres. and Sup. J. L. Handley, Treas. J.A. Kelly, Sec. R. M. Houston.

HOUSTON.
MICHIGAN CITY, MICH.—MlchCity St.Ry.Co.
MIDDLETOWN, CONN.—Middletown Horse
Ry. Co 2 m, 6 c, 31 h. Pres. John M. Dantord, Sec.
and Treas. J. K. Guy, Supt. Joseph Lane.
MIDDLETOWN, 0.—Middletown Horse R.R.Co.
Pres. John M. Douglas, Sec. & Treas, Jas. K. Guy.
Middleton & Madison St. R.R. Co. 2 m, 5 9 g, -r, 4
c, 8 h, Pres. F. Gunchel, Sec. and Treas. E. W. Gunchel

Middleton & Madison St. R.R. Co. 2 m, 5 9 g, -- f, 4 (c, 8 h, Pres, F. Gunchel, Sec. and Treas. E. W. Gun-chel. **MILLERSVILLE, PA.**—Lancaster & Millersville St. R.R. Co. (See Lancaster, Pa.) **MILWAUKEE, WIS**.—Cream Clty R.R. Co. 8 1-6 m, 4-83% g, 27-38 ih r, 74 c, 307 m, 2 h. Pres. Winfield smith, V. Pres. Christian Preusser, Treas. Ferdinand Knehn, Sec. Wm. Damkoehler, Gen. Mau. D. Atwood, supt. H. J. C. Berg. Milwakee City Ry. Co. 30 m, 4-8% g, 27 lh iron & 48 ib steel r, 80 c, 450 h. Pres. Peter Mc. eoch, Sec. & Treas. Geo. O. Wheatcrott. West Side St. Ry. Co. Owner & Manager, Wash-ington Becker, Supt. — McNaughton. **MINWAUKE OLIVE, JULN.**—Minneapolls St. Ry. Co. 52 m, 3-6 g, 27-35-45 lb r, 186 c, 1050 h and mu. Pres. Thos. Lowry, V. Pres. C. Morrison, Treas. W. W. Herrick, Sec. C. G. Goodrich, Supt. D. W. Sharp. **MOBILE, ALA**.—City R.R. Co. 17½ m, 5-2g, 35 lb T-r, 68 c, 240 h. Pres. Jao. Maguire, Sec. I. Strausse, Treas. Myer I. Goldsmith, Supt. A. Moog. Dauphin & Lafayette Ry. Co. 2m, 5-2% g, 35 lb 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. Mobile & Spring Hill R.R. Co. 8 m, 5-2% g, 35 lb r, 5 c, 35 h, 1 dummy. Pres. Danlei McNeill, Sec. & Treas. C. F. Sheldon, Man. F. Ingate. **MOHAWK**, N. Y.—Mohawk & Illon R.R. Co. 1% m, 4-8% g, 30 lb r, 4 c (contract for motive power). Pres. O. W. Bronson, V.Pres. J. Brown, Sec. H.D.Alex-ander, Treas. R. M. Devendorff, Supt. O. W. Bronson. **MOLINE, ILL**.—Moline Central St. Ry. Co. 1% **MANKAWK**, S. Moline Central St. Ry. Co. 1% **MOLINE & Bronson**, V.Pres. J. Brown, Sec. H.D.Alex-ander, Treas, R. M. Devendorff, Supt. O. W. Bronson. **MOLINE, ILL**.—Moline Central St. Ry. Co. 1% **MOLINE & Broke Island St. Ry. Co.** 5 m, 4-8% g, 20 lb **1** 20 db Dr e L Burlor St. Ry Co. 1% **1** 20 db Dr e L Huntor St. Ry Co. 1% **1** 20 db Dr e L Huntor St. Ry Co. 1% **1** 20 db Dr e L Huntor St. Ry Co. 1% **1** 20 db Dr e L Huntor St. Ry Co. 1% **1** 20 db Dr e

MOTINE, ILL.—Moline Central St. Ry. Co. 1s/ m, 4-8% g, 30 br, 3 c, 10 h. Pres. S. H. Velle, V. Pres. P. H. Wessel, Sec. W. R. Moore, Treas, C. F. Hemenway.
Moline & Rock Island St. Ry. Co. 5 m, 4-8% g. 20 lb r, 13 c, 41 h. Pres. J. Huntoon, Sec. I. M. Butord, Treas. C. Lyons, Supt. Wm. Gamhle.
MONTGOMERY, ALA.—Capital City Electric St. Ry. Co. Electric motors. Pres. E. B. Joseph, Gen. Man. J. A. Gaboury, Treas. Thos. E. Hannon, sec. Taylor Rohert.
MONTGAMERY, ALA.—Montreal City Pass. Co. 21 m, 4-8% g, -lh r, 76 c, 465 h. Pres. Jesse Joseph, V. Pres. Alex. Murray Sec. & Man. Ed. Lusher, Supt. T. H. Robiliard.
MOULTRIEVILLE, S. C.—Middle St. & Sull-van's Lanoling Ry. 2% m, 4-8% g, 20 lh r, 7c 4 h. Pres. B. Callahan, Treas. E. 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. Welt-heimer; office, 261 Broadway, N.Y.
MUSCATINE, IA.—Muscatine Cit7 Ry. Co. 3% M, 3-6 g, 21 lh r, 7 c, 19 h. Pres. Peter Musser, V. Pres. D. C. Richman, Sec. T. R. Fitzgerald, Treas. S. M. Huyches, Supt. O. J. Chapman.
MUSKEGON, MICH.—Muskegon Ry. Co. 4% m, 4-6 g, 20 lb r, 8 c, 26 h. Smu. Pres. F. A. Nims, V. Pres. Chas. Merriam, Hoston, Mass., Sec. Thomas Murroe. Treas. G. R. Sherman, Supt. C. H. Newell. NASHVILLE, TENN.—Nashville & Edgefield R.R. Co. Fatheriand Street Raliway Co. North Edge-field and Nashville St. R.R. Co. one management. 5 m, 5 g, 16-20-321 br zi c, 100 mu. Pres. Jon P. White, Sec. & Treas. H. B. Stubblefield, Supt. D. Deadreick. McGavock & Mt. Vernon Horse R.R. Co. 7% m, 5 g, 16-20-23-32 lb r, 25 c, 140 h & mu. Pres. John P. White, V. Pres. B. F. Wilson, Sec. & Treas. & B. Bublefield R.R. Co. Fatheriand Street Raliway Co. North Edge-field and Nashville St. R.R. Co. 47% m, 5 g, 16-20-23-32 lb r, 25 c, 140 h & mu. Pres. John P. White, V. Pres. B. F. Wilson, Sec. & Treas. & B. Stubble-field, Supt. Dalagerfie

No C, U. Fuller.
NATICK, MASS.—Natlck & Cocbituate St. Ry.
3 m, 4834 g, 351 br, 6 c, 17 h. Supt. Geo. F. Keep.
NEW ALBANY, IND.—New Albany St. Ry. Co
6 m, 4-11½ g, 251 br, 15 c, 55 h. & mu. Pres. Geo. T.
Yance, Treas. Lettla V. Vredenburgh, Supt. & Pur.
Agt. Wm. L. Timberlake.
NEWARK, N. J.—Newark & Bloomfield St.
R.R. Co. 7 m, 5-2½ g, 471 br, 22 c, 140 h. Fres. S. S.
Battin, Sec. W. L. Mulford, Supt. H. F. Totten. Consolidated with Essex Pass. Ry. Co.
Essex Pass. R.R. 31 m, 5-2½ g, 471 br, 107 c, 702 h.
Pres, S. S. Battin, Sec. F. F. Kirke, Supt. H. F.

Totten, Paymaster, W. L. Mulford. Office, 756 Broad St. Newark & Irvington St. Ry. Co., 7 m, 5-2½ g, 47 lb r, 5 c, 120 h, Fres. S. S. Eattin, Sec. W. L. Mulford,

499

Newark & Irvington St. Ry. Co., 7 m, 5-2% g, 47 lbr, 28 c, 130 h, Pres. S. S. Eattin, Sec. W. L. Mulford, Supt. H. F. Totten. **NEW BEDFOIDD, MASS.**—New Bedford & Fair-haven St. Ry. Co. 7% m, 4-8% g, 35-45-50 lb r, 48% c, 14) Pres. Warren Ladd, 'Ireas. & Clerk, A. G. Pierce. Acushnet St. R.K. Co., 6m, 4-5% g, 35 lb r, 20 c, 103 h. Pres. Chas. E. Cook, Sec. & Treas. A. P. Smith. **NEW BRUNSWICK, N. J.**—New Brunswick HIOrse R.R. 4 m, 4-8% g, 40 lb r, 5 c, 20 h. Pres. F. M. Delano, Treas. Carroll Sprigg. (In process of construction.) construction

M. Defailo, Treas. Carloin Sprigg. (in process of construction.)
NEWBURGH, N. V.—Newburgh St. R. R. Co. Pres. D. S. Haines, Sandy Hill.
NEWBURYPORT, MASS.—Newburyport & Amesbury Horse R.R. Co. 61-3 in, 12 c, 54 h. Pres.
W. A. Johnson, Treas. N. H. Shepard, Sec. Geo. H. Stevens, Lessee, E. P. Shaw.
NEW HAVEN, CONN.—Fair Haven & Westville R.R. Co. 7 in, 44 g, 42 ib 1, 23 c, 150 h. Pres. H. B. Ives, Sec. & Tr. L. Candee, Supt. Waiter A. Graham. New Haven & Centreville Horse R.R. Co. 32 in, 48½ g, 42 lb r, 4 c, 30 h. Trustee Cornellus Pierpont. New Haven & West Haven R.R. Co. (See West Haven).

New Haven & West Haven R.H. Co. (see West Haven).
 State Street Horse R.R. Co. 2% m, 48 g, 43 lb r, 4c, 4ch P. Fes. G. M. Watrous, Sec. George D. Watrous, Treas. Eul Whitney, 1c.
 New MARLEDROR, O. – Kankapot R.R. Co. New York, Sec. Great Stress, Eul Whitney, 1c.
 New MARLEDROR, O. – Kankapot R.R. Co. New York, S. K. G. Stress, J. H. G. Stress, Stress, J. H. Fes. Go. J. Stress, S. J. J. G. Stress, J. J. G. Stress, J. J. Stress, Stress, J. K. Stress, J. Stress, J.

NORFOLK, VA.—Norfolk & City R.R. Co. 34m, 5-2 g, 44 lb r, 18 c, 65 h. Pres. John B. Whitehead, Treas. H. C. Whitehead, Supt. E. W. Savage. NORTHADAMS, MASS.—North Adams Horse By Co.

NORTHAMPTON, MASS.—North Adams Horse Ry. Co. NORTHAMPTON, MASS.—Northampton St. Ry. Co. 3½ m, 4-8½ g, 32 lb r, 7 c, 26 h. Pres. Oscar Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark.

500

Edwards, Sec. M. H. Spaulding, Treas. & Sup. E. C. Clark.
NORWALK, CONN.-Norwalk Horse R.R. Co. 2m, 4-10 g, --1b r, 7 c, 20 h. Pres. James W. Hyatt, V. Pres. & Sec. Edwin G. Hoyt, Sup. James W. Hyatt.
NORWICH, CONN.-Norwich Horse R.R. Co. OAKLAND, CAL.-Alameda, Oakland & Piedmont R.R.
Berkley Villa R.R.
Broadway & Piedmont St. R.R. Co.
Fourteenth St. R.R. Co. 6 m. 5 g, 20-30 lb r, 6 c, -h. Pres. & Supt. Waiter Blair, Sec. P. J. Van Loben. Oakland, Brooklyn & FruitvaleR. R. Co. (See East Oakland.)
OGBEN CITY, UTAH.-Ogden City Ry. Co. 3m, 448 g, 201b r, 4 c, 21 h. Pres. L. W. Shur tle, Ogden City, V. P. & Supt. O. P. Arnold, Sait Lake City, Sec. & Treas. H. S. Young, Ogden City.
OGDENSBURG.N.Y.-Olgean St. Ry. Co. 1% m, 3-6 g, 25 lh r, 3 c, 8 h. Pres. M. B. Fobes, Sec. & Treas. M. W. Barse.
OMAHA, NEB.-Omaha Horse Ry. Co. 15 m.

Barse, OMAHA, NEB.—Omaha Horse Ry. Co. 15 m, 48% g, 85 lb r, 40 c, 300 h. Pres. Frank Murphy, V. Pres. Guy C. Barton, Treas. W. M. Marsh, Supt. W.

4 by g, 35 lb r, 40 c, 300 h. Pres. Frank Murphy, V. Pres, Guy C, Barton, Treas, W. W. Marsh, Supt. W. A. Smith. Omaha Tramway Co. **ONEIDA VILLAGE, N. Y.**—Onelda Ry. Co. 2 m, 4-8% g, 47 lb r, 3 c, 6 h. Pres. Jerome Hickox, Sec. & Treas. W. E. Northrup, Supt. Chas. Bonta. **OSHKOSH, WIS.**—Oshkosh St. R R. Co. 3% m, 4-8% g, 27 lb r, 9 c, 24 h. Pres. Jeander Choate, V. Pres. F. Zentner, Sec. & Treas. J. Y. Hull, Sup. F. L. Thompson. **OSWEGO, N.Y.**—Oswego St. Ry. Co. 2% m, 4-8% g, 45 lb r, 3 c, 23 h. Pres. Jas. F. Johnson, V. Pres. H. J. Oliphant, Sec. Haynes L. Hart, Treas. Robt. G. Post, Gen. Man. James O'Connor. **OTTAWA, ONT.**—Ottawa City Passenger Ry.Co. 3m, 4-8% g, 30 lb r, 9 c, 40 h. Pres. Thomas C. Keef-er, V. Pres. R. Blackburg, Sec. James D. Fraser. Ottawa St. Ry. Co. **OTTUMWA, IA.**—Ottumwa St. R.R. Co. 2 m, 3-6 g, 27 lb r, 4 c, 2 h. Ju Huu. Pres. J. M. Hedrick, Sec. & Treas. H. L. Hedrick, Supt. C. M. Hedrick. Mineral Springs St. Ry. 1 m, 3% g, 16 lb T, 1 c 4 h. owner, L. E. Gray. **PALATIKA, FLA.**—Patatka St. Ry. Co. **PALATIKA, FLA.**—Patersou & Passatc R.R. Co. 7 m, 4-10g, 33 lh r, 16 c, 24 h. Pres. John N. Ter-lune, Treas, John I. Brown, Sec. F. S. Brown, Man. & Pur. Agt. Ambrose T. King, Supt. M. O. Rourke. Patterson City RR. Co. 6 (m, 4-8% g, 25 lb r, 12 c, 31 h. Pres, Garrett Planten, Treas. Heimas Romaine, Sec. Albert A. Wilcox. **PAWTUCKET, R. 1.**—Pawtucket St. Ry. Co. 8 **MUTUCKET, R. 1.**—Pawtucket St. Ry. Co. 8 **MUTUCKET, R. 1.**—Pawtucket St. Ry. Co. 8 **MUTUCKET, R. 1.**—Pawtucket St. Ry. Co. 8

PAWTUCKET, R. I.-Pawtucket St. Ry. Co. 8 m 4 lb i

m, 54 lb r. PENSACOLA, FLA.—Pensacoia St. Ry. Co. PEORIA, ILL.—Central City Horse Ry. Co. 4% m, 4-8% g, 40 lh r, 50 c, 135 h. Pres. H. R. Woodward, Nec. M. Pheffer, Treas. Elliot Callender, Supt. John Strong. Fort Clark Horse Ry. Co.-m,-g,-lb r,-c,-h.

Fort Clark Horse Ry. Co.-m,-g,-lb r,-c,-h.-Pres, J. H. Hall. Feoria Horse Ry. Co. 7% m, 4-8% g, 40 lb r, 63 c, 140 h. Pres. H. Woodward, Sec. M. Pfeiffer, Treas. H. N. Wheeler, Supt. John Strong. **PETERSBURGH**, VA.-Petersburgh St. Ry. Co. 3% m, 4-3% g, 42 lb r, 9 c, 44 h. George Beadle, Pro. **PHILADELPHIA, PA.-**Citizens Pass. Ry. Co. 10% m, 5-2 g, 45-47 lb r, 92 c, 420 h. Pres. John Mc-Carthy, Sec. & Treas. J. J. Adams, Sup. Sam'l Cline, Office, n & cor. 12th and Susquenanna ave. Capital, 5192,500. Empire Pass. Ry. Co. 8% m, 5-2 g, 45 lb r, 30 c, 30

Onnee, n w cor. 12th and Susquehanna ave. Capital, \$192,500.
Empire Pass. Ry. Co. 5½ 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. Frankford & Southwark Phila, City Pass. R. R. Co. 18 m, 5-2 g, 47 lb r, 102 c, 8 dummy c, 618 h. Pres. Heury Geiger, Sec. & Treas. Geo. S. Gandy, Supt. W. H. Janney. Capital, \$750,000.
Germantown Pass. Ry. Co. 29% m, 5-2% g, 47 lb r, Cars and horses, leased. Pres. Craig D. Ritchle, Treas. Lewis S. Renshaw, Sec. K. H. Parks. Office, n w cor. 10th and Chestnut sts.
Hestonville, Mantua & Fairmount Pass. R. R. Co. 20 m, 5-2 g, 48 lb r, 50 c, 480 h. Pres. Charles F. Laffer-ty, Sec. & Treas. W. C. Foster. Office, 4,300 Lancas-terave.

Lehigh Ave. Pass. Ry. Co. Pres. John Lamon, Sec. Chas. A. Porter, Treas. John L. Hill. [Track not laid.] Lombard & South Sts. Pass. Ry. Co. — m, 5-2, 8, 4 lb. r, 51 c, 278 h. Pres. John B. Parsons, Sec. & Treas Francis Hazelburst, Supt. Jno. M. Gaughen. Office. 5509 South st. 43

10. F, 61 C, 27.8 h. Pres. John B, Parsons, Sec. & Tréas.
Francis Hazelhurst, Supt. Jno. M. Gaughen. Office,
2,509 South st.
People's Pass, Ry. Co. 44 m,5-2g, 47 lb r, 125 c, 1,660
h. Pres. John B Parsons, Sec. & Treas. Jno. C. Dessalet, Supt. Wm. Hagenswiler.
Philadelphia City Pass, Ry. Co. 7 m, 5-23 g, 47 lb
r. - c, - h. Pres. Wm. W. Colket, Sec. & Treas. T. W. Pennypacker. (Leased to Phila. Traction Co.)
Philadelphia Traction Co. 109 m, 5-2% g, 47 lb r, 594 c 2,942 h. Pres. W. H. Kemble, V. Pres. P. A, B. Widener & W. L. Elkins. Treas. D. W. Dicksson. Office, n w cor. 41st and Haverford sts.
Philadelphia & Darby Ry. Co. 64 m, 5-2% g, 42 lb r, road leased. Pres. C. L. Borle, Sec. and Treas. Wm. W. Colket. Office, 202 Walnut pl. Leased to Phila. City Pass. Ry. Co.
Philadelphia & Gray's Ferry Pass. R.R. Co. 10 1-3
m, 40 c, 200 h. Pres. Muthew Brooks, Treas. J. C. Dawes, Sec. J. Crawford Dawes, Supt. Patrick Lovett. Office, 302 h. Pres. E. B. Edwards, V. Pres. John Lambert, Sec. & Treas. Wm. S. Bilght, Supt. Wm. Inges.

Second & Third Sts. Pass. Ry. Co. 37 m, 116 c, 669h. Pres. Alexander M. Fox, Treas. William F. Miller, Sec. Charles D. Matlack, Supt. David W. Stevens. Soventeenth & Nineteenth sts. Pass. Ry. Co. 74 m. Pres. Matthew S. Quay, Sec. & Treas. John B. Ped-dle. (Leased to Fhilada. Traction Co.) Thirteenth & Fifteenth Sts. Pass. Ry. Co. 14 m, 5-2 g, 431 br. 73 c, 452 h. Fres. Thos. W. Ackley, Sec. & Treas, Thos. S. Harris, Supt. Wm. B. Cooper. Union Pass. Ry. Co. 70 m, 348 c. 1,724 h. Pres. Wm. H. Kemble, Sec. & Treas. John B. Peddle, Supt. Jacob C. Petty. (Leased to Fhila. Traction Co.) West Philadelphila Pass. Ry. Co. 18% m, 122 c, 646 h. Pres. Petter A. B. Widener, Sec. & Treas. D. W. Dickson, (Leased by the Phila. Traction Co.) PHILLIPSBURGH, N. J. – Phillipsburgh Horse Car Ry. Co. 2% m, 488 g, 353 hr, 4 c, 13 h. Pres. Daniel Runkle, Sec. & Treas. James W. Long. PHTTSBURGH, PA. – Central Pass R. R. Co. 3 m, 16 c, 95 h. Pres. J. F. Cluley, Sec. F. L. Stepnenson, Treas, F. R. Jones, Supt. R. G. Heron. Citizens Pass. Ry. Co. 16 (Jm, 5-2); g, 47 lh r, 40 c, 37 h. Pres. Jno. G. Holmes, Sec. C. M. Gormly, Supt. Murry Verner. Treas. Jas. J. Donnell, Capital, \$200,000. Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, 5-2% g, 64-50 lb r, 20 c. 154 h. Pres. Wm. H. Creerv.

\$200,000. Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, Federal St. & Pleasant Valley Pass. Ry. Co. 26 m, F.2½ g, 46-50 lb r, 20 c, 154 h. Pres. Wm. H. Creery, Sec. R. F. Ramsey, Treas. James Boyle, Supt. Wm. J. Crozler, Allegheny Ctty. Feople's Park Pass. Ry. Co. 2 m, 5-2½ g, 45 lb r, 10 c, 75 h. Pres. Wm. McCreery, Sec. R. F. Kamsey, Treas, James Boyle, Supt. Wm. J. Crozler, Allegheny Clty.

Clas, James Boyle, Supt. Wm. J. Crozler, Allegheny Pittsburgh, Allegheny & Manchester Pass Ry. Co. 5 m. 5-2½ g, 46 lb r, 40 c, 275 h. Pres. Chas. Atwell, Sec. & Treas. Chas. Setbert, Supt. James C. Cotton. Manager J. P. Speer. Pittsburgh, Oakland & East Liberty Pass. Ry. Co. 11 m, 5-4½ g, 47 lb r, 32 c, 110 h, 61 mu. Pres. J. T. Gordon, Sec. John G. Traggardh, Treas. A. W. Mellon, Supt. H. M. Cherry. Pittsburgh Union Pass. R.R. Co. 5 m, 5-2½ g, 45 lb r, 29 c, 170 h. Pres. Chas. Atwell, Supt. James C. Cotton, Sec. & Treas. Chas. Setbert, Cash. Saml. C. Hunter. Pittsburgh & Birminghen Pace. D. B. Construction of the set o

Cotton, Sec. & Treas. Chas. Selbert, Cash. Saml. C. Hunter.
Pittsburgh & Birmingham Pass. R.R. Co. 3½ m, 5-2½ g, 48 lb r, 20 c, 170 h. Pres. W. W. Patrick, Sec D. F. Agnew, Treas. John G. Holmes.
Pittsburgh & West End Pass. Ry. Co. 3½ m, 5-2 g, 35 lb r, 13 c, 75 h. Pres. John C. Relily, Sec. & Treas.
Pittsburgh & Wikinsburg St. Ry. Co. By m, 5-2 g, 47 lb r, 8 c, 60 h. Pres. Geo. Fawcett, Sec. Jas. F. Fawcett, Treas W. J. Fawcett.
South Side Pass. R.R. Co. 2½ m, 5-2½ g, 47 lb r, 12 c, 80 h. Pres. D. Z. Brickell, Sec. & Treas. W. T. Wallace, Supt. W. M. Rosborough.
Transverse Pass. Ry. Co. 6½ m, 5-2 g, 52 lb r, 99 c, 243 h. Pres. C. L. Magee, V. Pres. C. F. Klopter, Sec. & Treas. Wia. R. Ford, Supt. Miller Elliot.
PITTSTON, PA. –Pittston St. R.R. Co. 1½ m, 3c, 5 h. Pres. Thomas Grifflith, Treas. M. W. Morris, Sec. William Allen.

PITATYON, PA. -Pittston St. R.R. Co. 1% m, 3c, 5 h. Pres. Thomas Griffith, Treas. M. W. Morris, Sec. William Allen.
PORT HURON, MICH. --Port Huron St. Ry. Co.
PORT HURON, MICH. --Port Huron St. Ry. Co.
Portant A. Beard, Sec. Treas. & Man. J. R. Wastell.
POITTIAND, ME. --Ocean St. R.R. Co.
Portant R.R. Co. 7% m, 4-5% g, 30-33-45 lb 7, 34 c, 454 h. Pres. H. J. Libby, Treas, & Gen. Man. E. A. Newman, Supt. Geo. W, Soule.
PORTLAND, ORE. --Portland St. Ry. Co. 2 m, 3.6 g, 23-49 lb 7, 11 c, 40 h. Pres. D. P. Thompson, Sec. & Supt. C. K. Harbaugh.
Multnomth St. Ry. Co. 2% m, 3-6 g, 30 lb r, 19 c, 65 h. Pres. A. N. King, Sec. E. A. King.
Transcontineutal St. Ry. Co. 7 m, 3-6 g, 30 lb r, 19 c, 65 h. Pres. A. N. King, Sec. E. A. King.
Transcontineutal St. Ry. Co. 7 m, 3-6 g, 38 lbr, 15 c, 65 h. Prest, Watter F. Burrell, D. W. Wakefield, Sec., Tyler Woodward, Supt.
PORTSWILLE, PA. --Poople's Ry. Co.9% m, 16c, 56h.
POUGHIKEEPSIE, N. Y. --City R.R. of Poughkeepsie, 4m, 4-8% g, 35-49 lb r, 11 c, 38 h. Pres. Geo. B. Adriance V. Pres. & Treas. Hudson Taylor sec. A. B. Smith, Supt. C. M. Davis. Office 491 Main st.
PROVIDENCE, R. I. --Union R.R. Co. 5 m, 4-8% g, 455-10 hr, 11c, 38 lb. Pres. Geo. B. Adriance V. Pres. & Treas. Hudson Taylor sec. A. B. Smith, Supt. C. A. Davis. Office 491 Main st.
PROVIDENCE, R. I. --Union R. Co. 5 m, 4-8% g, 455-10 hr, 9 c, 46 h. Pres. James Stecton, Y. Pres. & Gen. Man. D. F. Longstreet. sec. and Treas. & A Babcock.
QUEBEC, CAN.--Quebee St. Ry. Co. 3 m, 4-8% g, 45-10 hr, 4-8% g, 35 hr, 4-6, 20 h. Pres. John St. Ry. Co. Lim, 1% m, 4-8% g, 35 hr, 4-6, 20 h. Pres. John St. Ry. Co. 20 h. Runs 4 'buses out 4 m. from city Hints. Pres. John St. Ry. Co. Lim, 1% m, 4-8% g, 35 hr, 4-6, 20 h. Runs 4 'buses out 4 m. from city Hints. Pres. John St. Ry. Co. Lim, 1% m, 4-8% g, 35 hr, 4-6, 20 h. Pres. John St. Ry. Co. Ha 4 g 30 hr, 9-0-h, Pres. John T. Fish, Sec. & Treas. & Supt.

BOBS, GOBB, CDAR, DARK, -Rapid City St. Ry. Co.
Pres Fred. T. Evans.
IREADING, P.A.-Reading City Pass. Ry. Co.
21-5 m, 5-2% g, 45 lb r, 19 c, 44 h. Pres. B. F. Owen,
V. Pres. Jas. L. Dourlass, Sec. & Treas. H. A. Muhlenberg, Supt. J. A. Riggs.
Perkiomen Ave. Pass. Co. 21-5 m, 5-2% g, 46 lb r,
13 c, 41 h. Pres. Chas. Breneiser, Sec. & Treas. Isaac
Hieberg, Supt. J. A. Riggs.
RED OAK, IA.-Red Oak St. R.R. Co. 15/m, 4-2%
g, flat r, 2c, 2h. 2 mu. Pres. J. W. Judkins, V. Pres. G.
West. Sec. F. M. Byriket, Treas. & Supt. F.O. Judkins.
RICHMOND, IND.-Richmond City Ry. Co. 3 m,
s, 9 lb r, 10 c, 30 h. Pres. J. Y. Miller, V. Pres. Jos.
RUCHMOND, J.LL.-Richmond St. R.R. Co.
RICHMOND, JLL.-Richmond St. R.R. Co.
RICIMOND, YA.-Richmond St. R.R. Co.
RICHMOND, Supt. F. M. Boiton, Supt.
Charles Selden.
Biomode t. Napohester Pr. Stm. Co. 24 m 9h

c. a. 1763. White Kind, Mail. C. M. Bolton, Supt. harles Selden. Richmond & Manchester Ry. & Imp. Co., 2½m, 26 h, c. Supt. B. R. Selden. ROCHESTER, N.Y.-Rochester City & Brighton

OCTOBER, 1886.

R.R. Co. 37 m, 4-8½ g, 25-30-45 lb r, 142 c, 596 h, Pres. Patrick Barry, Sec. C. C. Woodworth, Treas. C. B. Woodworth, Supt. Thomas J. Brower.
Cittleras St. Ry. Co. Pres. Wm. H. Jones, Sec. & Treas, J. E. Pierpont, Supt. S. A. Green.
ROCKFORD, HLL.-Rockford St. Ry. Co. 6 2-5 m, 4-8½ g, 30 lb r, 13 c, 52 h, 16 m. Pres. Anthony Haines, V. Pres. L. Rhodes, Sec. Miss A. C. Arnold, Treas. N. E. Lyman, Supt. Fred. Haines.
ROCK ISLAND, HLL.-Rock Island & Milan St. Ry. Co. 7 m, 4-8½ g, 20-30-42 lb r, 10 c, 7 h. Pres. & Supt. Bally Davenport, Sec. E. H. Hunt, Treas, J. F. Robinson, 2 m, with horses, 5 m, with motor.
RODUT, N. Y.--Kingston City R. R. Co. 3 m, 4-8½ g, 40 lb r, 10 c, 40 h. Pres. James G. Linds-ley. V. Fres. S. D. Coykendol, Sec. & Treas. John C. Roineyee, Supt. Wm. H. DeGarmo.
RUTLAND, VT.--Rutland St. Ry. Co. 8 m, 4-8½ g, 20 lh r, 8 c, 30 h. Pres. M. Quin, Sec. John N. Woodfin, Treas, A. H. Tuttle, Supt. M. McKeough. 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 Saginaw St. R. R. Co. 2½ m, 4-8½ g, 42 lb r, 10 c, 50 h. Pres. David H. Jerome, V. Pres. Geo. F. Williams, Sec. & Treas. Geo. L. Burrews, Supt. Fred G. Benjamin.
SALEM, MASS.-Salem & Danvers St. Ry. Co. 6 m, 4-8½ g, 35-47 lb r, 15 c, 45 h. Pres. Benj. W. Rus-selj, Sec. G. A. Vickery, Treas. Geo. W. Williams, Supt. W. B. Furgurson, Asst. Supt. David M. Cook, Naumkeag St. Ry. Co. - m, 4-8½ g, 30-3545 lb r, 50 , 140 h. Pres. Chas. Odell. Clerk Joseph F. Hickey, Treas. Henry Wheatland, Supt. Williard B. Ferguson. SALINA, N. Y.-Woodlawn and Butternut St. Ry. Co.
SALT LAKE CITY, UTAH.-Salt Lake City R Co. 13 m, 45% c, 20 lh r, 90 c, 51 m. Pres. Idap.

SALINA, N. Y.-Woodlawn and Butternut St. Ry. Co. SALT LAKE CITY, UTAH.-Salt Lake City R.R Co. 13 m, 4-5% g, 20 lh r, 20 c, 115 mu. Pres. John Taylor, Sec. David McKenzle, Treas. James Jack, Supt. Orson P. Arnold. SAN ANTONIO, TEX.-San Antonio St. Ry. Co. 15 m, 4 g, 30 lb r, 38 c, 125 mu. Pres. A. Belknap, San Antonio, V. Pres. F. W. Pickard, N. Y. City, Treas. I. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb. Prospect Hill St. Ry. Co.

SAN ANTONIO, TEX.—San Antonio St. Ry. Co. 15 m, 4 g, 30 lb 1, 38 c, 125 mu. Pres. A. Beiknap, San Antonio, V. Pres, F. W. Pickard, N. Y. City, Treas. 1. Withers, San Antonio, Sec. E. R. Norton, Supt. John Robb.
Prospect Hill St. Ry. Co.
SAN DISKY, O. —Sandusky St. Ry. Co. 2 m, -g, -lb 1, -c, -h. Pres. Chas. B. Ods, Sec. & Treas. A. C. Morse, Supt. Clark Rude.
Cans K. C. Morse, Supt. Clark Rude.
Cans Main, V. Pres. S. C. Bigelow, Treas. A. J. Guminson, Sec. C. V. LeBreton Supt. J. F. Clark. Clars St. Hill R. R. Co. V. LeBreton Supt. J. F. Clark. Clars St. Hill R. R. Co. V. LeBreton Supt. J. F. Clark. Clars St. Hill R. R. Co. J. Bardet, S. C. Bigelow, Treas. A. J. Guminson, Key. C. V. LeBreton Supt. J. F. Clark. Take J. Oseph Briton.
Gearty St. Park & Ocean R. R. Co. 9% m, 65% m eable, 4% m stearb 50 g, 45 h f, 39 c. Pres. Daniel Meyer, V Pres. R. F. Morrow, Treas. S. C. Bigelow, Supt. Johnson Reynolds, Sec. John N. Syme. Daniel Meyer, V Pres. R. F. Morrow, Treas. S. C. Bigelow, Supt. Johnson Reynolds, Sec. John N. Syme. Common Supt. J. Fres. Leiad Stantord, V. Pres, Chas, F. Crocker, Treas. M. T. Smith, Sec. J. L. Without, Supt. H. D. Morton. Onlece, Fourth and Pornerial stat. Sign. R. R. Co. 9 m, 5g, 46 c, 400 M. Aiverd, Supt. M. Skelly.
Ocean Beach Ry Co. (operated by Market St. Cable RY. Co.) 2 m, Pres. Leland Stantord, V. Pres. Chai Appel, Sec. H. W. Hathorne, Treas. W. Mathorne, Treas. W. Mathorne, Sec. G. N. Without, Supt. M. Skelly.
Oranie Beach Ry Co. (operated by Market St. Cable RY. Co.) 2 m, Pres. Teland Stantord, V. Pres. Gustav Sutro, Y. Pres. Thandy Hopkins, Treas. N. T. Smith, Sec. J. Without, Supt. M. Martin.
Park & Ocean R. R. Co. 4, 82 m, 5g, 354 b D r, 5c, 64 h. Pres, Gustav Sutro, Y. Pres. Chalaghan, Sec. G. Ruegg, Supt. M. Martin.
Park & Ocean R. R. Co. 5% m, 4-11 g, 35-45 lb r, 40 c, 86 h. Pres, R. Roorow, Sec. A. K. Stevens, Treas. N. T. Smith, Sec. J. Without, Supt. H. D. Morrow.
Stath, S. R

SEATTLE, W. T.-Scattle St. RJ. Co. 3½ m, 4.8½ g, 35 lb r, 5 c, 20 h. Pres. F. H. Osgood, Sec. Geo. Kinnear. SEDALIA, MO.-Sedalfa St. RJ. Co. 2½ m, 4-10 g, 22 lb r 6 c 25 h. Pres. Joseph D. Sicher, V. Pres. Louis Deutsch, Treas. F. H. Guenther, Sec. Chas.

5, 25 of 7 of 25 h. Frees. Joseph D. Schel, V. Pres. Louis Deutsch, Treas. F. H. Guenther, Sec. Chas. S. Conrad. SELMA, ALA.—Selma St. R.R. 2½ m, 18 lb r, 5 c, 8 h. Pres. F. Gilman, Sec. & Treas. J. H. Hollis, Supt. W. Bohlla. SENECA FALLS, N.Y.—Seneca Falls & Waterloo R.R. Co. 7 m, 4-8½ g, 40 lb r, 4 c, dummles. SEVASTOPOL, IA.—Des Molnes & Sevastopol St. R.R. Co. 12 m, 4g, 36 lb r, 2 c, 12 h. Pres. G. Van Ginkel, Sec. G. C. Van Ginkel, Treas John Weber. Offic; Main st. SHERMAN, TEX.—Sherman City R.R. Co. 3½ m 5 g, 20 lb r, 7 c, 32 mu. Pres. C. W. Batsell, Treas. J. M. Batseli. Sec. C. W. Batsell, Jr. SHERVEPORT, LA.—Sherveport City R.R. Co. 1½ m, 44 g, 46 lb r, 6 c 14 h. Pres. Peter Youree. SILVER CLIFF, COL.—Sliver Cilff St. R.R. Co. SIOUX CITY, IA.—Sourd Uty St. Ry. Co. 5 m, 4 g, -r, 8 c, 52 mu. Pres. Fred. T. Evans, V. Pres. D. A. Magee, Sec. & Treas vied Evans, Jr. SOUTH BE VD, IND.—South Bend Ralway Co-ton, Treas Lucius (lark, Sec W G George. Office, 212 W Market st, Utlea, N T. SOUTH Bed and Mishawauka St, Ry. Co. SOUTH CHICAGO, HLL.—Chicago Horse & Dummy R.R. 5 m, 45% g, -i b r, -c., -h. Pres. D. L. Huff, Treas. A. C. Calkins, Sec. E. R. Bilss, [Not in operation.] South Chicago City Ry. Co, 4 c, 8 h. Pres. An-drew Rebm, Sec. & Supt. A. Krimb, Treas H. Shearrer.

South Chicago City RY. Co, 4 c, 8 b. Pres. Andrew Rebm, Sec. & Supt. A. Krimb#, Treas H. Shearrer.
SOUTH PUEBLO, COL.—Pueblo St. R.R. Co. SPRINGFIELD, ILL.—Cltizens' St. R. R. Co. 9% m, 3 6 g, 20-36 lb 7, 29 c, 100 h. Pres. J. H. Schrick, Treas. Frank Reisch, Sec. Chas. F. Harman. Springfield City Ry. Co. SPRINGFIELD, MASS.—Springfield St. Ry. Co. 45% g, 33-40 lb 7, 30 c, 120 h. Pres. John Olmstead, Auditor L. E. Ladd, Clerk Gldeon Wells, Treas. A. E. Smith, Supt. F. E. King.
SPRINGFIELD, MO.—Cltizens'Ry Co. of Springfield and No Springfield, 5% m, 5-5% aud 4-10 g, 30, 33 and 40 lb 7, 16 c, 70 h & mu. Pres R C Kereus, V Pres B F Hobart, Sec and Treas A M Longwell, Supt F B Smith, Ex-com L H Murray, H F Denton, C B McAfee.
SPRINGFIELD, O.—Cltizens'St. R.R. Co. 10m, 4 g, 29 c, 135 h. Pres. D. W. Stroud, V. Pres. A. S. Bushnell, Treas. Rose Mitchell, Sec. F. S. Penfield, Supt. N. H. Hanford.

STATEN ISLAND, N. Y .- Staten Island Shore

STATEN ISLAND, N. 14, State Ry. Co. ST. CATHAR INE'S, ONT.—St. Catharine's, Mer-rilton & Toorold St. Ry. Co. 5½ m, 4-8½ g, 30 lb r, 8 c, 32 h. Pres. E. A. Smyth, Sec. S. R. Smyth, Supt. E. A. Smyth. ST. JOSEPH, MO.—Clitzens' St. R.R. Co. 3 m, 4-8½ g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kirkpatrick, Supt. John F. Merdam.

ST. JOSEPH, MO.-Clilzens' St. R.R. Co. 3 m, 4-8 χ g, 28 lb r, 14 c, 52 mu. Pres. Richard E. Turner, Sec. & Treas. Arthur Kikpatrick, Supt. John F. Merriam. Frederick Ave. Ry. Co. 1 χ m, 3 g, 16 lb r, 6 c, 16 h. Pres. Thos E. Tootle, V. Pres. Winslow Judson, Sec. W. D.B. Motter, Treas. Thos W. Evins, Sup. S. Rowen. St. Joseph & Lake St. R.R. Co. Union Ry. Co. - m, - g, 20, 30 and 52 lb 7, 27 c, 110 h. Pres Seymour Jenkins, Sec & Treas. S Stein-acker, Supt Harvey E Lewis. Office, cor Highland and St. Joseph Avenues. ST. LOUIS, MO.-Baden & St. Louis R.R. Co. 3 χ m, 4-10 g, - lb 7, 7 c, 21 h. Pres. George S. Case, V. Pres. William Z. Coleman, Supt. J. H. Archer. Benron & Belletontaine Ry. Co. 7 χ m, 4-10 g, 45 lb 7, 99 c, 200 h. Pres. J. G. Chapman, V. Pres. Chas. Parsons, Sec. & Treas. Robert McCullocb. Cass Avenue & Fair Grounds Ry. Co. 8 χ m, 4-10 g, 38 lb 7, 39 c, 285h. Pres. W. & Allen, V. Pres. Geo. W. Allen, Sec. & Treas. J. W. Wallace, Supt. G. G. Gibson, Cassier O. H. Williams. Citizen's Ry. Co. -m, -g, -lb 7, -c, -h. Pres. Julius S. Walsh, V. Pres. J. D. Pres. John M. Gelkeson, Gen. Man. John Scullin, Scc. C. K. Dickson. Lindel Ry. Co. 13 χ m, -g, -lb r, -c, -h. Pres. John H. Maquon, V. Pres. John M. Gelkeson, Gen. Man. John Scullin, Scc. C. K. Dickson. Lindel Ry. Co. 13 χ m, -g, -lb r, -c, -h. Pres. John H. Maquon, V. Pres. John M. Gelkeson, Gen. Wan. John Scullin, Suct. Jos. C. Llewellyn. Northern central. Missouri R.R. Co. 13 χ m, -g, -lb r, -c, -h. Pres. P. C. Mafit, See. W. D. Henry. Mound City R.R. Co. Pres. John, Scullin, Sec. & Treas. Geo. W. Baumhoff, Supt. Jos. C. Llewellyn. Northern Central. Missouri R.R. Co. 11 m, 4-10 g, 35-52 lb r, 49 c, 250 V. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Johnson. St. Louis R.R. Co. 11 m, 4-10 g, 35-52 lb r, 49 c, 250 V. Pres. E. R. Coleman, Sec. J. S. Minary, Man. W. L. Jounson. 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. Ischer. St. Louis R.R. Co. 11 m, 4-10 g, 38-54 lb

STONELIAM, MASS.—Stoneham St. R. R. Co. 2% m, 4-8% g, 23 lb r, 10 c, 25 h. Pres A V Lynde, Mel-rose, Treas. & Clerk Lyman Dyke, Supt. John Hill

rose, Treas, & Clerk Lyman Dyke, Supt. Join Hill
sT. PAUL, MINN.-St. Paul City Ry. Co. 37 m
48½ g, 45-52 lb r, 82c, 600 h. & mu. Pres. Thos. Lowry
V. Fres. C. G. Goodrich, Sec. A. Z. Levering, Treas.
Clinton Morrison, Supt. A. L. Scott.
STILLWATER, MINN.-Stillwater St. Ry. Co,,
STILLWATER, N. Y.-Stillwater & Mechanic-s.
ville St. Ry. Co. 4½ m, 4-8½ g, 25-30 lb r, 3 c, 6 h.

Pres. S. Rowley, V. Pres. W. L. Denison, Gen. Supt. Peter Van Veghten, Sec. & Treas. Edw. I. Wood.
STROUDSBURGH, PA.-Stroudsburgh Passen-ger R.R. Co. 14-5 no. 48% g, 28-30 lb r, 3 c, 9 h. Pres.
& Treas. J. Lantz, Sec. Jacob Houser.
SYRACUSE, N. Y.-Syracuse & Onondaga R.R. Co. 23-5 m, 4-8 g, 28-37 lb r, 9 c, 18 h. Pres. Peter Burns, Sec. & Treas. Lyman C. Smith, Supt. W. B. Thompson.
Central City Ry. Co. 22 m, 4-8% g, 40 lb r, 12 c, 37 h. Pres. Danlel Pratt, V. Pres. Jonathan C. Chase, Sec. & Treas. James Barnes, Supt. George Crampton.
4 Syracuse Savings Bank Building.
Fifth Ward R.R. Co. 22 m, 4-8% g, 35-561 br, 8 c, 30 h. Pres. P. B. Brayton, Sec. & Treas. O. C. Pot-ter, Supt. Hugh Purnell. Office W. Washington st. Genesee & Water St. R.R. Co. and Fourth Ward R.R. Co. 4 m, 4-8% g, 18-30 lb r, 10 c, 35 h. Pres.
Robt G. Wynkoop, Sec. & Treas. Go. J. Gardiner, Supt. W. J. Hart. Onondaga Valley R.R. Co. 17 m, 48 g, 16-35 lb r, 2 c, 6h. I dummy. Pres. Matthias Britton, Sec. T. W. Meacham, Treas. J. H. Anderson. Syracuse & Coddes Ry. Co. 4 m, 4 g, 30-45 lb r, 10 c, 40 h. Pres. R. Nelson Gere, Sec. & Treas. Reselas A. Bonta, Supt. J. H. Anderson.
Syracuse & Coddes Ry. Co. 7 m, 4 g, 30-45 lb r, 10 c, 40 h. Pres. K. Nelson Gere, Sec. & Treas. Reselas A. Bonta, Supt. J. H. Anderson.
Syracuse & Coddes Ry. Co. 7 m, 4 g, 30-45 lb r, 10 c, 40 h. Pres. K. Nelson Gere, Sec. & Treas. Resselas A. Bonta, Supt. Wm. J. Hart. Gen offices, 1 Onondaga Co. Bank Bullding.
Third Ward Ry. Co. Pres. W. B. Cogswell, Sec. 4 Treas. W. S. Wales.
TAMPA, FLA.-Tampa St. Ry. Co. Sec. Geo. 7. Chamberlain.
TERE HAUTE, IND.-Terre Haute St. Ry. Co. 44 m, 45% g, 32 lb r, 16 c, 48 h. Pres. T. C. Buntln, 40% g, 25 lb r, 10 c, do the Hazen St. W.

TAUNTON, MASS.—Taunton St. Ry. Co. 4 m, 4 8% g, 14 c, 45 h. Pres. Wm. C. Lovering, Treas. Henry M. Lovering, Clerk, Orville A. Barker, Supt. Geo. C. Morse.
TERRE HAUTE, IND.—Terre Haute St. Ry. Co. 4% m, 4-8% g, 28 lb r, 16 c, 48 h. Pres. T. C. Buntin, V. Pres. Josephus Collett, Sec. John R. Hagen, Supt. John T. Shriver.
TEXARKANA, ARK.—Texarkana St. Ry. Co. 70 LEDO, 0H10.—Toledo Consolidated St. Ry. Co. 17% m, 4-8 g, 42 h r, 41 c, 200 h. Pres. J. E. Balley, Sec. A. E. Lang.
Adams Street Ry. Co. 10 h. Pres. & Sec. Jno. J. Shipherd of Cleveland, Treas. H. E. Wells of Cleveland, Gen. Man. T. F. Shipherd, Supt. Jno. A. Watson.
Monroe Street R.R.
The Centrai Passenger R.R. Co. of Toledo, O. 8 m. 3 g, 27 lb r, 17 c, 70 h. Pres. F. E. Seagrave, Treas. & Man. A. R. Seagrave, Supt. Joseph Murphy.
TOPEKA, KAN.—Topeka Clip Ry. Co. 9 m, 4 g, 25-48 lb r, 25 c, 90 h. Pres. Joab Muivane, V. Pres. D. W. Stormont, Sec. & Treas. E. Wildes, supt. Jesse Shaw.
TORONTO, CAN.—Toronto St. Ry. Co. 60 m, 4-10% g, 30lb r, 160 c, 750 h. Pres. Frank Smith, Sec. James Gunn, Supt. John J. Franklin.
TIRENTON, N. J.—Trenton Horse R. R. Co. 3 m, 5-2 g, 43-48 lb r, 10 c, 33 h. Pres. Gen. Lewis Perrine, Sec. & Treas. Lewis Perrine, Jr., Supt. Thomas S Morris. Cly Ry. Co. 7 m, 5-2% g, 35 lb r, 19 c, 110 h&m.Pres. Adam Exton, V. Pres. W. II. Skirm, Sec. H. B. Howell, Treas. & Mang. Director Chas. Y. Bamford.
TIROY, N. Y.—Cortland & Homer Horse R. Co. 4 m, 4-8% g, 25-30 lb r, 2 c, —h. Pres. C. H. Garri-Son, Troy, V. Pres. K. A. Kinkchrocker, Sec. & Treas. Jas. M. Milen, Cortland, Sec. S. E. Welch, Cortland. Troy & Abla Street RY. Co. 3% m, 4 g, 33-45 lb r, 9 c, 41 h. Pres. Thos. A. Kinkcherbocker, Sec. & Treas. Theo. E. Hastehurst, Supt. W. R. Bean.
Troy & Lansingburgh R. R. Co. 21% m, 4-8% g, 47 lb r, 9 c, 46 h. Pres. William Kemp, V. Pres. Charles Cleminshaw, Sec. & Treas. Joseph J. Hagen, supt. L. C. Brown, Asst, Supt. C. H. Smith. 295 River si.

UTICA, N.Y.-Utica, Chinton & Binghamton St. R.R. 10 1-3 m, 4-8½ g, 43-56 lb r, 17 c, 82 h. Pres, Isaac Maynard, Sec. & Treas, Robt. S. Williams, Supt. Roger Rock. The Utica & Mohawk R.R. Co. 3¼ m, 4-8½ g, 25-04 lb r, 9 c, 5 h. Pres, Jas. F. Mann, Sec. Wm. E, Lewis, Treas, J. H. Sheehan. VALEBURGH, N. J.-Newark, So. Orange Ferry St. & Hamburg Place R.R. Co. VALEJO, CAL.-Valejo St. Ry. Co. VICENBURG, MISS.-Vicksburg St. Ry. Co. Hill City R.R. Co. VINCENNES, IND.-Vincennes St. Ry. Co. Hill City R.R. Co. VINCENNES, IND.-Vincennes St. Ry. Co. Hill City R.R. Co. WACO, TEX.-Waco St. Ry. Co. 5 m, 4-8 g, 14 18 hr, 9 c, 44 h. Pres, E. Rotan, Sec. & Treas. W. R. Kellum, Supt. J. W. Sedbury. WALTHAM, MASS.-Watham & Newton St. Ry, Co. 3½ m, 3-8½ g, 30 hr, 7 c, 18 h. Pres. R. E. Robbins, Sec. & Treas. Weitham & Newton St. Ry, Co. 3½ m, 3-8½ g, 30 hr, 7 c, 18 h. Pres. R. E. Robbins, Sec. & Treas. W. E. Boughton, Supt. Andrew Glass. Anacosta & Potomac River Ry. Co. 3 m, 4-8 g, 37 hr, 9 c, 24 h. Pres. H. A. Griswold, Sec. Edward femple, Treas. T. E. Smithson. Columbia R.R. Co. of the District of Columbia. 2½ m.-g, --hr, 19 c, 56 h. Pres. H. A. Willard, Sec. & Treas. Wm. H Clayette, Supt. Thos. E. Benson. Metropolitan R.R. Co. 01 χ m, 4 8 g, 35 lb r, 90 c, 400 h. Pres. George W. Pearson, V. Pres, A. A. Wilson, Sec. & Treas. Utilan W. Moore, Supt. L. W. Emmart Washington & Georgetown R.R. Co. 20 m, 4-3½ g, 21 br, 173 c, 550 h. Pres. H. Autrister & A. A. Koones, Gen, Supt. C. C. Saller. WATERFORD, N. Y.-Waterford & Cohoesfi.R. Co. 2 m, 4-3½ g, 451 br. Pres. Thos. Breslin, Sec. & Treas. C. O. Oraby, Leased by the Troy & Lan-singburgh R.R. Co.

WATERLOO, IA. Waterloo St. Ry. Co. 2 m, 3 g, 20 lb r, 2 c, 1 baggage wagon, 9 h. Pres. Loran W. Heynolds, Sec. and Treas. J. H. Kuhn, Man. M. K. Ken

WEST HAVEN, CONN.-New Haven & West Haven R.R. Co. 6 m, 4-8% g, 54 lb r, 24 c, 115 h. Pres.

501

Geo. R. Kelsey, Supt. W. W. Ward, Treas. D. Trow-bridge, sec. Sam'l L. Smith. WESTPORT, CONN.-Westport & Saugatuck Horse R. R. Co. 1% m, 45% g, 40 lb r. 3 c, 5 h. Pres. A. S. Hurlbutt, Sec and Treas B L Woodwerth, Supt E S Downe

Supt E S Downe WHEELING, W. VA.—Cltizens Ry. Co. 10 m, 5-2½ g, 45 lb r, 20 c, 55 h. Pres. Dr. C. A. Wingeiter. Sec. Van B. Hail, Supt. Michael J O.103. Wheeling & Elin Grove R.R. 7 m, 4-5½ g, 20 lb r, 12 c, 4 Ealdwin Motors. Pres. J. D. DuBols, Sec. E. J. Rutter, Supt. E. Hirsch. WICHITA, KAN.—Wichita City Ry. Co. 7½ m, 11 c, 60 mu, 4 b. Pres. B. H. Campbell, V. Pres., Treas. & Gen. Man. E. R. Powell, Sec. G. W. Lara-mer, Atty. E. C. Ruggles. With Explanation of the second states of the second st

WILKESBARRE, PA.-Wilkesbarre & Kingston

WILKESBARKE, PA.-Wilkesbarre & Kingston Pass, R.R. Coatville Passenger R.R. 2½ m, 4-8½ g, 20-24 lb r, 3 c. 10 h. Pres. Geo. W. Kitkendail, Supt. A. S Orr, Sec and Treus Geo Loveland. Capital, 502.675 WILLIAMSPORT, PA.-Williamsport St. R.R.

WILLIAMS OF CALL Front & Union St. Pass-enger Ry. Co. 1% m, 5-2 g, - 1b r, 7 c, 20 h. Pres. Geo. W. Bush, Supt. Sam'l A Price, Treas. E, T.

Geo. W. Bush, Capt. Co. 6 m, 5-2% g, 45 ib r, 19 Wilmington City Ry. Co. 6 m, 5-2% g, 45 ib r, 19 c, 80 b. Pres. W. Canby, Sec. & Treas. John F. Miller, Supt. Wm. H. Burnett. WINDSOR, CAN.—Sandwich & Windsor Passen-

WINDSOF, CAA.—Sandwich & Windsof Passen-ger R.R. Co. Windsor & Walkerville Electric Ry. Co. WINFIELD, KAN.—Union St Ry Co. 2½m 4 g, 28 lb r, 2 c, 8 mu Pres — Shuler, V Pres H E Silliman, Treas John D Pryor, Sec John A Eaton Capital, 325,000

Silitman, Treas John D Pryor, Sec John A Eaton Capital, \$25,000
WINNIPEG, MANITOBA, CAN.—The Winnipeg St. Ry. Co. 5 m, 48% g, 35 lb r, 13 c, 75 b. Pres. Duncan MacArthur, Sec. & Mangr. Albert W. Austin, Supt. Geo. A. Young.
WINONA, MINN.—Winona City Ry. Co. 4 m, 3-6 g, 27 lb r, 10 c, 39 h. Pres. John A. Mathews, V. Pres. B. H. Langley, Sec. & Treas. C. H. Porter.
WOBURN. MASS.—No. Woburn St. Ry. Co. 2% m, 4 8 %g, 40 lb. r, 5c, 4 h. Pres. & Treas. J, K.Car-ter, Supt. Dexter Carter.
WORCESTER. MASS.—Worcester St. Ry. Co.

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YOUNGSTOWN, O.-Youngstown St. R.R. Co. XOUNGSTOWN, O.-Zanesville & Mcintire St. Ry. Co. 3 m, 3-6 g, 38 lb r, 12 c, 54 m. Pres. J. Bergen, Sec. W. C. Townsend, Treas. T. B. Townsend.

NEW ROADS.

PLVMOUTH, MASS.—Plymouth & Kingston St. R.R. Co. 2% m. 4 8% g. r undecideo, 6 to 10 c, 10 to 12 h. Capital stock, 825,000. Joseph D. Thurber and others incorporators. Work to be begun in spring of 1887.

COVINGTON, GA.-W. C. Clark & Co. incorpor-ators and owners. 1 m, 20 or 30 lb r, 2 pass. c, 2 flat c, pass. cars for 1 h, 6 to 5 mu, or h. Work will be commenced by Nov. 1 or delayed until spring.

KANSAS CITY, MO.-Grand Avenue Ry. C (For officers see Directory). Now const.ucting: m, double track cable road.

m, double track canle toad. • **NEWTON, MASS.**-Newton St. Ry. Co. 5 m, 4 \$26 g, 5 c. 5 electric motors, 35 lb r. Pres. Horace B. Parker, V. Pres. Lucius G. Pratt, Treas. Herbert G. Pratt. Capital stock, \$50,000. Present office, \$7 Milk st. Boston, Mass. Work will be commenced and the road opened in the spring of 1887.

Mink Sir Josen, Sinks Wolf, Storff of 1887.
CHICAGO, HLL.—The Crosstown Pass. Ry. Co. of Chicago, 80 m, 48 1-2 g, 45 lb r, 75 c, 500 to 500 h. Pres. John J. Currar, Treas. Geo. P. Bunker, Sec. James A. Taylor. Capital stock, \$1,000,000. Gen. of-fice, room 18, No. 164 Washington st. Time of commencement of work undecledd.
OMAIIA, NEB.—Cable Tramway Co. of Omaha, 4 m, 48 1-2 g, 58 lb r, 10 c, each with grip: operated by cable. Press. S. R. Johnson, V. Pres. L. B. Williams, Sec. and Treas. C. E. Yost. Chief Engineer Robert Gillbam, Capital stock, \$300,000. General office, 215 South 15th st.

SCRANTON, PA.--Scranton Suburban Ry. Co. In process of construction, will use electric motor on Van Depoele system. To be in operation about Oct. 4,1886.21-Sm, 4-81-2g, 52 and 40 lb r, number of cars undecided. Pres. Edward B. Sturges, Treas. T. F. Torrey, Sec. Geo. Sanderson.

PITTSBURG, PA.-Wilkinsburg and East Liberty Ry. Co. 3 m, 481-3 g, Johnson T rails, Pres. Ed. Jay Allen, Sec. and Treas. W. H. Allen. To use about 5 c and 20 h. Not decladed when road will be opened. Capital stock, \$15,000. Present office, 517 Wood st.

SAN FRANCISCO, CAL. The Powell & Jack-son St. R.R Co. 11 m, 3-6 g. Pres, W. J. Adams, V. Pres, H. H. Lynch, Treas, W. H. Martin, Sec, G. H. Waggoner, Capital stock, \$2,000,000. Work in pro-gress, Cable traction.

SAVRE, PA.-Sayre St. Ry. Co. Pres. Howard Imer. No work done.

UTICA, N. Y.-Utica Belt Line St. Ry. Co. 8 m, 15 c. Pres. Dr. C Teffi, V. Pres, W. A. Jones, Sec. and Gen. Man. Isaac J. Grifith, Treas. Chas. W. Mather. To be opened about Dec. 1. Work now in progress.

Write us for sample copies for your

friends.

Street Cars in the City of Mexico,

The District Railway company operates 150 kilometers of track, or about 93 miles English measure. Its rolling stock consists of about 139 first-class cars, 65 second-class cars, 46 platform cars for transporting furniture, merchandise, etc., 26 funeral cars, and 26 wagons for transporting material and fodder. The company owns 1,500 mules, eight estates in the city, aud twelve in the suburbs. It transports nearly 10,000,000 passengers yearly. Fares range from 3 to 23 cents, according to distance and class, but in the limits of the city proper the first-class fare is $6\frac{1}{4}$ cents, or a medio equal to 5 cents American money.

The divisions of the cars into first and second classes will be noted. This is an excellent idea, for people who want good company pay double what those particular are charged. The first-class cars are painted yellow and the second-class green. These cars runs in "trains" of two or three. There is always one first-class and ono second-class car in a "train." On long distances sometimes two first-class and one second-class car are run, and sometimes four cars.

The hours for running cars are from early morning until 9 P. M., and on some lines stopping at 7 P. M. There is no all-night service anywhere.

There are a few short open cars, but a great majority are closed cars, with the windows down except in cold or rainy weather. Everybody smokes as much as he pleases on any car, from conductor to driver. Smoking is so universal here that a prohibition of smoking would make the peoplo rise in revolt. Sometimes, I regret to say, the conductor has a novel, and reads slyly, to the neglect of passengers hailing his car from the sidewalks. The conductors do not take up tickets, but these are gathered by inspectors, who board the cars at regular stations, and after collection, make a comparison of books with the conductor. This system is said to work very well.

Conductors are paid from \$1 to \$2 per day; inspectors, \$1.50; drivers, 75 cents. Deduct from this 20 per cent, to get the equivalent in American currency. This would make the pay of a driver 60 cents,

The city lines are 14 in number, and there is a system called the "circnit" system—not exactly a belt railway, but a system of narrow-gauge tracks running away through the city, up one block and down another. These lines go east, west, north and south, aud really form a useful feature of the system. There are seven narrow gauge circuit roads.

A novel and very useful feature is that of platform, and even box cars, in which furniture or goods are moved from point to point. Pianos are largely carried in this manner, and costly mirrors and such fragile goods. A platform car, to a point four miles out, costs but \$3 or \$2.40 American money. Six dollars pays for a service to the distance of 12 miles. Not over 7,000 pounds are allowed on a single car. I should think this feature might advantageously be introduced into the street car service of the United States, especially in cities where the lines are not crowded with passenger cars.

The tourist in Mexico frequently sees, slowly traversing the city streets, black, lugubrious-looking platform cars, and the canopy of the same somber color. This is a funeral car, and following it there will be one or two cars filled with mourners, all on their way to some neighboring cemetery. The coffin is in plain sighton the funeral car. In the case of young children white cars are used. This service costs from \$4 to \$12 per car, according to the class, and is the usual mode of conducting a funeral here.

Although the etiquette of a Mexican street car is free and easy, and men smoke inside or on the platform, women are invariably treated with respect, and half a dozen men will get up and give place to any woman, young or old, rich or poor. The Mexican gentlemau has all the courtesy for which the Latin races are famons, and life is smoothed and its angles rounded by the constant courtesy of this most polite nation. Do not imagine that because people smoke in the street cars their interiors resemble the American railway smoker—all filth under foot and the air befouled with rank cigars and old pipes. The windows of the car being generally open, a constant current of air drives the smoke out of the car, and one hardly notices that smoking is going on.—Boston Herald.

A Boston Scene.

An open horse car. A young woman sitting at the end of a seat. A father with a crippled boy in his arms waiting for the well-dressed young woman to move along and make it easier and safer for the cripple. A stolid and heartless refusal of the passenger fo change her place a little.

Probably the selfish and indifferent woman would resent the imputation that she was heartless in such an act.

The 14 miles of street railway in Glasgow are owned by the city, and bring to the treasury a rental of \$76,000 annually. There is no uniform rate of fare, but a penny a mile is charged, with reduced rates morning and evening, when the working people travel.

STREET RAILWAY STOCK QUOTATIONS.

Corrected by H. L. GRANT, 145 Broadway, N. Y. City. New York Stocks. Asked. Par. Amount. Period. Rate. Date. Bid. January, July, January, June, July, July, July, July, January, April, January, January, Bleecker St. & Fulton Ferry J. & J. J. & J. \$900,000 1886 $28 \\ 116 \\ 220$ 30 125 lst mort..... Broadway & Seventh avenue..... 1,000 700.00 725 1900 J. & J. Q.-J. J. & D. J. & J. 2.100.000 100 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1886 240 $\begin{array}{c} \begin{array}{c} & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ &$ st mort..... 1 mort. 1904 $104 \\ 103$ $107 \\ 106$ lst mort. 2d mort. Broadway Surface Guaranteed.... Additional.... Brooklyn City—Stock. 1st mort. Brooklyn Crosstown 1st mort bonds. Central Park North and East river. Con, mort. bonds... Christonber & Tenth 1914 555254727 1914 1924 1905 1886 1886 1886 1886 103 100 100 190 106 100 100 195 110 1121/2 J. & J. Q.-J. J. & D. F. & A. A. & O. Q.-F. M. & T. Q.-F. J. & D. F. & A. Q.-F. A. & O. 100 January, December, 1886 1902 115 118 1,000 122135 Con, mort. bonds..... Christopher & Tenth..... 2% February, 7 October. 100 1886 132 135 October, 1898 Bonds. Central Crosstown. 1,000 110 116 January, November, February, June, August, 134 1886 165 1,000 1,000 500 100 100 1001886 1922 1886 1893 1914 1886 1893 $160 \\ 114 \\ 160 \\ 114 \\ 105 \\ 001$ mort 115 165 1165 107 1st East B'way & Battery.... Dr Doci ist mort consol..... p. Grand St. Ferry..... August, April, 225 111 1,000 136 100 $\frac{38}{109}$ 40M & S. J. & J. 1910 $\begin{array}{c} M & \& S, \\ J, \& J, \\ Q, -J, \\ F, \& A, \\ Q & -F, \\ J, \& J, \\ J, \& J, \\ M, \& N, \\ M, \& N, \\ M, \& S, \\ J, \& J, \\ Q, -F, \\ J, \& J, \\ M, \& N, \\ \end{array}$ 110 1.000 1,000 1,000 100 100 100 5001,200,000 1,600,000 1,000,000 62 1915 58 60 October, 1915 1886 1914 1885 1894 1886 1909 205 210 October, August, July, July, November, May, August, July, February, January 110 130 113 190 107 000 $105 \\ 120 \\ 112 \\ 185 \\ 106 \\ 103 \\ 200$ 627557 $\begin{array}{c} 1,000,000\\ 1,000,000\\ 250,000\\ 500,000\\ 1,862,000\\ 550,000\\ 1,050,000\\ 2,000,000\\ 2,000,000\\ \end{array}$ 100 1,000 1888 100 1,000 1885 $\frac{210}{116}$ Sixth Avenue. Ist mort... Third Avenue—Stock. Ist mort.... 23d St.—Stock. Ist mort. Ninth Avenue. Chicago St. Railway. 1890 112 2,000,000 2,000,000 600,000 1001886 260 280 1.000 January, 1890 $\frac{110}{265}$ 112 275113 120 325 M. & N M. & N May, May, 1885 573 1,000 100 100 250,000 800,000 1893 110 110 299 September, 1885

Phila. Street Railway Stocks.

Corrected by ROBERT GLENDINNING & Co., 303 Chestnut street, Philadelphia, Pa. Par. Period. Amount. Rate. Date. Bid. Asked. Citizens Continental. Frankford £ Southwark Germantown. Green & Coates. Hestonville Lombard & South Q.—J. J. & J. Q.—J. Q.—J. Q.—J. \$500,000 1,000,000 750,000 1,500,000 50 50 50 50 50 50 121 126 95 $5_{00},000$ 2,050,000 500,000 1,500,000 29 ombard & South..... $\frac{50}{50}$ Lombard & South. People's...... Philadelphia City. Philadelphia & Gray's Ferry. Philadelphia Traction. Ridge Avenue. Second & Third...... Seventeenth & Nineteenth. Thirteenth & Firteenth. Union. 40 $\begin{array}{c} 1,500,000\\ 1,000,000\\ 617,500\\ 5,000,000\\ 750,000\\ 1,060,200\\ 500,000\\ 1,000,000\\ 1,000,000\\ 1,250,000\\ 750,000\end{array}$ J. & J. J. & J. 145 85 78 240 204 50 50 50 77% J. & Q. Q. - J. J. & J. J. & J. J. & J. J. & J. 50 50 50 50 50 203% 152 200 West Philadelphia...

SPECIAL NOTICES.

Rates for Special Notices.

Advertisements of Street Railway Property "Wanted" or "For Sale," "Positions Wanted" or "Men Wanted," or similar matter inserted under his heading at 10 c, per line, eight words to a line. The name of the advertiser kept confidential when desired. Replies may be addressed "Care of STREET RAILWAY JOURNAL," at its New York, Chicago, Philadelphia and Boston Offices, as is most conven-ient to the advertisers. Replies will be forwarded, if desired. Excellent results have been realized by ad-vertisements in this department.

FOR SALE-First class street railroad property opportunity for an investment on account of present owner's time being demanded for other interest. Ad-dress, Banker, care STREET RAILWAY JOURNAL, 32 Liberty street, New York.

WANTED-A party with \$50,000 to \$75,000 to form a Company for Con olidating several Street Car lines in a large and growing city. A good opportunity. A valuable franchise. Address, "CONSOLIDATION," STREET RAILWAY JOURNAL, 32 Liberty street, New York,

ANTED-A thoroughly reliable man exper-lenced in Street Raliway practice, to organ-ize and manage a company, for the introduction of a new system of propulsion. Patentee will turnish capital. An exceptional opportunity for a man of large street raliway acquaintance and with the en-ersy and judgment requisite to success. Address, IXION, STREET RAILWAY JOURNAL Office, 32 Liberty Street, New York Clty.

ANTED-A party with Capital to take one-half interest in horse and cattle grooming machine, now ready for operation, fully covered by patents. Will sell whole or one-half interest. Full control given in either case. Patentee has other business. Cannot give it his attention. Address, SAFETY, care STREET RAILWAY JOURNAL, 119 South 4th St., Phila., Pa.

Sweepers of other makers taken in exchange which will be sold thoroughly refitted very low on early orders. "Kattan tower than ever hefore. Write for prices. Address, Brooklyn Railway Sup-ply Co., 37 Walworth st., Brooklyn, N. Y.

S UPPLIES WANYED-Wc anticipate building short line Street Ratiroad, gauge 3% feet; need two or more light-passenger cars and two or more flats and all supples except Iron. Address, S. W. S., Aivardo, Tex.

FOR SALE-Three NEW one-horse cars, never have been used. Built by Jones of Troy, with Fare Boxes, fitted with andrews & Clooney wheels. For sale low. The road for which they were built never having been completed. Address "W," this office. Office.

WANTED AT ONCE-Good second-hand cars, both one and two-horse. Address, BROOKLYN RAILWAY SUPPLY Co., 37 Walworth St., Brooklyn N. Y.

WANTED-Position as Superintendent or Fore-man with some good street rainoad, hy a thoroughly practical and experienced street rainoad man who has had 15 years' experience in the busi-ness; can refer to some of the most prominent street rainoad men of the country. Address R. P. A., care STREET RY. JOURNAL, 32 Liberty St., New York.

WANTED-Small size of T rail either steel or iron, 12 lb. to 20 lb. weight, new or second hand if in good condition for relaying. Adress L, this office, stating quantity, price and where seen.

MANTED -A reliable man as stable and track foreman who has had some experience in the street raliway business. Address Eric City Pass. Ry. Co., care of Jacoh Berst. Supt., Erie, Pa.

FOR SALE—Three second-hand Turntables 7ft. 6in. in diameter, with guide plates all complete; suitable for narrow-gauge roads of the Fulton Foundry, Cleveland, Ohio, pattern. Address Frank 11. Andrews, 545 West 33d st., New York City.

WANTED-Position as Superintendent on a street railroad hy an experienced man N. Y. City references. Willing to go South or West. Parties wishing a good, steady man, and one ahle and willing to look sharp attcr all the minute details of a road, will please address superintendent, care STREET RAILWAY JOURNAL, 32 Liberty St., New York.

FOR SALE-Street Railroad connecting two live Manufacturing towns. Forty horses, 9 cars. We have exclusive franchise for 25 years. New road, Good Business. Address, HORSE RAILROAD, care STREET RAILWAY JOURNAL, 32 Liberty St., New York.

W ANTED.—Position on the construction of street railways. An thoroughly acquainted with all details, estimates made for same, measure-ments taken for curves, switches, frogs and cross-ings of all shapes and angles. Would engage with railway switch works. No objection to going out of the country for few months or year. Address "CON-TRACTOR," care ST. KY. JCUB-AL, 119 South 4th St., Philadelphia, Pa.

FOR SALE.

Six Second hand One Horse Street Cars.

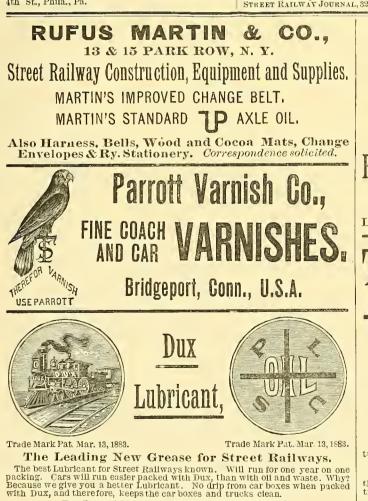
Ten Second Hand Two-Horse Street Cars.

Steel Rails, T and Street Patterns, all weights.

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Old Street Rails Purchased,

HUMPHREYS & SAYCE, No. | Broadway, New York.



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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. Please ship us one (1) bbl. and ohlige. Yours truly, MANUFACTURED BY The Leib Lubricating Co.,

196 & 198 CHICAGO STREET, - - BUFFALO, N.Y.



RAILWAY MECHANICS 2 METHODS. American Railway Pub. Co.

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Their Construction Tramways:

and Working. Embracing a Comprehensive History of the System; with an exhanstive Analysis of the varions Modes of System; with an exhanstive Analysis of the various Modes of Traction, including Horse-Power, Steam, Heated Water and Compressed Air; a Description of the Varieties of Rolling Stock; and ample Details of Cost and Working Expenses: the Progress recently made in Tramway Construction, &c., &c. By D. KINNEAR CLARK, M. Inst., C. E. With over 200 Wood Engravings, and 13 Folding Plates. Two Vols., large crown Svo, 30s, cloth. Price \$12.

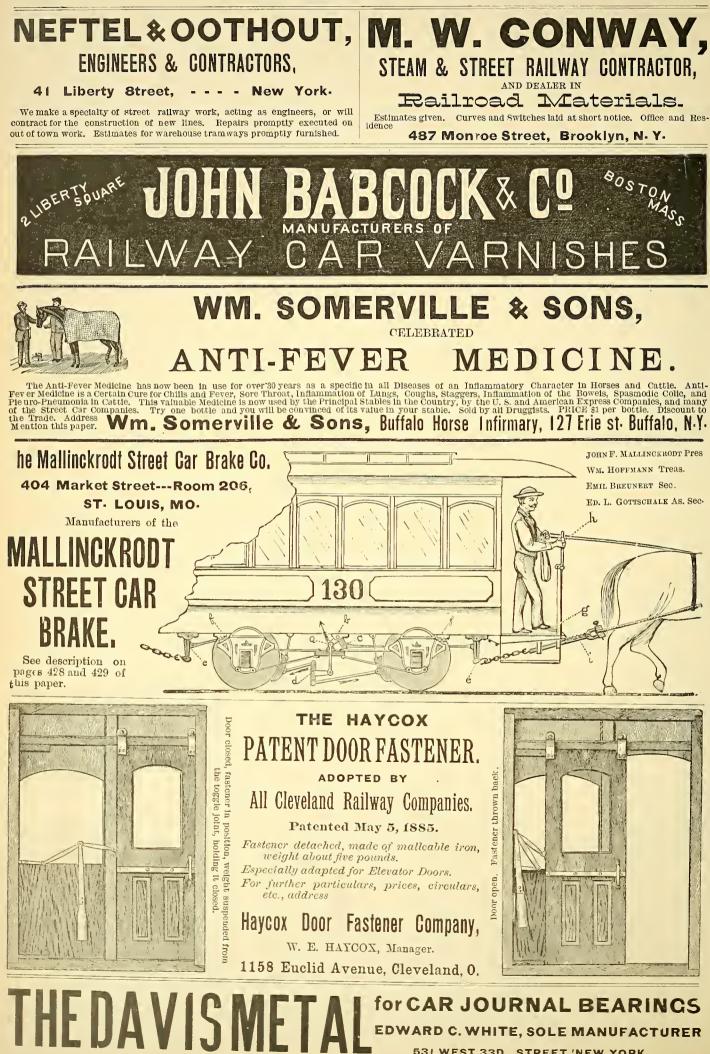
"All interested in tramways must refer to it, as all railway engineers have turned to the author's work 'Railway Machinery.""-Engineer.

"An exhaustive and practical work on tramways, in which the history of this kind of locomotion, and a description and cost of the various modes of laying tramways, are to be found."-Building News.

"The best form of rails, the best mode of construction, and the best mech anical appliances are so fairly indicated in the work under review, that any engineer about to construct a tramway will be enabled at once to obtain the practical information which will be of most service to him."—Athenæum.

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OCTOBER, 1886.

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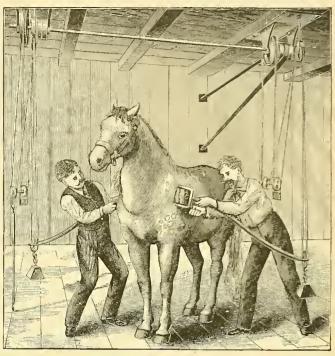


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Get our prices before buying.

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The brush is caused to revolve by gear wheels actuated by a flexible shaft, Both hands free to handle brush. Swings and turns in any direction. Direc-tion of motion quickly changed. The cheapest and best Grooming Machine yet invented. Motion supplied by hand, steam or animal power. Rights to use or manufacture. For full particulars an i rates apply to

a water-tight socket and made rust and dust proof. It i CHARLES E. BERRY, Cambridge, Mass.

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They have the advantage of easy adjustment. No buckles or straps are used. They can be applied in an instant, being fastened to the collar. The collar is vided and there is no strain upon the collar or the eyes of the horses. In case of accident the whole harness can be removed at once. They are adapted to the use of Fire Departments, Horse Railroads, Express Wagons, Teams and ght Carriages, and are in use in over one hundred cities and towns in the United States and Canada. REGANPATEN They are made of the best gun metal and multeable from, with a brass spring which is inclosed in a mpossibility for it to become detached. Write for it ustrated catalogue and prices.

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508

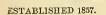
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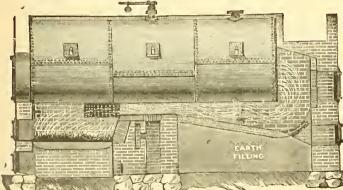
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ARMINGTON AND SIMS ENGINES, Belting direct to Power Dynamos without using Shafting.

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Street Railway Car Builders

WEST TROY,

NEW YORK.

PENNSYLVANIA STEEL COMPANY,

MANUFACTURERS OF

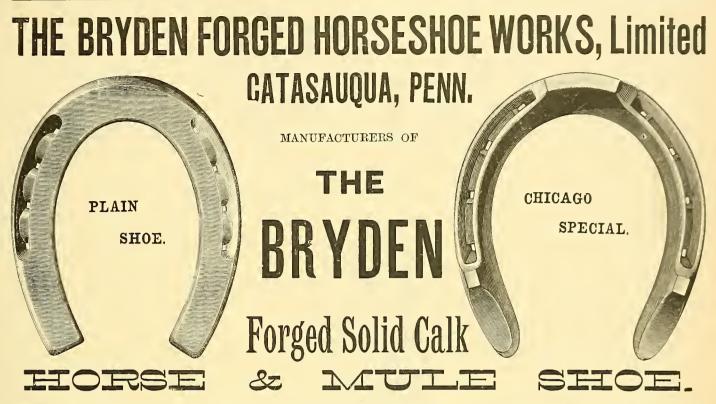
STEEL RAILS

Of **T** patterns, weighing from 16 to 76 lbs. per yard. CENTRE BEARING Street Patterns, 42 to 60 lbs. per yard, TRAM Street Patterns 45 to 47 lbs. per yard, and Street Patterns for STEAM ROADS.

> WORKS AT STEELTON, DAUPHIN CO., PENN.

NEW YORK OFFICE,

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These shoes are forged into shape under heavy drop hammers, greatly condensing the iron and adding very much to wearing qualities, making it nearly equal to steel in durability.

The distinctive feature of our system of manufacture is, that it produces a *finished* shoe, calked, or plain, ready for attaching to the hoof.

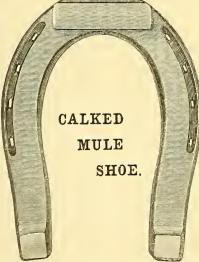
The crease is made low and the nail holes are punched well in and beveled to permit the nailhead to be well driven in, reducing the strain on the nails and insuring a firmly fastened shoe.

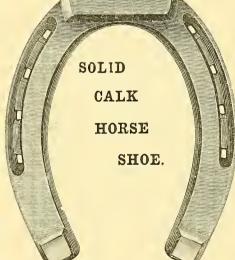
The foot bearing of the shoe is level, thus materially aiding in the preservation of the hoof.

It is not ne essary to heat the shoe in order to fit it.

There are no welds in the shoe to break, the calks being solid forged up from the web.

OUR CALKED SHOE. A good, strong, reliable shoe to have on hand. The calks will not come off. Always ready to nail on. A handy shoe for the Winter, easily sharpened, and, as the calks will not break, will give as much service as steel. Made in sizes No. 1 to No. 6. Front and hind of steel or iron.





The shoes have a good substantial clip drawn up from metal driven outside the regular outlines of the shoe for that purpose. The outer edge of the clip, when drawn up, coinciding with the outlines of the shoe, requires no robbing of the hoof wall to let in the clip.

Having ample capital and bei. g equipped with the most modern and best machinery, and using only the best grades of material, we are confident of our ability to furnish consumers the best, the longest wearing, the cheapest and the most satisfactory shoe in the market. Our shoes are now extensively used by the largest street railway companies in New York city, Philadelphia, Chicago, New Orleans, Buffalo, Washington, D. C., and Brooklyn.

We present illustrations of some of the many designs of shoes manufactured by us.

OUR FROG PRESSURE SHOE. The advocates of the frog pressure system of horseshoeing have in this shoe the very thing they want. The best shoe made for curing corns or contracted feet. Made in sizes No. 1 to No. 6. Front and hind, iron, or steel.

OUR PLAIN SHOE. "The best railroad shoe made," so says one of the largest consumers of horseshoes in New York city. This shoe is used by the largest street railroads in New York city and Philadelplia. Made in sizes No. 1 to 6. Front and hind.

OUR CHICAGO SPECIAL. Designed to meet the wants of many of our western customers. Extensively used in Chicago, on the principal railroads and for custom work. A light calked ahoe for shoeing trotting and driving hors(s. Made in sizes No. 1 to No 4 of iron or steel.



OUR CALKED MULE SHOE. Just the thing for street railway and coal mining work; solid calks. Made in sizes No. 1 to No. 5 in iron or steel.

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ALL OF THE STREET RAILWAY LINES IN

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CITY OF BROOKLYN, NEW YORK

ARE IN SUCCESSFUL OPERATION ON RAILROAD LINES IN THE UNITED STATES AND CANADAS, AND GIVE ENTIRE SATISFACTION THESE CAR HEATERS

For Warming Horse or Street Railroad Cars.

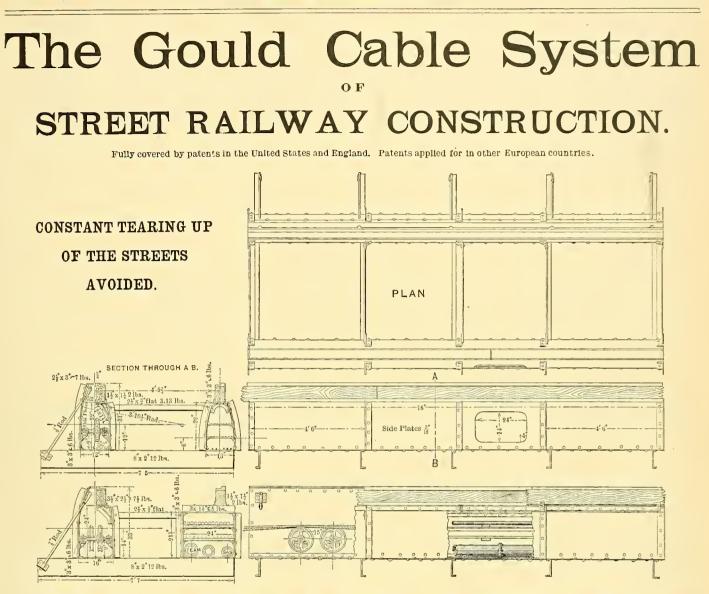
It is Brick Lined, has Rotating and Dumping Grate, and Safety Door Catch.

It is nea in appearance, occupies but little space, is an ornament to a car, is not costly in price, nor expensive in its operation.

SOLE MANUFACTURERS

NATIONAL STOVE CO.,

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The conduit is placed at the side, doing away with the central conduit entirely. A conduit is supplied for natural gas, steam, electric and telephone wires, etc.

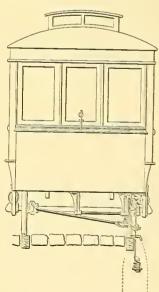
THE RAILS ARE TIED TOGETHER AT THE SURFACE.

The construction of the grip is the simplest known.

The slot which admits the grip is placed outside the rails.

The inventor will make favorable terms with parties desiring to put this system in to operation.

A capital chance for the right man to organize a company.



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N. B.-Parties Infringing on this Grip will be Prosecuted to the full Extent of the Law.

Address all communications to

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Open Wheels of all sizes & weights.

Wheels and Axles of all sizes fitted on short Notice.

Chilled curve rail, Turnouts, Switches, etc., etc. Blue prints and Bills Furnished on Application.

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Ornamental to any Car.

REDUCTION IN PRICE WHERE TWO BOXES ARE PLACED IN ONE CAR.

Roads Equipped with Boxes on Trial, and if not Satisfactory, Returned Without Any Expense to the Company trying them.

Patented Oct. 14, 1873.

BOX NO. 1. BOX NO. 2 CHARIOT PATTERN. One of the principal merits of these Fare Boxes over all others, consists in the fact that the fares are not turned out of sight at once by the drivers, leaving nothing but the bare word and memory of the parties as evidence of the payment, thereby making it easy for deception to be practised, even though an officer is on the car, and is endeavoring to see that the driver is faithfully performing his duties. They are so constructed that the fares are kept in sight from one end of the road to the other, and at any point on the line an officer of the company, or indeed any other person, can taily passengers with the fares. The drops can easily carry from 75 to 80 fares, and can be countee without mistake, and counterfeit money can be easily detected. These boxes are very simple in construction, being cleared, when required, in five minutes, whereas any other box takes a much longer time. The glass fronts and drops render them so transparent that a person suiting in the further end of car can readily count the fares and make the taily, without making himself conspicuous in the matter, if desirable. They are lighted from an outside lantern, (which is only on the car at night, and should be taken off during the day,) giving an excellent light, for the fares can be seen all most as plain as by day. When the box is put in a car it can not be taken out or tampered with, unless the keys are obtained from the office, and can not be robbed without violence. Special attention given to correspondence on the subject of street railway construction, equipment and operation. Address all correspondence to

A. A. ANDERSON, with TOM. L. JOHNSON, Indianapolis, Ind.



MANUFACTURERS OF

Railway Switches, Stands, Frogs and Crossings.

ALL SUPPLIES FURNISHED APPERTAINING TO

Steam & Street Railways.

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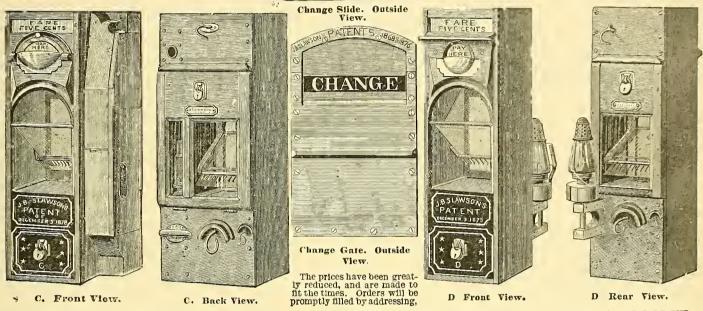
Office, 307 Walnut Street, Philadelphia

SLAWSON'S PATENT FARE BOXE

These Boxes are of the latest and most approved pattern, and contain a front door, by opening which all of the glass inside 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 pur-pose. They are well made and not liable to get out of order, cannot possibly bepicked, 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-

CHANGE PATENT 1877

TEM," and all of his Boxes, Change Gates and Drivers' Change Box are protected by several patents, and par-tles using them are not ilable to claims for initinge-ments, 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 Ameri-ca, Europe, Asia, Africa and Australia—in fact, nearly all places where street cars are used.



NEW YORK. MILTON I. MASSON, Agent, 365 AVENUE A, or the JOHN STEPHENSON COMPANY, Limited, 47 EAST TWENTY-SEVENTH STREET, New York.

WM, WHARTON Jr. & CO Limited,

Engineers, Manufacturers & Contractors,

Twenty-Fifth Street and Washington Avenue,

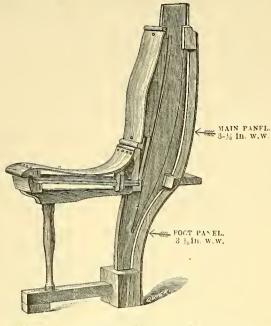
PHILADELPHIA, PA.

CABLE RAILWAYS, GRIPS,

And All Appurtenances.

The Oldest and Largest Manufacturers of Street Railway Track Appliances in the World. Responsible parties conemplating Building, Benewals or Extensions will find it to their interest to correspond with us.

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 railway lines, which test has jeft them as firm and good as the day they were put in, we unhesitatingly place these sides in the market as a superior article. They are composed of three white wood (or popiar) 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:

They are fully 75 per cent stronger, for they brace and stiffen the 1st. car.

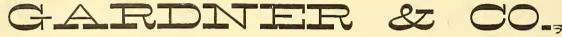
2nd. They are lighter, being only 3-8 inch thick, and so do not add so much dead weight to the car.

3rd. They will not check or split by change of atmosphere.

. They will not split or crack when nailing into place, even though the nail be placed near the edge. 4th.

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.

car. For repairing cars these sides have no equal. **Our Three Ply Car Sents and Backs**, so well known all over the world-are now the most popular seat and back in the market, and recommend them selves especially for their *Lightness*, *Cleanliness*, *Healthfulness and Beauty*, as also their *Cheapness and Durability*. For they are indestructible by moths (the great enemy of uphoistering), and will not harbor vermin or insects, or carry or communicate contagion or disease. Our trade in thus 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 customer. 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 greaty 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 general-ity used are *Birch*, *Birdseye Maple*, Oak and Mahogany.



Manufacturers of Car Seats and Ceilings and Depot Seating,

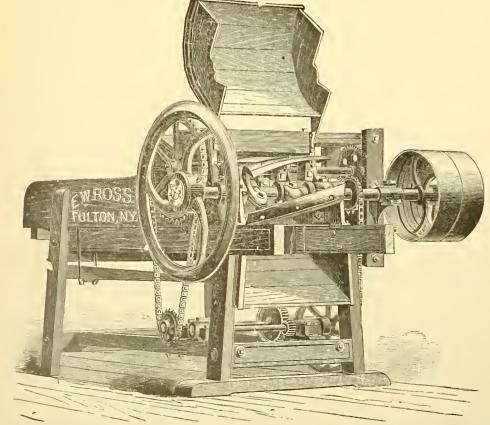
OFFICE AND FACTORY: 643, 645, 647, 649, 651, 653, 655 and 657 West 48th St., New York.

Sample and Salesroom: 206 Canal St., cor. Mulberry.

Send for Catalogue.

Address all Communications to Office.

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A FULL LINE OF CUT-TERS BUILT EXPRESSLY FOR STREET RAILWAY BARNS.

THEY HAVE COM-**BINED STRENGTH, DURA-**BILITY AND GREAT CA-PACITY.

ARE EASILY OPERAT-ED AND CAN BE RUN TO CAPACITY FULL BY SMALL GAS ENGINE.

MACHINES SENT T₀ ANY PART OF THE U.S. ON APPROVAL IF DE-SIRED.

GUARANTEED TO BE THE BEST.

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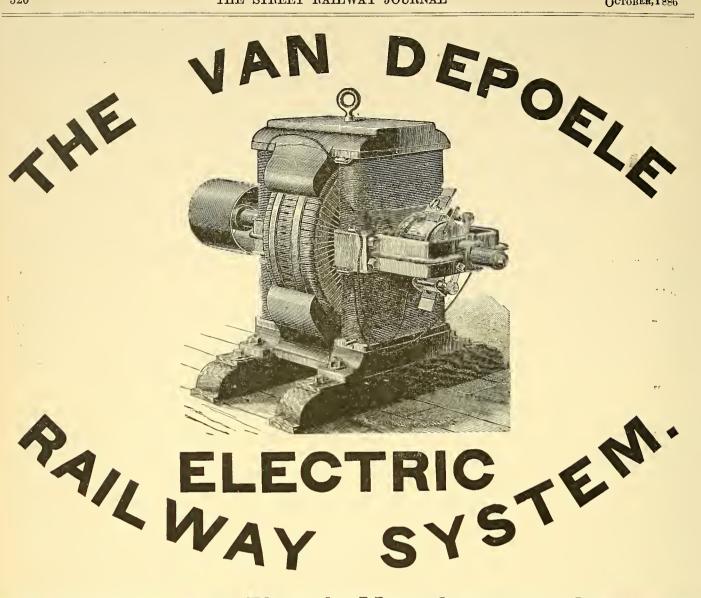
518

OCTOBER, 1886

CAR BOX COMPANY, MANUFACTURERS OF The Bemis Patent Box. Journal 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. 30 Taylor St., Springfield, Mass. Baltimore, LA.

Manufacturers of Cable Railway Plant. Machine Moulded Gearing for Mills and Factories.

519



The Van Depoele Electric Manufacturing Company

21 NORTH CLINTON STREET, CHICAGO, ILL.,

Owning the Van Depoele Patents for Electric Railways and for Van Depoele Motors, are prepared to equip railways with their Electric System.

We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates to new companies or those desiring to extend lines or wanting more rapid transit.

Van Depoele Electric Manufg. Co.

MANUFACTURING

MANUFACTURERS AND OWNERS OF THE Latest Designs, Improvements and Inventions in Registers, Indicators, Classifiers and Punches, for the Recording of Fares Collected on Street and Steam Railroads.



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COMPANY.

This company owns over 100 Patents (mbracing all the Valuable Features of Fare Registers, Indicators, etc., and was awarded three Medals at the Chicago Exposition of Railway Appliances.

Benton Register.

The Alarm Registering Punch.

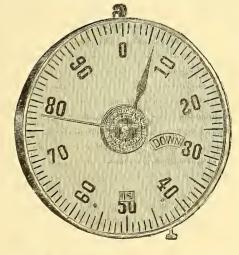
This Register, which is so generally used throughout the United States and Europe, we claim to be the most perfect check that has ever been placed before the public for the Collection and Registration of Fares on Street Railroads, especially where different rates

2203

R

of Cash fare and tickets are to be collected.

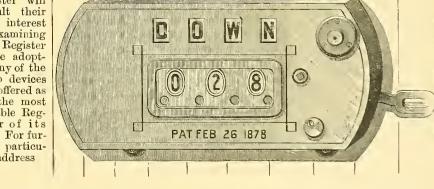




Railway com-panies desiring to use a Stationary Register will consult their own interest by examining this Register before adopting any of the cheap devices now offered as it is the most Reliable Register of its kind. For further particu-lars address

The Pond Register.

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BEADLE & COURTNEY, Gen'l Agents, 1193 BROADWAY, NEW YORK. Branch Office, 423 Walnut St, Ph'a

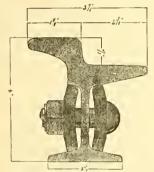
THE GIRDER SYSTEM OUR SPECIALTY.

THE

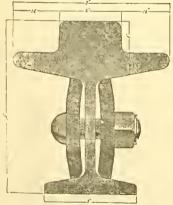
Johnson Steel Street Rail Company.

JOHNSTOWN, PA.

Section C. 38, No. 111.



Patented February 20, 1883.5 Section E. 76, No. 117.



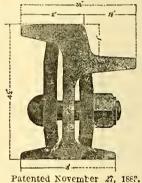
Patented January 29, 1884

SIDE BEARING GIRDER RAILS

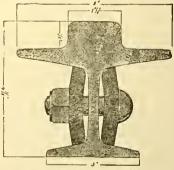
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CENTER BEARING GIRDER RAILS.

Large Assortment of different Weights and Sections. Section D.45, No.11.



Section G. 58, No. 120.



Patented January 29, 1884.

Rolled Steel Switches, Frogs, Curve Crosses, Etc.

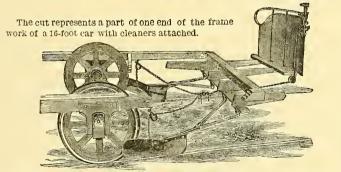
We Furnish Every Detail Wanted in Track Work.

Our customers are guaranteed against all suits for infringements on goods purchased from us and we further undertake to defend the patents covering the details of our Girder System.

To those contemplating the use of the Girder System, we offer, FREE OF COST, to survey their routes, and after consultation as to the best and most economical construction, to furnish tull and complete estimates of cost of the completed work. Send for Illusrated Catalogues.



DAY'S IMPROVED STREET RAILWAY TRACK CLEANERS.



These Track Cleaners need no extended statement of their great superiority over all others invented. The fact of over three thousand pairs being now in use is sufficient evidence of their necessity and utility. Are adaptable to all kinds of rails and styles of cars. Clean Snow, ice. Mud and Stones from the rail. The driver can raise or lower them instantly with one hand. To secure the largest benefit they should be attached to every car. No estimate can be made of their advantage in saving of horseflesh hand labor, salt, and the making of time in stormy weather. Since their introduction new and valuable improvements have been made in their construction, mode of at-cachment, and convenience of handling. They are finished in a thorough, work-manifike manner of the be-t material obtainable, the design being to manufac-ture the most efficient article in preference to other considerations. Price in-cludesright of use and is set shan heretofore. Reference is made to a few of the roads using these Cleaners.

Reference is made to a few of the roads using these Cleaners.		
Detroit City Ry., Detroit, Mich	.154	Pair
Chicago Clty Ry, Chicago, IlL.	. 400	6.6
Rochester Clty & Brighton R. R. Rochester, N. Y.	.100	6 1
Albany Ky., Albany, N. Y.	, 75	4 +
Lynn & Boston R. R. Boston, Mass	. 68	
Boston Highland Ry, Boston, Mass	. 46	
Grand Raplds Street Ry	, 48	**
Naumkelg Street Ry., Salem, Mass	. 69	66
Bridgeport Horse Ry., Bridgeport, Conn	, 40	46
Cream City Ry., Milwaukee, Wis.	. 40	11
Mllwaukee Clty Ry., Milwaukee, Wis	. 50	56
Buffalo Street Ry., Buffalo, N. Y.,	. 32	66

This cut represents my Snow Plow, 23 of which are now in use. With four horses and two men they have handled two feet of snow, distributing it nine feet from the outside rail. DAY'S DETROIT SNOW PLOW

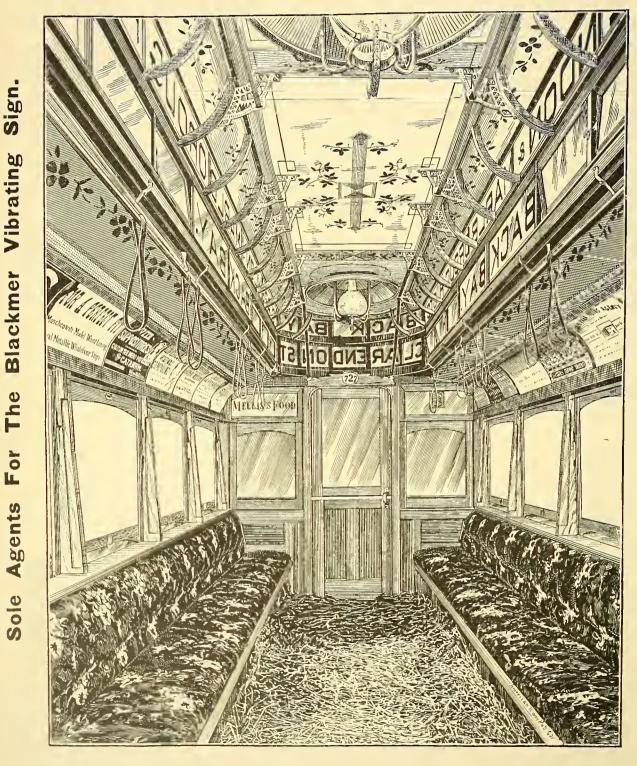
523

It is adapted to single or double track roads, adjustable where necessary; bulk in the most thorough and substantial manner of the best materelal. The Plow is not intended to supply the place of the small Track Cleanrs, but be auxiliary to them. For execution in deep snow, case, and convenience inhandling, it sur-passes 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., De-troit, Mich. (Two plows.) Rochester City & Brighton R.R., Rochester, N. Y. (Two plows.) Cream City Rr., Milwaukee, Wis. West Side Street Ry., Mil-waukee, 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. Min-neapolis St. Ry., Minneapolis, Vinn. (Two plows.) St. Paul +t. Ry., St. Paul. Minn. (Two plows.) Kalamazo ost. Ry., Kalamazoo, Mich. Worcester St. Ry., Worcester, Mass. South Bend Ry., South Bend, Ind. Milwaukee City Ry., Milwaulter, Wis,

Detroit, Michigan, U. S. A.

For Further Information and Price, Address:

The United States Steam and Street Railway Advertising Company, Limited,



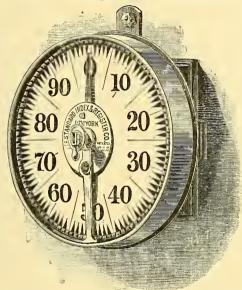
Sole Agents For The Randall **Car Advertising Rack**

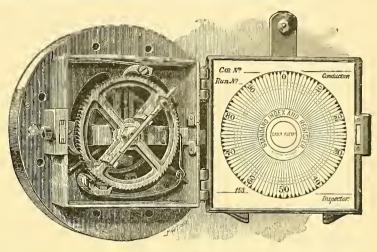
Contractors For Advertising Space in Street Railway Cars. WM. F. CARLETON, Manager, 239 Broadway, N. Y. P. O. BOX 2366.

THE STANDARD INDEX & REGISTER CO., NEW YORK. SOLE LICENSEES AND MANUFACTURERS OF STANDARD **REGISTER.** INDEX THE ANU

ADOPTED BY THE LEADING RAILROADS IN THE UNITED STATES.

For Indelibly Recording upon paper the number of trips made, and passengers carried for each trip as well as for any number of trips for any period of time, and sounding an alarm simultaneously with each registration made.





The recent decision of the U. S. Circuit Court in our favor after three years of litigation in which the Standard was involved, justifies us in accepting orders

of litigation in which the Standard was involved, justifies us in accepting orders from railway companies generally for our Registers, which are celebrated for sim-plicity efficiency and *infallibility* as an indicating and .ecording register. It will appear obvious upon inspection that the Standard Register is the only device that should be adopted by railway com-panies anxious to secure a correct report and record of trips made and fares collected, for the reason that, in addition to the visual dial and indicator, a permanent registration of each trip made, and the exact number of fares collected or passengers carried, is auto-preserved in the office of the company for reference and comparison with fares turned in by the conductor, and for filing for future purposes. purposes.

STANDARD INDEX & REGISTER COMPANY, 138 Fulton St., N. Y.

TESTIMONIALS.

METROPOLITAN RAILROAD COMPANY. PRESIDENT'S OFFICE. C. A. RICHARDS. 16 KILBY STREET,

ELI BALNWIN, ESQ., Prest. Standard Index & Register Co., New York, N. Y., Dear Str.,—In answer to your inquiry of March 8 I would most respectfully state, that after a trial of some months of the two bundred odd registers that you have placed in our cars. I feel that I do no more than exact justice to your com-pany in giving you in the strongest and most unqualified manner my entire ap-proval of them. They are in every way all that you claimed, and all that you promised me they would prove to be. In short, I like them. They answer my purpose completely, and I would not exchange or part with them for any other device of the kind I have yet seen. Very respectfully yours, &c., President Metronolitan Balmord a

C. A. RICHARDS, President. CHAS. BOARDMAN, Treas. W. P. HARVEY, Secy. OFFICE OF

THE METROPOLITAN RAILROAD COMPANY,

NO. 16 KILEY STREET,

Boston, March 23, 1886. E. BALNWIN, Esq., Prest. Standard Index and Register Co.: Dear Sir, --We have now in daily use four hundred and twenty-five of your registers. They have hy repeated purchases come to this number. We like the registers very much, and have no fault to find with them. With an experience of four years we feel that we are justified in recommending them. Very respectfully yours, &c., C. A. RICHARDS, President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY. G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valent Secy. and Treas. W. N. A. Harris, Supt. OFFICE, 10th AVENUE, 53D AND 54th STREETS, J. L. Valentine,

New York, August 31, 1882. New York, August 31, 1882. The Standard Index Register instruments purchased from you ahout a year and a haif ago bave since that time heen in constant use upon the cars of this line, and I am very free to acknowledge their superiority over any device hitherto tried by us. We believe from our experience that in their construction

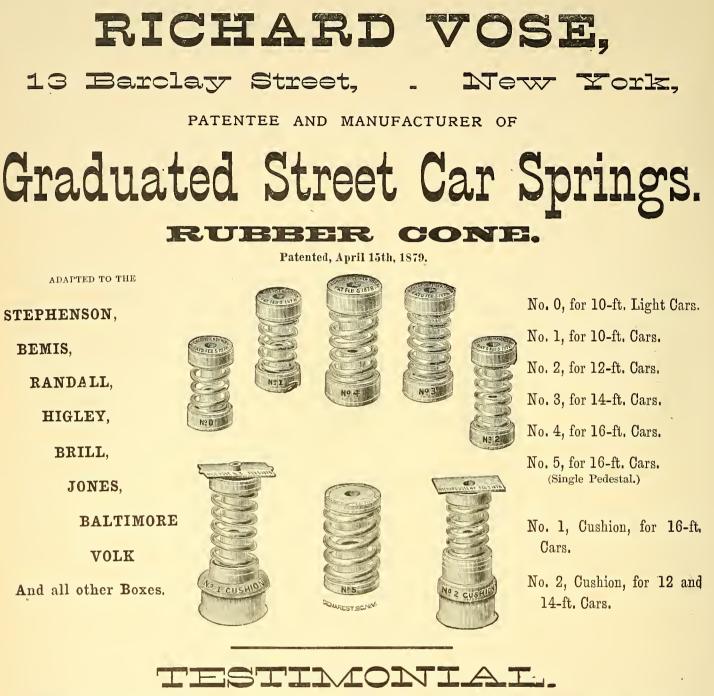
and result they attain the object sought with accuracy and at the same time with a minimum liability to external tampering or dishonest manipulation. Very respectfully, C. DENSMORE WYMAN, Vice President.

CENTRAL PARK, NORTH & EAST RIVER RAILROAD COMPANY G. Hilton Scribner, Prest. C. Densmore Wyman, Vice Prest. J. L. Valentine, Treas. Howard Scribner, Secy. W. N. A. Harris, Snpt. TENTH AVENUE, 53D AND 54TH STREET,

TENTH AVENUE, 53D AND 54TH STREET, NEW YORK, March 24, 1886. ELI BALDWIN, ESQ., Prest. Standard Index & Register Co., 135 Fulion Street, New York: My Dear Sir, – We have used about 150 of your "Standard Index Registers" for the past five years and such use has demonstrated their entire utility and adaptation for the purposes intended in their construction. We are more than satisfied with them, finding that by reason of the simplicity of their construction they require hardly any repairs, while they are accurate and reliable and at the same time by virtue of the inside paper dial are free from the dianger of being tampered with. In a word we are thoroughly satisfied with the Standard and it is but just to you that I should express this opinion to you. Very sincerely yours, C. DENSMORE WYMAN, Vice President.

OFFICE OF THE BROADWAY AND SEVENTH AVENUE RAILROAD COMPANY, COR, 7TH AVE. AND 50TH STREET,

COR. 7TH AVE. AND 50TH STREET, NEW YORE, March 25, ISS6. ELI BALDWIN, ESQ., Prest, Standard Index & Register Co: Dear Sir,—Concerning your inquiry as to the result of our experience in the use of the Standard Register furnished by your company and the satisfaction given I will state that after five years' test during which they have been in use on the cars of our roads, we have found them the embodiment of all that you have claimed, and I cheerfully endorse them as the best registers that we have ever seen and have found them reliable and not easily put out of order. In short we would not be without them. The paper register or tablet upon which regis-trations are recorded of the number of passengers carried and trips made is an invaluable feature, producing as it does an infallible and indelible record of fares collected, serving as a check where a division of trust is questioned. We have upwards of two hundred of your Registers on the cars of our roads at the present time. Yery Truly Yours, J. W. FOSHAY, President.



MIDDLESEX RAILROAD CO., BOSTON, MASS.

RICHARN VOSE. Dear Sir,—We have had in constant use upon this road for several years the "Vose Grad-uated Spring," and they have given very general satisfactiou. So much so that we shall continue to order them. Very truly, CHAS. E. POWERS, Prest.

NO. CHICAGO CITY RY. CO., CHICAGO, ILL.

RICHARD VOSE, ESQ. Dear SIT, —This company has had in use for the past seven or eight years your Patent Graduated Car Spring, and our experience leads us to the conclusion that they are all in every respect which you represent them to be. And cer-tainly all that we desire. Yours Respectfully, V. C. TURNER, Prest.

B'DWAY & 7TH AVE. R.R. CO., NEW YORK CITY-MR. RICHARD VOSE. Dear Sir, —We have 125 cars equipped with your Graduated Springs. They have given entire satisfaction. They arc undoubtedly the best in the market. Very Respfly. J. W. FOSHAY, Prest.

BROOKLYN CITY R.R. CO., BROOKLYN N.Y. RICHARD VOSE, ESQ. Dear Sir, — Yours of May 27 to Mr. Hazzard, Prest., has beeu referred to me for reply. And would say that we have now in use about 600 sets of your Patent Graduated Car Springs. And up to date have given perfect satisfaction. Yours truly, A. N. DICKIE, Supt.

CHICAGO CITY RY. CO., CHICAGO, ILL. RICHARD VOSE, ESQ. Dear Sir,-Replying to your roor of a recent date I beg to say that we have been

using your Graduated Car Springs since 1881 and have increased the number, until at the present time we are using 369 sets, and the same have invariably proved satisfactory. Yours truly, C. B. HOLMES, Supt

CAMBRIDGE R.R. CO., CAMBRIDGE, MASS.

COL. RIGHARN VOSE. Dear Sir, — We have used your Graduated Street Car Springs for several years and I need only say with such success that we con-tinue to use them. Very Respty, W. A. BANCROFT, Supt.

CINCINNATI I. P. R.R. CO., CINCINNATI, O.

RICHARD VOSE. Dear Sir, -Send us 6 more sets of your new patteru Car Spring, same as the lot we ordered of you last Sept. in every way. This is the best answer we can make to your question of "How we like them." Yours truly, J. M. DOHERTY, Supt.

LYNN & BOSTON R.R. CO., CHELSEA, MASS.

RICHARD VOSE, ESQ. Dear Sir,—All I can say in favor of the Vose Spring is that we continue to apply them to most of our new cars. I have about 60 cars equipped and think very well of them. If they could be produced for less money should think better of them. Very Respectfully Yours, E. C. FOSTER, Snpt.

CREAM CITY R.R. CO., MILWATKEE, WIS.

Gentlemen,-Yours of May 23 at hand, with re-gard to your Car Springs. We find they are the best in use. They come a little higher than the Barrel Spring, but they are much the better springs. Yours truly, H. J. C. BEBG, Supt.

LOWELL HORSE R.R. CO., LOWELL, MASS.

TO WHOM IT MAY CONCERN: We have used the Rich ard Vose Graduated Car Springs for several years, and are well pleased with them. Should be unwil-ling to change them for any other. All of our cars use these springs. Yours Respectfully, J. A. CHASE, Treas.

DATTON STREET R.R., DAYTON, O.

MR. RICHARD VOSE, Sir,--We have eighteen cars equipped with your Patent Graduated Spring, and will use your springs to replace all other kinds as tost as repairs are needed. Your springs give the best satisfaction to our company and patrons of any that we have even tried that we have ever tried. Yours Respectfully, A. W. ANDERSON, Supt.

FT. WAYNE & ELMWOOD RY. CO., DETROIT, MICH.

RICHARD VOSE, ESQ. Dear Sir,—For the past four years we have been using your Graduated Springs on all of our cars (30). Our Superintendent says that none of them have ever had to be repaired and that they are the best springs we ever used. Yours truly, N. W. GOONWIN, Secy.

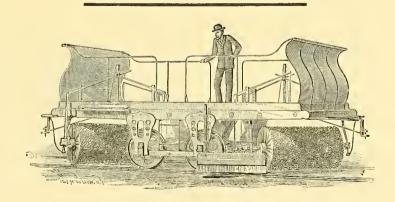
RICHARD VOSE, ESO. Dear Sir,—I have your favor of the 20th uitimo. We have about 70 cars equipped with your springs. Our experience is that they wear well and give general satisfaction. Yours truly, GEO. HENDRIE, Treas.

THE BBOOKLYN RAILWAY SUPPLY GOMPANY. 37 WALWORTH ST., BROOKLYN, N. Y.,

U. S. A.

RAILWAY SUPPLIES.

Yellow Pine Timl er for Track Construction of Best Quality. Knee Spikes and Joint Plates. Rail Spikes at Lowest Manufacturer's Prices, Made to Order, to Fit any Rail. Any Kind of Materials Promptly Furnished Responsible Parties and Satisfaction Guaranteed. Second-hand Cars Selected by Experts for Parties at a Distance on Small Commission.



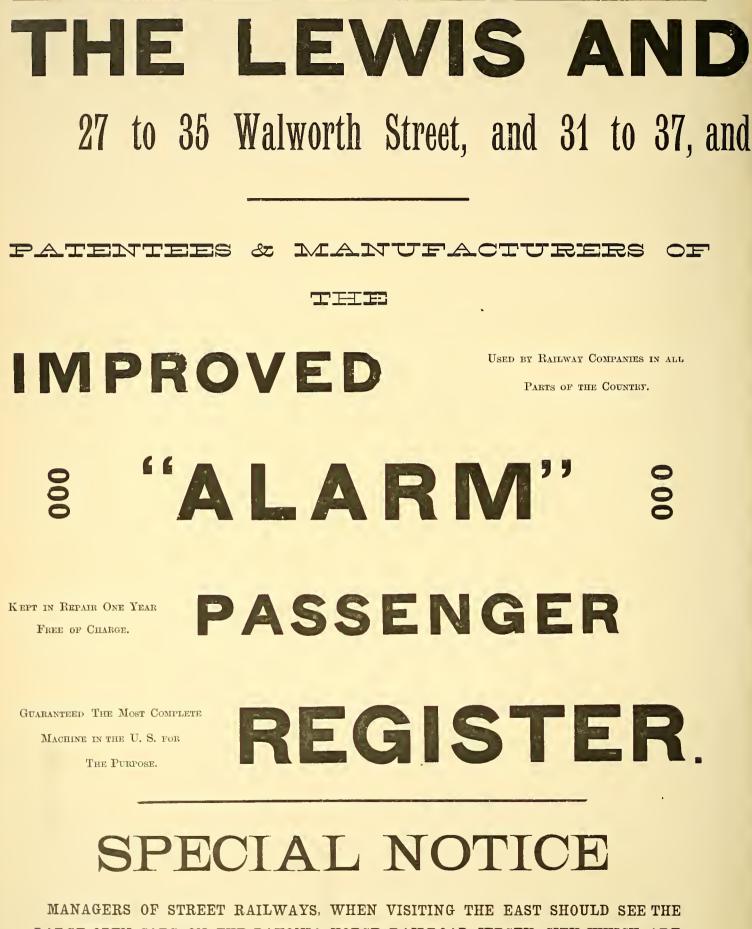
SPECIALTIES.

Latest Improved Snow Sweepers of OUR OWN MANUFACTURE. Now used in nearly all the principal Northern cities. Rattan for refilling Brooms. Snow Plows. Sand Cars.

We have several Sweepers of other makers, taken in exchange, which will be sold, thoroughly refitted, very low on early orders. Rattan lower than ever before; write for prices.

CORRESPONDENCE SOLICITED.

OCTOBER, 1886



MANAGERS OF STREET RAILWAYS, WHEN VISITING THE EAST SHOULD SEE THE LARGE OPEN CARS ON THE PAVONIA HORSE RAILROAD, JERSEY CITY, WHICH ARE RUN BY THE DRIVER AND "SMALL'S AUTOMATIC FARE COLLECTOR." THEY ARE TWENTY-TWO FEET LONG, SEAT THIRTY-FOUR PASSENGERS, AND FREQUENTLY CARRY SEVENTY AT A LOAD.

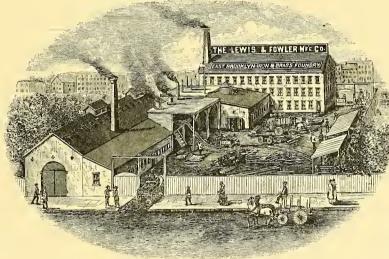
The Lewis & Fowler Manufacturing Company, Sole Agents.

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Materials Furnished for Street and Cable Railway Construction

Knees Spikes Channel Plates Frogs Points Tongue Switches Grooved Rails for Curves

Bent any desired radius.



Pedestals Oil Boxes Brake Shoes Wheels and Axles Brass Bearings Turntables Snow Sweepers Plows Etc. etc. etc.

RAILROAD CASTINGS

Of every description and most approved patterns.

FOWLER'S IMPROVED RANDALL BOX & RUNNING GEAR.

October, 1886.

ACKNOWLEDGED THE BEST! 115 R. R. Companies USING THE **"ALARM" PASSENCER** THE LEWIS & FOWLER MANUFACTURING CO., PATENTEES & MANUFACTURERS.

AWARDED THE HIGHEST PRIZE MEDAL AT CHICAGO, ILL., 1883.

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Ashtabula City Ry. CoAshtabula, Ohio.
Brooklyn City R. R. Co
Brooklyn, Bushwick & Queens Co. R. RBrooklyn, N. Y.
Broadway R. R. Co
Bushwick R. R. Co
Bradford & Kendall St. R. R. Bradford, Pa.
Bay City R. R. Co
Baltimore Pass. R. R. Co
Baltimore Stage Co
Baltimore & Hall Springs R. R. Co
Baltimore City Pass. Ry. Co
Boone & Boonesboro Pass. Ry. Co
Brooklyn Crosstown R. R. Co
Columbus Consolidated St. Ry. Co
Central Pass. Ry. Co
Citizens Pass. Ry. Co
City Ry. Co
Cass Av. & Fair Grounds R. R. Co
Crescent City Ry. Co
City & Subarban Ry. Co
Cedar Rapids & Marion St. R. R. Co
Citizens R. R. Co
Chester St. Ry. Co
Citizens Pass, R. R. Co
Coney Island & Brooklyn R. R. Co
Dry Dock, E. B'way & Battery R. R. Co
Detroit City Ry. Co
Denver City Ry. Co
Duluth City R. R. Co
East Genesee St. R. R. Co
Evansville St. R. R. Co
Elyton Land CoBirmingham, Ala.
Fourth Ave. Raihoad Co
Forest Park, Laclede & Fourth St. Railroad Co
Fifth Ward Railroad Co
Front & Union St. Railroad Co
Forty Second St., M. & St. N. Av. Railroad Co
Grand St. & Newtown Railroad CoBrooklyn, N. Y.
Greenpoint & Loriner St. Railroad CoBrooklyn, N. Y.
Grand River Railroad CoDetroit, Mich.

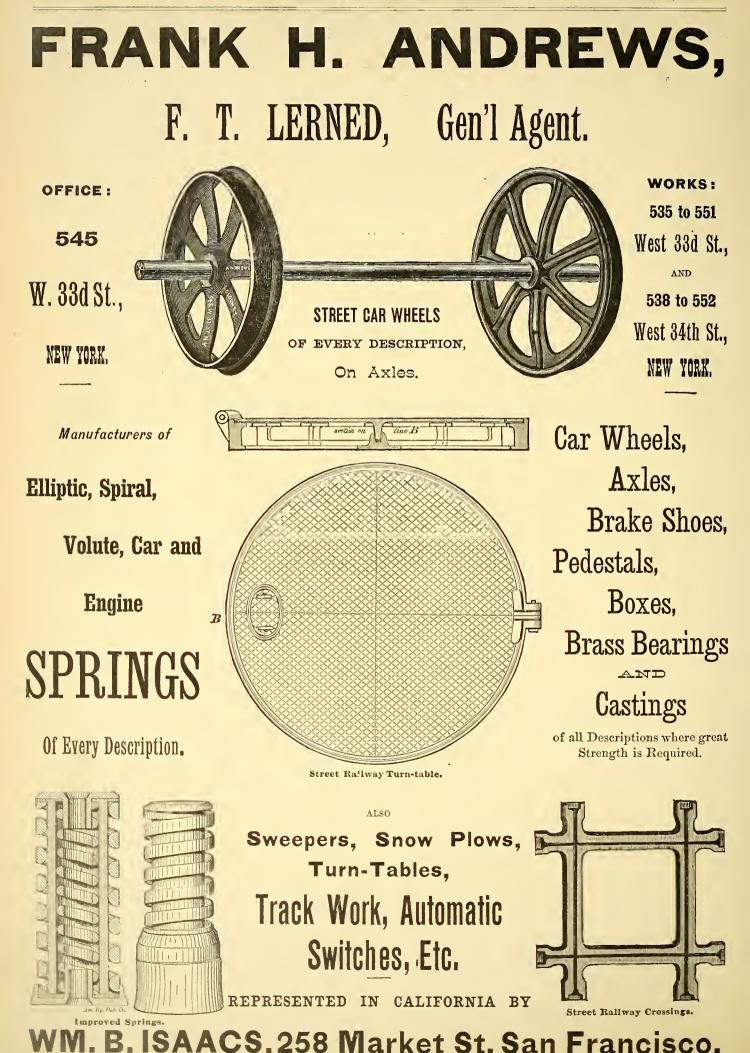
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LIST OF 115 RAILROAD COMPANIES USING "ALARM" PASSENGER REGISTER, CONTINUED.

	Greenbush Horse Railroad Co Hestonville, Mantua & Fairmount Park Railroad	Greenbush, N. Y. Philadelphia Pa
	Harlem Bridge, Fordham & Morrisania Railroad	N. Y. City.
	Incline Plane Railroad Co	Cincinnati O
	Interstate Rapid Transit Railroad.	
	Jefferson Ave. Railroad Co	
	Jersey City & Bergen Railroad Co	
	Jackson Co. Railroad Co	
	Jacksonville St. Railroad Co	
	Jamaica & Brooklyn Railroad Co.	
	Keokuk St. Railroad Co	
	Lindell St. Railroad Co	St Lonic Ma.
	Lombard & South St. R ilroad Co.	Philadolphia D.
	Long Island City & C. C. Rullroa L.	L L City N V
	Long Island Rapid Transit Railroad.	Prochlyn X V
	La Crosse City Railroad Co	
	Metropolitan Railroad Co	
	Mound City Railroad Co	St Louis Mass.
	Missouri Railroad Co	
	Minneapolis Ry. Co	
	Monumental Pass. Ry. Co	
	Metropolitan Railroad Co	
	Manchester Horse Railroad Co	
	North Hudson Co. Railroad Co	
	Northern Central Pass. Ry. Co	
	Norfolk City Ry. Co	
	NewBedford & Fair Haven Railroad Co.	
	New Williamsburgh & Flatbush Railroad Co.	
	Naumkeag St. Ry. Co	
	Niagara Falls & S. B. Railroad Co	
	North Hudson Co. Elevated Railroad	
	Oakland and East Liberty Railroad	
	Oneida Railroad Co	
	P. P. & Coney Island Railroad Co	
	Pittsburgh & Birmingham Railroad Co	
	Pittsburgh, Alleghany & Manchester Railroad Co.	
	Pavonia Horse Railroad	
	Philadelphia & Grays Ferry Railroad	
	People's Pass. Railroad Co	
	Philadelphia Traction Co	
	People's Pass. Railroad Co	
	Petersburg Horse Railroad Co	0.
	People's Pass. Railroad Co	
	Paterson & Passaic Horse Railroad.	
	Pawtucket St. Railroad	
	Quebec St. Railroad Co.	
	Richmond City Railroad Co.	
	Rochester City & Brighton Railroad	
	St. Louis C. & Western Railroad.	
	Steinway & H. P. Railroad Co.	
	Springfield City Ry. Co South Brooklyn Central Railroad Co	
	Second Ave. Railroad Co.	
	St. Paul Ry. Co	
	Syracuse & Geddes Railroad Co.	STRANSO N V
	Springfield City Railroad Co	
	Sixth Ave. Railroad Co	
	Wilmington City Railroad Co	
	Salem & Danvers Railroad Co	Salem, Mass.
	Seventh Ward Railroad Co.	
	South Side St. Pass. Ry. Co	
	Transverse Railroad Co	Pittsburgh, Pa.
	Topeka City Railroad Co.	Topeka, Kan.
•	Trenton Horse Railroad Co	Trenton, N. J.
	Twin City & Des Moines Railroad	.Des Moines, Iowa.
	Third Ave. Railroad Co.	N. Y. City.
	Union Pass. Ry. Co.	Pittsburgh, Pa.
	Union Pass. Ry. Co.	Philadelphia, Pa.
	Union Pass. Ry. Co.	St. Lonis, Mo.
	Union Pass. Ry. Co.	St. Joseph, Mo.
	Union Depot Ry. Co.	Weahington D. C.
	Washington Herdic Phaeton Co.	. wasnington, D. C.

THE STREET RAILWAY JOURNAL.

OCTOBER, 1886.



532

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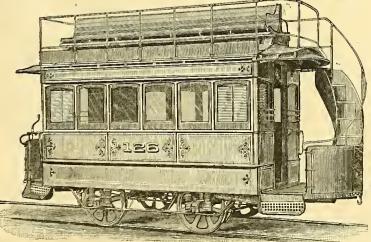
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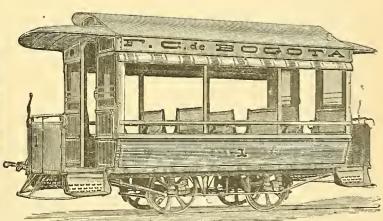
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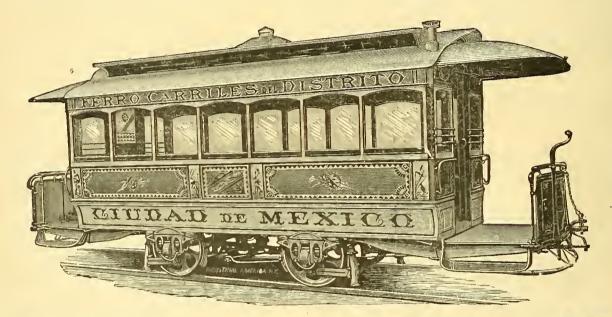
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