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NOTICE TO SUBSCRIBERS

REMITTANCES.—Remittances should be made by check, New York draft, or money order, in favor of the Street Railway Journal.

CHANGE OF ADDRESS.—The old address should be given, as well as the new, and notice should be received a week in advance of the desired change.

BACK COPIES.—No copies of issues prior to September, 1904, are kept on sale, except in bound volumes.

DATE ON WRAPPER shows the month at the end of which the subscription expires. The sending of remittances for renewal prior to that date will be much appreciated by the publishers.

CLUB RATE.—On five or more subscriptions from one company or its employees, a club rate of \$2.50 each per annum is quoted.

NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office by 10 a. m. Monday preceding the date of publication, except the first issue of the month, for which changes of copy should be received two weeks prior to publication date. New advertisements for any issue will be accepted up to noon of Tuesday for the paper dated the following Saturday.

Of this issue of the Street Railway Journal, 8500 copies are printed. Total circulation for 1906 to date, 253,600 copies, an average of 8181 copies per week.

Ventilating Armature Ovens

There seems to be an idea that the more nearly air tight a baking oven for armatures and fields can be made, the better will be the results obtained. At least, the writer has inspected many ovens which have been built practically air tight. It stands to reason, however, that more moisture can be taken from the contents of the oven if a proper amount of ventilation is provided for. If the box is air tight, after a little while the enclosed air becomes saturated with moisture and can be made to take up more only by heating it to a still higher temperature. If provision is made for letting the heated and moisture-laden air escape and at the same time admitting a fresh supply of dry air, the drying process can be carried on to a greater degree. Of course, when the oven is ventilated a greater amount of heat must necessarily be supplied in order to maintain the same temperature.

Advertising Nuisances

A correspondent in this issue calls attention to an abuse which is by no means new but which seems to be on the increase. We refer to the demands made upon manufacturers to advertise in all sorts of programs, souvenir books, and other publications of railroad relief associations and similar bodies. Contracts of this kind are generally secured by some "business manager" upon a commission basis, and the usual plea advanced is that the recognition requested will be "appreciated" by the officials of the railway company which is connected with the association. This request is usually accompanied by a more or less veiled intimation to the manufacturer that his sales to the company in question will fall off if he does not assent to the proposition. The result is that if he is supplying apparatus to the road, he is mulcted for sums which, though individually small, aggregate a large amount. He may, and usually does, realize that this advertising is absolutely of no direct value to him, but if his business with the railroad company is large; or if he hopes that some day it will be, he is generally afraid to decline. The officers of the company actually responsible for the purchases may know nothing about the publication and usually would be in no way influenced by the question as to whether the manufacturer was "represented" or not, but their names are used with great freedom on the stationery and other literature employed to convince the manufacturer that he ought to patronize the advertising pages of the publication in question.

Those of our readers who are not familiar with the newspaper business may not know that during the last five or ten years there has been a great advance in the methods of advertising. This has been due both to the great advance in technical and genera! publications and also the fact that associations such as the Technical Publicity Association and the Association of American Advertisers have been formed among manufacturers to investigate for themselves the circulation and standing of advertising mediums used by their members and to determine the value of their advertising

pages. This movement has been fought by publishers whose patronage in the past has been secured on sentimental grounds or by vague claims as to circulation, but has been met in the proper spirit and encouraged by the leading technical papers and magazines which have been willing and anxious to do business on a business basis. The consequence is that advertisers are very much wiser than they have been in the past, and when the program or other sporadic nuisance is brought to their attention as an advertising medium they recognize its uselessness more clearly than they might have done five or ten years ago.

Another objection to publications of the kind which we have been considering is that they establish an unfair competition with independent technical papers. It is well known that most manufacturers appropriate a certain amount of money for advertising purposes, and what is given to one publication for sentimental or other reasons is often withdrawn from another which is of real value in the field. The right kind of a technical paper is not afraid of fair competition; indeed it welcomes it, but every paper or publication which does not give its advertisers value received for their money is a parasite in the newspaper business. It is supported entirely at the expense of the legitimate papers in the field, which are in consequence prevented by just so much from the usefulness of which they are capable.

We do not mean to say that programs and publications of a similar kind ought to be debarred from all advertising. We can easily conceive that local tradesmen selling clothing or groceries directly to the employees of a company might find it of value to advertise in a company organ or publication having a circulation among these men, but that there is any real value in such publicity to a manufacturer of engines, generators, cars or other large apparatus is preposterous. The solicitation of such business by railroad companies or their officials, or by any association under their patronage, is, to say the least, derogatory to their dignity.

The Subway Controversy

Recurring to the Sprague-Stillwell discussion on the equipment of the Subway, we are glad to note that the differences between these capable engineers are more of degree than of kind. Mr. Sprague's call for the determination of such schedules and maximum speeds as will give maximum capacity with the greatest degree of safety is one the wisdom of which no one will dispute. We have no doubt that, as Mr. Stillwell says, this course was followed, but every year adds new light on rapid transit, and the problem of maximum capacity involves operative factors which cannot be predetermined from electrical data, especially when practical safety in operation is considered. As the service is quickened a point is reached beyond which increase of speed involves altogether disproportionate increase of risk. The fundamental thing in safe operation is that a moving train should always and everywhere be under such control as will enable it to be stopped in time to avert collision. The dangerous space defined by the distance required to stop depends in the last resort upon the speed and weight of train and the braking facilities, quite independent of the length of the blocks. The handling of the schedule must take this into full consideration, and until this has been done there will continue to be

accidents. We think that Mr. Sprague's insistence upon uniform trains which can be handled with exact uniformity is a position well taken from this point of view. It does not necessarily follow, however, that all cars should be motor cars. The requirement of uniformity alone can perfectly well be met by a train drawn by a locomotive, and while the use of motor cars only somewhat simplifies making up uniform trains, it is an open question whether this gain is not fully paid for by extra care and maintenance of equipment.

This indeed is the point at which Mr. Sprague and Mr. Stillwell part company, the former insisting that nothing short of his full multiple unit control will answer the purpose, and the latter taking a polite but firm negative. Between the two we should hesitate to take sides without an exhaustive personal study of the engineering problems of the Subway. The main question is whether the acceleration necessary to secure maximum capacity can be smoothly applied without resorting to a complete motor-car equipment, bearing in mind that acceleration cannot be pushed too far without serious danger to the line load. This is a question of fact, and with this limitation the simpler the motor equipment the better. The incidental advantages of multiple unit control, such as facility in splitting up trains at branches, have not yet amounted to much in practice, whether from mere inertia in railway management or from inconvenient complication we cannot say.

We do not attach much importance to the advantage claimed in emergency braking with the motors when all cars are motor cars, for in nineteen cases out of twenty this method is not resorted to until too late, if at all. By the time it is certain that the regular brakes will not work no brake will avail much if trains are on short headway. How far control, and especially braking control, should be automatic is rather an open question. As regards smoothness of stopping and starting, it is surely an advantage. In emergencies any automatic device that requires a second's thought to replace by full manual control is an element of danger, and the usefulness of the scheme depends on the perfection with which operating details are worked out.

The main faults of the Subway lie outside the electrical equipment proper. If the cars were more easily accessible, and the tunnel were properly ventilated, or indeed half ventilated, we fancy that well-founded complaints would be few indeed. The difficulties of air supply and disposal of the heat generated during operation are so grave as to constitute a formidable objection to the building of subways in any form now in use.

A Standard Wheel-Tread

The street railways of the country occupy very much the same position in regard to all standards that the steam railroads do relative to those of the American Railway Master Mechanics' Association. There is, it is true, no interchange of traffic, so that no road is called upon to repair the rolling stock of a connecting line, as in the case of steam roads. But there are other pecuniary reasons in favor of uniformity, because where this obtains it is possible to manufacture at a less cost, with the result that the consumer pays a lower price. Up to the present but little has been done, as there have been other things of more pressing importance to require

attention, so the street railway companies have followed the course of the steam roads, on which there was a delay of forty years before standards were adopted. But that there is an appreciation of the importance of the matter is shown by the appointment of committees by the American and Engineering Associations to handle the subject, and we are glad to note from the circular just issued, and published in the last issue of this paper, that one of the first things to be considered is that of standardizing the wheel tread and flange.

That this is important is evident by the fact that there is a wide variation in the practices of the different roads, by which wheel makers are obliged to maintain a large number of wheel patterns and chills for cast wheels, and either do the same in the case of the tires for steel wheels, or else turn the flange to the required shape at the expense of time and money. All of these investments and cost must be paid for and, in the final accounting, it is the street railway company that pays the bill. As to just what the total number of patterns of wheel there are in use in this country, there is no means of ascertaining, but if all of the variations of flange were to be multiplied by all of the variations of tread width and this again by the number of dishes of the hub, we would have a possible total that would be well up in the hundreds and absurd in the variety that is offered.

That a remedy is needed there can be no doubt, and that it is difficult to find and apply is equally evident. First of all there are the 'municipal regulations as to grooved and side bearing rails usually made by municipal engineers who have little or no appreciations of the running requirements. This has compelled many roads to use a rail and wheel tread that do not meet with the approval of its officers. In other cases a tread and flange has been designed by a master mechanic to meet his own ideas of what is best, without, perhaps, any really thorough investigation as to what is most suited to his own requirements, and so this heterogeneous practice, under which we are now laboring, has grown up. Of course where municipal requirements are such that they can be met only by the peculiar tread and flange in use, no discussion of standards is in order, as yet. But where there is a free hand to act, the subject is a live one.

Recognizing this, let us see what steps it will be advisable for the committee on standards to take in the designing of the wheel tread and flange.

First of all, the intimate relationship between the wheel and the rail must be considered. This calls for a careful investigation of the subject jointly by the car and track departments. For years we have had many theoretical discussions as to just what may be the best forms of curves for the flange and the rail head. A large number of reports of observations have been made, but with them all there are still wide differences of opinion as to the best forms to use. Should the root of the flange be struck with a long or short radius? Should it conform to the head of the rail or not? Should the tread be straight, or tapered? If tapered should that be on the ratio of one in fifteen, twenty or twenty-five. One can take his choice, and for that choice he may be very sure that he will pay money. Years of experience has led to some approximation as to what is best. It seems to be fairly well proven that a tread taper of one in twenty is better than one that is flatter, and that the side of the rail head should slope rather than be vertical. Hence the rail man should be called in to

see what he can and will do before the wheel man reaches his decision.

Now as to height and thickness of flange. Should the former be 3/4 in., 7/8 in. or I in. for city service? At what maximum speed can a low flange be depended upon to keep the car upon the track? What is the tendency of wheels with flange roots of various radii to climb the rail? What are the pressures put by the flange upon the rail on curves and tangents? These are questions that should be answered because upon almost every urban line there is more or less country running to be done, and it is well to know what can or cannot be done before taking a step that is to be blindly followed in its recommendations in so many respects.

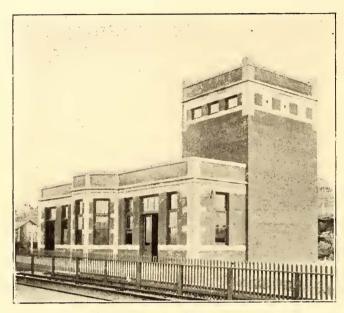
Then how strong need the flange be? On this we are absolutely in the dark, but there is a prospect that in the near future some light may be thrown upon the subject. Current practice has followed precedent established by the rule of thumb with remarkably good results, but it would be well to know whether this precedent has established dimensions that are all that they should be or not. In this the steel wheel, of course, far outranks the cast-iron one as to strength, but how about wear? Will a flange shape that will give the best results on cast iron also give the best with steel?

Finally, in the shaping of the flange what shall be the contour of the crown? It seems to be the almost universal practice among street railroads to use a crown that is the arc of a circle, rather than a gothic arch such as that adopted as standard by the Master Car Builders' Association. The reason is to be found in the peculiar condition of switch and cross-over work, where the wheels are called upon to carry the load of the car on their flanges. In many, if not in most cases, the cross-over is deliberately made with such a shallow flangeway that, for some time after it is laid, the surface is protected from all wear by the flange carrying the wheel and lifting the tread clear of the rail, until a groove has been worn in the special work. This prolongs the life of the track, but how about the wheels? Will the metal saved in the crossing pay for the wheels that are discarded on account of chipped and broken flanges? These are conditions that must be faced by the committee engaged in the formulation of a recommendation as to wheel flanges.

There has been no desire, in what has been said, to make a mountain out of a molehill, but merely to call attention to a few points that should be considered in the development of this standard. No questions have been asked that patient and thorough investigation cannot answer definitely and finally; nor have any been asked that do not seem to be deserving of an answer. With the data at hand, that this work would give, a form of tread and flange and rail head can be designed that will have the weight of authority, and this will be backed in a way that will compel municipal authorities, that now impose burdensome restrictions upon the railroads within their limits, to remove such restrictions and permit the use of wheels and rails that will not only give better satisfaction to the public but decrease the cost of purchase and maintenance to the operating companies. On the other hand, if this is not done, and the municipal engineer is allowed freedom to dictate any peculiarity in rail which strikes his fancy, the position of the street railway companies will remain unchanged and modifications of practice can only be brought about by the slow methods now in vogue.

OPERATING DETAILS OF THE LACKAWANNA & WYOMING VALLEY RAILROAD

In the STREET RAILWAY JOURNAL for June 13, 1903, an account was published of the system of the Lackawanna & Wyoming Valley Railroad, the high-speed third-rail line extending from Scranton to Wilkesbarre, Pa. This line possesses the unique distinction among interurban electric rail-



SUB-STATION AND PASSENGER STATION

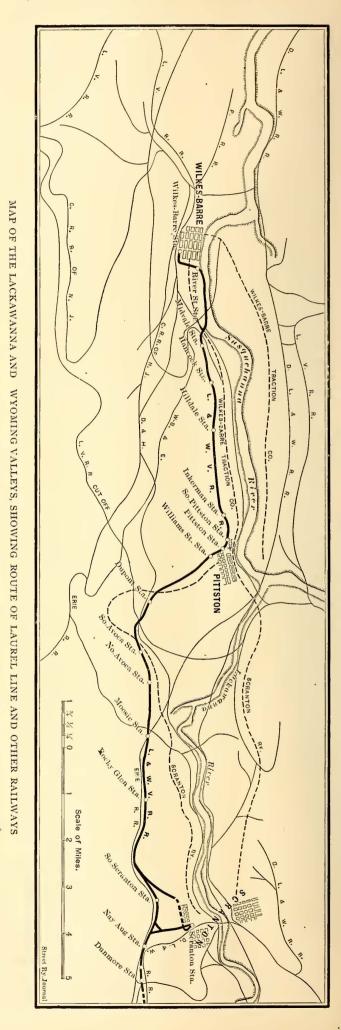
ways of operating for its entire length over its own right of way, and of owning handsome stations in each terminal city, as well as several at way stops. In other words, its operating conditions are similar to those of a steam railroad, except for its motive power. The construction of the line was thoroughly described in the issue already referred to, and has subsequently been treated in detail in papers by the construc-



VIEW IN TUNNEL FROM NORTH PORTAL

ting engineers and others presented before engineering bodies, particularly in a paper read by George B. Francis to the Boston Society of Engineers. The road was built by Westinghouse, Church, Kerr & Company, and is still largely owned by the Westinghouse interests.

The article in the STREET RAILWAY JOURNAL already referred to describes the line practically as it is to-day, except that the company has recently completed a tunnel which cuts



off considerable distance between Scranton and Wilkesbarre. This tunnel is 4747 ft. in length, from portal to portal, and is a grade in the tunnel of I per cent.

and 22 ft. high, from sub-grade to the top of the arch. There



FRONT OF SCRANTON TERMINAL STATION



SCRANTON TERMINAL STATION, FROM YARD SIDE

trains were run through it for the first time on Oct. 19, 1905. The cost of the tunnel was about \$600,000. The track is elevated 2 ft. above the sub-grade. The tunnel is 17 ft. wide,

In spite of the many articles on the construction of the line, little or nothing has appeared in regard to its operation, although the special conditions already mentioned, and the fact

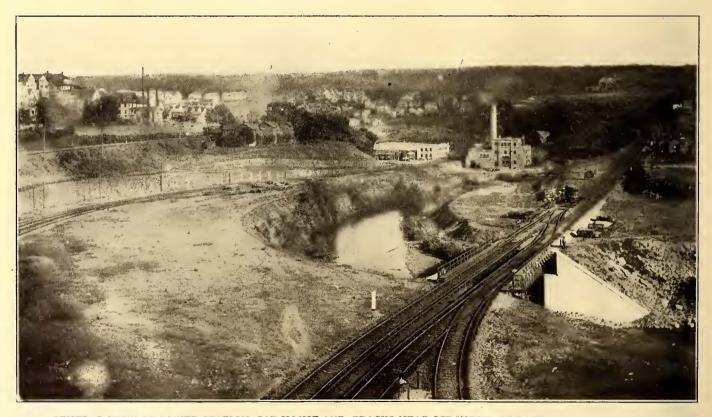
that the company is incorporated under a steam railroad charter, makes these features of especial interest.

The terminal cities are 20 miles apart. Scranton has a population of about 120,000 and Wilkesbarre of 80,000. The intervening country is fairly well settled. The largest city

ing and Lackawanna valleys have probably more lines of track 'than almost any other section of the country of equal area. There are altogether seven steam railroad lines extending into the district, and most of them traverse its entire length. These roads are the Pennsylvania Railroad, the Erie Rail-



ONE OF THE VIADUCTS ON THE LINE



GENERAL VIEW OF POWER STATION, CAR HOUSE AND TRACKS NEAR SCRANTON, OF LACKAWANNA & WYOMING VALLEY RAILWAY

between Scranton and Wilkesbarre is Pittston, which is about half way between the two termini and has a population of about 30,000.

STATISTICS ON TRAFFIC

At first sight the outlook for an additional road extending from Scranton to Wilkesbarre would not seem promising. On account of the anthracite coal deposits, the Wyom-

road, the New York, Ontario & Western Railroad, the Delaware, Lackawanna & Western Railroad, the Central Railroad of New Jersey, the Delaware & Hudson Railroad and the Lehigh Valley Railroad. There are also two trolley lines connecting Scranton and Pittston, one on each side of the river, and two between Pittston and Wilkesbarre. The steam railroads mentioned were built, of course, principally

on account of the coal deposits, and only two have aimed to do a passenger service between the two cities under consideration, Scranton and Wilkesbarre. These two railroads are the Delaware & Hudson, whose terminals are well located

for passenger traffic in both cities, and the Delaware, Lackawanna & Western, whose Scranton terminal is well situated, but whose Wilkesbarre terminal is about a mile and a half from the center of that city. Consequently, before the advent of the high-speed line, the Delaware & Hudson Railroad got most of the business, except that which went by trolley.

The fare charged by the steam railroads of the vicinity before the Lackawanna & Wyoming Valley Railroad was opened in 1903 was 3 cents per mile, and some concessions from this rate were made when mileage books and commutation tickets were purchased. The Lackawanna & Wyoming Valley Railroad decided that it could carry passengers for 11/2 cents per mile on single tickets and 11/4 cents per mile on excursion tickets

rates, and this was followed a little later by another. Although the steam railroad rates are and have for some time been lower than those charged by the Lackawanna & Wyoming Valley Railroad, no effort has been made to meet the



PASSENGER STATION AT ROCKY GLEN



WILKESBARRE TERMINAL STATION, FROM YARD SIDE

and mileage books. The last are sold in books containing 250 and 500 miles. At these rates the single-ticket fare between Scranton and Wilkesbarre is 30 cents, and the round-trip fare 50 cents. Shortly after it opened its line for traffic a material reduction was made in the steam railroad

former. The electric line has considered its rates to have been carefully and fairly determined, and has depended upon its service to win business. No statistics are available as to the division of traffic between the competing steam and electric lines, but careful local estimates place it at about 80 per cent for the electric line and 20 per cent for the steam lines, with the through traffic via the trolley lines practically negligible. It is interesting to add that the steam lines are carrying more passengers than before, thus showing that the ad-



TIMBER SECTION OF TUNNEL

vent of the electric line has created a very considerable traffic.

The following statement, showing the car mileage of the
Lackawanna & Wyoming Valley Railroad by quarters for the



PITTSTON PASSENGER STATION

years of 1904 and 1905, indicates the increase of the company's business:

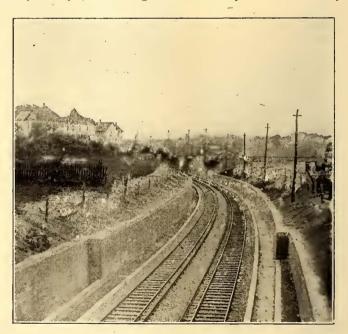
0		1904			1905	
Quarter	Passenger	Freight	Total	Passenger	Freight	Total
First Second Third Fourth	338,821	12,506 13,146 16,371 13,016	241,161 270,487 355,192 317,888	286,098 319,387 390,437 339,355	12,965 15,967 17,768 16,489	299,063 335,354 408,205 355,844
	1,130,689	55,039	1,185,728	1,335,277	63,189	1,398,466

CREATION OF TRAFFIC AND SCHEDULES

The greater part of the business now enjoyed by the company has practically been created by the supply of good transit facilities. The other transportation lines between the

cities, as stated, carry as many, if not more, passengers than before, but the existence of a high-speed line between the two cities has undoubtedly caused many people to travel who would not have done so otherwise. Part of this is pleasure traffic, or is induced by the pleasure resorts along the line. The greater portion, however, is twelve-month business. Thus a great many shoppers travel on the line, although Wilkesbarre and Scranton are of nearly enough the same population, so that there is no very marked difference between the shopping facilities in each place. Nevertheless, critical buyers have discovered, or have thought that they have discovered, that certain articles can be purchased better in one city and others in the other, and these shoppers make up a considerable bulk of the day's business. Theatrical parties, or atendance induced by attractions in one or the other city, contribute to the traffic. In fact, the experience on the Lackawanna & Wyoming Valley Railway shows that the residents of two cities 20 miles apart, of about 100,000 population each, and connected by an attractive and high-speed line, with low fares and frequent trains, can find many excuses for traveling from one city to the other

When the company commenced operations in May, 1903, it ran a twenty-minute local service from 6 a. m. to 12 p. m. In December, 1903, additional local trains were scheduled, producing ten-minute service from 3:20 p. m. to 6:40 p. m. daily except Sunday. In February, 1904, a limited train service, stopping only at Pittston and terminals, was instituted with five trains in each direction, daily except Sunday. In June, 1904, an all-night service was put on with hourly



TYPICAL CUT ON LINE

local trains from 12 midnight to 6 a.m. In June, 1905, the limited service was increased to thirteen trains in each direction daily except Sunday.

The company's present schedule between Scranton and Wilkesbarre includes limited trains or cars each way every hour between 7 a. m. and 7 p. m., and local cars every 10 minutes between 3:20 p. m. and 6:40 p. m., and every 20 minutes between 5:40 a. m. and 3:20 p. m., and between 6:40 p. m. and 12 midnight. Local cars are also run every hour from 1 a. m. to 5 a. m. In addition, there are five freight and express trains run each way during the day.

SOLICITING TRAFFIC

The passenger organization, as already described, is conducted along steam railroad lines by an experienced traffic

manager. Although the line is only 20 miles long, the company believes in advertising extensively in the daily papers. These advertisements take two forms. One is the standard time table, similar to that carried by the steam railroads. This

is published not only in all the daily papers in the two terminal cities, but also in a considerable number of local papers, which are issued less frequently. In addition to this newspaper advertising, the company uses special announcements, and has arranged with the editors by which some of these announcements appear in the reading columns. One plan, which has proved very popular and which has been conducted for the last two seasons, is the publication of a set of jingles on the advantages of the "Laurel line," which is the popular name of the road. These jingles were known as the "Nifty Bill" jingles, and a new verse was published each day in each paper in which the company advertised. As this campaign was conducted for three months during the past two summers, the brain of the poet was somewhat taxed in an effort to produce 180 verses. But he succeeded, and it was found that people came to look cach day to see what "Nifty Bill"

had to say. Two of these verses are appended to illustrate their general character.

"How old is Ann?" the doctor said; Cried Nifty Bill: "I've never read The lady's age, but know, instead, The wonders of the Laurel Line."

"The reason there's no dust, they say, Is rock-ribbed ballast all the way, And oil besides," said Bill, "to lay The dust along the Laurel Line."

Newspaper advertising is not the only kind of missionary

large covers of this circular, which was printed tastefully in colors, were framed and presented to different hotels and other places in the cities along the route. A standard time table is issued for passengers' use, and is very similar to those

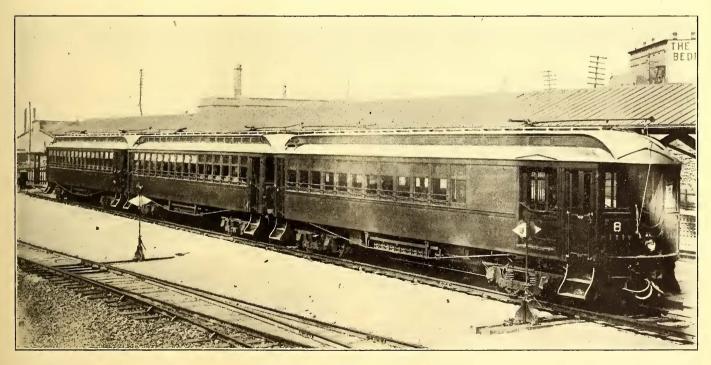


TYPICAL WAY STATION

employed by steam railroads, except that it is printed in two colors. In addition, the company has two outside men to solicit business and has issued various advertising souvenirs, such as lapel buttons and ladies' hat pins. These souvenirs are distributed by the ticket agents and the outside men. Ticket agents are employed regularly at four stations, viz., Scranton, Pittston, Hancock and Wilkesbarre.

TRAFFIC AGREEMENTS WITH OTHER ROADS

The company has traffic agreements with other roads in the Eastern Railway Association, and sells through tickets and checks through baggage, just as steam railroads do. It also

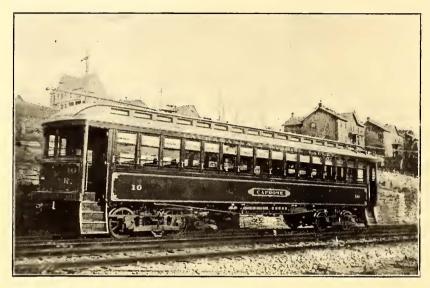


STANDARD THREE-CAR TRAIN

work upon which the passenger agent depends for developing traffic. The company issues a number of traffic circulars, and when it first commenced business distributed a very handsome circular, which was prepared by the Matthews-Northrup Company, and of which 10,000 were printed. The interchanges freight with the Erie Railroad, the Delaware, Lackawanna & Western Railroad, and the Lehigh Valley Railroad, and expects to haul through steam railroad passenger cars for certain of the steam railroad lines, which reach one of its terminals and not the other.

FREIGHT AND EXPRESS SERVICE

The company has leased the express business on its line to the Adams Express Company, and is one of the very few electric railways whose express business is conducted by one of the old line express companies. There are five express runs each way by special express motor car. In addition, freight cars are hauled over the line by a steam locomotive owned Scranton, and the company uses a modification of Nos. 19 and 31 of the Standard American Railway Forms, as shown on page 170, except that the instruction is sent by telephone instead of telegraph. The conductor is required to write the train order as received by the despatcher on an autographic



STANDARD CAR



MILK CAN USED FOR HOLDING CALCIUM CHLORIDE

by the company, but this steam locomotive has recently been replaced by an electric locomotive. The company has the same freight rates and schedule as the steam railroads, and employs freight agents at each of the principal stations.

ELECTRIC LOCOMOTIVES

Two views are given of the electric locomotive used by the company for hauling freight trains. It is of the Baldwin-Westinghouse 8-4-E type, weighs 55 tons, and its principal dimensions are: Length over all, 32 ft.; width, 9 ft.; truck



SIDE VIEW OF LOCOMOTIVE

centers, 15 ft.; wheel base, 7 ft. 10 ins.; wheels, 36 ins. in diameter. The locomotive is equipped with four 50-hp motors and automatic air brakes and is also arranged for multiple-unit switch control. It is fitted with both trolley and third-rail shoes.

TELEPHONES AND DESPATCHING

All despatching is conducted by telephone, and Couch & Seeley instruments are used. The despatcher is stationed at

register, which makes three copies. He then repeats the order to the despatcher, and marks the time of its receipt. Two copies are then torn off from the register; one is kept by the conductor and the other is handed by him to the motorman. The third is retained within the register.

THIRD-RAIL CONSTRUCTION

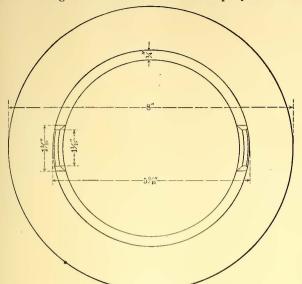
The company was one of the first to use a side third rail,



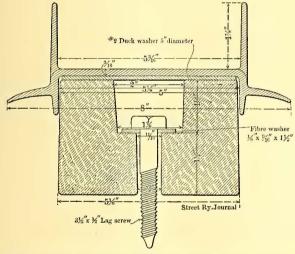
END VIEW OF LOCOMOTIVE

and has made little change in the character of rail or insulation. The rail is mounted 19½ ins. center to center from the service rail and its head is 3 ins. above the head of the service rail. The rail used is a 75-lb. A. S. C. E. section. Several types of insulators have been employed, including reconstructed granite and several types of earthware. Experiments are also to be conducted with insulators made of oak and painted with P. & B.

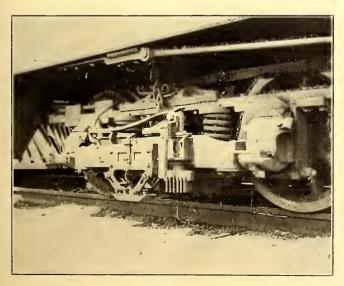
'SLEET REMOVAL BY CALCIUM CHLORIDE
For cleaning ice off the third rail the company uses brushes



Top View of Malleable Iron Cap.

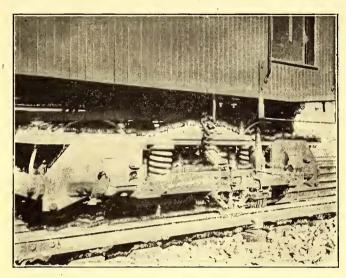


PLAN AND SECTION OF THIRD-RAIL INSULATOR



HEDLEY SLEET SCRAPER ON REAR TRUCK

and a weak solution of calcium chloride. The cars always run in the same direction and the forward truck is equipped with a wire brush. The handle is hollow. The calcium chloride solution is carried in a 15-gal. milk can in the motorman's cab, and is connected with the hollow handle of the brush on each side of the truck by 3/4-in. piping. The flow is controlled by small globe valves. The cans are carried only when the weather requires it, and a very small quantity of fluid only is needed. The rear truck is equipped with a standard Hedley third-rail scraper, which consists of steel-plate spring brushes held in a flat back, and bearing on the



BOSTON ELEVATED WIRE BRUSH FOR SLEET, USED ON FORWARD TRUCK

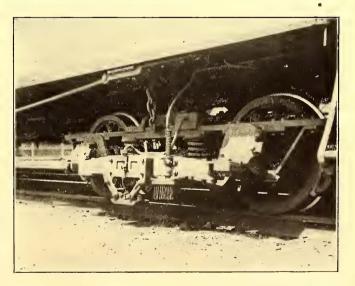
head of the rail, diagonally across its face. This scraper removes the ice or sleet, which has been softened by the calcium chloride applied by the leading brush.

BRAKE-SHOES

A large number of experiments have been conducted on brake-shoes. The company first used a very soft brake-shoe, which wore out very rapidly. This was followed by a hard brake-shoe, which cut the tires badly. The company has now adopted the Diamond-S shoe as standard.

PARK RESORTS

The company has developed a large park business, and has on its line an unusually large number of very attractive parks,



OHIO BRASS SLEET WIRE BRUSH, USED ON FORWARD TRUCK, SHOWING ALSO PIPE FOR CALCIUM CHLORIDE

especially Luna Park, near Scranton; Rocky Glen Park, 6 miles south of Scranton, and Valley View Park, half-way between Pittston and Wilkesbarre. The latter is controlled by

the company, the others by outside individuals or corporations. At Valley View Park no admittance is charged, except when the park is leased for the day, as it frequently is, to some society or association. In this case, the latter has control over the admissions. The park contains base ball grounds, five booths for the sale of refreshments, dancing pavilion, swings, seats, band stand, etc. Last season the company provided band concerts every Sunday afternoon and evening, at which bands of thirty pieces from Wilkesbarre and Scranton played on alternate weeks. The average attendance was from 4000 to 5000, and the park has frequently entertained 12,000 persons. The land was leased for a long term of vears at a nominal rental, and as the natural attractions were excellent only about \$5,000 was required to fit up the park, not including \$2,000 which was spent on the baseball and athletic grounds, so that the investment is not large, although the returns are very satisfactory.

ACCOUNTING

As the company is organized under the steam railroad law,

it is obliged by the Commissioner of Internal Affairs, at Harrisburg, to conduct its accounts after steam railroad methods. The steam railform is, road therefore, followed, with the addition of some eight or ten accounts not used in steam railroad work. Thus, in "maintenance of way," the company has an additional item, "maintenance of electric lines." In "maintenance of equipment" the company also has a charge of "maintenance of

Lackawanna & Wyoming Valley Railroad Company.
To the Superintendent
Reported by Occupation From
Train or Run No. Engine or Motor No. Cars Nos. Direction
Conductor Badge No
Exact place of accident Time Number persons Injure! Passengers Employes Travellers on Highwaya Troupassers.
Names of injured persons. Occupations, if employes. Addresses
Appendix of the Control of the Contr

· • • • • • • • • • • • • • • • • • • •
Apparent lojury
What was done with and for injured perions?
And the second s
If Physicians were called, give names and addresses
Where are injured persons now?

Cause of accident
Danage to property
Name of owner
Witnesses Addresses Addresses
many analysis and the control of the second
The same of the sa
Construction of the second
Control of the contro
What tracks are observed? Which can be cleared first!
Is wreck train needed? From which end can wreck train work to best advantage?
Is Engine or Motor off track! Damaged?
In what position?
How many loaded cars are off track? How many damaged
How many empty cars are off track? How many damaged
How many and kind of cars needed for transfer of freight?
How many cars abaud of cars wrecked or off track?
Brief statement of how accident occurred
Dispatcher

TELEPHONE REPORT OF ACCIDENT

steam and electric plants." The "passenger car" item is credited with all the expenditures put on the cars, except those required for the electrical equipment. The expense of the crews on the freight cars is charged in to freight service. The passenger motormen expenses are carried in a separate item and the same is done with the passenger conductors. The general expenses are the same as with a steam railroad, and the accounting with agents is also conducted on the same plan.

ACCIDENT RECORDS

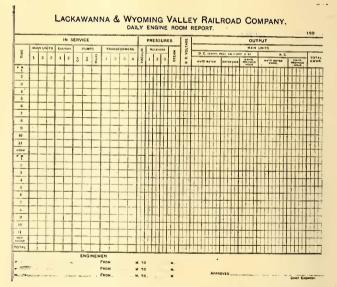
The company pays more attention to accident records than most roads. These records are kept in vertical file cases, which contain, respectively, in three divisions, settled cases, those in suit and those for which no suit or claim has been brought. The accident record itself may consist of eight sheets. The first is the first news of the accident received at the main office. This word usually comes by telephone to the train despatcher, who fills out this blank, as soon as the accident is reported to him. As this is a novel idea, the blank used for this purpose is reproduced. The

second sheet contains the conductor's report of the accident. This blank is filled out by the conductor as soon as he reaches one of the terminal stations, and it gives the particulars more in detail. The third blank is the motorman's report, and describes the condition of the car or train, its speed, whether all lights were burning, etc., and contains a space for his account of the accident. The fourth blank is the one filled out if the victim of the accident is an employee. It gives par-

		- 1	N S	ER	/ICI						1					OL	ITP	וטי							CIRCUI	T BREAKE	R RECORD
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SUB-STATION REPORT, 91/2 INS. X 12 INS.

ticulars of the accident and is signed by the injured person, foreman and all others who were witnesses. The fifth is the surgeon's report, and must be filled out and forwarded by the surgeon, immediately after attendance, to the superintendent. All of these blanks contain forms for making sworn acknowledgements of their statements before a notary public—a



FRONT OF ENGINE-ROOM LOG, 91/2 INS. X 12 INS.

precaution that is usually taken. The sixth and seventh blanks are the more complete reports of the conductor and motorman, which are in the form of affidavits, and the eighth is a statement filled out by the witnesses. The blanks, when collected after an accident, are enclosed in a stiff manila cover with blank lines on the outside, where the information can be digested, and are bound up with any other papers that may relate to the accident. All accidents are numbered, as far as possible, in chronological order, and each is given a mark on the outside to indicate its classification, according to the plan

followed by the Pennsylvania State Railroad Commission. If suit is brought, the file is transferred to another file called the suit file, and when settled the papers are transferred to another file containing settled cases.

BULLETIN ORDERS

All bulletin orders are written in triplicate, and one copy is sent to the bulletin board at each terminal. A third is kept in

ire No		Size		Kind	
Center No.	Axle No.	On Centre	Turned or Off	Amount Turned	Mileage
				+	

TIRE RECORD, 3 INS. X 5 INS.

the trainmaster's office, where it is pasted in a large book. Underneath the space left for the bulletin, the following words are printed:

I hereby certify that I have read the above Bulletin Order No. , on the date opposite my name, and that I fully understand same and agree to be governed thereby.

Underneath this clause is a space for signatures, and each man affected by the order is required to sign his name on the page.

BLANKS AND FORMS

No attempt can be made to publish or describe all of the blanks and forms used by the company, but those used in keeping track of accidents have been mentioned, and certain others showing the performance of the apparatus used have proved so satisfactory, that a brief description will be given of them.

The company's three log sheets for the engine room, boiler room and sub-station are presented herewith. The principal feature of these logs is that no attempt is made to keep a record of prices at the power station. Instead, the chief engineer fills out the mechanical information required, leaving the accounting for the head office. Only one side of the engineroom log is reproduced. The other side has a record of circuit breakers in and out, remarks, and switchboard attendants. No daily record is kept of oil used, as the company has

Form 112, 200 3'06
L. & W. V. R. R.

Mil	eage F	Record								Car	No.	
Day	Jen.	Feb.	Mor.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec
1					•							
2												
3												
4												
5									,			
6					,							
7												
8												
9												

FORM FOR KEEPING MILEAGE RECORDS, 8 INS. X 5 INS.

a contract for the supply of all the oil required at a maximum cost per 1000 kw-hours of station output. The coal record is kept by weighing the coal when delivered, and taking an estimate of stock at the end of the month. More exact methods are not required, as the line is in the region where coal is cheap, and no large supply has to be kept on hand.

All of the other performance records are kept on cards, either 5 ins. x 8 ins., or 3 ins. x 5 ins.

The heading of the paint and varnish record is shown in Form 113. This is self-explanatory, except to say that the dates on which cars were painted are written in red ink, and those on which cars were varnished are given in black ink. This same form can be used to record progress of any special tests, i. e., on armatures, etc., when desired.

Form 111 is used for the tabulation of different kinds of troubles. Six classes of troubles are kept on this card, viz., troubles with air-brakes, type-L control, electro-pneumatic control, trucks, motors and car bodies. The card is ruled off

UNDER CAR		2		
No.	From	То	MILEAGE	REMARKS
			1	
\neg				,
			 	
				·-····································

BACK OF TIRE RECORD, 3 INS. X 5 INS.

for 31 days. In addition, a card is kept for entering the number of defects which are reported, but which, upon examination, are found to be O. K.

Form 112 is the mileage record. A separate card is kept for each car.

The only supply parts which the company uses in sufficient quantities to warrant special records are brake-shoes and tires.

LACKAWANNA & WYOMING VALLEY RAILROAD COMPANY

	No	•			Record
Date In	Date Out	Remarks	Date In	Date Out	Remarks
	-				
			I.		

PAINT AND VARNISH RECORD, 5 INS. X 8 INS.

Form 114 shows the card used in keeping brake-shoe records. This, like all of the other cards mentioned so far, is 5 ins. x 8

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4										9			B007	П						\prod	П	П	11	1	Ш	Ш			il.
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11						1													~	-	-	-							
MED-						1					-																		
TOTAL		-	-					7				1	V																

BOILER-ROOM LOG, 91/2 INS. X 12 INS.

ins. After the words "Truck number" the card is filled in to show whether the shoe is on a right front-motor truck wheel, a right rear-motor truck wheel, a right front-trail truck wheel, etc. The cards when placed in the index are divided into eight divisions, to correspond with the eight car wheels. The first four columns on this card are used regularly. The items in the following four columns are kept only occasionally, viz.: when special tests are made of brake-shoes.

The tire record is printed on both sides of a card, 5 ins. x 3 ins., and is ruled with nine horizontal lines to give all the entries probable during the life of each wheel.

REPAIR SHOP RECORDS

In its repair shop records, the company pays especial attention to their possible use at any time as evidence in accident suits. It has been found that in a number of claims the plaintiff has alleged that a defective condition of the car has existed, and every care is taken to provide against this contingency. The first repair record may be considered to be that kept by the train master as a substitute for the usual signing

DATE	NAME AND ADDRESS	CAT. NO.	QUANT.	LIST	DIS.	NET	REMARKS

PRICE RECORD, 5 INS. X 8 INS.

in sheet. This consists of a report to the effect that Car No. is in good condition, with the exceptions noted, and must be signed by both conductor and motorman when leaving work. The items which the motorman approves are printed in one column in one font or style of type, and those which the conductor approves in another column and another font of type. This report is made with a carbon duplicate. Both sheets are checked by the despatcher against the train sheet. The original then goes to the master mechanic and the duplicates to the superintendent for his accident file. The master mechanic notes on the back of his sheet any remarks which are necessary, and places in his permanent file.

Every car is thoroughly inspected at the repair shop once in three days. When a car enters the shop a blue card is attached to it, carrying the following list of parts and repairs:

CAR NUMBER..... DATE IN.....

Car Body:-

Steps.

Doors (checks, stops and fastenings).

Window guards.

Sash (glass and fixtures).

Seats

Floors.

Registers.

Trucks:-

Brakes adjusted.

Brake shoes.

Truck bolts.

Hand brakes.

Sand boxes inspected and filled.

Motors Oiled:-

Armature bearings. Motor-axle bearings.

Motors Cleaned:-

Blowing out.

Cleaning Fuller boards.

Brush holders.

Brush-holder springs.

Carbons.

Air-Brake Equipment:-

Compressors oiled and inspected.

Motormen's brake valves.

Conductors' signal valves and whistles.

Slack adjusters.

Piping.

Connection hose.

Governors.

Controllers and Lamp Circuits:-

Switchboard.

Controllers.

Reverser.

Lamp circuits. Storage batteries.

Junction boxes.

Jumpers.

Jumper sockets.

Trolleys and Third-Rail Shoes:-

Poles and wheels inspected.

Wheels and bases oiled.

Links.

Bolts.

Shunts.

The car number is then entered in a diary kept in the shop. This diary shows the number of the car in for inspection, and whether it was turned out O. K. at the end of the day or held in the repair shop for repairs. The different entries are comparatively few in number, so that for convenience they are stamped in the diary with rubber stamps. The blue card remains with

the car while it is in the shop. It is hung on a hook in the cab. Train men have instructions never to take out a car

Lackawanna & Wyoming Valley Railroad Co. TRAIN ORDER NO.

		ntendent's	,	Scranton, 20	Mar. 190_6
То	C. & M.	of	No. 3 N.	at	Wilkes-Barre
	No. 3 N. will	not pass J	enkins Crossov	er without ord	ers. C. P. W.

CONDUCTOR AND MOTORMAN (OR ENGINEMAN) MUST EACH HAVE A COPY OF THIS ORDER.

Rec'd by	Land	Condr.	Made	Comp.	at	1:16 p.	M.	Vicker.	Dispr.

FORM OF TRAIN ORDER USED IN DESPATCHING, MADE IN DUPLICATE

which has a blue card on this hook unless all the items on the card have been completely checked off and signed for by the

Form 111 100-2 06 LACKAWANNA AND WYOMING VALLEY RAILROAD COMPANY

FORM FOR TABULATING TROUBLES, 5 INS. X 8 INS.

Porm 114 20-	2,00	LACK	AWANNA	& WYOM	ING VALLE	Y RAILRO	AD COMPANY	
Truck No.	-							Brake Shoe Record
Nake	Date On	Date Off	Allenge	Weight	Scrap Wt.	Wt. Wear	filles per fb.	Remarks
								•
						70.0		

BRAKE-SHOE RECORD, 5 INS. X 8 INS.

several inspectors. If so, the card must be turned in to the master mechanic before the car is taken out. If emergency repair work has to be done, a yellow card is used instead of a blue one. All of these cards, when returned to the master mechanic, are kept for two years, the time during which, under the law, accident claims must be brought.

Another blank used for the car house is solely for preparing

defenses for accident claims. The company has sometimes had claims after an interval of several months for accidents, in which the plaintiff has alleged faulty condition of a seat, step or loose king-pin plate. As these parts are used as a basis for accident claims more frequently than any other, the company has found it desirable to use, in addition to the blue card, an inspector's report of each defect found which might possibly cause such an accident. For convenience in filing, these reports are made on blank paper cut 3 ins. x 5 ins. and filed by days in chronological order. They are kept for two years.

OFFICE RECORDS

A word might be said about a few of the office records. The lost and found department uses two cards. The first is a tag

Lackawanna & Wyoming Valley R. R. Co.

APPLICATION FOR EMPLOYMENT.

Applicant	must answer qu	estions and sign this	application in ink in his own handwriting.
Name in full		AND ROLL STREET, SPANISH AND ADDRESS.	Married, Single, Widower.
Address in full		anga sa pajaganganganga	
Position desired	erette verreite with a terrent		What is your trade or occupation?
Age H	eight	Weight Hov	v long have you lived in
Where were you	born?	A COLOR DE LOS DE LOS DE LA COLOR DE LA CO	and the state of t
If out of the Un	ited States, how	long have you lived	in this country?
Are you, or have	e you declared	your intention to become	ome a citizen of the United States?
			oyed by an electric, street or interurban, or steam railroad?
Where were you	last employed,	and in what capacity	
When, and why	did you leave?	The state of the s	property and the second
Are you in debt	Parameter .	ll so, how	much?
		-	are dependent upon you for support and where they live
			Are you in any way crippled or deformed?
			The state of the s
			g or speech?
			nen, where, how, and effect of injury?
			Commence of the Commence of th
			meanor ?
			o, to what extent?
			Where and when?
Have you any i	relatives in our e	mploy ?	
To what snrety	company have yo	ou ever applied for bon	d?
Was bond grants	ed ?		· · · · · · · · · · · · · · · · · · ·
State on	the following bla	nk your employment	and employers during the last five years:
DATE PROM	DATE TO	EMPLOYED AS	HAME AND ADDRESS OF EMPLOYEES
San allegan et agrantement			
	- Constitution of the second		be in the control of
and an alter defendant	**************************************	······································	man hour states and a summary different a summary of the summary o
liquidated damages cation by me of as knowledge.	and as a forfeit to affidavit contain	mployment, I agree to do n insure the return of along a fall and truthful at	mpany's Surgeon and pay \$1 co for same. especial with the Company, without interest, the sum of \$10.000 by way of I property with which I may be intrusted and the making and verifi- stement of every secident affecting the Company of which I may not of the property instrusted to me, or to make uffidavit as provided in the
money owing by r	ne for nulforms, or	as against moneys belo	of the property instrusted to me, or to make uffidavit as provided in the samy but that ii shall not be used as an offset against claim made for aging to the Company and placed in my bands for the purpose of making

FRONT OF APPLICATION BLANK

which is attached to every article found, and gives "found by," "occupation," "where," "train or run number," "direction," "arriving at." The second is a card index of the articles, giving the same information as the tag, but having a space on which the owner can receipt for the article. Such articles, if not called for within six months, are returned to the finder, sold or destroyed. Receipts are also kept for six months.

Orders are filed by firms' names, and when the order is sent the duplicate is kept on file until the order is completed, when it is stamped "completed," and put in a permanent file. After the order has been completed the prices are entered up in another card catalogue, which is indexed by articles, and

gives date, name and address, catalogue number, quantity, list price, discount, net.

SCHOOL FOR MOTORMEN AND CONDUCTORS

The company pays especial attention to the selection and instruction of its train crews, and has adopted a system of instruction and premiums which is quite unique. The company began operation May 20, 1903, and on the first anniversary of that event announced the following bonus system: "From and after this date, a semi-annual premium will be paid to regular conductors and motormen for each six months' clear record in their respective positions. To be eligible, a man must work on at least 150 separate days within the calendar six months, but in case leaves of absence be granted on account

I agree, as a punishment, in case of an infraction	on of the Company's rules, to serve time	practicing or under suspension without pay.
		ach additional time in excess thereof as the
I understand that no compensation is paid gnated point for opportunity to work), but that cars, computed at following rates:	to trainmen for time speut while eng	aged "on watch" (meaning waiting at any de- lered while actually employed on the Company
22 cents per hour for first year of continue	ous service, after being placed on extra	i list
23 cents per hour for second year of conting	years of continuous service, after being	etra list. /
24 rents per bour for third and succeeding These wages are satisfactory to me, and if	employed, I agree to work contentedly	y and faithfully.
bove referred to, I shall have no claim against	the Company for service rendered, or e	
I agree to provide myself at once with a s White in the Company's service, I agree to	study carefully and comply faithfully	with all its rules, regulations and orders
hereby make effidavit.	statements made, and my willingness	t the foregoing and clearly ouderstand all control unide by the conditions of this contract.
State of Pennsylvania.		and the state of t
County of	SS:	
•		worn, deposes and says the above statement i
true to the best of knowledg	e and belief.	worn, deposes and says the score statement i
Swarn to before me this-		
		NOTARY POBLIC
We do not be in the court of the	REFERENCES.	
		G VALLEY RAILROAD COMPANY to
mploy	as	and do state
bat we are not related to him in any way		(a)
nd that he is a man of good moral cha	racter, of sober, temperate and i	ndustrious habits not addicted to the use
of intoxicating liquors or drugs, and no viole of truth and integrity, good understanding,	ator of law and good order. And and of temper and manners fit to	d we further represent that he is a man
a)		
b)		
0)		
0)	Residence	CONTRACTOR
LACKAWANNA AND	WYOMING VALLEY RA	ILROAD COMPANY.
polication No		Badge No.
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lationality.	- ·	
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pproved190		
ppointed190	amon from conjugate as a root for the party and the state of the state	Superintendent.
	CASH DEPOSIT.	
This is to certify that there has been his application.	deposited with the Cashier the su	um of \$10.00 as a forfeit as provided i
Date	***** *g *** ****** ** ** **	Gashier
*		
Deschool		Wyoming Valley Railroad Company, th

SECOND PAGE OF APPLICATION BLANK

of sickness or other proper reason, the period of six months will be extended by the terms of such leaves of absence. In case an entry against a man's record be necessary, he commences a new period of six months immediately he returns to work after discipline. * * * * It is sincerely hoped that every conductor and motorman will merit this reward." The names are kept in a card index. Every time a man returns to work after discipline the date is entered in black, and every time that a man gets a bonus the date is entered in red.

In addition, the company conducts twice a year what might be termed a school for motormen and conductors. The course consists of six meetings, and every conductor and motorman is required to attend five of these meetings, whether

he is an old man or a new man. At the time this instruction is being given the schedules are re-arranged each week and the course repeated so that every train man has a chance to attend, and the men are paid while attending the school. Other employees, such as inspectors or switchmen, are welcome to attend the meetings, but attendance is not compulsory with them. Each session lasts an hour and a half. During the first half of each daily session, the chief despatcher discusses the subject of train rules, orders, etc., with the men. During the last half of each session the superintendent, Mr. Wilson, talks to the men on special operating features, hints on the care of new apparatus, methods of dealing with passengers, ejectments, accidents, and other subjects which the management thinks it advisable to discuss. What constitutes legal liability in accidents and ejectments is also explained so that the men may know how to avoid trouble and where to look for competent witnesses. The men are invited at these times to make suggestions, and many valuable points have been brought up by them. As indicating the value of these talks, the company had no accidents from November, the time of the last meeting, until well on into January.

The company employs exclusively for its train crews men who have had experience in steam railroad operation, and takes no one who has not had at least one year's service on a steam railroad, or its equivalent in the company's own service. It does not take employees from electric roads unless they have also had the steam railroad experience. The superintendent considers it essential that the men should instinctively get out the flag in the case of stops, as in steam railroad work. The company has fifty-five men in its train service, and has had very few resignations or discharges since the line went into operation. The front and back of the application blank, which is especially complete, is presented on page 171. Since the blank was printed the company has made a change in the wages paid, which are now 25 cents per hour for the first year of continuous service after being placed on the extra list, and 26 cents per hour for the second and succeeding years of continuous employment. In other respects the application blank is the same as that shown-

DEVELOPING FREIGHT TRAFFIC

In addition to the methods for developing passenger traffic already outlined, the company has engaged quite extensively in advertising to manufacturers the advantages of locating their works along its line. In particular it has issued a twenty-page folder for this purpose, in which the cheap fuel and power facilities of the territory between Scranton and Wilkesbarre is described in detail. The company states that it has recently installed at Scranton a large power plant whose capacity is in excess of that required for the road, and which has been designed to supply power for industrial purposes. In addition the company's freight facilities are excellent, and it is prepared to make such connections in the way of sidings as will appeal to manufacturers. A map is published in which the industrial locations available along the line of route are indicated. Passenger traffic circulars are coming to be very common among electric railway companies, but a vigorous campaign to secure new manufacturing plants along their lines is as yet rare among electric railway companies.

OFFICER'S

The officers of the company are: President, George C. Smith, of Pittsburg; vice-president and secretary, Charles F. Conn, of Scranton; treasurer, Carl M. Vail, of New York; auditor, H. E. Yost; traffic manager, B. F. Wyly, Jr.; superintendent and purchasing agent, Chester P. Wilson.

CONVENIENT METHOD OF THROWING SWITCHES

Much of the trouble usually attendant upon the throwing of a switch by the motormen is avoided by the Clinton Electric Railway Company, Clinton, Ia., by the method illustrated in the accompanying illustration. A hole is cut in the platform over the rail, and the switch-iron is extended through this. With a little experience the motorman is enabled to



METHOD OF THROWING SWITCHES AT CLINTON, IA.

stop the car in such a position that the hole is immediately over the switch tongue, and then it is a very easy matter to throw the switch. R. M. Howard, general manager of the system, states that the method is satisfactory in every way. The cars on the Clinton system are mounted on a single track, but this method of throwing switches is used in Minneapolis and St. Paul on double-truck cars.

+0+-

The Lake Shore & Michigan Southern Railway is constructing in its freight yards at Collinwood an electric line for the purpose of carrying switchmen and other employees to and from different points in the yards. The Collinwood yard is the largest on the system, and all freight trains are made up here. For a long time the company used a switch engine for carrying the men back and forth. Later a gasoline car was used for this purpose, but it did not prove altogether satisfactory, and the company is stringing trolley wire over one of its tracks in the yard and will operate an electric car up and down these tracks at frequent intervals. Arrangements have been made with the Cleveland Electric Railway Company to secure the necessary power.

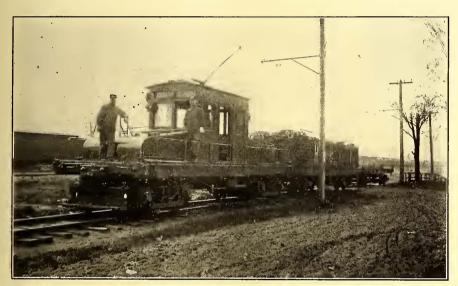
SOME OPERATING FEATURES OF THE TOLEDO & INDIANA

The Toledo & Indiana Railway, operating from Toledo to Bryan, Ohio, was completed about a year ago, and the equipment and power station were fully described in the Street Railway Journal of Oct. 21, 1905. Since that time the road has changed hands, and is now being operated by E. E. Darrow, managing engineer, who has instituted a number of innovations in operating practice and in new equipment which are quite interesting.

COST OF CAR-LOAD FREIGHT

As outlined in the previous article, the road does quite an extensive car-lead freight business. There has long been a great difference of opinion among traction-line operators as to the profit aspect of this class of business, and even among those roads which are engaged in it there has been a woeful lack of data as to the cost of operating freight trains and the effect such traffic has upon the general welfare of the road.

Before going into the subject it would be well to recapitulate some of the general conditions which this road encounters. It extends from Toledo to Bryan, 56 miles, closely par-



ELECTRIC LOCOMOTIVE HAULING STEAM ROAD FREIGHT CARS

alleling the main line of the Lake Shore & Michigan Southern Railroad. Except in passing through towns the rights of way of the two roads adjoin one another, and in view of the remarkable freight-handling facilities of this great steam road, it would seem at first glance to be the height of folly to attempt to compete with it on bulk car-load freight. It appears, however, that the steam road has more business than it can handle. This particular district is a very prosperous one, originating more than the average amount of freight, and the steam road seems to be perfectly willing that the electric shall handle a few cars a day between local points. Local people shipping to nearby points are glad to give the business to the electric line, because they are sure of prompt delivery. The electric line has its own cars and is glad to accept broken lots, and usually it is possible to get better car service from the electric than from the steam. The line now has an arrangement with the Toledo Terminal & Belt Line whereby freight cars run to its terminal station in the heart of Toledo for loading and unloading. The belt makes a charge of \$3 per car for handling to any point on its line or to the terminal station. The traction line has about twenty standard box cars which are marked as private cars so that they will not be taken off from the Belt Line. Shipments to distant points are frequently made in foreign cars delivered by the Belt

Line, the traction company receiving a switching charge for handling them.

The road is remarkably level, there being no grades over 2 per cent, and there are no sharp curves. In fact, it is possible to run a train of standard freight cars from one end of the line to the other. Freight trains are handled by a locomotive built at the company's own shops. The floor framing is weighted with rails, and the weight of the locomotive is 82,000 lbs. It is equipped with four Westinghouse No. 112, 75-hp motors with a gear ratio of 64 to 18. The maximum speed is about 20 m. p. h., and the scheduled speed is 15 m. p. h. It is fitted with a Westinghouse L-4 controller, and has air brakes and Van Dorn couplers. It has handled twelve loaded freight cars.

Tests made by the managing engineer have demonstrated that the locomotive alone consumes 4 kw-h per car mile. He states that each loaded car adds 2 kw-h to the power consumption, and that this increase holds good with each car added up to ten cars, which was as high as he went. The readings were taken on the locomotive over a run of 50 miles. Current from the company's station delivered at the cars costs about 1 cent per kilowatt hour. The cost of the cur-

rent for the locomotive is therefore about 4 cents per car mile, and each car added increases it to 2 cents per car mile. The locomotive covers a round trip daily of about 100 miles. The daily cost of operating the locomotive alone is figured at \$4 per day for power, \$1 for repairs, lubrication and incidentals, and \$4 per day for train service, or a total of \$9 per day, the cost of operating the locomotive alone. As intimated, the cost of each car is about \$2 per day. Over a period of six months the average number of cars handled daily has been five each way, or 500 car miles per day. The actual earnings from freight have been 15 cents per car mile, or \$75 per day for the crew. It will be seen, therefore, that according to these figures there is a very nice profit in this business. This method of calculation, of course, makes no charge for the freight operation, for the expenses of track and

overhead maintenance, and the maintenance of station agents, and numerous other expenses incident to the operation of the road. Mr. Darrow probably figures that these would be necessary anyway, and that this freight is merely a small adjunct which yields a good return from the extra investment.

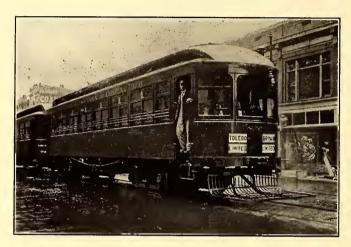
The load on this line includes five passenger coaches, on hourly schedule, two limited trains making three round trips each, three express cars making two round trips each, and the freight train, making one round trip.

All of this load, including a small lighting load which will be referred to later, is handled by one 600-kw generator. The load factor averages pretty close to the normal rating, and the station output averages 10,000 to 12,000 kw hours per day. The managing engineer claims that it is impossible to note any great difference in the current consumption, whether the freight train is on or off, the output on Sundays being usually only a trifle less than on week days. He says that the freight train in starting does not produce any more of a peak than the limited cars, which are geared high and start fast. He believes that he has practically ideal conditions for small freight business of this character. He does not believe that these favorable conditions would hold true if there was business enough to warrant the operation of several freight trains, because then the fluctuations would be much greater than at

present, and it would be necessary to install additional machinery and feeders, and the profit from the freight alone probably would not be sufficient to warrant the large outlay. The lack of grades and curves, of course, renders this additional load much easier on the power station. Additional freight trains would also interfere with the passenger service, which is very fast. With but one train of this character, the freight clears the limited cars by five minutes and has never delayed them.

FAST LIMITED SERVICE

The limited service on this line is claimed to be the fastest in Ohio, the cars covering the 56 miles in 1 min. 45 sec. This is practically the same as the steam trains which make the same



A TOLEDO & INDIANA PARLOR CAR

stops, and people are enabled to reach the business centers of the town in faster time than on steam trains. Two very fine parlor cars, the "Virginia" and the "Madlyn," are used in this service. They were fitted up in the company's own shop and are handsomely finished and furnished. Three different styles of wicker chairs are used. The corner seats are couches large enough for two, while some of the chairs have high rolled backs, while others are smaller and the seats are lower, the idea being to provide comfortable seats for men or women. The cars seat thirty-two passengers, twelve in the smoking compartment The window draperies are dark green, and the floors are carpeted with a heavy carpet of the same color. The smoking room has linoleum covering. In one corner of the main passenger compartment is a neat little writing desk. The stationery is provided, and a number of current magazines are also supplied. The lighting of these cars is very liberal, there being side lights and electroliers, the lamps on the latter being fitted with white globes. An excess fare of To cents is charged on these cars, and baggage is carried free. It is stated that this small excess is not objectionable, and that the limited cars earn about the same per car mile as the local cars.

CASH RECEIPTS

The company has recently adopted the scheme of charging 5 cents more for fares paid on cars than for the ticket fares, and making the cash fare receipt redeemable for 5 cents at any ticket office. This has the effect of discouraging the payment of fares on cars, and at the same time does not cause the discontent among people who do not have ready access to ticket offices as the scheme of making a straight increase for fares paid on cars. The fares on the Toledo & Indiana are a trifle higher than on the parallel steam road, due to the two-cent fare law recently passed in Ohio, but the frequent service, the high speed and superior accommodations of the limited have enabled the traction company to

hold its own; in fact, the business has improved, because the steam road has reduced the number of its local trains.

FLOATING SUB-STATIONS

Mr. Darrow was formerly an advocate of floating sub-stations, and the Toledo & Indiana was built with all but one of its sub-station outfits in cars. Mr. Darrow believes it is impossible properly to protect such outfits from lightning. Lightning recently got into one of these cars and went through the oil switches and transformers, throwing the oil all over the car and entirely destroying everything in the vicinity. A new sub-station being erected to take the place of this will contain no wood of any kind, the walls, roof and floors being of concrete, and unusual precautions will be taken to guard against lightning.

SPRING SWITCHES

Originally the road was laid out with spring switches at all turnouts. Recently an entire freight train was derailed on one of these switches, and investigation showed that a piece or coal had dropped into the switch and held it open just far enough to cause the derailment. Figuring on what might have occurred if one of their limiteds had struck this point, the management took out all the spring switches. It takes a little longer to open and lock a switch, but it is figured that it is better to make up this time in some other way.

Unlike many others, this management does not countenance the running at high speed through villages and towns. It has gained the good will of all the towns along its line by urging them to pass speed ordinances limiting the speed to 12 miles an hour, and employees have been instructed that they must obey these ordinances. Between towns the road



THE RICH INTERIOR OF A TOLEDO & INDIANA CHAIR CAR

is a perfect tangent on which the men can run as fast as they want to.

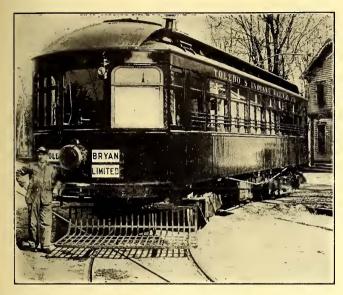
STEEL VS. CHILLED WHEELS

While the majority of high-speed operators are advocating steel-tired wheels, Mr. Darrow, after using them for two years, has returned to the advocacy of chilled wheels. His complaint against steel wheels is that they do not wear even, one wheel wearing sharp and another one round. He believes that it is necessary to keep all the wheels on the set the same diameter, or the smaller wheels will have a tendency to slip, causing a drag on the car and an uneven wear to the wheels, so that they have to come in frequently to be turned. His argument is that steel wheels cost about \$30 net, including the rebate for old material, while the cast-iron wheels cost about \$4 each, including the rebate. The Griffin wheel which he has been using averages about 60,000 miles, so that

he can get over 300,000 miles for the cost of the steel-tired wheels, and he has been unable to find a steel-tired wheel that will give such a mileage. The straight track and lack of curves and excellent city entrance is undoubtedly accountable for the excellent service given by the cast-iron wheels.

SWINGING FENDER

Several cars on this line have recently been equipped with a new fender made by J. A. Sage, of Bryan, Ohio The fender



HEAD-ON VIEW OF CAR, SHOWING FENDER CONFORMING
TO CURVATURE OF TRACK

is of the ordinary Detroit "gridiron" pattern, and possesses the interesting feature of following a curve. A metal track is attached to the body of the car and the fender is attached rigidly to a carrier hung on this track with anti-friction rollers; the carrier, which is simply a forked lever, is pivoted

at the back end of the car, and a lever attachment to the truck causes the fender to swing with the trucks. The device is designed so that it can be used with the type of fender which drops, as well as with the stationary type of fender. The illustration shows the fender swinging with a curve. The motorman is standing in a position where he would be struck by an ordinary fender.

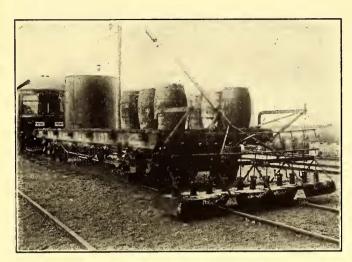
BURNING WEEDS

The line traverses a sandy district, and the removal of weeds from the right of way has been an expensive and troublesome proposition. Recently an interesting outfit was rigged up for burning weeks. A number of tanks of crude oil are mounted on an ordinary flat car and the oil is conveyed through nozzles under an air pressure of 80 lbs., which makes a very hot flame. The burners are surrounded by sheeting to keep the sprays in the proper place, and the

sheeting, becoming red hot, aids in the burning and drying out of the weeds in the track. A large tank of water with hose connections is carried on the car to prevent any spread of fire. The burning outfit may be raised or lowered by a lever as the conditions may develop. In practice it has been found that it takes one barrel of crude or torch oil per mile. About three miles per hour can be covered easily, so that it makes a simple and effective way of fighting weeds, and the expense is very slight as compared with the old way of digging them out.

LIGHTING

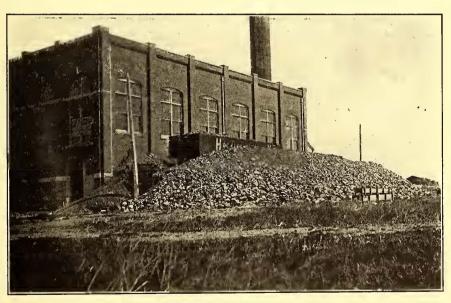
The company is negotiating to illuminate the village of Stryker. At present there are installed 26 arc lamps and about 1000 incandescent lamps operated from a city plant, which is unsatisfactory. The plan is to supply the current at the flat rate of 4 cents per kilowatt hour on the high-tension side of a step-down transformer, the village to maintain the system as heretofore. The contract provides that the village lighting shall be a secondary consideration to the operation of the interurban line.



THE WEED BURNER LOWERED

EMPLOYEES' CLUB

The Toledo & Indiana employees' club has recently been formed by employees, all employees and officials being members. A well-equipped clubroom, with reading room, billiard table and bathroom, has been fitted up at the headquarters at Stryker. The membership provides for dues of 50 cents per



COAL SUPPLY AT POWER HOUSE

month, and a fund has been created from which employees receive a benefit of \$6 per week during sickness.

ADVERTISING

One of the most profitable methods of advertising for an electric road is the publishing of time tables in the daily papers of the towns through which the line passes. Of course the more information presented in this way the better it is, but frequently operators figure that the less space used the better, and they are satisfied with a bald statement that

trains in certain directions leave at a certain time. The Toledo & Indiana publishes its complete time table in all the towns along its line. One form of copy does for all the towns. As will be noticed from the accompanying reprint,

TOLEDO & INDIANA RY. CO

TIME TABLE

		V	ZEST I	BOUNI	D		
Toledo	Swanton	Delta	Wauseon	Pettisville.	Archbold	Stryker	Bryan
Miles	20	26	34	38	42	48	56
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TOLEDO & INDIANA' RAILWAY COMPANY TIME TABLE

the names of the stations appear at the top of the column, together with the miles from Toledo and the rates of fares from Toledo. Then follow the trains west bound and the trains east bound. Reading across the column, the seeker for information can ascertain the times of any train at any station. The entire advertisement occupies five inches single column, and gives all the information that can be desired in a concise and legible manner.

EXTENSION TO FORT WAYNE

The owners of the Toledo & Indiana Railway have secured right of way for an extension of 41 miles from Bryan to Ft. Wayne. Arrangements have been completed for financing this section. The new extension will cost in the neighborhood of \$600,000, and will reduce the cost of the entire prop-

erty to the rate of \$20,000 a mile, as the power station was designed to handle the entire road from Toledo to Ft. Wayne. This will be a very direct route between these two large centers, continuing the present limited schedule, and also furnishing the most direct route from Toledo to Indianapolis.

TRACK CONSTRUCTION IN MONTREAL

In a paper read at the last meeting of the Canadian Street Railway Association, M. Nielson, consulting engineer of the Montreal Street Railway Company, described his ideal of track construction in paved streets. He recommended a T-rail, A. S. C. E. standard, weighing 90 lbs. per yard and in 60-ft. lengths. It should have sufficient depth to allow the laying of 6-in. scoriae grooved blocks inside the rail. In macadam streets he recommended 80-lb. T-rail in 60-ft. lengths. The joints should be made with heavy 28-in., sixbolt angle plates, or with "continuous" joint plates.

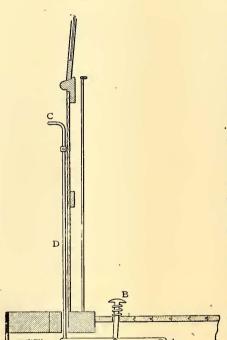
For the foundation Mr. Nielson recommended concrete stringers 2 ft. wide and 12 ins, deep under each rail. In laying the track the rails are mounted over the trenches for the concrete on ties spaced 12 ft. apart. These ties are merely to bring the rails to a correct surface. Tie-rods are used every 5 ft. or 6 ft. After the track is surfaced the concrete is tamped in under the rails and laid between the rails to a depth of about 6 ins. to support the stringers. Care should be taken to prepare the foundation for the concrete so that the section will be as near as possible uniform the whole length of the track. Great care should also be

taken with the earth foundation upon which the concrete is to rest. It should be well rammed or rolled to an even hardness. These details are very important.

When relaying track in streets which were concreted when the track was first laid, stretches of good solid concrete can often be utilized. All the old concrete in the bad stretches should be removed and new work of the kind described put in. Where the concrete is good quality, although broken into large slabs which rest upon a well-settled earth bed, it seems unwise to disturb it. In cases like this the practice in Montreal is to lay the rails on top of this work, held together with tie-rods only. The rods are placed every 6 ft. The rails are shimmed to correct grade, everything loose on top of the old concrete is removed, and the whole surface is kept well moistened ahead of the new layer of concrete, which varies in thickness according to the settlement that has taken place under the original mass. In cases where no settlement has taken place and there is not sufficient depth to allow the new concrete being tamped under the rail, pure cement mortar is run under. Work like this, properly done, should stand up well, and it is self-evident that it is the cheapest way of preparing the foundation for the new rails. In every case where entirely new concrete work is put in, no cars should be allowed on the rails for at least ten days after the last batch of concrete is laid; good work is sometimes ruined by allowing traffic on it too soon.

A CONVENIENT HEADLIGHT TRIP

The majority of the arc headlights in use at the present time are probably those of the automatic type or the type that is self-tripping. There are, however, many of the older



DETAILS OF HEADLIGHT TRIP

style in use that necessitate pushing a button in order to cause an arc to be drawn after the Imp has been extinguished. On a road where such lamps were in use to avoid the inconvenience of letting the window down whenever it was necessary to trip the lamp, a device shown by the accompanying drawing was devised by the master mechanic.

In the drawing, B is a pin projecting up through the floor of the motorman's cab. Its lower end is attached to about the middle point of

a lever which has its fixed point at A. At the outer end is a long rod which projects up through a bumper block and terminates in a flattened-out angle at C, which is immediately over the button of the headlight. Pressing the pin B causes the angle C to push the button of the headlight down until the carbons make contact. When the foot is removed a spring under B restores C to its normal position. This device was put on thirty cars at a cost of about one dollar per car. In this instance a hole was bored through the floor and bumper block.

Street Ry. Journal

COMBINED COMFORT AND WAITING STATIONS IN CLEVELAND

The city of Cleveland is preparing to make some liberal expenditures in the erection of shelter houses and public comfort stations in various parts of the city, particularly at transfer points on car lines, where they will serve as waiting rooms for transferring passengers. Several elaborate sta-

tions have been erected in the public parks, while in the public square, the most congested point in the city, where an immense amount of transferring of passengers is done, there are three of these stations. Two of them are simple shelter houses built of structural iron with wide tile roof, and a section which is closed and heated in cold weather, while the third building combines the features of a public comfort station and a waiting room for the interurban passengers. The two smaller buildings are on the north and south and east and west streets through the center of the public square, while the comfort station is on the southwest corner of the square, which section is given over entirely to the interurban cars. There are double tracks around this corner, and all the interurban cars stop at this point several minutes before the hour of departure, so that the building, while owned and maintained by the city, answers all the purposes of an interurban station. The traction companies maintain a ticket office,

a ticket seller. In addition the companies even agreed to check baggage free of charge. An ordinance was passed and plans prepared, when there came a hitch as to who was to furnish the towels to be used by the general public. The city insisted that individual towels be furnished to every one who took advantage of the convenience. The companies objected to this on the ground that it would be rather expensive. Then some one secured an injunction on the ground



SHELTER HOUSE ON PUBLIC SQUARE FOR CITY PASSENGERS



PUBLIC COMFORT STATION AND INTERURBAN WAITING ROOM

checking station and small waiting room immediately opposite the station, so that the arrangement is a great improvement over the plan formerly in vogue of obliging passengers to wait for cars in the open.

The public comfort station, while built by the city, was originally proposed by the traction companies, and the story of how it was secured is somewhat amusing, as showing the inconsistencies of city governments. The interurban companies offered to erect the station, deed it to the city and maintain it at their own expense, the only condition being that the companies be permitted to reserve a small corner for

that the park property could not be used for private purposes. The matter dragged for about a year, and finally the city erected the building itself, utilizing the plans prepared by the traction companies. As it stands, the interurbans are getting practically all they wanted at no expense whatever, as the city even maintains attendants who direct passengers to the proper cars.

The building is of artistic architectural effect, built of dark pressed brick and stone trimmings. The frame is of steel and the roof of red tile. Above ground the building is 70 ft. long by 16 ft. wide, and contains a large open space divided in the center by a railing separating the quarters for men and women. The space is filled with comfortable wooden benches, giving quite a large seating capacity. The space is closed in winter, while in summer the doors are removed, making practically an open side facing the tracks. The building is well heated in winter and a boiler fired by natural gas and supplying a number of steam radi-

ators around the walls. The basement of the building extends beneath the sidewalks, giving a space 30 ft. x 70 ft. Toilet accommodations are provided for both men and women. The rooms are accessible by stone steps at either end of the building. The basements are finished in white glazed brick, and the plumbing, fixtures and facilities are equal to those found in the best hotels, there being attendants constantly on duty in both rooms. Hot and cold water and individual towels are among the conveniences. The cost of the structure was about \$12,000. The institution is of tremendous convenience to interurban passengers as well as to the general public.

THE RECONSTRUCTION OF THE CLINTON STREET RAIL-WAY SYSTEM, CLINTON, IOWA

About one year ago the system of the Clinton Street Railway Company, then known as the State Electric Company, was completely rebuilt. The old track was torn out and relaid with heavier rails, new overhead work was put up, new cars were obtained, and a building containing shop, storage houses and offices erected. In fact, the old system might be said to have been replaced by a new one. As it stands now it is an ideal one for a small city. The reconstruction was carried out in such a thorough manner that it would be difficult to find where any extensive improvements or changes could be made to any advantage.

The system comprises about 16 miles of single track. The greater portion of this lies on Second Street and connects Clinton proper with Lyons, which was formerly a separately incorporated town, but is now a part of Clinton. The two towns have a combined population of about 25,000. A spur from the end of Second Street, or main line, continues to Eagle Point Park, operated by the railway company, on the bluffs overlooking the Mississippi River and about four miles above Clinton. A crosstown line on Sixth Avenue serves the Western portion of Clinton, and is also used for an



TAMPING UNDER THE TIES

entrance for the interurban line of the Iowa and Illinois Railway Company, operating between Clinton and Davenport. Power for the line is purchased from the Clinton Gas Company, which has installed a 350-kw Bullock generator to care for the railway load.

Several reasons combined to bring about a decision to reconstruct the line. With the exception of the track construction the new work was done by the railway company under the supervision of R. M. Howard, general manager of the system. The tracks were rebuilt by the North American Railway Construction Company, of Chicago. They are comparatively heavy, considering the weight of the cars operated on them. The main line on Second Street is built with 72-lb. 6-in. T rails, while the Sixth Avenue line is of heavier construction, because the heavy interurban cars of the Iowa & Illinois Railway Company are operated over it. On this line 80-lb. 7-in. T rails were employed. At intervals of 10 ft. the rails are tied together with 13%-in. x 3%-in. rods. In all of the work No. 1 white oak ties measuring 6 ins. x 8 ins. square and 8 ft. long were employed, and were placed with centers 2 ft. apart.

After the old track had been torn out the ground was ex-



LAYING THE PAVEMENT

cavated to a depth of about 8 ins., and the bottom of the excavation was filled with 4 ins. of crushed rock obtained from a local quarry. The rock was well rolled with a 13-ton steam roller before the ties were laid upon it. These were afterward raised about 2 ins. by tamping, giving 6 ins. of

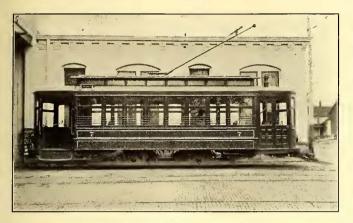


TRACK PARTLY LAID

rock under them. Under special work and under about 2000 ft. of track on Sixth Avenue over what was formerly low, swampy land, the ties were laid on a 6-in. concrete bed. The special work used was of the Lorain Steel Company special built-up construction. In the lower illustration on page 178 is shown a piece of special work employed at Sixth Avenue and Second Street. This, as may be seen, is a three-way switch. The rails are all in 60-ft. lengths, and are connected by continuous rail joints, and two 4-0 protected rail bonds are employed at each joint. In installing these bonds the holes are drilled 1-16 in. small at the mill, and were reamed out dry

with a portable reamer just before the bonds were placed in position. In order to interfere with traffic as little as possible during construction work, only 1000 ft. of track was torn up at one time, and cars were operated up to both ends of the torn-up section and the passengers were transferred around the work in buses hired by the company.

White cedar poles with 7-in. tops and 30 ft. in length were



STANDARD 20 FT. SEMI-CONVERTIBLE CAR

employed in constructing the overhead. To give the poles a better appearance they were painted a slate color to a height of 5 ft. above the ground. The overhead construction of the main line and the Sixth Avenue line differ in that on the main line the trolley is of 2-0 wire and no feeders are employed, while on the Sixth Avenue line a 4-0 trolley and a 4-0 feeder are used. The greater portion of the main line is double track, and the two trolleys are continued over the single track to the ends of the line. Over the entire line Garton lightning arresters are placed on poles at 1000-ft. intervals.

CAR EQUIPMENT

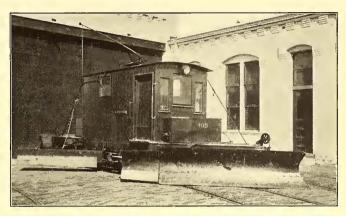
When the line was reconstructed enough cars were pur-



A THREE-WAY SWITCH AND OTHER SPECIAL WORK AT SIXTH AVENUE AND SECOND STREET

chased to operate it without the use of the old ones. The new equipment consists of six semi-convertible cars with 20-ft. 8-in. bodies built by the St. Louis Car Company, six tenbench open cars and two Brill semi-convertible cars of the American Car Company manufacture with 20-ft. bodies. In addition there are six old summer cars used when travel is

heavy. All of the cars are equipped for operation from either end and are provided with Providence fenders, International double fare registers, automatic circuit breakers, and electrical meters. The semi-convertible cars are provided with cane cross seats of the walkover type, and are heated with hot-water heaters carried in the vestibule. The cars built by the American Car Company are mounted on No. 21-E trucks,



SNOW-PLOW BUILT IN THE COMPANY'S SHOPS

while the remainder are equipped with St. Louis No. 35 trucks. All are equipped with two GE 67 motors and K-10 controllers. Trucks and electrical equipment are provided for all of the cars, so that no changing over is necessary in the spring and in the fall. This practice is followed because all the cars, both open and semi-convertible, are required to care for summer travel. The cars are all painted a chrome green. No lettering is used, but the sides are striped in gold. In addition to passenger cars the equipment of the system includes a line car, a salt car and a snow plow. This latter was built in the shops of the company. It is mounted on a single track upon which are mounted two GE 67 motors. The plows, one on each end, serve to counterbalance

one another, one being raised while the other is lowered, a winch inside the car operating them. Boxes on each end of the car are loaded with 2½ tons of scrap iron. The line car was constructed from an old closed car. The tower is supported by five 4-in. pipes, and is raised by a winch inside the car. A salt car built from an old closed car body has inside of it a grinder driven from the axle, for grinding the rock salt used on the track. This car is not provided with motors, but is usually pulled by the line car.

THE NEW SHOPS

The old shops and storage barns were located on Sixth Avenue in the down-town district of the city. The location of the new shops at Sixth Avenue and Randolph Streets is about midway between Clinton and Lyons, and was decided upon partly because it was a convenient point, but the fact that it was outside the fire district and cheaper insurance could be obtained was of considerable influence. The executive

offices and storage barns are built in conjunction with the shop.

The general design of the building was worked out by Mr. Howard to meet the conditions arising on this particular road. They have been found satisfactory in every particular, and their adaptability to such a road may be judged by the

fact that the design has been copied in one or two instances for other roads. The building measures 100 ft. by 177 ft. 4 ins. long. It might be said to consist of four sections, two on the south for the storage of cars, a car shop proper immediately north of these, and a section somewhat longer than the car shops which contains the machine shop, boiler room

GENERAL VIEW OF SHOPS AND OFFICES

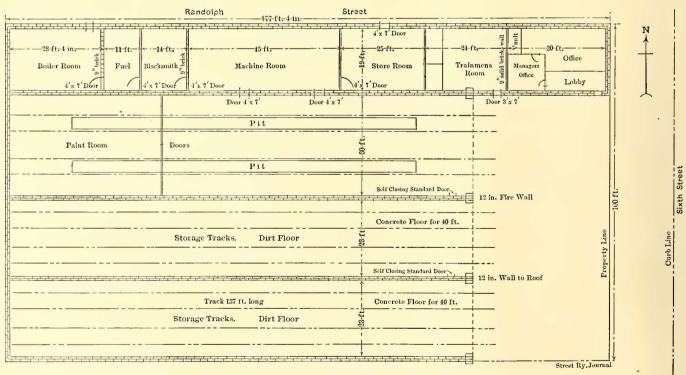
for heating the building, the forge room, store room, trainmen's waiting room, and offices. The building is of sand lime brick, and while no attempt has been made to construct an ornate building, the structure, as may be observed by the illustration, is of pleasing appearance. Wood truss construction is employed to support the tar and gravel roof, and these

construction of the car shop and storage barns. The floors and pits are of concrete, and the front doors are of the Kinnear rolling steel type. The brick wall separating the car shop and the adjacent storage compartment, as well as that between the two storage compartments, extends above the roof, and the one opening in each of them is provided with a

self-closing fire-proof door. In fact, every precaution has been taken against fire that could be gotten with a reasonable outlay of money.

The car shop proper is provided with two tracks, both of which have concrete pits. The rear portion of this shop is arranged to be used as a paint room during that season when the cars are being overhauled, and at other times to be utilized for general repairs. It is separated from the forward portion of the shop by hinged doors which close it up tight so that the proper temperature can be maintained in it irrespective of the temperature in the forward portion. Separate hinged doors for closing the pits are provided under the main doors. The shop is provided with overhead carriers and other means for handling wheels, armatures and other

heavy parts. An illustration on page 180 shows the method of raising car bodies free from the tracks when these are to be repaired or wheels are to be changed. Four chain hoists are suspended to I-beams overhead, and by means of a T-rail placed under the car at each end and supported by a pair of the chain



PLAN OF SHOPS AND CAR HOUSE OF THE CLINTON STREET RAILWAY COMPANY

wooden trusses have been so built that in case of fire they will be burned away without injury to the walls. In car-shop construction very frequently sufficient attention is not given to the arrangements for proper lighting. Mr. Howard, however, appreciates the importance of light in such a shop, and the roof is liberally supplied with skylights, as may be observed from an accompanying view. With the exception of the roof trusses, there is practically no wood used in the

hoists the car body is quickly raised to any desired height. Another illustration shows an overhead traveler supported from an I-beam above the trolley. In the illustration may also be seen the trolley bridge, which when let down permits the traveler to pass beyond the trolley. A jumper passing over the I-beam connects the two sections of the trolley so that the section beyond the break is never dead, with the consequence that an arc can never be drawn

by letting the bridge down, when current is being taken from the section of the trolley beyond it. The bridge, which is made of a piece of heavy sheet iron bent into a U shape, is hinged at one end and is raised or lowered by a cord which passes over pulleys, and drops to a point along the wall within easy reach of the floor.

The shop is heated by hot air supplied by means of a motor-driven blower which forces the air over steam coils supplied with steam from a boiler. The air pipes are laid down underneath the concrete floor, and the outlets are in the sides of the pits near the bottom. This method of heating was followed not so much to keep the pits comfortably warm for the workmen as to dry out the motors and electrical apparatus under the car. It is the custom to allow the cars to remain over the pit and be subjected to the drying process as many hours as the schedule and repairs on other cars will permit. Since this practice has been followed there has been quite a decrease in cable troubles and breakdowns due to dampness of the apparatus.

That portion of the building used for the storage of cars was erected in two sections with a 12-in. wall separating them, because it was found that there was very little difference in the cost of this construction and steel girder roof construction extending clear across the four tracks. Separating the storage space in two sections, moreover, permitted the summer equipment to be stored away and closed up until spring. Storage space has been provided for all of the equipment of the road, first, because it was considered better economy to provide shelter for the cars, and secondly, because the cars can be maintained in a much better manner when kept out of the weather

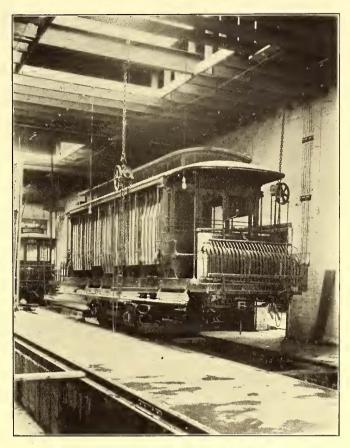
The machine room north of the car shop proper is amply provided with tools for making all ordinary repairs. A view on the opposite page shows the interior of the room. A 5-hp motor drives the machinery, which consists of a 20-in. 6-ft. Mueller lathe, a 26-in. Barnes drill press, an emery wheel and a grindstone. No wheel press or boring machine is required, as all wheel work is done in a neighboring machine shop. The machine room contains, in addition to the tools just mentioned, an air compressor used for blowing out



ROOF CONSTRUCTION OF SHOP, TROLLEY TRAVELING ON I-BEAM AND TROLLEY BRIDGE

motors and controllers. Immediately in the rear of the machine room is the forge room, containing one forge which is provided with a blower driven from the machine-shop line shaft. Behind the forge room is a room given over to the heating apparatus. There is installed in this room a boiler and hot-air heating apparatus, consisting of enclosed coils and a ventilating fan driven by a 6-hp motor.

The store room near the front of the building is well supplied with shelves and racks which enable all the supplies necessary for the road to be carried in the least space possible. The shelves are placed around the walls, while a combination bolt rack and storage space for glass utilizes the



CAR-BODY BEING RAISED FROM TRUCK BY CHAIN HOISTS

space in the center. A waiting room for trainmen is provided with a table and reading matter, and the toilet rooms for the shop are built opening out into it. The office of the system is in that portion of the structure extending out beyond the storage barns and car shops. The main office is provided



ROOF OF REPAIR SHOP, SHOWING VENTILATORS AND SKYLIGHTS

with a lobby and a fireproof vault for the storage of records. A private office for the manager opens off the main office. The shop sets back some distance from the street, and all the space in front is laid with paving brick.

EAGLE POINT PARK

The company operates an amusement resort known as

Eagle Point Park, which embraces 70 acres filled with ravines and glens and covered with fine trees. It is located a few miles north of Clinton on high bluffs about 200 ft. above the river, which at this point is filled with islands. The view obtained from the park is in itself the means of attracting many people to it. In fact, one can see a distance of twenty miles into the country on the opposite side of the river. The park is not yet fully developed, but at present it contains several buildings, and others will be erected during the coming sea-

GENERAL VIEW OF THE MACHINE SHOP

son. As it is high up on the hills where an almost constant breeze is to be found, it is used a great deal during the heated portion of the summer by those seeking a cool retreat. Conventions of various organizations meeting in Clinton usually hold picnics or gatherings at the park, and on the occasion of the merchants' convention more than 6000 people were carried to it. Usually the cars leading to the park are operated on the spur from the main line only, and it is



VIEW OF THE MISSISSIPPI RIVER FROM EAGLE POINT PARK

necessary to change cars at the terminus of the spur. On Sundays, holidays and other occasions when travel is heavy, however, through cars are run to the park.

A forcible example of what can sometimes be accomplished by reducing fares was shown on the line leading to the park. The fare from the city was formerly 10 cents. This has since been reduced so that one can go from any part of the city to the park for 5 cents. Since the reduction has been made the attendance at the park has been more than doubled. The receipts, of course, are not much greater than they were

previous to the reduction, but the management feels that the reduction will in time result in greater receipts due to the growing popularity of the park. In the meantime the company has the satisfaction of feeling that its efforts to make the park popular are being appreciated by the citizens.

OPERATING FEATURES

The management realizes that in a town where the hauls are short every effort must be offered to get the people into

the habit of riding. To this end traffic is watched closely and at all times sufficient cars to handle the people comfortably are kept on the line. Special effort is also made to run cars close to the schedule and to keep them clean and comfortable. The necessity of keeping them properly heated is appreciated, and thermometers have been installed in the cars and the trainmen instructed to keep the temperature at about 60 or 65 degrees.

Quite a little revenue is obtained by giving proper attention to theater traffic. In order to take care of this properly the three-way switch at Sixth Avenue and Randolph Street was installed so that cars could be stored on Sixth Avenue. Usually six or eight cars are in readiness after an evening performance at the theater to convey the people to their homes.

The appearance and general demeanor of the trainmen is better than usually found on street railway systems, and this is partly due to the method of

discipline in use and partly to the interest shown by the management in the welfare of the trainmen. The merit system of discipline is used. Conductors are given merits or demerits for meritorious acts or for violating rules or unseemly conduct. This method of punishment is preferred by the company to that of laying men off for offenses, as that form of discipline works hardship on their families and increases their own troubles so that



SHELTER HOUSE IN EAGLE POINT PARK

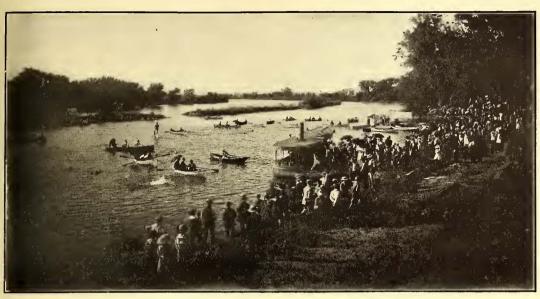
they cannot put heart into their work when they are reinstated. And, too, it often happens that a violation is made at a time when the man is needed badly and cannot be laid off. If he is laid off for a week or two after the offense is committed, a great deal of the effect of the punishment is lost. In other places where the merit system is employed it is usually customary to give the promotions to those having the least number of demerits or the greatest number of merits. This company, however, believes it better to give promotions to those longest in service.

pany, Sioux City, Ia., comprises 288 acres of land at the junction of the Missouri and the Sioux Rivers. One portion of this tract is taken up by the building and race track of the county fair grounds, but about 50 or 60 acres is devoted entirely to an amusement park. One of the illustrations shows the pavilion erected near the Sioux River. This contains a theater in which vaudeville performances are presented during about ten weeks of the summer season. Band concerts are also given at intervals on

No club or organization of the trainmen or employees exists, but the company has provided a waiting room for the employees and keeps it supplied with literature. A locker for

RIVERSIDE PARK AT SIOUX CITY

Riverside Park, controlled by the Sioux City Traction Com-



A LIVELY BOATING DAY ON THE SIOUX RIVER AT RIVERSIDE PARK

each man is also provided. All the trainmen are uniformed and are required to purchase a new suit each spring. In the office the standard method of accounting is employed. This has been varied somewhat to meet local conditions, but it is practically the same as recommended by the American Street and Interurban Railway Accountants' Association. A system of store-room accounting devised by Mr. Howard is in use, which requires very little work to keep it up yet which accounts for all material used and takes into consideration the exact cost of the material.

Until a few months ago the company was known as the States Electric Company. Since that time it has been reorganized and the name has been changed to the Clinton Street Railway Company. The capital stock is \$600,000, all paid in, and in addition to this there is a bond issue of \$400,000. The officers of the company—C. H. Young, president; D. Langan, vice-president; A. L. Schuler, vice-president, and C. C. Coan, treasurer—all reside in Clinton. In fact, all the stock is owned by residents of Clinton,

and the manner in which the system is maintained is due in a great measure to the fact that the stockholders take a pride in it and keep in touch with its operation.

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The Hocking Valley Railway, a steam line extending from Toledo to the southeastern portion of the State through Columbus, has been paralleled for more than two-thirds of its length by traction lines. A prominent official of the company has been quoted as saying that the company will not give up its local business without a hard fight, and that its experts are investigating all the gasoline and gaso-electric cars that can be found with a view to adopting something of this description as soon as a practical device can be secured. Local services will be given out of Toledo and both directions out of Columbus.



FRONT VIEW OF PAVILION IN RIVERSIDE PARK

the Sioux River. Quite a portion of the park is cleared of timber and is utilized as a golf course and ball grounds. Several boat clubs have their headquarters at the park, and quite a number of summer cottages have been erected on the grounds by the residents of Sioux City. The Sioux River, opposite the park, offers special inducements for bathing and boating. At about its middle point is a long, narrow island, which makes the view from the park especially attractive.

The Clover Leaf Railroad has effectively acknowledged the effect of interurban competition. According to an affidavit filed with the Indiana State Tax Board, the passenger traffic of that road has dropped off 95 per cent between points of interurban competition. The officials of the road say they are now building motor cars at the company's shops in Frankfort to compete with the trolley cars.

OPERATING RESULTS ON THE LANCASHIRE & YORK-SHIRE ELECTRIC DIVISION

Readers of this paper are acquainted with the fact that about two years ago the Lancashire & Yorkshire Railway Company, one of the most important steam railroads of England, electrified the portion of its line between Liverpool and Southport, a distance of some 18 miles. This division embraces 47 miles of track and a power and transmission plant of 12,000 hp. Descriptions of this system, which was in-

sengers with ordinary tickets. Our season tickets have also largely increased in number. The amount of building which is going on upon the line in consequence is also very gratifying, showing that it has done what we hoped it would do in attracting a large number of people to go and live out in this district. As to the cost of working, we have only had six months' experience as yet of the complete electric service, and we think we shall be better able to judge of the actual facts as to the cost of working when we have had a complete twelve months' experience of operation. It is, however, clear that it would be impossible to give the public the great advantages which they have in rapidity and frequency of service by any other method than by working elec-

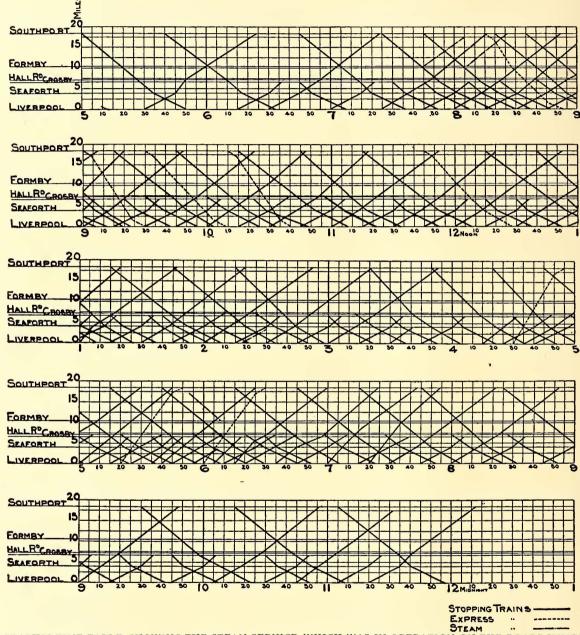


FIG. 1.—GRAPHIC TIME TABLE, SHOWING THE STEAM SERVICE WHICH WAS IN OPERATION ON THE ROADS IMMEDIATELY BEFORE THE ELECTRIC SERVICE

stalled by Dick, Kerr & Co., the well-known British contractors, appeared in the Street Railway Journal for Jan. 9, 1904, and April 2, 1904. Since the publication of these articles the line has been extended, and data are available upon the results secured. In general they can best be described in the words of the chairman, Sir George Armytage, delivered at the meeting of the company in August, 1905. The improved traffic is referred to in the following words:

The electric service upon the Liverpool, Southport & Crossens line during the last six months has been quite satisfactory, and has been appreciated by the vast majority of the people who have used it, as we have carried no less than 600,000 additional pas-

trically. There are, in addition, other indirect advantages to be considered; one, particularly, is the reduction of operations necessary at the terminal station, as the train can leave the platform it arrived at without any shunting, and this alone will postpone the necessity for enlarging the Liverpool station for some time to come. The short connecting line between Seaforth and the Liverpool Overhead Railway was brought into operation on July 2, and this additional convenience to the public will no doubt develop in time into an important feeder.

A further experience of eight months confirmed Sir George Armytage in his opinion of the operation of the line, for at the half-yearly meeting held on March 7 of this year he said, in reference to the cost of operation: With this we are quite satisfied, and we have been able to do a much greater amount of work, and give a very much improved service to the public, which would have been absolutely impossible under the old conditions. We are now contemplating some addi-

amounts now to nearly 60 miles of single track. This includes the extension from Southport to Crossens referred to in Sir George Armytage's address, as well as one of the

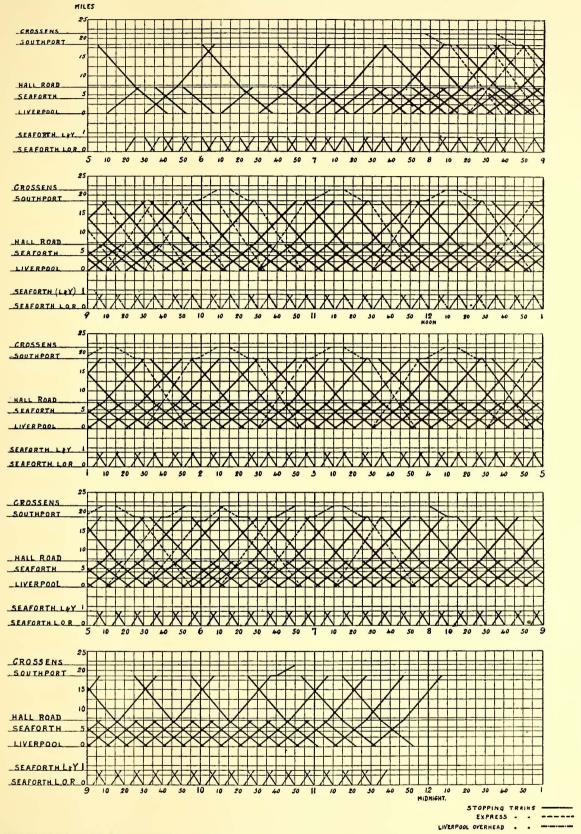


FIG. 2.—GRAPHIC TIME TABLE OF ELECTRIC SERVICE ON THE ELECTRIFIED DIVISION OF THE LANCASHIRE & YORKSHIRE RAILWAY

tions which will enable us to deal with the rapidly growing traffic as it arises. We have again carried very large additional numbers of passengers over the electrified portion of our railway, especially for short distances, and the whole system is working smoothly and well.

The total length of the line which has so far been electrified

branches which links up the Liverpool Elevated Railway with the Liverpool Southport line at Seaforth. The characteristics of the line and its extensions are level and straight. There are practically only two grades, one of I in 100 at Churchtown on the Crossens extension, and the other of about I in II2 for a short length at Seaforth. There are only two curves to be considered, and over these there is a speed limitation of 40 m. p. h. There are fourteen inter-

ger carrying vehicles, a baggage car, weighing 32 tons, is in constant operation on the line, running conveniently between the scheduled time of the trains, and dealing with baggage,

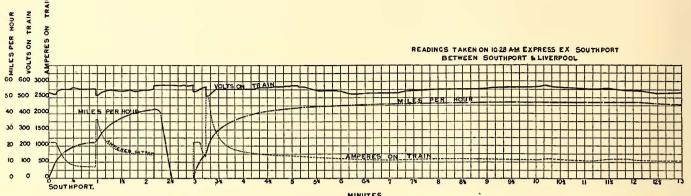


FIG. 5.—FIRST HALF OF A TYPICAL EXPRESS RUN FROM SOUTHPORT TO LIVERPOOL

mediate stations, which lie at an average distance of less than one mile apart on the southernmost portion of the route, but are more widely separated on the northern portion. The traffic is almost wholly passenger, business people going to and returning from Liverpool in the morning and evening, with a considerable shopping and miscellaneous traffic during the day.

ELECTRICITY VS. STEAM

Under steam conditions there were about thirty-six trains per day in each direction between Liverpool and Southport, a similar number running in each direction between Liverpool and Crosby, a station some $6\frac{1}{2}$ miles from Liverpool. The majority of these trains stopped at every station, a few expresses being run in the morning and evening for the accommodation of the business men. The running times were as follows: Express trains, 25 minutes; stopping or way trains, 54 minutes; Hall Road stopping trains, 25 minutes. The total train mileage per diem was about 1900. Fig. 1 is a graphic time-table, showing the steam service which was in operation on the roads immediately before the electric service was inaugurated; and Fig. 2 is the time-table to which the electric service of the line is now being run.

Under electrified conditions the daily train mileage has been increased from 1900 to 3500. The number of trains in each direction between Liverpool and Southport has been increased from 36 to 70, and between Liverpool and Hall Road from 36 to 60. Moreover, the running time from Liverpool to Southport, which before the initiation of the scheme was 54 minutes, has now been decreased to 37 minutes, and from Liverpool to Hall Road from 25 minutes to 17 minutes. The schedule time of the fast trains has remained unaltered; but there is now an express in each direction hourly, instead of only rarely. In addition to this, all the express trains now run on to Crossens, giving that suburb a service of seventeen trains each way during the day. These arrangements, however, by no means represent the ultimate capacity of the line, and indeed already very considerable extensions are in contemplation, while some of these are being actually proceeded with.

ELECTRIC TRAINS

The trains consist of two motor cars and of one, two, or three trailers as required. The five-car trains are operated during the rush hours of morning and evening, and the light trains during the slack hours of the middle day and early afternoon. The empty weight of the motor cars is about 46 tons, and that of the trailers 26 tons, so that a three-car train weighs 118 tons, a four-car train weighs 144 tons, and a five-car train weighs 170 tons. In addition to these passen-



FIG. 3.—VIEW OF CONTROLLING APPARATUS ON MULTIPLE-UNIT TRAIN

goods, produce, fish, etc., which cannot be handled during the fifteen-second station stops, at which passenger trains aim.

TWO-MOTOR CAR VS. MULTIPLE-UNIT SYSTEM

As described in the STREET RAILWAY JOURNAL for April 2, 1904, the original electrification was on the two-motor car system. That is, a train always included two motor cars, one at either end, equipped with two motor trucks, each car-

a multiple-unit train, and Fig. 4 shows the arrangement of the resistances and contactors under the coaches.

ENERGY CONSUMPTION

Tests made by the contractors indicate that the average

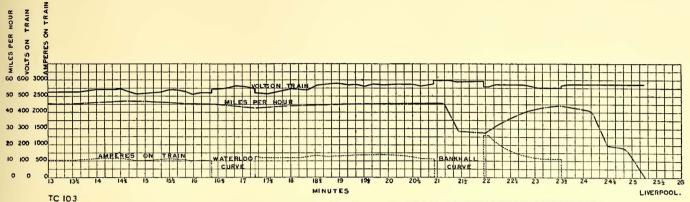


FIG. 5.—SECOND HALF OF A TYPICAL EXPRESS RUN FROM SOUTHPORT TO LIVERPOOL

rying two Dick, Kerr 4A, 150-hp motors, or eight motors per train. The controller was fully described at the time, and, briefly, consists of two controller cylinders geared together and operated by one handle; one cylinder controls the four motors of the leading car and the second cylinder the four motors of the rear car. By the use of solenoids for magnetic blow-outs, currents of 2500 amps. at starting are handled by this controller satisfactorily.

On June I the company commenced running some of its trains into Liverpool over the Liverpool Elevated Railway. Owing to the loading strength of the structure these trains had to be considerably lighter than those operating over the rest of the line, and the multiple unit system has been installed on the cars which run over both systems. In this way the trains can be divided up at the junction of the two

amount of energy taken by the four-car way trains which make the run from Liverpool to Southport in 37 minutes is about 80 watt-hours per ton-mile. The expresses between Liverpool and Birkdale absorb only 53 watt-hours per ton-mile. The current composition per ton-mile over the whole system is 82.3, but this will be understood and appreciated when consideration is given to the frequency of the Hall Road service, and the station density at that end of the line. Curves are given in Fig. 5 of a typical run of an express train.

POWER-STATION CHANGES

The original power station was designed for the operation of twelve trains, but almost from the first fifteen were found necessary, then a ten-minute service between the Liverpool Overhead and the Liverpool-Southport lines was established,

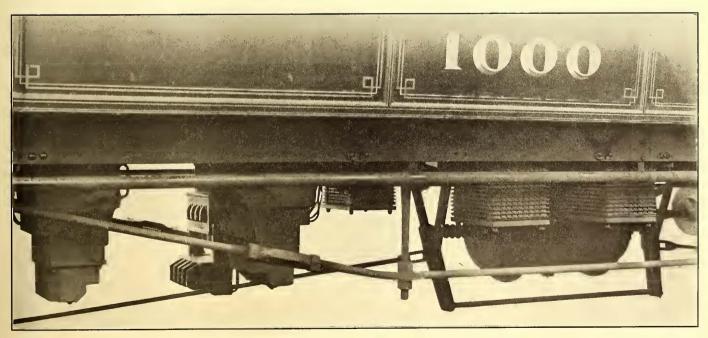


FIG. 4.—ARRANGEMENT OF RESISTANCES AND CONTACTORS UNDER THE CARS

systems. The use of the multiple-unit system, however, is confined to such trains as operate on both lines, and on trains which have been recently added to the Lancashire & Yorkshire system, which are not required to run on the Liverpool Overhead Railway, the locomotive system of control has been adhered to. Fig. 3 is a view of the controlling apparatus on

and, later, other trains were added. This naturally involved a heavier power-house output than was initially contemplated. Instead, however, of increasing the capacity of the power house to meet this demand, the railway company determined, upon the advice of its contractors, to put down a comprehensive system of storage batteries which should be capable

of dealing with the severe peak loads inseparable from the electrical working of a railway whereon a fast and frequent service, short runs between many stations, and high acceleration have to be maintained.

The batteries selected were those made by the Tudor Accumulator Company, and these, after careful consideration of all the questions involved, it was determined to put into four battery sub-stations. These are located between the rotary sub-stations and have capacities ranging from 1000 amps. discharge for one hour, or a maximum output for a short period of 2500 amps., to a 1600-amp. hourly discharge rate, or a maximum output of 4000 amps. Each battery is controlled by an automatic reversible booster of suitable capacity, the plant consisting of a motor, which is shunt-wound, directly connected to a booster which is capable of giving all necessary increase in voltage.

The electrification of one of the other branches will necessitate the erection of another sub-station, which is to be located at Aintree, and which is to be provided with two rotary transformers, each of 600-kw capacity, with necessary statics, etc., each unit being a duplicate of that originally installed in the earlier sub-stations. Housed in the same building will be a Tudor battery capable of giving a con-

true, a few fatalities, but for considerably over a year there has been nothing in the nature of a serious electrical shock or accident, although much of the track work is complicated. The cost of renewals of insulations, bonds, and other details connected with the third rail of the system has been almost negligible, where the insulators have been well set and the rail properly anchored, and in the case of the insulators the renewals have amounted to less than 300 per annum out of 30,000, or less than 1 per cent.

Experiments on the loss of current by leakage from the third rail indicate that on wet and slushy days, and after prolonged rain or snow, the loss is less than 2 amps. per mile. In starting up on a Sunday morning after a wet or snowy Saturday night the leakage current has been known to exceed this for a very short period, but as a whole the leakage may be regarded as negligible.

"THE ROUTE OF THE MINUTE MEN"

This is the title of a traffic booklet issued by the Lexington & Boston Street Railway Company, describing and illustrating the route of the minute men, followed by the company's lines.

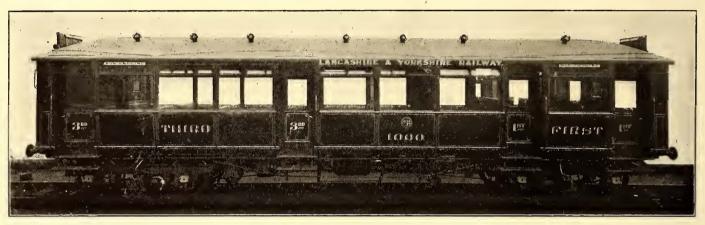


FIG. 6.—NEW MULTIPLE-UNIT CAR ON THE LANCASHIRE & YORKSHIRE RAILWAY

tinuous output for one hour of 1500 amps., and this battery will be connected to the third rail through a reversible booster, in a manner similar to that which has been adopted so successfully at the other stations. The sub-station at Aintree will be connected by means of high-tension cables with the rotary sub-station at Seaforth, as, owing to the ample section of the trunk mains from the power house to this point and the equalizing of the load through accumulators, it will not be necessary to reinforce the main high-tension cable system.

It will be noted by reference to the previous article that the alternators, which are of 1500 kw, generate at 7500 volts and 25 cycles. Power is distributed at this voltage to four rotary sub-stations, including one at the power station. Direct current is taken by the cars at 650 volts from a third rail which is located 3 ft. 111/2 ins. from the center line of the track and whose top is 3 ins. above the surface of the track rails. For the return circuit the company uses a fourth rail spiked to the ties and located midway between the service rails. The fourth rail is cross-bonded to the running rails and is omitted within the terminals and at the large stations, where the track work would be complicated by its introduction. In view of the controversy now going on in both England and America as to the relative advantages of the third-rail and overhead systems, it is interesting to learn that the third rail on the Lancashire & Yorkshire line has proved very satisfactory. Soon after the opening of the road there were, it is Along the route are such places of historic interest as the battle ground at Lexington, Hancock-Clark house, Monument Square in Concord, Sleepy Hollow Cemetery, and Lexington Park.

The cover of the pamphlet is surmounted by a picture of the statue of Captain John Parker, commander of the minute men at the Battle of Lexington. Five pages are then devoted to advertising. Beginning the descriptive matter is "Paul Revere's Ride." Following this is a picture of the statue of a minute man on Concord battle ground. In the descriptive matter is included the story of each of the places of interest, making the booklet extremely valuable.

It is reported that about Aug. I the United Railways, of St. Louis, began to run a refrigerator car over its lines to convey dressed beef from the St. Louis Dressed Beef Company on Manchester Avenue and Gratiot Street, to its three other branches. A car has been built for the purpose by the United Railways Companys, at a cost of \$6500. It has a capacity of 40,000 lbs. The dressed beef company will dispense with about forty wagons when the new service is installed. The railways company claims the right to carry express matter under its franchise. It also claims that dressed meat carried in the manner indicated is express and not freight. It is asserted that the meat will be carried mostly at night and when the lines are little used.

FROM A CONDUCTOR'S POINT OF VIEW

SIGNALING BY PASSENGERS

It seems to be taken for granted by many persons that when they are being carried past their destination they are privileged to pull the bell strap three times—the emergency stop—thus bringing the car to a sudden standstill. There is a law in many States making this a misdemeanor, and notices to this effect are posted on elevated cars. Similar announcements should be posted on street cars, and the rule should be vigorously enforced.

ASSIGNMENT OF RUNS

The placing of certain employees in localities especially suited to their peculiar abilities or disabilities is a matter to which street railway companies have not given much attention, yet it is an important consideration in the practical operation of a road. On many short feeder lines a mile or two in length one often finds young, vigorous motormen of several years' experience, operating the cars, free from the annoyances caused by trucks, burned-out motors or other difficulties. If they do get into trouble they will not block up the road, and the loss of a half trip would make only a few minutes difference. On the other hand, there are men on the main lines who have served from twenty to twenty-five years as motormen, and who if kept in the service at all should be placed where the work is lightest.

Again, one will find conductors on certain runs for which they are unsuited. It is a fact that certain regular riders will let cars go by them if they think that by waiting for a certain car they will get a new conductor who can be cheated out of his fare. Moreover, with nearly every company the crews work to some extent in rotation, so that it may often happen that a light or inexperienced conductor will take a car carrying a crowd of beats, or a tough picnic or ball crowd, with consequent loss of fares to the company. The writer knows of a certain isolated locality where a slight young lad used to get on his run every evening a mob of foreigners who would actually steal the nickels out of his pocket, besides pulling down the trolley and setting the rear brake, to say nothing of cheating him out of his fares. If there was a rule allowing starters to change the personnel of a run used by toughs, and to assign it to an experienced conductor, these conditions would be considerably improved.

Another way in which the red tape of rotation operates against the interests of the companies is in keeping the same crews continually in one depot or city. Suppose one man is holding a pretty fair run in one city and another in another city on lines of the same company. One man wishes to change, but if he does he loses his standing and has to go to the bottom of the extra list in the new depot. This is a bad rule, for if two men in different depots wish to change they should be allowed to take each other's runs. And if a company wishes to change two men they should do so and place them on their respective runs.

SUGGESTIONS FOR UNIFORMS OF CONDUCTORS ON OPEN CARS

Now that the open-car season is at hand, the question arises should not something be done to reduce the danger of conductors tripping when using the running-board. Some time ago the writer had an ugly fall caused by his trousers catching on some projection while he was collecting fares on an open car, and he has known of a number of cases of this kind. With a crowded open car the conductor has to spend considerable time on the running board, and it would seem a simple device, such as bicycle clips, would reduce a great deal of danger from this source. If the company wished to

go further, it could provide military leggins or even knicker-bockers. The latter may seem considerable of an innovation, but an example may be found when the bicycle police squad was organized. Now the sight of a policeman in short trousers or with leggins is not unusual and causes no comment. Leggins would give a military appearance to the men and might be preferable for this reason. There are also advertising possibilities in the idea, because if it became generally known that a road was planning to introduce a change of this sort many people would be attracted by the novelty until it became an old story.

KEEPING THE HANDS CLEAN

In the midst of hot weather, one of the serious problems, both to the street railway manager and to the street railway conductor, is the unclean condition into which the hands of the latter necessarily get on account of contact with dusty parts of the car, sweating, etc. The conductor can easily wash his hands by using soap and water, but to dry them is the difficulty. For this reason we see so many conductors with dirty hands. It is hardly practicable to provide toweling enough for say 200 men, and even if this were done outsiders would take advantage of it. A simple remedy would be for the janitor to take the old newspapers that accumulate, cut them into single strips about 11 ins. x 14 ins., and hang them on a nail. If this were done a conductor could hastily run into the wash room, wash his hands and dry them on a slip of paper.

SANDING RAILS

When a rail gets slippery on damp or foggy mornings, or from leaves falling on the ground, it is necessary to have the tracks sanded from one terminus to the other, and there is a call for the sand car. Sometimes this car cannot be sent out in a hurry. Perhaps the men are not at hand, the sand may not be ready, or the car itself out of order. It is obvious that delays in a case of this kind are dangerous, and a plan to get a division sanded in a quicker and less expensive manner is worth considering.

Every car has a sand-box at each end, so that when a car is running north, for instance, the motorman has the sand-box at the end to sand his track, and the sand-box at the south end of the car is inactive. A quicker way to get the division sanded would be for the starter to take some conductor or motorman and instruct him to board a car and work the sand-box on the rear of the car until it is empty. The man could tell this by looking at the track. Then he could leave the first car, board the next car, and work the sand-box in that car until it was empty, repeating the operation until the entire division was sanded. Where the car house is in the center of the route, one man could board the north-bound and another the south-bound car

THE TRANSFER QUESTION

An active discussion is going on in New York owing to a couple of new rules recently made by the local management. One of them requires a passenger to ask for a transfer when he pays his fare, and the other prohibits smoking on the rear platforms of street cars. Despite the clamor of the newspapers and a portion of the public, it cannot be said that the position of the railway company is unjust. It is certainly no harder for a passenger to ask for a transfer when he pays his fare than at any other time. On the other hand, it considerably lightens the work of the conductor and enables him to give more time to looking after the safety of his passengers. Of course this rule is also beneficial to the company, as it avoids the possibility of fraudulently-inclined passengers getting more than one transfer. The law does not require a company to give

two transfers, and no fair-minded person can deny that the company has the right to adopt reasonable regulations to protect itself against fraud. Regarding any rules about transfers and smoking, the writer has noticed in several cities that some conductors enforce them and others do not. This is certainly an injustice to those that enforce the rules, and the company should see that no man is allowed to shirk his duty.

Recently a large Eastern traction company put a rule into force requiring conductors to give a transfer upon a transfer. As matters now stand, owing to the peculiar routes of the system, a party can start on a car and ride indefinitely. The rule was made, however, because it is sometimes necessary to ride on three lines in going between certain portions of the city. When a passenger gets one transfer on another, he is doing very well, but to prevent indefinite riding the following suggestion is offered: When a conductor gives a transfer on a transfer, have him tear a small piece off of the corner of the transfer issued. This is a notice to the next conductor to issue no more transportation on that transfer.

"FARE, PLEASE"

A street car company should prohibit its conductor from using "Fare, please," except in extreme cases. The writer tried the experiment, while connected with one of the largest electric roads in the country, and found that in conducting his car without using such an expression he made a vast improvement in his work. At first it was exceedingly hard, but he soon noticed that the very hardness made him extremely sharp and watchful. And when he came to some one not inclined to pay promptly, "Fare" yelled at that individual would produce an extremely healthy activity in the direction of the desired nickel.

STORE-ROOM ACCOUNTING ON THE CHICAGO & MILWAU-KEE ELECTRIC RAILROAD

The quantity of material handled, the number of different kinds of stock kept, the fact that prices change at almost every purchase and other unusual features, makes it rather difficult to devise a satisfactory system of accounting for the store room and supply department. The system in use by the Chicago & Milwaukee Electric Railroad is of interest because very little clerical work is required to keep it up, reports are gotten out promptly at the end of the month, and the stock on hand is always known. The store room is run by the car maintenance department, which, in turn, is under the jurisdiction of J. L. Matson, superintendent of motive power of the system. Requisitions for material are usually

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DAILY REPORT OF MATERIAL RECEIVED

made out by foremen, but, in case time would be lost in hunting for a foreman, the storekeeper makes them out, writing in the proper blank space the name of the employee to whom the goods are delivered. Requisitions for goods for other departments than that of car maintenance are made in duplicate. Each day the copies of all the requisitions made for departments other than that of car maintenance are sent to

the heads of the departments, who check them in order to see that no goods not needed have been drawn. Any attempts at theft or improper use of material by employees would by this means be detected at once. For the car maintenance department, the original requisitions themselves are exam-

ined and checked, as the store room is under this department.

To assist in accounting the material in the stock room is classified under heads designated by the letters of the alphabet. Class A consists of bolts of all kinds; B of tools, including brooms, mops, drills and buckets; C is car motor repair parts, and D is air compressor and governor repair parts. The list continues in a similar manner through the alphabet. Every five days all the requisitions are arranged according to the classification of the goods issued on them and the prices of the goods de-



MEMORANDUM OF GOODS RECEIVED

livered is marked direct on the requisition itself.

The prices are obtained from the stock record. This is made up in the form of a loose leaf ledger, a page of which is given over to every kind of material carried. Consequently, there are several pages for each classification of material. Under

Chicago & Milwaukee Electric Railroad Co.

STOCK RECORD

SUBSTRICT NO.

SUBSTRICT

Class A, for example, a page is used for each kind of bolt, machine bolt, lag bolt, carriage bolt, and others. After the

STOCK RECORD

Storelle	eper will deliver	the following to				
THE PARTITY ON HAND	QUANTITY REQUIRED	DESCRIPTION OF ARTICLES REQUIRED	PRICE	TO BE USED	CHARGE ACCOUNTS	CAR NO.
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REQUISITION FOR SUPPLIES

requisitions for the five preceding days have been arranged in order it is a very easy matter to mark the prices.

As a general rule, only supplies coming under one account, as designated by the standard system of street railway accounting, are entered on one requisition. The total price of each requisition is then entered on an account sheet in its proper place. The amounts under each account are totaled

every five days, and at the end of the month the six sub-totals added together give total cost of goods issued on each account. These totals are entered on the monthly report, under the proper headings.

Entries of material given out, as obtained from the total of the requisitions made for the period, are made on the stock record every five days. Material received is entered on this record each day, and after each entry the amount of stock of the particular item on hand is obtained by subtraction or addition to the amount previously in stock. The stock record book is of such a size that it will last one year at least, and in most cases from 3 years to 5 years, without making out new sheets.

A notice on the order blanks requests that firms from whom goods are ordered make out in triplicate invoices of the goods on forms furnished by the railroad companies with the order. On receipt of the invoices, the original is passed by the heads of the departments, and is forwarded to the auditing department. The duplicate of the invoice is kept in the store room, while the triplicate is kept in the purchasing agents' department. The three forms are printed in different colors, to facilitate in distinguishing between them. When goods are received, an entry is made on a sheet entitled "daily report of material received." Goods for delivery direct to the office or to some department are not entered on the store-room stock record. On the Chicago & Milwaukeep Railroad the clerical work necessary to keep up the system described requires but a portion of one man's time.

NOTES ON SHOP PRACTICE AT DES MOINES, IOWA

The fact that the cars of an electric railway system have a clean and well-kept appearance is a sufficient guarantee that the shops of the system if inspected will disclose many features of practice and many methods of doing things that are of interest and of benefit to shop superintendents and master mechanics of other systems. The shops of the Des Moines City Railway, Des Moines, Ia., are no exception. Through the courtesy of J. E. Welch, master-mechanic of the system, some of the more important features of practice in these shops are here published.

The shops cannot rightfully be termed repair shops alone, for practically all of the rolling stock of the company, including passenger and express cars, is built in them. Recently the private car Iowa, with steel bottom framing, was also completed in these shops, and last year a 30-ton locomotive was built. All the castings, both iron and brass, for the cars constructed in the shops, and even the bell of the locomotive, were cast in the shop foundry.

The practice in the paint shops varies considerably from that usually found. When new bodies are painted they are not given the customary guide coat and rub-down with pumice stone, but are simply sandpapered off. This, of course, does not give the appearance that is obtained with the more costly method, but Mr. Welch considers that the benefits resulting from rubbing the cars down in the usual manner and applying so many coats of color and varnish in succession are not sufficient to repay the cost. He believes that as the better effect is noticed by probably but one person in one hundred, it is better to put the extra money in the maintenance of the car after it leaves the shop by bringing it in and varnishing it at frequent intervals. In painting new cars the twelve-day Sherwin-Williams system is usually followed. Occasionally, however, painting has been rushed considerably without hurtful effects. In one instance when new cars were needed badly they were painted from the priming coat to the finishing coat in six days. Some cars painted in

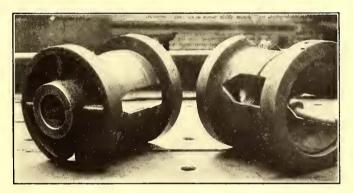
seven days were given the following coats in succession: One coat of primer, two coats of rough stuff, one ground coat, one coat color and two coats of varnish. These cars were not returned to the paint shop until the following year, when they were revarnished, and it was four years afterward before they were recolored.

THE FOUNDRY

Three men are employed constantly in the foundry. Besides brass furnaces a 2-ton cupola furnace is installed here. Castings of all descriptions are made, but a great deal of the work in the iron foundry consists in casting brake shoes. For the city cars these are cast without inserts, as the increased breaking pressure necessary with inserts is not considered desirable on account of the city cars being equipped with hand brakes only. In casting the shoes, scrap iron, mixed with a sufficient amount of pig iron, is used. In this manner the scrap iron, which would otherwise be disposed of at a low cost, is utilized. In the brass foundry all the brass fittings for the cars are cast, as well as much of the brass line material, such as overhead switches, cross-overs and hangers.

OILING CARS

Grease has been abandoned entirely in the motor bearings



CHUCK FOR TURNING BEARINGS

of all cars. An oil box provided with a wick feed is placed in the grease box, and Galena car oil is used. The oil does not feed when the car is standing still, and one cup of oil lasts about one week or about 1400 miles. The boxes are of sheet iron and were made in the shop at a cost of 15 cents each.

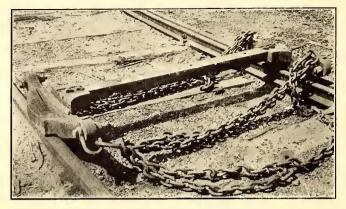
CHUCK FOR TURNING BEARINGS

For turning up babbited bearings chucks of the style shown in the accompanying illustration are employed. These are screwed to the center of a regular machine lathe, and consequently no time is lost in centering them. The cylindrical shell is but about ¼ in. thick and is grooved and slotted so that it is somewhat flexible. With the heavy ring on the end of the cylinder screwed forward, a bearing to be turned can just be slipped into the cylinder. After the bearing is inserted the ring is turned back by hand and the bearing is gripped on all sides by the slight springing of the cylinder. For bearings with smaller outside diameters cylindrical bushings are provided, and by the use of these one chuck may be employed for several different sizes of bearings. The great advantage in the use of this style of chuck is that no time is lost in centering a bearing.

SKID FOR BROKEN AXLES

When an axle breaks on a car it is frequently customary to chain the axle up and drag the car into the shop, and by so doing flatten a pair of wheels. To save the wheels and to quicken the work of getting a car with a broken axle off the track and into the shops, Mr. Welch uses the skid shown in the illustration. This consists of two cast-iron shoes bolted together to the gage of the track by a heavy bar and fitted

with chains for fastening it to the car body. The underside of the shoes is provided with flanges so that the skid will be kept on the track, and the upper side has recesses for the



SKID FOR BRINGING IN BROKEN AXLES

flanges of the wheels. In case of an axle breaking on a car, the car is jacked up and the skid placed under the wheels on the broken axle. The skid is then chained in position to the truck and the car dragged into the shop. The shoes, of course, wear out rapidly, and it is necessary to replace them every three or four trips, but the expense of replacing these is incomparable to the cost of replacing flattened wheels.

BUSINESS-GETTING METHODS OF THE IOWA & ILLINOIS RAILWAY COMPANY

The Iowa & Illinois Railway, of Clinton, Ia., under the management of P. P. Crafts, has been pursuing an active business-getting campaign during the past year. In general, the advertising methods pursued have been such as to impress all within a radius of 100 miles or more of the existence of the road, and to keep the road constantly in the minds of the people in the terminal towns and the immediate vicinity. Much traffic has been created by liberal advertisements of special events or occasions in the terminal cities. At one time about 2000 large time cards, measuring 22 ins. x 23 ins. and printed on heavy board, were sent to hotels, theaters, steam road stations and other public places in the surrounding towns. Accompanying were requests to post them in conspicuous places, and in most instances this was done. The fact that the time cards were gotten up in an attractive manner was no doubt responsible for the attention given to



THE EMBLEM OF THE IOWA & ILLINOIS RAILWAY

them. A large engraving of one of the interurban cars occupies the upper part of the card. The car body is printed in green while the trucks and background are in black. The symbol "I. & I." is printed in red across the central portion of the car body. Steam road and ferry connections are given below, and the fact that 150 lbs. of baggage is carried free on each full ticket is announced in heavy type. In Clinton

and Davenport special attention is given to newspaper and theater programme advertising, and advertisements may even be seen on the waste paper cans on the streets in the terminal cities.

The interurban cars are also used to advantage in advertising. Boards on the cars carry advertisements of different kinds and announcements of special occasions or events in either of the cities. These car advertisements and announcements are now printed on standard forms, the symbol "I. & I." taking up the lower portion of the paper which is pasted to the billboard on the car. Sheets with the symbol printed on them are kept on hand, and the blank space is filled with any wording desired. Any special occasion in either of the terminal towns or at points along the line is announced on these sheets. Special theatrical performances, automobile races, Labor Day celebrations and similar events are heralded in this manner. When the grand opera singer, Calve, was in Clinton, vigorous advertising of the fact in Davenport resulted in 104 people making the trip. At the performance of the violinist, Kubelik, sixty people from Davenport came over the line. Clinton people are in a similar manner induced to attend special theatrical performances in Davenport.

On the occasion of a circus in Clinton, the management of the road learned that the elephants would be bathed in the Mississippi River the Sunday afternoon preceding circus day. A little advertising of the fact resulted in several cars of Davenport people making the trip to view the unusual sight.



POSTER FOR WHICH PRIZE WAS GIVEN

At times the railway company has undertaken to inaugurate special days. On one occasion a "Tri-Cities Day" was inaugurated and created considerable traffic. When there are no special events to be advertised, the boards on the car carry some wording to suggest a pleasure ride over the line, as, for instance, in very hot weather the signs advise a cool ride as a relief.

Special time cards are printed of the ferries across the Mississippi River at Le Claire and Princeton. Ferry tickets are also sold on the trains and at the ticket offices of the railway company. No direct compensation is obtained, but the fact that a general knowledge of the existence of the ferries may cause traffic over the line is believed sufficient to warrant such actions. In addition, the good will of the ferry companies is gained, and this is considered of value. The same incentive is responsible for free advertising of Electric Park at Clinton, belonging to the Clinton Street Railway.

On one occasion the road offered a prize of \$5 for the best cartoon to be used in advertising. One entitled "Come on in, the water's fine," was the winner of the prize and has since been used in advertising Mississippi Park when bathing facilities are provided. On another occasion mileage books good for 500 miles' travel on the line were offered to the persons in Davenport and in Clinton submitting the best verses to be used for advertising purposes and containing the words Clinton, Davenport and the symbol "I. & I." Five hundred and twenty-five verses were submitted. The verse winning the Clinton prize was:

If from Davenport to Clinton you've occasion to travel, Don't study the problem, there's none to unravel. In frosty December or blistering July, Just take a nice ride on our own I. & I.

That winning the Davenport prize was:

The I. & I. we call for short Our line from Clinton to Davenport. With palace cars and well-built track, We take you safely there and back.

The company has compiled a list of all the lodges, societies, churches and organizations of different kinds in the cities along the lines, and sends out periodically announcements of the fact that it is prepared to furnish cars for special trips and excursion or pinic parties. The announcements are often followed up by a representative of the company, who explains in detail what arrangements can be made for taking care of large parties.

CORRESPONDENCE PROGRAM ADVERTISING

July 18, 1906.

Editors Street Railway Journal:

Within the last few months we have received quite a number of letters from railroad relief associations and the like, asking us to take space in magazines, programs, souvenir books, etc., and a number of solicitors have called upon us for advertising of this kind. We usually take an advertisement in these publications. It seems to me, however, that the principle of this practice is wrong and that the railway companies that permit such to be carried on are countenancing what is little less than blackmail. At all events, it is pretty small business to ask outsiders to contribute to funds for the support of disabled employees. Some of these letters and requests have included something like the following, which I quote from a letter of an association of street railway employees which is one of the largest in the country: "We trust you will favor use with your advertisement, and we will reciprocate on all occasions." Some of the solicitors strenuously insist that an advertising value is given on account of large free distribution of their publications, but as a rule they have little to say about that. In one letter recently received is the following: "There is no regular price for advertising; we have received from \$5 to \$50 for ads." In this letter it is requested that checks be made payable to the treasurer of the association, who is also one of the chief officers of the

railway company. It has occurred to me that the matter might appropriately be referred to in the STREET RAILWAY JOURNAL.

MANUFACTURER.

ARMATURE WINDING AGAIN

July 20, 1906.

Editors Street Railway Journal:

Since writing you the letter which appeared in your issue of April 7 I have had an opportunity of seeing how some other street railway companies handle their work in the armature room. Our master mechanic recently made an arrangement to help out a street railway company in a neighboring city by rewinding their armatures, as they were very much behind in their work. In return they helped us with our overhead work. When we arrived at their shops we found plenty to do. About 100 armatures were out of commission, and nearly all were to be rewound. The company had the coils necessary, but no new mica segments. Some segments which they intended to use were burned 1/4 in. deep, and we found that it had been their practice to use old burned segments, scraped and filled with a compound. Even the bead rings on the 800's were not taken off, although the mica was burned through to the composition ring.

Instead of using the original babbit liner, they were accustomed to put a sleeve on the shaft to reduce the weight of brass necessary in a brass liner which the company made and is now using. Before any repairs can be done to the commutator, it is necessary to cut off this sleeve to get off the thrust collar, then the screws and commutator shell—hence the reason commutator work was neglected. We found one armature winder and about six boys at work, but making no headway.

The shops of the company of which I write were described in the Street Railway Journal some months ago, and the illustrations were very elaborate, but the winding room is so insignificant (only 60 ft. x 30 ft.) that no view of it was published.

Now, Mr. Editor, every master mechanic knows that armatures constitute his chief trouble, and his main object should be to have the armature leave the winding room in the best possible condition and repaired with the best material.

When I had rewound the first armature for them, it was turned over to a lathe hand, who did not understand the work required on it. He turned the commutator and hooded the armature, but the next day it was returned to the winding room, with a shorted coil. On cutting away the string band I found that none of the surplus solder had been turned off before hooding. When the lathe hand was reprimanded for his negligence, he said that he did not have time to turn it off, but thought it would melt off when it got hot.

We have also been doing armature repairs for three other street railway companies in neighboring towns who can not afford to keep a repair man for the small amount of work which they have. A short time ago an armature arrived from these companies, rewound by some person who did not have the least idea of what he had to do, as the result will show. The coils on this armature span 1 and 15, and are connected I and 55. There is also one coil cut dead in connecting. The winder wound the machine 1 and 13 and connected I and 47. When he found that he had one lead too many in the first layer of leads, he cut that lead off. He then commenced laying his second layer at any point, and when he found he had a lead too many in that layer he cut that one off! That armature winder was probably paid \$2 per day; it took him four days on the armature, and the ARMATURE WINDER. company lost \$27 in coils.

EQUIPMENT FOR THE INDIANAPOLIS, NEW CASTLE & TOLEDO ELECTRIC RAILWAY

The State of Indiana, already netted with interesting systems of interurban railways, will soon have added to those now in successful operation a new line of electric railway between Indianapolis and New Castle, Ind., as the main terminals, with branch lines to Greenfield, Anderson, Muncie, Winchester and Richmond, the total mileage of which is 140. A private right of way 50 ft. wide, and terminal facilities controlled by the company in the City of Indianapolis, place the new system in a very favorable position for maintaining high speed through the country, and secure rapidity of entrance and exit from the city proper. In addition to the passenger traffic, the company's franchise permits the transportation of freight without any restriction.

The engineering features of the road include a main power station near New Castle and ten permanent and one portable sub-station, one sub-station being installed in the main power-plant building. A transmission voltage of 33,000 volts was adopted, not only to meet the engineering requirements of the present system, but also because the voltage at the frequency selected would enable the system to mesh properly with practically all of the other similar systems now operating in Indiana, should future conditions so demand. Seventy-pound A. S. C. E. section T-rails, heavily ballasted, will permit of high-speed train operation.

The schedule so far prepared contemplates hourly runs between Indianapolis and Richmond, with connections for branch roads laid out to provide the most thoroughly satisfactory service. Limited high-speed service will also be established between Indianapolis and Richmond, operating on three-hour headway and making proper connections with branch roads. An express service is allowed for as well, and two 50-ton electric locomotives will be provided for freight haulage and switching purposes.

The contract for the entire construction of buildings and roadbed has been awarded to the Electrical Installation Company, of Chicago. Complete Allis-Chalmers power and electrical equipment will be installed in the main power station, and three rotary converter sub-stations will be built at once, the building of the remaining sub-stations being delayed until later. The equipment for the main power station will, for the present, consist of two Iooo-kw turbo-generators to operate at 175 lbs. steam pressure and 50 deg. F. superheat, the electrical ends of these units being wound for 25 cycles, three-phase, 2300 volts.

The boiler equipment will be made up of three horizontal water-tube boilers, 175 lbs. gage, with normal rated capacity of 400 boiler horse-power each, and fitted complete with mechanical stoking devices. Two boiler feed pumps are provided, each of sufficient capacity to handle the total amount of feed water necessary for operation of six 400-hp boilers at their normal rated capacity. The feed pumps are to be of the horizontal outside, center-packed plunger type. A feedwater heater of the open cast-iron type will be provided, capable of handling 45,000 lbs. of water per hour.

Two complete surface condenser equipments will be furnished, consisting of condenser proper, steam-driven air pump and centrifugal circulating pump, direct connected to a single engine, each outfit capable of condensing 20,000 lbs. of exhaust steam per hour. Two exciter generators will be furnished, one for each of the 1000-kw turbo-alternators. Six 350-kw oil-filled, water-cooled, step-down transformers for a ratio of 2300 to 33,000 volts are provided. They are to be arranged in two banks of three each for connection to the alternators. Three converter transformers, each 150-kw, oil-

filled, self-cooled, step-down type for 33,000 to 405 volts will be provided for supplying current to the 400-kw compound wound rotary converter to be installed in the main power plant, 400 kw, 25 cycles, 405 volts a. c., 650 volts d. c. A 40-kw, 120-volt, direct-current generator, provided for direct-connection to a high-speed engine, will be so connected as to form a reserve for either one of the two direct-connected exciters specified, so that in case of the breakdown of either one the corresponding alternator will not be disabled. This generator will also furnish the station lighting. The outside sub-stations will each be provided with a 400-kw, 25-cycle, three-phase rotary converter and three 150-kw, oil-filled, self-cooled transformers, similar to those already described.

Eight complete car equipments will be provided, each consisting of four 75-hp railway motors, two controllers, Christenson air-brakes, one set of rheostats, and miscellaneous apparatus.

The controllers which have been developed for use with these motors are made suitable for two and four-motor equipments. They are of the series parallel type, and are provided with an efficient magnetic blow-out.

MALLEABLE IRON ANCHOR

While there are many anchors on the market, the W. G. Nagel Company, of Toledo, claims that none has been able to take the place entirely of the old-style "dead man." However, when this company designed its Hercules malleable iron anchors it felt assured that wherever the old style "dead man" could be used, the Hercules anchor could be installed at a less expense and do the work equally as well with a longer life.

The plate proper of this anchor is made of high-grade



MALLEABLE IRON ANCHOR

malleable iron, the heavy center core being strengthened by braces, also having a reinforced crib around the edge of the plate to add additional strength. It is a well-known fact that malleable iron is the slowest to rust of any of the irons, and when buried it will last a lifetime. The plate, being of this material, cannot break under strains as is the case with cast iron. The rod of this anchor has

a welded head of size sufficient to stand the breaking strain of the rod. Great care is taken in welding the eyes of the rods to prevent the chilling of the iron and weakening of the rod. When the anchor is properly set it pulls against earth which has not been disturbed or loosened by digging. Heavy rains, therefore, will not cause the anchor to creep by washing the earth back of the anchor plate or pack loosened earth ahead of the anchor.

The statement has been made that by June I the gross earnings of the Columbus Railways & Light Company will reach such a sum as would compel it to sell eight tickets for a quarter. The franchise provides that when the earnings reach \$1,750,000 the company shall do this. Last year the railway earnings were \$1,450,000. Probably not before 1908 will the required sum be reached. There is another phase which has not been entered in the account. The company is now operating the Central Market Street Railway, acquired from the Schoepf syndicate, and the earnings of this division will not count in the total. It is probable that the increase in the earnings of the Central Market Company will keep down the estimated increase on the other lines, and thus postpone the day of eight tickets for a quarter.

A NOVELTY IN CRANK MECHANISM FOR SINGLE-ACTING ENGINES

Radical departures in reciprocating engine design are very rare at present, as most if not all improvements for a long time have been in details. The Ramsey crank mechanism, however, introduces a new principle in engine construction. Although applicable only to single-acting engines, the increasing use of internal combustion engines opens up for it a wide field. In ordinary engine design the crank shaft is in line with the central axis of the cylinder and the connecting rod in most cases is approximately five times the length of the crank. To make the connecting rod shorter with the

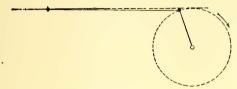


FIG. 1.—POSITION OF RAMSEY CRANK

ordinary crank mechanism introduces excessive cylinder friction because of the sharp angularity of the connecting rod during the power stroke. The Ramsey crank mechanism comprises a connecting rod made approximately three and three-eighths times the length of the crank, with the shaft located from the central axis of the cylinder a distance equal to the length of the crank. (See Fig. 1.) The first notable effect of the Ramsey crank mechanism is to increase the length of the piston stroke and to increase the proportion of the crank circle during which effective pressure is applied to the crank.

Thus in Fig. 2, AB and BC represent the positions of an ordinary connecting rod and crank at the beginning of the power stroke; DE and BC represent the positions of the same

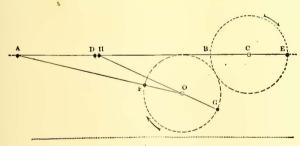


FIG. 2.—DIAGRAM OF PISTON TRAVEL

crank and connecting rod at the end of the power stroke. AD therefore represents the piston stroke, which is equal to the diameter of the crank circle. During this stroke the crank covers exactly one-half of its circle, or 180 deg. In the same figure AF and FO; illustrating the Ramsey crank mechanism, represent the positions of the connecting rod and crank at the beginning of the power stroke; and HG and GO represent the positions of the same connecting rod and crank at the end of the power stroke. AH therefore represents the piston stroke, which exceeds by about 5.25 per cent the diameter of the crank circle, while the crank pin has been driven from F to G, a distance which equals 192 deg. of the crank circle, or 12 deg. more than one-half the circle. The effect of the longer piston stroke is to increase the expansion of the gases, which not only increases the power to be obtained from an engine, but also the efficiency and economy with which it is operated. The gain in effective crank travel similarly increases the power that can be obtained from an engine of given dimensions.

Again, there is a decrease in the angularity of the connecting rod travel, and the greater the angularity—pressure and velocity considered—the greater will be the friction. With the ordinary crank mechanism the power stroke is made with an increasing angularity until the crank is at right angles to the piston rod, when the angle is about 12 degrees, whereas with the Ramsey crank mechanism the total angularity is much less, and at the center of the stroke is zero. Fig. 3 shows graphically the extent of piston travel with different degrees of angularity. In this figure the upper line represents the piston stroke of an engine equipped with the Ramsey crank mechanism. The lower line represents the piston stroke of an engine equipped with the ordinary crank mechanism, both engines having the same length of crank. The lines A and A', B and B', C and C', D and D', and so on up to and including L and L', represent the respective positions of the two pistons at intervals of 15 deg. of crank travel. M represents the position of the piston of the engine equipped with the Ramsey crank mechanism after 12 deg. of further crank travel, i. e., at the end of the power stroke. Above the lines, A, B, C, etc., are given the degrees of angularity existing between the connecting rod and the central axis of the cylinder of the engine equipped with the Ramsey crank mechanism when its piston is in these respective positions. Below the lines A', B', C', etc., are given the angularities existing between the connecting rod and the central axis of

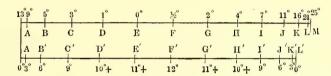


FIG. 3.—DIAGRAM SHOWING ANGULARITY OF STROKE

the cylinder of the engine equipped with the ordinary crank mechanism when its piston is in these respective positions. Reducing the relative travel of the two pistons to a percentage basis, the following percentages hold good for any length of crank:

Ramsey Crank Mechanism	Ordinary Mechanism
During the power stroke the pis-	,
ton travels at less than a	
10-deg. angle, is 88%	50 %
At less than a 9-deg. angle 85%	30 %
At less than a 6-deg. angle 73%	131/4%
At less than a 3-deg. angle 50%	31/4%
At less than a 1-deg, angle 31%	11/1%

Another advantage claimed for the new mechanism is the sluggish movement imparted to the piston at the beginning of the return stroke. The position of the connecting rod is such at this point that the crank travels through a wide arc while the movement of the piston is slight. This can be understood by referring back to Fig. 2. This peculiar quality makes it possible to exhaust the burnt gases with considerable less back pressure than that which is inevitable in an ordinary engine. In the case of a two-cycle engine the sluggish movement presents a further advantage, in that less of the power stroke need be sacrificed by the opening of the exhaust port, thus enabling the engine to be run at a higher speed. After the piston passes the point of its sluggish movement it returns to the inner end of its stroke very rapidly. This minimizes the loss of heat by radiation during compression, and thus increases the temperature and pressure in the cylinder at the time of ignition, correspondingly increasing the initial pressure of the power stroke.

For the purpose of determining to what extent the Ramsey

crank mechanism will improve the efficiency, an engine was constructed and equipped with the Ramsey crank mechanism on the lines of a well-known vertical marine gasoline engine having a 91/2-in. x 14-in. cylinder. The manufacturers claim for their engine a fuel consumption of one-eighth of a gallon of gasoline per horse-power hour, while in the tests made of the engine equipped with the Ramsey crank mechanism the fuel consumption was found to be from 1-10 to 1-11 of a gallon per horse-power hour. This engine, working under brake loads varying from 22 to 30 hp, showed a total heat efficiency of the engine ranging from 24.1 per cent to 25.9 per cent, as compared with approximately 19 per cent for the engine equipped with the ordinary crank mechanism after which the test engine was patterned. It is thought, however, that the efficiency will be still further increased with the new mechanism in an engine improved by changes in the design rendered possible by the crank mechanism. In other words, the advantages of the increased expansion, the greater piston stroke and crank effort, the decreased friction, the sluggish movement and quick compression, etc., will materially benefit the efficiency of any engine without regard to the excellency of its other features.

The mechanism is the invention of Robert H. Ramsey, of Philadelphia, and is controlled by the Ramsey Engine Company, of that city, which proposes to issue licenses to manufacturers of single-acting engines in this country.

NEW ROLLING STOCK FOR PADUCAH TRACTION COMPANY

The American Car Company, of St. Louis, has just completed a number of cars embodying the Brill grooveless post, semi-convertible window system for the Paducah Traction Company of Paducah, Ky. This company operates, in addition to the new equipment, seventeen motor and twelve trailer cars, both single and double-truck, equipped with motors of 25-hp capacity each. Twelve miles of single track are

operated, covering the principal parts of the city. Wallace Park, consisting of 75 acres at the end of the Broadway line, is controlled by the traction company; there are no public parks in the city at present. An extension of the lines into Mechanicsburg, a district of Paducah to the south of Island Creek with a population of about 4000, is contemplated, which will add about 11/2 miles of track to the company's present system. The entire track and overhead system is being rebuilt this summer, and in the near future a new power station and car house will be erected, and it is expected that in a short while additional cars will be needed to take care of the rapidly increasing business. Power for the Paducah Traction Company

bought from the Light & Power Company of Paducah, which, like the traction company, is operated and managed by Stone & Webster, of Boston.

The dimensions of the new cars are as follows: Length over the end panels, 28 feet, and over the vestibules 38 ft.; width over the sills, including the sheathing, 8 ft. 3½ ins.; width over the posts at the belt, 8 ft. 6 ins.; sweep of the posts, 1¾ ins.; centers of the posts, 2 ft. 8 ins.; height from the floor to the ceiling, 8 ft. 5 11-16 ins.; height from the track to the under side of the sills, 2 ft. 8½ ins.; height from the track to the platform step, 1 ft. 4 15-16 ins.; size of the side sills, 4 ins. x 7¾ ins.; size of the center crossings, 4½ ins. x 5½ ins.; size of the end sills, 5¼ ins. x 6½ ins.; size

of the inside sill plates, ¾ in. x 12 ins.; thickness of the corner posts, 3¾ ins.; thickness of the side posts, 3¼ ins. On entering the car the passenger reads in bold, black letters this sign: "Notice to Passengers: No disorderly or otherwise objectionable person, whether or not under the influence of liquor, will be permitted to ride on this car. Passengers riding on platform do so at their own risk." There are two such signs at each end of the car, painted on the glass on each side of the center vestibule sash.

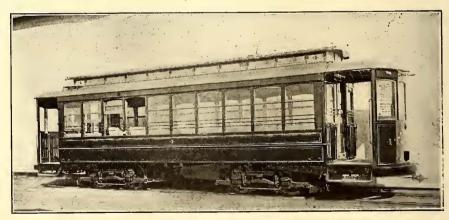
The seats are of Brill manufacture, 36 ins. in length, permitting an aisle space of 26 ins. Numerous specialties are employed throughout the car, among them being the "Dedenda" alarm gong, "Dumpit" sand box, "Retriever" signal bell, angle-iron bumper, etc. The car body is mounted on No. 27-GE1 trucks having a wheel base of 4 ft. 6 ins. and wheel diameter of 33 ins., the diameter of the axles being $4\frac{1}{2}$ ins. Two 40-hp motors are used per car. The weight of a car and trucks without motors is 24,000 lbs.

SUBWAY PROPOSED FOR SAN FRANCISCO

With the purpose of taking advantage of the present opportune time in San Francisco, Reed & Co., of 44 Market Street, have presented a plan to the Board of Supervisors for a subway under Market Street, from Third Street to the ferry. Such a construction would leave the street level free for a boulevard, and thus relieve the congestion on lower Market. The proposed plans include loops at the ferry with a special dome-covered depot and ornamental stairway, stations, etc., on the line of the subway.

ELECTRIC INTERURBAN CAPTURES BIG EXCURSION

E. V. McGrath, soliciting passenger agent of the Indiana, Columbus & Eastern Traction Company, has contracted to



SEMI-CONVERTIBLE CAR FOR THE PADUCAH TRACTION COMPANY

handle the annual picnic of the National Cash Register Company, from Dayton to Tecumseh Park. This excursion annually brings out 10,000 people, and no traction line has ever attempted to handle it heretofore. The new management of the former Appleyard lines is going after the long-distance and special excursion business on an extensive scale.

The electrification of the Para tramways, of Para, Brazil, is being carried out by J. G. White & Co., Ltd., of London, and not by the J. G. White Company, of New York, as mentioned in a recent issue of this paper.

LEGAL DEPARTMENT*

CONTIGENT FEES AND ATTORNEYS' LIENS

It has been the law from time immemorial that an attorney is entitled to a lien upon a judgment obtained for his client for compensation for legal services. The tendency of modern times has been to extend rather than curtail the attorney's rights by statute. In New York, for example, it is expressly provided that the compensation of a lawyer for his services "is governed by agreement, express or implied, which is not restrained by law," and that "from the commencement of an action or special proceeding, or the service of an answer containing a counterclaim, the attorney who appears for a party has a lien upon his client's cause of action, claim or counterclaim, which attaches to a verdict, report, decision, judgment or final order in his client's favor, and the proceeds thereof in whosoever's hands they may come; and the lien cannot be affected by any settlement between the parties before or after judgment or final order." Interpreting this provision, the New York Court of Appeals (Fischer-Hansen vs. B. H. R. R. Co., 173 N. Y., 492) held that where a claim and cause of action are extinguished by a settlement made by the parties before judgment, the implied, although not express, effect of the statute is that an attorney's lien extends to the proceeds. It attaches to the fund the instant it is created by the settlement, so that a party who with actual or constructive notice of the lien pays the fund over to the other, does so at his peril, and is liable to the attorney for the amount of his lien in an equitable action to enforce it, if he is unable to collect it from his client on account of the latter's financial irresponsibility. It is positively laid down that the existence of the attorney's lien does not prevent an honest settlement in good faith between the plaintiff and the defendant.

It has always been the policy of the law to encourage the settlement of litigation, and an attorney may not prevent a compromise if his client be satisfied with the amount tendered, the attorney's lien, however, being preserved upon the amount of the actual settlement.

There has recently been something of a judicial controversy over the question how large a share or proportion of a client's prospective recovery an attorney may legally contract to receive. The Appellate Division of the New York Supreme Court, First Department, in Matter of Fitzsimons (77 App. Div., 345), held that an agreement by which a lawyer was to take as his compensation one-half of his client's interest in what was stated to be a large estate was upon its face unconscionable. Two decisions of the Federal Courts (Herman vs. Met. Street Ry., 121 Fed. 184, and Muller vs. Kelly, 125 Fed. 213) have taken the same position that a 50 per cent contingent fee was to be regarded as unconscionable and therefore unenforcible. The New York Court of Appeals, however, on appeal in the Fitzsimmons case (174 N. Y. 15) refused to endorse the theory that an agreement for a 50 per cent contingent fee is unconscionable necessarily, or as a matter of law. It was held that, as the right of attorney and client to contract is express and unlimited, an arrangement for any percentage, no matter how large, is not void on its face, but the question of unconscionability is one of fact to be determined after a consideration of amount involved, work required, and other features of the particular case.

The most recent utterance of the New York Court of Appeals on this subject is of considerable interest to street railway corporations, that are constantly called upon to consider the settlement of claims for damages for personal injuries. In Morehouse vs. Brooklyn Heights Railroad Company (New York Law Journal, July 10, 1906) it was held that a railroad company which has made an honest settlement

with the plaintiff in an accident case and paid to him the full amount, although it had received timely notice that his attorney had a lien for 50 per cent of any sum paid on compromise of the case, may defend an action subsequently brought by the attorney to recover one-half the amount paid, on the ground that the attorney's contract with his client was unconscionable, and therefore void. The Court takes the position that, as the client is primarily liable to pay over to the attorney the latter's share of the sum received in settlement, if the client does not do so the defendant is in the position of a surety for the client to the attorney, and is therefore subrogated to any defense the client might interpose. This position is sound enough legally, and the result is certainly just. It is hardly the part of wisdom to pay over large sums in settlement without seeing to it that attorneys' liens are satisfied, but the present decision enables a defendant, where that has been done, to raise the same defense which the client might have made to the rapacity of an ambulance-chaser.

CHARTERS, ORDINANCES, FRANCHISES.

KANSAS.—Railways—Railway Commissioners — Jurisdiction— Electric Roads—Crossing Other Roads—Electric Railways— Railway Commissioners.

I. In giving the board of railway commissioners supervision over railways operated by steam, the statute, by implication, denies them power over railways operated only by electricity.

2. In defining the term "railway company" as used in the railway commissioners' law to mean a company whose road is operated by steam, the statute forbids such term being construed to include a company owning a road operated only by electricity, except where such intention may be expressly manifested.

3. The section of the statute which gives the board of railway commissioners authority to hear and determine the application of a railway company for permission to cross its track "with any other railway upon the grounds of such other railway corporation" does not apply to a case where a railway company seeks to cross the track of a railway company whose line is operated entirely by electricity.

4. A line of railway which is so constructed as to be operated only by electricity, and which is, in fact, so operated, is not a railway operated by steam, within the meaning of the railway commissioners' law, even although it is owned and managed by a corporation whose charter permits the use of steam as a motive power.

5. The board of railway commissioners has no jurisdiction to entertain an application by a railway company for leave to cross its track with that of a railway company using only electricity as a motive power.—(Kansas City, O. B. & Electric R. Co. vs. Board of Railway Com'rs et al., 84 Pac Rep., 755.)

MASSACHUSETTS.—Eminent Domain—Damages—Evidence—Competency—Mortgage Value—Evidence—Opinions — Reasons—Damages From Elevated Railway.

I. Even if it be competent to show diminution, in the mortgage value of property, as evidence of diminution in its market value, which is the measure of damages to abutting property from construction and maintenance of an elevated railway in the street, evidence that persons applied to were unwilling to loan on a mortgage on the property the amount which had been loaned on it is not competent for such purpose.

2. In the absence of evidence that there is a market for mortgages, in which the same percentage of market value can be borrowed on all properties, evidence of diminution in mortgage value is not competent to show diminution in market value, which is the measure of damages to abutting property from construction and maintenance of an elevated railway in a street.

3. Evidence of matters incompetent as substantive evidence may not be introduced to fortify the opinion of an expert, though offered under the guise of reasons for his opinion, and though they might be introduced on his cross-examination to test and diminish the weight to be given his opinion.

4. In proceedings to recover damages to abutting property from construction and operation of an elevated railway in the street, testimony of the keeper of the restaurant on the premises that on several occasions people who came there went out, saying: "We can't talk here. Let us get out of here, and eat somewhere where we can talk and hear ourselves"—is admissible as showing the effect of the noise of the railway.—(Pierson vs. Boston Elevated Ry. Co. New England Trust Co. vs. same, 71 N. E. Rep., 769.)

^{*}Conducted by Wilbur Larremore, of the New York Bar, 132 Nassau Street, New York, to whom all correspondence concerning this department should be addressed.

MASSACHUSETTS.—Eminent Domain—Damages—Injuries to Property—Evidence.

I. In proceedings for the assessment of damages to land and buildings caused by the construction and operation of an elevated railway, the court did not abuse its discretion in admitting proof of the rents received from the property for several years prior to the assessment, in the ordinary course of business, under normal conditions, and in good faith.

2. Neither was the admission of proof of the cost of a building on the land erroneous, where there was nothing to show that the sum paid was not paid in good faith and under normal conditions.

—(Levenson et al. vs. Boston Elevated Ry. Co., 77 N. E. Rep.,

535.)

- MASSACHUSETTS.—Duplication of Questions—Evidence—
 Matters of Opinion on Fact—Eminent Domain—Construction
 of Street Railways—Damage to Adjacent Property—Evidence
 —Trial—Exhibits—Inspection Through Microscope—Elements of Damage—Injury to Health—Witness—Impeachment.
- I. In a suit for damages to a building used in part for stores by the maintenance of an elevated railway in the street, a witness testified that when passengers were carried on surface cars on the street there was an opportunity for merchants to display goods, and that customers frequently stopped along the street and made purchases, while the elevated road carried passengers past the portion of the street where plaintiff's property was situated without a stop. Held, that this testimony did not justify the exclusion, as mere reiteration, of a further question as to what witness would say of the street as a business street before the erection of the elevated structure.
- 2. In a suit for damages to a building by the maintenance of an elevated railway in the street, a question as to what were the witness' observation as to the conditions of travel on the street since the erection of the elevated structure did not call for the opinion of the witness as an expert, but related to a question of fact.
- 3. In a suit for damages to a building by the maintenance of an elevated railway in the street, it was within the discretion of the court to admit or exclude a question as to what would have been a fair price for the use of a part of the building before the elevated structure was erected.
- 4. In a suit for damages to a building by the maintenance of an elevated railway in the street, it was within the discretion of the court to refuse to allow the jury to inspect through a microscope particles of steel and iron collected from the building with a magnet.
- 5. In a suit for damages to a building by the maintenance of an elevated railway in the street, plaintiff was entitled to introduce evidence that the inhalation of particles of steel and iron, which floated into the building because of the operation of the road, were apt to cause pulmonary affections and injure the general health of occupants of the building.
- 6. In a suit for damages to a building by the maintenance of an elevated railway in the street, in which plaintiff had testified that the value of the property after the erection of defendant's structure was from \$7,800 to \$10,000, evidence that plaintiff employed agents to sell the property and named \$17,000 as the price was admissible.—(Cotton vs. Boston Elevated Ry., 77 N. E. Rep., 698.)
 MICHIGAN.—Street Railways—Train Railway—Use of Streets

-Ordinances—Authority Under Train Railway Act—Additional Food Wires in Street

tional Feed Wires in Street.

- I. The grant by a city to a company organized under the train railway act, of the right to construct and operate a street railway with all necessary tracks and connections, all tracks to be constructed under the supervision and with the approval of the Common Council, does not authorize the company to make a connection in the streets of the city with the tracks of a company organized and operating under the general railway laws, and having no franchise from the city, though in the ordinances granting franchises to such train railway company, and to another company organized under the general railway laws, a connection between them, and transfers from the one to the other, were required.
- 2. Train Railway Act Section 41, providing that companies organized under such act may make connection with any other railway, and that when the road of such a company is intersected by any new road it shall unite with such road in making a connection, and grant running and business facilities, does not authorize such a company to make connection, when, where and how it may, in the streets of a city, with the road of a company organized under the general railway act, the preceding sections of the act allowing construction of a railway in the streets of a city only with the

consent of, and subject to the conditions imposed by, the city authorities.

3. Under the provisions of the ordinance granting a train railway company the right to construct and operate a street railway, that "no wires carrying an electric current shall be placed in said street except the trolley wire," the company may not, without further authority, place in the street an additional feed wire, not a trolley wire. (City of Monroe vs. Detroit, M. & T. Short Line R. Co. et al., 106 N. W. Rep., 704.)

MISSISSIPPI.—Carriers—Ejection of Passenger—Violation of Law Requiring Separation of Races—Evidence—Admissibility—Defense—Compliance with Law by Carrier—Street Rail-

ways.

I. In an action against a street railway company for ejecting a passenger and causing him to be arrested for violation of Laws 1904, p. 140, c. 99, relating to the division of cars into separate compartments for the white and colored races, where the only evidence of a division of the inside of a car between the two races consisted of proof of an established custom, testimony to establish a custom of the company to permit passengers of both races to occupy the back platform of its cars was admissible.

2. To justify a street railway company in causing the arrest and ejection from its cars of a passenger for a violation of Laws 1904, p. 140, c. 99, providing that street railways shall provide separate accommodations for the white and colored races by providing two or more cars, or by dividing the cars by a partition or adjustable screen, the company itself must have complied with

the provisions of the law.

3. The posting of a sign in a street car indicating that a part of the car was to be used by white persons and another part by colored persons was not a sufficient compliance with Laws 1904, p. 140, c. 99, providing that street railways shall provide separate accommodations for the white and colored races by providing two or more cars, or by dividing the cars by a partition or adjustable screen, especially where the sign posted was not large enough to be seen in all parts of the car. (Waldauer vs. Vicksburg Ry. & Light Co., 40 S. Rep., 751.)

MISSISSIPPI.—Corporations—Contract with Promoters—Construction—Liability of Corporation—Disposition of Assets—Right to Object—Stockholders—Promoters' Contract—Construction—Sale of Franchise and Assets—Insolvency—Corporations—Judgment—Assignment—Equitable Relief—

Prayer.

- 1. Plaintiff and his associates acquired a franchise for the construction of a street railway, which he contracted with S. and others to transfer to a corporation in consideration of their agreeing to build the railroad and pay to plaintiff and his associates 25 per cent. of any profits that might be made out of the property, either in cash, bonds or stock. In a letter written by S. to plaintiff, he stated that the mortgage bonds of the company, amounting to \$200,000, would be sold, and all the money put into the plant, without profit, and that S. and his associates were not to make any profit out of the construction of the road. None of the stock or bonds of the company were ever disposed of, except \$100,000 of stock and \$50,000 first mortgage bonds. Held, that the amount advanced by S. and his associates for the construction and equipment of the road should not be treated as a payment on capital stock, but as a first lien on the railway and its franchise in determining the amount of plaintiff's interest in the corporation.
- 2. Where, at the time a street railway franchise was assigned to S., it was understood that it was being acquired for the benefit of a corporation which was to own and operate the road, which corporation had already been chartered, and the corporation subsequently accepted the benefits accruing to it from the contract and availed itself of the franchise, with full knowledge of the manner and conditions on which it was obtained, a contract by the promoters to pay plaintiff 25 per cent. of the profits in stock, bonds, etc., in consideration for his services in obtaining the franchise, was binding on the corporation.
- 3. The entire scheme for the construction of a street railway, and the corporation organized to exploit the same, was projected without any attempt to comply with the law against issuing stock or bonds, except for money, labor done, or property actually received. No money was ever paid in on the capital stock, and no property of value, except the franchise and the plant and franchise of an electric company, was ever transferred for which stock could legally have been issued. The stock and bonds, except those issued to pay for the electric plant, were never disposed of by any corporate act. Held, that the individual incorporators could not object, in a suit by one of the promoters to enjoin an alleged fraudulent sale of all of the corporation's assets, fran-

chise and property, that plaintiff was not entitled to sue, because no stock had ever been issued to him in settlement of his contract, by which he was to receive one-fourth of the profits of the transaction.

4. Where the incorporators of a street railway company agreed, in consideration of the assignment of a franchise procured by plaintiff to one of them for the benefit of the company, to pay plaintiff one-fourth of the stock and bonds of the corporation over and above the cost of construction, plaintiff's right was not to receive a definite number of shares of stock, but the equitable ownership of one-fourth of the whole railway when completed and equipped, together with its franchise, subject to a prior lien in favor of the incorporators advancing the money to complete and

equip the road to the extent of the money so advanced.

5. Plaintiff and his associates obtained a street railway franchise, which was assigned to S., to be later transferred to a corporation, under a contract by which plaintiff became the equitable owner of one-fourth of the whole road, subject to a lien for the amount necessary to construct and equip the same. The corporation was organized, plaintiff being recognized as a stockholder, and he was elected secretary without any stock being issued to him; the whole authorized capital being issued in blank and put in possession of S. as president, and the corporation being operated by dummy directors, voting as directors and stockholders by virtue of certificates issued in their names by S. Held, that a subsequent sale of all the corporation's assets, franchise, etc., to a third person, authorized at a secret meeting, of which plaintiff was purposely not informed, for the purpose of nullifying his interest, was fraudulent and void, though the corporation was insolvent at the time.

6. Where a contract for the construction of a street railway contemplated that the moneys advanced to complete and equip the railway should be treated as a bonded debt, and not as a current debt presently payable, the current revenues derived from the operation of the road could not be diverted from the payment of operating expenses, fixed charges, and current expenses, and applied to such construction debt for the purpose of showing that

the road was insolvent.

7. Where an assignment of certain judgments against a street railway company, the property of which had been purchased by J. under a fraudulent sale, was brought about by him in order that he might buy the assets of the railway company at an execution sale and strengthen his title, neither J. nor a new corporation formed to take over and operate the road could avail themselves of any rights acquired under such judgments against the

original corporation.

8. Where defendants, including a new corporation organized to take over the assets of a street railway, participated in a sale thereof which was fraudulent as against plaintiff, but prior to the institution of a suit to set aside the same defendant J. and the new corporation paid debts and judgments existing against the old corporation, and a vacation of the sale and the appointment of a receiver would probably seriously affect the public interest, a personal decree would be rendered instead against both the old and the new corporations and the individual defendants for the amount of plaintiff's interest, of which he was so deprived, under his prayer for general relief .- (Mulvihill vs. Vicksburg Ry., Power & Mfg. Co. et al., 40 South Rep., 647.)

MISSOURI.—Carriers—Carriage of Passengers—Carrier's Duty —Ejection of Passenger—Force Justified—Rules—Conduct of Passenger—Reasonableness of Rule—Prohibition of Smoking-Continuous Assault-Procuring Passenger's Arrest-

Excessive Force—Action—Instructions.

I. The duty of a carrier to exercise the highest degree of care to protect a passenger from assaults, whether offered by strangers or by the carrier's servants, continues until the passenger has left the vehicle in safety at his destination.

2. If it becomes necessary to eject a passenger because of his misconduct, no more force must be employed than is required to

accomplish the removal.

3. A passenger is bound to observe and obey reasonable rules established for the convenience and comfort of other passengers, and, on his failure so to do, his ejection is warranted.

4. A prohibition of smoking in a street car is a reasonable rule. 5. Where a conductor in attempting to eject a passenger used

excessive force, and assaulted the passenger, and followed him from the car, and ran after him, and, overtaking him, again assaulted him, there was a continuous assault, all of which was inclimded within the exercise of excessive violence in the ejection.

6. A carrier was liable for a conductor's assault on a passenger, who had been ejected from the car, the assault being incident to an effort to procure the passenger's arrest.

7. Where, in an action against a carrier, the petition charged that defendant's servants assaulted plaintiff, drove him from the car, and knocked him down upon the streets of the city, and there was evidence tending to show that the first assault committed by the conductor was all over when the plaintiff left the car, and that it was several minutes before the conductor started to look for an officer and as incident to such search committed another assault, it was error to instruct the jury in effect that they might find for plaintiff, either under the hypothesis that the assault was continuous, or that two separate assaults were made. (Mc-Querry vs. Metropolitan St. Ry. Co., 92 S. W. Rep., 912.)

NEW YORK.—Carriers—Regulation—Passengers—Transfers—

Refusal by Conductors—Penalty.

Laws 1890, p. 1114, c. 565, Section 105, providing that railways operating intersecting lines shall give to each passenger paying a single fare a transfer, entitling such passenger to one continuous trip to any portion of its road, "to the end that public convenience may be promoted by the operation of the railways embraced in such contract, substantially as a single railway with a single rate and providing a penalty for failure to give such transfer, does not render a company liable to the penalty where it has established a system of transfers for its intersecting lines, and furnishes its conductors with tickets for that purpose, and some individual passenger has not received transfers through the misjudgment, neglect, or mistake of the conductor.—(Schwartzman et al. vs. Brooklyn Heights R. Co., 98 N. Y. Sup., 941.)

NEW YORK.—Street Railways—Construction in Street—Con-

sent-Value of Property.

Under Railway Law, Heydecker's Gen. Laws, p. 3308, c. 39, Section 91, providing that a street surface railway shall not be built without the consent of one-half in value of the property "bounded on" that portion of the street on which it is proposed to build the railroad, the value of an entire tract abutting on the street, with buildings thereon, is to be considered, though it extends back to another street; it having no interior boundaries, natural or artificial, and being used as an entirety for a single purpose.—(Fox et al. vs. New York City Interborough Ry. Co., 98 N. Y. Sup., 338.)

NEW YORK.—Easements—Conveyance of Dominant Estate— Reservation-Effect of Reservation-Action for Injuries to-Conveyance Pending Action—Creation of Trust.

I. On conveyance of a dominant estate, easements of light, air and access, abutting on a public street, pass to the grantee, notwithstanding attempted reservation of the same in the deed and of any rights of action for their injury.

2. Where easements of light, air and access, together with rights of action for their injury, are reserved in a deed, though such reservation is ineffectual to create a trust therein, it makes the grantee the trustee of money received or judgments recovered

for any injury to such easements.

3. Where, in a conveyance of land, the grantor attempts to reserve the easements of light, air, and access, and any right of action for injuries thereto, and such easements have been destroyed, the grantee is the only person who can sue for the damages thus caused, or can execute a release in satisfaction thereof.

4. An abutting owner of property brought an action for damages by the operation of an elevated road, and thereafter conveyed the property pending the suit, reserving his right of action and easements of light, air and access. Thereafter the railway company obtained from his grantee, with knowledge of such reservation, a release of the easements and any right of action therefor, paying an agreed sum. The grantor thereafter sued the railway company and his grantee to have the grantee declared a trustee for his benefit, and asking that the release be set aside. Held, that a judgment of the trial court dismissing the complaint as to the company was proper, as the reservation in the deed created no equitable lien on such easements apart from the freehold to which they were appurtenant, but only created an equitable lien in favor of the grantor on the money's received as against his grantee.—(McKenna vs. Brooklyn Union Elevated R. Co. et al., 77 N. W. Rep., 615.)

NEW YORK.—Carriers—Rates of Fare—Overcharge—Recovery of Penalty-Street Railways-Mistake of Law.

1. Laws 1890, p. 1095, c. 565, Sec. 37, as amended by Laws 1892, p. 1392, c. 676, provide for a penalty for the exacting by a carrier of unlawful rates of fare, unless the overcharge was made through inadvertance or mistake, not amounting to gross negligence. Held, that where a railway made a mistake in the construction of its statutory rights, such as an ordinary prudent person, honestly desiring to act within his rights, might make, it is exempt from the penalty.

2. Where a street railway company had on its route an elevation exceeding 300 ft. to the mile, which it overcame within a distance of two miles, it is not liable for the penalty imposed by Laws 1890, p. 1096, c. 565, Section 39, for charging a fare of ten cents for a continuous ride over its road, where under a mistake of law it construed the statute authorizing a railway to collect such a rate of fare under such circumstances as comprehending within its operation a street railway corporation, as Section 39, if applied to a street railway, will include within its exemption from the penalty cases of mistake in law, as well as mistake in fact.—(Goodspeed vs. Ithaca St. Ry. Co., 77 N. E. Rep., 392.) OHIO.—Street Railway—Franchise—Extension of Term—Mu-

nicipal Extension of Term-Validity.

I. An intention to prolong the life of a street railway franchise from the date originally fixed for its termination to February IO, I908, which was the date fixed for the expiration of a franchise granted to another company with which the company operating the former franchise was, with the consent of the city, consolidated, must be inferred from subsequent ordinances authorizing the consolidated company to extend its lines and change to electricity as a motive power, the rights under all of which were to terminate with the franchise of the "main line," which was recognized as continuing until that date.

2. Municipal ordinances extending the life of a street railway franchise from the date originally fixed for its termination to the date fixed for the expiration of a franchise granted to another company with which the company operating the former franchise was, with the consent of the city, consolidated, do not violate the provisions of Ohio Rev. Stat. Section 2502, that a municipal corporation shall not, during the term of a street railway grant or renewal thereof, release the grantee from any obligation or

liability thereby imposed.

3. Municipal extensions of the life of a street railway franchise before the original grant has expired are authorized by Ohio Rev. Stat. Section 2501, although the language of that section is that the Council may renew any such grant at its expiration. (City of Cleveland and the Forest City Ry. Co., Appts. vs. Cleveland Electric Ry. Co., 26 Ct. Rep., 513.)

LIABILITY FOR NEGLIGENCE.

ILLINOIS.—Appeal—Review of Evidence—Peremptory Instruction—Decisions of Intermediate Courts—Trial—Theory of Case—Argument of Counsel—Carriers—Injuries to Passengers—Proximate Cause—Instructions—Prejudice—Trial—Remarks of Court—Witnesses—Leading Questions—Evidence—Hearsay—Harmless Error—Admission of Evidence—Carriers—Injuries to Passengers—Actions—Care Required.

I. Where no peremptory instruction was asked at the close of plaintiff's evidence, or at the close of all the evidence, the question whether the evidence fairly tended to support the verdict will

not be reviewed on appeal.

2. In an action for injuries to a passenger, in the absence of a passenger, in the absence of a request for a peremptory instruction, the question whether defendant's employees were negligent, as charged in the declaration, was solely for the determination of the jury, whose finding, after having been affirmed by the Appellate Court, would not be disturbed on a further appeal to the Supreme Court.

3. Remarks of counsel in his closing argument to the jury will not control the theory on which the case is tried, when the pleadings, evidence, and instructions show that both parties proceeded

on a different theory.

4. Where a passenger on a street car was injured in a collision between the car and a railroad train at a crossing, and the fault of the conductor of the street car in signaling to the motorman to cross when he knew a train was approaching contributed in part to the injury, the street car company was liable therefor.

5. Where a charge was given at defendant's request that if any witness had wilfully or knowingly sworn falsely to any material element of the case, or had exaggerated any fact or circumstance material to the issues to deceive, mislead, or impose on the jury, such witnesses' entire testimony might be rejected, except as corroborated by other evidence, etc., defendant was not injured by another instruction that it was only in cases where it was "palpable" that a witness had deliberately and intentionally sworn falsely and was not corroborated that the jury should disregard his entire testimony.

6. Where remarks by the court during the trial, amounting to strictures on counsel for defendant, were called forth by persistent attempts to get improper evidence before the jury, and the remarks were not of such a character as disclosed in any degree the court's views as to the merits of the case, or tended to show

any views in favor of either party, and could not have been so understood by the jury, they were not reversible error.

7. A question asked of a witness with reference to a headlight on an engine: "That headlight—was that a regulation or another kind?" was objectionable, as leading.

8. Where a witness testified to facts showing that he did not see the engine in question or the headlight thereon, it was not reversible error for the court to strike his statement that the head-

light was smaller than regulation size.

9. Where, in an action for injuries, evidence was admitted showing that the railroad train which ran into defendant's street car at the time plaintiff was injured while a passenger on the car was running at from 15 to 30 miles an hour, defendant was not prejudiced by the exclusion of evidence that the train was run-

ning faster than ordinary speed.

- To. Where, in an action for injuries to a passenger on a street car by a collision with a railroad train at a crossing, the conductor, who went ahead and signaled the car to cross, testified that he saw the train when two blocks away, and did not realize there was any danger until it was within too ft. of the crossing, and fixed the location of the train at each of the periods he observed it, without basing his judgment in any way on its apparent speed, or any speed that he previously had knowledge of, a city ordinance regulating the rate of speed of trains at that point was immaterial.
- 11. An instruction rendering a carrier liable for injuries to a passenger caused by the "slightest negligence" was proper—(Chicago City Ry. Co. vs. Shaw, 77 N. E. Rep., 139.)

ILLINOIS.—Carriers—Injuries to Passengers—Actions—Instructions—Damages—Personal Injuries—Instructions.

I. Where a declaration against a street railroad for injuries to a passenger alleged that, while plaintiff was in the act of alighting from the car, defendant started the same before plaintiff had an opportunity to alight therefrom, a charge to find for defendant, if the preponderance of the evidence failed to show that plaintiff fell by reason of the car being started before she had an opportunity to alight therefrom, was properly refused, in that it failed to definitely state the issue presented by the pleadings.

2. In an action against a street railroad for injuries to a passenger, where the court charged that, if plaintiff attempted to alight from the car after it had started, and such act was negligence on her part, the jury should find for defendant, it was not error to refuse a requested charge that, if plaintiff attempted to alight from the car while it was in motion, she could not recover.

3. In an action for personal injuries, it was not error to refuse a charge that, if the jury find that plaintiff is not entitled to recover, they need not consider the character or extent of plaintiff's damages, whether serious or not, especially where the jury were cautioned by other instructions not to permit their sympathies to enter into their consideration of the case.—(West Chicago St. Ry. Co. vs. McCafferty, 77 N. E. Rep., 153.)

INDIANA.—Negligence—Nature—Carriers—Injuries to Passenger—Complaints—Sufficiency—Street Railroads—Construction of Track—Maintenance of Streets—Carriers—Carriage of Passengers—Assisting Passengers to Alight—Obligation—Defective Construction of Track—Complaint—Excavation in Street—Personal Injury—Contributory Negligence—Pleadings.

I. Actionable negligence consists in a breach of a duty owing from one to another, by reason of which the latter is injured.

- 2. A complaint, in an action against a street railway company for injuries to a passenger while alighting from a car in consequence of the distance from the step of the car to the surface of the street, alleged that the surface of the street was lower than the top of the rail of the track, but did not aver that the track was not laid to conform to the established grade of the street. Held, that it would be presumed that the track conformed to the established grade, as required by Burns' Ann. St. 1901, Sec. 5454, and the complaint did not show a negligent construction of the track.
- 3. A street railway company is not charged with the maintenance of streets occupied by its tracks outside of that part of the street actually occupied by it.
- 4. The duty of those in charge of a street railway car to aid passengers to get on and off only arises where there is an apparent necessity for such assistance brought to their attention.
- 5. A complaint, in an action against a street railway company for injuries to a passenger while alighting from a car in consequence of the distance from the step of the car to the surface of the street, alleged that the step was 2 ft. above the top of the rail of the track; that, owing to the condition of the street, the step

stood 3 ft. above the level thereof; that the company did not furnish an aditional step, whereby the egress from the car might be made in safety. Held not to show negligence in failing to furnish an extra step to enable the passenger to alight in safety.

6. Proof that a female passenger on a street car was fifty years of age, 5 ft. tall, and weighed from 185 to 200 lbs., does not show as a matter of law that she was infirm or unable to alight from the car, either on account of her age, or weight, or because the step on the car was 3 ft. from the street, so as to make it obligatory on the part of the servants operating the car to assist her.

7. A complaint, in an action against a street railway company for injuries to a passenger, while alighting from a car, in consequence of the distance from the step of the car to the street which alleged that the top of the track was a foot higher than the surface of the street contiguous thereto, did not charge negligence in the construction of the track in that it was not constructed on the proper grade or because of the condition of the

street outside of the part which it occupied.

8. A complaint, in an action against a street railway company for injuries to a passenger while alighting from a car, in consequence of the distance from the step of the car to the street, which alleged that an excavation in the street existed at the point where the passenger attempted to alight, that the company and its servants knew of its existence, and that in attempting to alight the passenger "fell heavily upon the earth," did not show that the company was negligent by reason of the excavation in the street; there being no connection between the injury and the excavation.

9. Acts 1899, p. 58, c. 41 (Burns' Ann. St. 1901, Sec. 359a), providing that in actions for personal injuries it shall not be necessary for plaintiff to allege want of contributory negligence, does not change the common-law rule that where the facts alleged in the complaint show that plaintiff was guilty of contributory negligence, the complaint is insufficient on demurrer for

want of facts.

10. Where a passenger, injured while alighting from a street car in consequence of the distance from the step of the car to the street, had as good an opportunity as the carrier or its servants to observe the conditions and to know whether the conditions were dangerous in an attempt to alight, the passenger was guilty of contributory negligence, precluding a recovery, the law requiring a person to use his own faculties so as to avoid danger if he can reasonably do so; and one will be deemed to have actually seen what he could have seen, had he looked.—(Indianapolis Traction & Terminal Co. vs. Pressel, [No. 5623], 77 N. E. Rep., 357.)

KANSAS.—Street Railways—Frightening Horses—Negligence—

Question for Jury.

Where, in an action against a street railway company for injuries to a traveler in consequence of his horse being frightened by a car, the testimony showed that that car when approaching the traveler was running more rapidly than he was driving, that the motorman was sounding his gong loudly, that the horse became frightened, that though the danger to the traveler was apparent the motorman continued to run his car toward the horse and to ring the gong loudly, the question whether the motorman was negligent in failing to do what he could to avert the threatened danger to the traveler so as to render the company liable was for the jury.—(Dulin vs. Metropolitan St. Ry. Co., 83 Pac. Rep., 821.)

MARYLAND.—Railroads — Crossing Accident — Negligence — Giving Signals—Evidence—Question for Jury—Contribu-

tory Negligence.

I. In the case of a collision at a crossing of a suburban electric car with a team, the fact that the car was an extra, running 14 seconds behind a regular at such a speed that, while it was going the distance between the cars, the team going at a rapid walk went 130 ft., does not show negligence of the railroad company.

2. Though a suburban electric car must give a signal when approaching a crossing, testimony of the persons in the wagon struck by it that they did not hear the gong sounded is not evidence to go to the jury on the question of negligence, as a whistle

might have been sounded.

3. The driver of a team which was struck by a suburban electric car at a crossing is precluded from recovering by contributory negligence, though the car was an extra, running 14 seconds behind the regular car; he having merely stopped at a distance of 130 ft. from the crossing, at which time the regular passed, and then driven forward at a rapid walk, without again stopping or looking, except directly in front of him.—(Hattcher vs. McDermot, 63 Atl. Rep., 214.)

- MINNESOTA.—Attorney and Client—Lien—Right of Action— Assignment—Rights Subject to—Compromise by Client— Continuance of Action by Attorney.
- I. A lien cannot be created upon a mere right of action for personal tort.

2. A right to recover damages for a personal tort is a mere personal right, and not assignable before judgment.

- 3. B., claiming to have a right of action against a railway company for damages for personal injuries, made a written contract with G., an attorney at law, by which G. agreed to bring the action and to pay all expenses of the suit, and B. agreed to pay G., after the expenses had been paid, 50 per cent of all money received from the railway company as compensation for his in-The action was brought, and after a disagreement of the jury, while the case was on the calendar awaiting another trial. the plaintiff and defendant, without the consent or knowledge of G., settled the case. On a petition by G. for leave to proceed in the case to protect his interests, held:
- (1) That G. had no lien upon the cause of action and was not the equitable assignee of an interest therein.
- (2) That the plaintiff had a legal right to compromise the claim and dismiss the action without the consent of his attorney.
- (3) That the petition for leave to continue the case was properly denied.—(Boogren vs. St. Paul City Ry. Co., 106 N. W. Rep., 104.)
- MISSOURI.—Carriers—Street Railways—Duty to Passengers— Res Ipsa Loquitor-Petition-Scope-Trial-Instructions-Applicability to Pleadings—Appeal—Harmless Error—Instructions not Applicable to Case-Injuries to Passengers-Operation of Car-Instructions-Conflicting Instructions-Appeal—Verdict—Weight of Evidence—Review.
- I. A carrier of passengers, either steam or street railway, is required, so far as it is capable by the exercise of a very high degree of care, to carry them safely and is responsible for all injuries resulting from even the slightest negligence on its part.

2. An explosion occurred on an electric car, breaking the window glass, causing the car to burst into flames and frightening the passengers, one of whom was injured by either jumping or being pushed out of a window. Held, sufficient to establish a prima facie case of negligence on the part of the carrier.

3. Where a petition in an action for injuries to a passenger on a street car alleged that the motor was defective, but also charged that the machinery, appliances, and parts of the car were defective, such allegation was sufficiently broad to include not only the motor, but all the other electric appliances with which the

car was equipped.

4. Where, in an action for injuries to a street car passenger, the complaint alleged negligent operation of the car and that all the electric appliances of the car were defective, an instruction that if the explosion, flame and burning of the car were caused by any defect in the condition of the car or the apparatus thereof, or by any improper management resulting from any negligence on the part of the defendant, or its agents and servants, etc., plaintiff was entitled to recover, was not objectionable as submitting a cause of action not stated in the petition.

5. Where, in an action for injuries to a street car passenger, there was neither allegation nor proof that the car itself was defective, an instruction in favor of plaintiff that if the explosion, flame and burning of the car "were occasioned by any defect in the condition of the car or apparatus thereof," etc., though ob-

jectionable, could not have misled the jury.

6. Where there was evidence that the street car in which plaintiff was riding at the time she was injured was started with a jerk, that too much power was applied and that in such case there was more likelihood of an explosion such as occurred than when the power was properly applied, it was proper to direct the jury's attention to the management of the car and charge that if the explosion and fire were caused by the mismanagement of the motorman, plaintiff was entitled to recover.

7. In an action for injuries to a street car passenger, the court charged on plaintiff's behalf that, if on an explosion occurring in the car, followed by fire, plaintiff became so alarmed that she endeavored to escape and was injured in so doing, and the explosion and burning of the car were occasioned by any defect in the condition of the car or apparatus, or by any improper management thereof, and if such defect or improper management resulted from any negligence on defendant's part for failure to exercise the highest degree of care, skill and foresight, etc., the jury should find for plaintiff. The court, on defendant's behalf, charged that if prior to the accident defendant had employed competent inspectors to inspect the electrical appliances used on the

cars, and that such inspector had used a very high degree of care in making reasonable inspections of the car on which plaintiff was injured a short time prior to her injury, and that such inspection failed to disclose any defect in the electrical appliances which were apparently in a reasonably safe condition, and the accident in question could not have been reasonably anticipated by the exercise of a very high degree of care in inspecting the car, etc., plaintiff could not recover. Held, that such instructions were not contradictory.

8. Where the trial court, in the exercise of its discretion, has overruled a motion for a new trial because the verdict is against the weight of the evidence, such question will not be reviewed on appeal.—(Brod vs. St. Louis Transit Co., 91 S. W. Rep., 993.)

MISSOURI.—Master and Servant—Personal Injuries—Defective Rail—Evidence—Question for Jury—Combined Negligence of Master and Fellow Servant—Contributory Negligence—Street Car—Excessive Speed—Responsibility of Conductor—Trial—Instructions—Assumption of Fact in Issue—Master and Servant—Injuries to Servant—Violation of Ordinance—Contributory Negligence—Ignoring Issues.

I. In an action by a street car conductor for injuries resulting from the derailing of the car because of an alleged defective rail, evidence held sufficient to justify submission to the jury of the

question of defendant's negligence.

2. A master is liable to a servant injured by the master's negligence, even though the negligence of a fellow servant contributed to the result.

- 3. Where a street car conductor was injured through the derailment of the car because of an alleged defective rail, the fact that the car was at the time running at an excessive rate of speed and might not have left the track had it been running slower did not show the conductor to be guilty of contributory negligence, since, though he had general control of the car, it was not within the scope of his duty to regulate the speed at all times.
- 4. In an action by a street car conductor for injuries from the derailment of the car because of an alleged defective rail, an instruction that if the jury believed that plaintiff was injured by reason of the car leaving the track on account of a defective rail, and not because of any fault on his part, they should find for the plaintiff, etc., was not objectionable on the ground that it assumed that the rail was defective.

5. Where a master's orders require a servant to violate an ordinance, the master cannot, in action by the servant for injuries, claim that the violation of the ordinance constituted con-

tributory negligence.

6. In an action by a street car conductor for personal injuries from the derailment of a car through an alleged defective rail, in which there was evidence that the car was running at an excessive rate of speed, but also evidence that that rate of speed was required by the schedule time, an instruction implying that plaintiff could not recover if he was in control of the car, and if it was being run at a greater speed than was allowed by ordinance was erroneous, because ignoring the question of defendant's orders as to speed.—(Moore vs. St. Louis Transit Co., 91 S. W. Rep., 1060.)

MISSOURI. — Carriers — Injuries to Passenger — Petition —
Proof — Sufficiency — Pleading — Inducement — Appeal—
Objections Not Raised Below—Trial—Instructions—Cure of
Error—Negligence—Personal Injury—Contributory Negli-

gence—Burden of Proof—Failure to Request.

I. An allegation in the petition, in an action against a street railway company for injuries received by a passenger while attempting to board a car in consequence of the sudden starting of the car, that it had come to a stop when signaled, and when plaintiff attempted to board it, is supported by evidence showing that the car had, on plaintiff's signal, so slackened its speed that it barely had a perceptible motion at the time he attempted to board it.

2. An allegation in the petition, in an action against a street railway company for injuries received by a passenger while attempting to board a car in consequence of its sudden starting, that the car came to a stop when signaled, is a matter of inducement, and the negligence consists in the starting of the car.

3. An objection to the admissibility of evidence not made in

the trial court will not be considered on appeal.

4. Where, in an action against a street railway company for injuries received by a passenger while attempting to board a car, the court directed the jury not to find for plaintiff if he was guilty of negligence, the error in a charge that, before plaintiff's right to recover could be defeated, defendant must show that plaintiff failed to exercise ordinary care, arising from the failure to state that before plaintiff's right to recover could be defeated

on the ground of contributory negligence, defendant must prove a failure to exercise ordinary care, was not prejudicial.

5. An instruction, in an action for personal injury negligently inflicted, that before plaintiff's right to recover could be defeated defendant must show that plaintiff failed to exercise ordinary care, correctly imposed on defendant the duty of showing that plaintiff failed to exercise ordinary care, and that such failure caused the injury.

6. Where an instruction on the measure of damages in a personal injury action was not improper, and defendant desired that it should state in greater detail the elements of damage, he should so request.—(Forrester vs. Metropolitan St. Ry. Co., 91 S. W.

Rep., 401.)

MISSOURI.—Street Railroads—Injuries to Pedestrians—Actions—Sufficiency of Evidence—Contributory Negligence.

- I. In an action against a street railway for the death of a person crossing its track, caused by a collision with a car, evidence held to show that the car which struck deceased was not exceeding the speed of 15 miles an hour, which it was authorized by ordinance to maintain.
- 2. A passenger on a west-bound street car, who alighted from his car, passed in the rear threeof, and started to cross the east-bound track of the street railway, when he was struck by an east-bound car, was guilty of contributory negligence where he failed to look for the car which struck him and proceeded to cross the track, absorbed in a newspaper, without any attention to his surroundings.—(Deane vs. St. Louis Transit Co., 91 S. W. Rep., 505.
- MISSOURI.—Pleading—Separate Causes of Action—Election—Appeal—Curing Errors—Defective Pleading—Witnesses—Impeachment of One's Own Witness—Surprise—Street Railroads—Injury to Person on Track—Willfulness—Petition—Instructions—Willful Injury—Evidence—Contributory Negligence.
- I. Where plaintiff joined in the same count a cause of action for common-law negligence, one based on the violation of a city ordinance, and another on wilfulness, recklessness, or wantonness, it was error for the court to refuse to compel plaintiff to elect on which he would stand; such causes of action being improperly joined.
- 2. The error was not cured by the court afterwards striking out allegations in the petition alleging a violation of the vigilant watch ordinance.
- 3. Defendant's motorman, who ran his car against plaintiff, made two written statements for defendant, and afterwards gave his deposition, taken by plaintiff, in which he stated that immediately before the accident he was looking straight ahead of him, and that plaintiff rose up from the trench across the track "instantly," and so close to him that he could not stop the car before strinking him. He voluntarily resigned his position as motorman, and later, while endeavoring to get his job back, voluntarily went to plaintiff's attorney and made a statement directly contradictory to his former statements and testimony. A change of venue having been taken, plaintiff took the motorman to the place of trial, paying his expenses, but did not offer him as a witness, thereby preventing defendant from using his deposition, whereupon defendant called him, and he testified, contrary to his deposition and written statements, to material facts prejudiced to defendant. Held, that defendant was entitled to claim that it was surprised by the witness' testimony, and to lay a foundation for his impeachment by the introduction of his deposition and written statements.

4. Where a petition, in an action for injuries to a person struck by a street car, contained no allegation of wilfulness, recklessness, or wantonness on the part of the motorman, it did not state a case under the humanitarian doctrine.

- 5. In an action for injuries to plaintiff by being struck by a street car, the court charged that, even though plaintiff was negligent in working between defendant's tracks and such negligence contributed to the injury, still if plaintiff had so placed himself in the dangerous position and thereafter such dangerous position became known, or by looking could have become known, to defendant's motorman, in time to have stopped the car by the excreise of ordinary care, and thereby avoid the injuries complained of, and he failed to do so, plaintiff was entitled to recover. Held, that such instruction was erroneous as based on the "last clear chance doctrine," which does not obtain in Missouri.
- 6. Where, in an action for injuries to plaintiff by being struck by a street car, the motorman operating the car knew that plaintiff had been working at or near the point of the accident for at

least a week before that, and testified that plaintiff was a friend of his, and that he would not have struck him if he possibly could have avoided doing so, there was no evidence of recklessness, wantonness, or willfulness sufficient to sustain an instruc-

tion in plaintiff's favor on the humanitarian doctrine.

7. Where plaintiff was struck by a street car while working in a trench under the street car track, he was not entitled to rely on the motorman of an approaching car giving him warning of such approach, nor on his sense of hearing alone, and was guilty of contributory negligence precluding his recovery by permitting his mind to become so engrossed in his work that he failed to take proper precautions, either by looking or listening to ascertain the approach of the car.—(Clancy vs. St. Louis Transit Co., 91 S. W. Rep., 509.)

MISSOURI.—Street Railroads—Collision—Negligence—Contributory Negligence—Instructions—Appeal—Harmless Error—Evidence to Authorize Instructions—Modification of Instructions—Refusal of Instructions—Reliance on Care of Motorman—Collision—Action—Trial—Refusal—Other Instructions—Appeal—Harmless Error—Admission of Evidence—Damages—Injuries to Person—Excessive Damages.

I. Where the driver of a vehicle, owing to the fact that another vehicle was approaching her between the curb and a street car track, drove upon the track about 40 feet ahead of a car approaching at the rate of 6 or 7 miles an hour, and while the vehicle was preceding the car a collision occurred, the motorman was guilty of negligence, under an ordinance requiring a motorman to stop on the first appearance of danger.

2. The driver of the vehicle was not guilty of contributory negligence either in going upon the track or in driving along

ahead of the car.

3. In an action for injuries sustained in a collision between plaintiff's vehicle and a street car, an instruction for plaintiff was not erroneous for failing to take into consideration the contributory negligence of plaintiff; it having authorized a verdict for plaintiff only in ease she was exercising ordinary care at and before the time of the injury.

4. Defendant could not complain of an instruction because it merely required the motorman to use common-law care, while the petition charged a violation of an ordinance requiring a motor-

man to stop on the first appearance of danger.

5. Where, in an action for injuries sustained by plaintiff in a collision between her vehicle and a street car, plaintiff's evidence showed that the car was running 15 miles an hour, and that the motorman could have seen the vehicle when he was more than 500 feet away, and defendant's evidence showed that the car was going at the rate of 6 or 7 miles an hour when the motorman saw the vehicle on the track 40 feet ahead, an instruction authorizing a recovery for plaintiff if by reason of excessive speed the motorman was unable to avert a collision was not objectionable on the ground that there was no evidence showing within what space the car could have been stopped.

6. Defendant requested an instruction that if the motorman, on seeing the vehicle, reversed his power and applied the brakes, and thus would have averted the accident but for the fact that the driver of the vehicle was prevented from getting off the track by reason of another vehicle in front of it, and that the collision was due to such failure, plaintiff was not entitled to recover unless the motorman knew or could have known that the plaintiff's vehicle was so obstructed in time to have stopped the car, which instruction was modified by adding, "unless excessive speed prevented stopping the car." Held, that the modification was proper; it appearing that if the motorman had applied his brakes as soon as he saw the danger the accident would have been averted, and the special defense pleaded being that the accident was caused by plaintiff, who was driving so close in front of the car as to render a collision unavoidable.

7. Where, in an action for injuries sustained in a collision between plaintiff's vehicle and a street car, there was nothing to show that the motorman saw that plaintiff, driving ahead of the car, was attempting to get off the track, it was proper to refuse an instruction that the motorman had a right to assume that the driver of the vehicle would use reasonable diligence and get off the track and out of the way, unless the motorman knew, or by the exercise of reasonable care might have seen or known, that the vehicle was hindered or impaired in its progress by a vehicle in front of it.

8. The driver of a vehicle has a right to presume that a motorman will so run his car that a collision will not occur with a vehicle, even though the driver of the vehicle does not do his duty.

9. In an action for injuries sustained in a collision between plaintiff's vehicle and a street car, the motorman having testi-

fied that the car was running at the rate of 6 or 7 miles an hour when he saw the vehicle preceding the ear, and that he then applied the brakes and reversed the eurrent, it was proper to refuse an instruction that, if the motorman was unable to stop the carplaintiff could not recover.

10. There is no error in refusing instructions substantially

eovered by others.

11. In an action for injuries, there was no error prejudicial to defendant in admitting testimony that plaintiff had visited certain places in an attempt to regain her health; it appearing that in consequence of such visits her health had improved.

12. In an action for injuries, defendant having sought to have plaintiff identify written statements said to have been made by her, there was no prejudice to defendant in her testimony that she did not sign one of them; the statements not being offered

in evidence.

13. Where, in an action for injuries, it appeared that plaintiff was in good health prior to the accident, and that she received injuries to her side, uterus, ankle, spine and nerves; that she was suffering from traumatic neorosis, her condition being one of nervous debility and exhaustion; and that she probably would not fully recover—a verdict for \$9,000 was not excessive.—(Latson vs. St. Louis Transit Co., 91 S. W. Rep., 109.)

MISSOURI.—Carriers—Who are Passengers—New Trial— Newly Discovered Evidence—Diligence—Sufficiency of Newly Discovered Evidence—Misconduct of Jury—Proceedings to Procure—Deposition—Damages—Personal Injuries—Excessive Damages.

I. One who attempts to enter a street ear for the purpose of taking passage, when it stopped for him on signal, is a passenger,

though he saw no conductor or motorman on the car.

2. An affidavit of the owner of a drug store that the plaintiff in an action for personal injuries, at the time of the accident, walked into the store without assistance, is insufficient to authorize a new trial on the ground of newly discovered evidence to meet the evidence of the plaintiff that he was compelled to use crutches ever since the injury complained of, since the exereise of reasonable diligence would have procured such testimony before or at the time of trial.

3. Where there was overwhelming contradictory testimony to alleged newly discovered evidence, so that the court could not say that the testimony of the affiant would produce a different

result, a new trial was properly denied.

4. An affidavit of a juror will not be considered on motion for a new trial on the ground of miseonduct of the jurors.

5. On motion for a new trial in an action for personal injuries, the refusal of the court to appoint a special commissioner to take depositions, on a showing that the applicant could in that way procure testimony as to the misconduct of the jury and as to newly discovered evidence, which it could not procure by voluntary affidavits, was not error.

6. In an action for personal injuries, where the plaintiff, a lawyer 70 years of age, had his thigh bone fractured, was laid up for several months, was compelled to go on crutches, and the injury was likely to result in permanent lameness, and he estimated his income at \$2,500 a year, an award of \$15,000 damages was excessive and should be reduced to \$10,000.—(Devoy vs. St. Louis Transit Co., 91 S. W. Rep., 140.)

NEW YORK.—Carriers—Injury to Passenger Alighting from

Street Car-Negligence-Evidence.

Where plaintiff sued for an injury on the theory that the street car on which he was a passenger stopped for him to alight, and, while he was doing so, started without giving him sufficient time, throwing him to the ground, a verdict for him is against the weight of evidence; he having no testimony but his own, the conductor's testimony that plaintiff attempted to alight while the car was moving being corroborated by two passengers, and plaintiff admitting that he told defendant's claim agent that the ear "did not stop, and as it was turning slowly and kind of stopped I stepped off," though he explained that by "kind of stopped" he meant it stopped "for a minute or half a minute or ten seconds, enough to step off."—Maurer vs. Brooklyn Heights R. Co., 96 N. Y. Sup., 1065.)

NEW YORK.—Injuries to Passengers—Position—Negligence— Assumed Risk—Evidence—Contributory Negligence.

I. While it is not negligence per se for a passenger to occupy a position on the platform of a crowded street car if accepted as a passenger, he nevertheless assumes the ordinary risks incident to such position.

2. Where plaintiff, a passenger on a street car, was thrown from the platform thereof as it was rounding a eurve, evidence that the speed of the car was "pretty swift," "about nine miles an hour," and that the movement was not "an ordinary jolt," was insuffi-

cient to establish negligence on the part of the carrier.

3. Where plaintiff, prior to being thrown from the platform of a crowded street car as it was rounding a curve, had knowledge of his situation, and that he was in a position that exposed himself to the danger of being thrown by any jolting or swaying of the car, but did nothing to protect himself, and did not even look to see whether there was anything from which he could obtain support, he was guilty of contributory negligence.—(Kiefer vs. Brooklyn Heights R. Co., 97 N. Y. Sup., 841.)

NEW YORK.—Eminent Domain—Street Railways—Damages to Abutting Owner—Evidence—Appeal—Reversible Error— Findings.

- I. In an action for damages to plaintiff's premises by the maintenance of an elevated railroad in front of the property, evidence held to show that the property had been increased in value by the construction of the road.
- 2. In an action for damages owing to the maintenance of an elevated railroad in a street on which plaintiff's property fronted, the refusal of the court to find that easements of light, air, and access, aside from any consequential damages, if any, from the taking of the easements, had in themselves only a nominal value, was reversible error.—Schmitz vs. Brooklyn Union Elevated R. Co., et al., 97 N. Y. Sup., 791.

NEW YORK.—Master and Servant—Injuries to Servant—Contributory Negligence—Assumption of Risk—Evidence—Opinion Evidence—Competency.

- I. An elevated railway structure had three tracks, between each of which was a narrow board walk, and which had a wider walk on the outside of each of the outer tracks. A servant, engaged in repair work on the structure, voluntarily walked on one of the inside walks instead of an outside walk, and, although he had worked on the structure for nearly a month and knew that trains were passing constantly at the place in question, failed to keep any outlook for approaching trains, or to take any precautions to protect himself. While he was in that situation a local train approached him on one track, and in throwing his body away from it he came in contact with an express train on the next track and was killed. Held, that he was guilty of contributory negligence.
- 2. A servant held to have assumed the risk of any danger in his manner of work.
- 3. In an action for the death of a servant, testimony of a non-expert witness, based on his experience as a workman and fore-man of work at the place of the accident, that it would be a "good idea" to establish a certain rule for the protection of workmen at the place in question, and that they could not be protected without such a rule, was incompetent.—(McLaughlin vs. Manhattan Ry. Co., 97 N. Y. Sup., 719.)

NEW YORK.—Negligence—Contributory Negligence—Street Railways—Injury to Pedestrian.

- I. Where a party by his own acts creates a controlling presumpption of contributory negligence, he is guilty thereof, as a matter of law.
- 2. In an action to recover for injuries received by being struck by an electric car while crossing the public street, evidence held to show that plaintiff failed to exercise ordinary prudence, and was guilty of contributory negligence as a matter of law.—(Lofsten vs. Brooklyn Heights R. Co., 76 N. E. Rep., 1035.)

NEW YORK.—Street Railways—Injury to Pedestrian—Contributory Negligence—Giving Notice of Approach of Car—Assumption That Car Would be Operated Safely.

I. Plaintiff, while crossing a street, saw cars approaching from the north and south. The south-bound car was 40 ft. or 50 ft. away. He paid no attention to it, but walked in front of it, and was injured. There was nothing to obstruct his view nor to distract his attention except the north-bound car. Held, as a matter of law, that plaintiff was guilty of negligence precluding a recovery, though the company was negligent.

2. Whether any notice was given of the approaching car was immaterial, because plaintiff knew it was approaching.

- 3. Plaintiff did not have the right to assume that the car would be so controlled as to enable him to cross in safety.—(Mc-Entee vs. Metropolitan St. Ry. Co., 97 N. Y. Sup., 476.)
- NEW YORK.—Death—Action for Causing Death—Cause of Death—Sufficiency of Evidence—Proximate Cause of Disease—Evidence—Questions for Jury.
- I. In an action for causing death, the evidence showed that decedent before the accident was in perfect health, that his in-

juries consisted of a fractured rib and a severe bruise on the left side, that he gradually grew worse and at the end of the second week pleurisy developed in the region of the fractured rib, that shortly thereafter a tubercular condition of the left lung was discovered and death resulted therefrom in about nine weeks after the injury. Held to warrant a finding that the injury negligently inflicted was the direct cause of death.

2. Where there is evidence from which a jury may find an unbroken connection and continuous operation between a disease and an injury negligently inflicted, it is for the jury to determine whether the negligence causing the injury is the proximate cause of the disease, and if they find it is, a recovery of the damages sustained in consequence of the disease may be had.—(Sallie vs. New York City Ry. Co., 97 N. Y. Sup., 491.)

NEW YORK.—Street Railways—Crossing Accidents—Injuries— Negligence—Contributory Negligence—Precautions—Duty of Motorman—Reasonable Care.

I. In an action against a street railway for injuries received while attempting to drive over a crossing, by collision with defendant's car, evidence examined and held to show contributory

negligence on plaintiff's part.

- 2. Where plaintiff knew that defendant street railway ran its cars at a speed of from forty to forty-five miles an hour over a highway crossing. It was not sufficient for him to look for an approaching car for the last time before driving upon the tracks when he was 20 ft. distant therefrom, and his failure to look again before attempting to cross, there being a clear view all along the road, was negligence on his part, precluding a recovery for injuries received in a collision between his wagon and defendant's car.
- 3. While it was the duty of a street railway motorman, on approaching a crossing over which his car ran at a speed of from forty to forty-five miles an hour, to use reasonable care, negligence on the motorman's part in approaching the crossing did not excuse contributory negligence of one attempting to cross the tracks, in failing to look for an approaching car immediately before driving on the tracks.—(Fancher vs. Fonda J. & G. R. Co., 97 N. Y. Sup., 666.)

NEW YORK.—Carriers—Injury to Passenger—Evidence—Sufficiency.

In an action against a street railway company for injuries to a passenger, plaintiff testified that she had stood up preparatory to alighting, and signaled the conductor, when the car gave a sudden jerk and "knocked her somewhere," after which she had no further remembrance, and it appeared that she had received traumatic injuries. Held, that the evidence was sufficient to raise a presumption of negligence.—(Lomas vs. New York City Ry. Co., 97 N. Y. Sup., 658.)

NEW YORK.—Carriers—Street Railways—Contributory Negligence—Cars Required—Negligence.

I. When a passenger was unable to obtain a seat in a street car, she was not guilty of contributory negligence, as a matter of law, in riding on the running board of the car.

2. Where a street car company permitted a passenger to ride on the running board, and accepted her fare as a passenger, it was oblig d to exercise extraordinary care to transport her to her

destination without injury.

3. Plaintiff, a girl 17 years old, boarded a street car and, being unable to get inside because of the crowd, stood on the running board, holding onto one of the stanchions. The conductor, in passing along to collect fares, swung himself around the passengers on the running board, and in doing so was struck by one of the trolley poles, located 4 ft. 5½ in. from the track, the nearest face being 2 ft. 8½ in., and struck plaintiff, causing the injuries complained of. Held, that there were two concurring causes which produced the injury—one, the overcrowding of the car, and the other, the conductor's act in coming in contact with the pole—both of which were the negligence of the carrier.—(Horan vs. Rockwell, 96 N. Y. Sup., 973.)

NEW YORK.—Street Railways—Operation—Injury to Person Near Track.

- I. In an action for injuries, evidence held to show that the person injured did not back from a street car track as rapidly as he could, as he claimed, to avoid an injury from being struck by the rear end of the car as it rounded the curve and projected beyond the track.
- 2. Whether the motorman of a street car rang his bell before starting the car was immaterial, where the person injured by it saw the car before it started.—(McCabe vs. Interurban St. Ry. Co., 97 N. Y. Sup., 353.)

LONDON LETTER

(From Our Regular Correspondent.)

Last month reference was made to the tour which the Kindred Institutions were making as guests of the Institution of Electrical Engineers through England and Scotland, so that it is not necessary at this time to repeat what has been already written. Suffice it to say, that the visit has been an unqualified success, and many expressions of good feeling were exchanged between British engineers who accompanied the party and the visitors. The corporations in the various cities which were visited have certainly earned for themselves the gratitude of the Institution of Electrical Engineers, as they extended most cordial hospitality and interesting entertainment. In Birmingham, Manchester, Liverpool, Glasgow, Edinburgh, Newcastle and Leeds, everything was done for the visitors that could possibly be conceived, and not only were the various electrical engineering institutions of these cities thrown open to the visitors, but entertainments in the form of luncheons, receptions and conversaziones, were freely offered. It would be almost invidious to pick out now which of the entertainments were most enjoyable, but certainly the visitors enjoyed in no small measure their visit to Windsor, and the trip up the Thames. The voyage through the Shakespeare country was also most enjoyable, while, after the more strenuous entertainments of Manchester and Liverpool, the trip to Glasgow by way of the English lakes was certainly very refreshing. One of the most enjoyable entertainments of the whole visit was undoubtedly that extended to the whole party by Babcock & Wilcox, who are past masters in the art of entertaining on the River The entire party visited this company's works at Renfrew, being taken there by special train, which afterward proceeded to Greenock, where the party embarked on the magnifi-cent Clyde turbine steamer "Queen Alexandra," on which they remained for the rest of the day. The trip was as usual by way of the Kyles of Bute and Lochfyne and it would be impossible to conceive a better day for the purpose in every respect. Mr. Rosenthal, the managing director of this most enterprising company, not only proved himself to be the perfect host, but also to be a linguist of great proficiency, as he replied to the toast of his company in three languages. Edinburgh also naturally proved a strong attraction for the visitors, and Newcastle-on-Tyne had much to offer in the way of interesting visits to the different works. The visitors had the opportunity of inspecting, while at Glasgow, the enormous new Cunard steamship, the "Lusitania" in the works of John Brown & Company, at Clydebank, and while at Newcastle-on-Tyne they had the privilege of seeing her sister ship, the "Mauritania," which are now the two largest ships in the world and are destined to regain the "blue ribbon" of the Atlantic for Great Britain. The visit was brought to a close at Leeds, where, after various receptions and visits to engineering works, an excursion was made to Harrogate and Fountain Abbey and Studley Royal, where, as usual, the visitors had a most enjoyable time and were favored with the very best kind of weather. It remains only to say that the arrangements for the whole trip were absolutely perfect, and to those who had the work in charge, a word of praise must be extended.

We regret to have to record during the past month a series of tramway accidents which have occurred in various parts of England, all of which appear to be of practically the same nature. In each case the car has got the better of the motorman on a down grade, the brakes have become inoperative and the car has dashed to the foot of the hill, with very serious and fatal consequences. Such an accident has occurred in London on the system of the Metropolitan Electric Trainways, Ltd., on the steep descent underneath the Archway at Highgate, resulting in the loss of several lives. An accident of a similar nature took place also at Halifax, where they are many extremely steep grades, another at Swindon and also one at Huddersfield. It seems curious that all of these accidents should have occurred about the same time, and upon inquiry it would appear that all of the cars have been well equipped with brakes, so that it would appear difficult to be able to find the exact reason of the accidents. The magnetic brake was fitted on at least two of the cars which came to grief, but as the wheels were found locked, it would appear that this brake would be useless, as its efficacy necessarily depends upon the revolution of the wheels. Owing to the accidents there has been a great hue and cry about the equipments of cars in almost every city in Great Britain, and various reasons have been attributed for the catastrophes. The awful disaster to a "Vanguard" motor omnibus, which was journeying with a pleasure party to Brighton, has also called the attention of the authorities to the braking facilities on these vehicles, so that the whole subject of braking in England just now is a very live one. At the inquest on the Highgate disaster, the jury returned a verdict of "accidental death," adding that the accident was caused by the brakes failing to act when they were being applied, without the exercise of proper skill on the part of the driver, who, in the opinion of the jury, was insufficiently trained for his duties. One of the reasons doubtless of the Highgate disaster appears to have been that the magnetic brake on the car was regarded only as an emergency brake and was not used in ordinary working. Many of the cities where the roads are extremely hilly, have their cars fitted with slipper brakes, and orders are issued to all the drivers to always use these slipper brakes whenever the car enters upon a gradient. In Hastings, for instance, where there are some very severe gradients, a very powerful slipper brake has been invented by Mr. Holliday, the manager of the system, who considers that it is impossible for an accident of this kind to occur on his system. He has now taken out patents for his particular brake, and is in a position to recommend it for other systems, having made arrangements with a firm of manufacturers to put it on the market.

The annual report of the Manchester Corporation Tramways contains some remarkable figures. During the twelve months 133,-923,932 passengers were carried, against 126,900,875 in the preceding year, and the receipts were £661,806, against £628,529. There are 157 miles 647 yards of track, and the cost of working cars per mile is 5d., and the average receipts for the same distance 10.84d. Of the passengers 70.76 per cent paid penny fares, 11.57 three-halfpenny fares, 6.25 halfpenny, and only 0.32 fourpenny fares. The net balance on the year's working was £232,-997, and after the payment of interest, renewals, etc., £46,000 was contributed to the relief of the rates.

Messrs. J. G. White & Company, Ltd., of London, announce that they have extended their present offices by taking a lease of the new building recently erected by the Skinners' Company, in Cloak Lane, and that hereafter the registered address of the company and the public entrance to the offices will be 9 Cloak Lane, Cannon Street, London, E. C.

The Light Railways Commissioners have postponed the public inquiry into the application of the Highgate Hill Tramways Company for permission to electrify the Highgate Hill Steep Grade Cable Tramway (the first cable tramway constructed in England), and to construct an electric tramway to join up that line with the Middlesex Light Railway at a point near the junction of North Hill and Archway Road. The scheme is opposed by the Hornsey Borough Council, the governors of Highgate School, and an influential committee of private residents.

The South Lancashire Tramways Company has commenced running cars on its new extension from Leigh boundry to Lowton, St. Mary's Station. This will link up Leigh with the Great Central Railway Company's system, thus somewhat interfering with the monopoly hitherto enjoyed in the Leigh district by the London and North-Western Railway Company. The work of extending the tramlines from Boothstown through Worsley to Winton, so as to link up with the Manchester and Salford tramways, is expected to be completed in August, thus coupling the tram connection between Manchester and Liverpool via Tyldsley.

The system of the Bath Electric Tramways Company, which now covers about 19 miles, practically all single track, is to be extended from Newton St. Loe to Saltford, a boating center on the Riven Avon. Thence it is only 2½ miles to Keynsham, the point to which the powers of the Bristol Tramways extend. These lines, however, actually terminate at Brislingdon, and the distance from there to Saltford is covered by a motor bus run by the Bristol Tramways. Thus, when the proposed extension of the Bath Tramways is completed it will be possible to travel the whole distance between the two towns by tram. This will be an important development, as it will link a number of towns, such as Devizes, Trowbridge, Bradford-on-Avon, Chippenham, and the villages of Box, Midsomer Norton, and Timsbury, etc., to which the Bath Tramways Company maintain an excellent service of motor buses with Bristol and the seaboard.

The annual report of the Wolverhampton Corporation Tramways Committee, which was issued recently, shows that a profit of £1,192 was made on the Lorain system of electric tramways in the borough. The running of motor omnibuses from Wolverhampton to Penn Fields has resulted in a loss of £179 during the year.

A joint meeting of the tramways committee composed of representatives of the Dewsbury and Ossett Corporations and

Soothill Nother District Council was recently held at the Dewsbury Town Hall. The three authorities named have obtained powers to construct tramways between Dewsbury and Ossett, by which means a through connection will be made between Dewsbury and Wakefield, as trams already run between the latter place and Ossett. It was decided to execute an agreement with the National Electrical Constructional Company, Ltd., London, for the construction of the line from Dewsbury to Ossett by way of Wakefield Cutting, with the branch line to Earlsheaton.

The Light Railway Commissioners have granted the Hertz County Council an order to construct tramways in Watford and Bushey up to the Hertz border at Stanmore, it being intended eventually to link up with Edgware and the Marble Arch tramways should they be constructed, and so give the neighborhood

direct tramway access to London at Kingston.

The motor omnibus, of which there must be at least five hundred now running in the streets of London, is on its probation. For the past year or so, the police have not interfered with it in any way, but complaints from house owners and from the public in general have been so great of late on account of the terrible noise made by these buses, together with the serious vibration, and the most repulsive smoke and fumes which they emit, that action has had to be taken. The crisis has been brought about also to some extent by the terrible catastrophe which befell the "Vanguard" bus on the Brighton Road, as already mentioned. It got beyond control at the famous hill at Handcross, broke all its brakes and finally dashed into a tree, causing the almost immediate death of about a dozen voyagers. Sir Edward Henry, the chief commissioner of police, has now published a letter in the "Times" in which he refers to the inconveniences and dangers arising from motor omnibuses, and the difficulties that have to be contended with in dealing with the problem. He remarks that motor omnibuses have undoubtedly come to stay, but only time can evolve the type best fitted for use in the London streets. The police are well aware of the great inconvenience caused to the public by these motor buses at present, but he states that the causes of excessive noise and the emitting of noxious vapors are not really offenses under the acts or regulations. The police have powers, however, over public vehicles, and he stated that they had not interfered seriously with the working of these buses for the reason that they did not wish to hurt a young and growing industry. They have come to the conclusion, however, that the time is now ripe when the companies operating motor buses should redeem their promises to make suitable vehicles for London streets. There has been also a large amount of correspondence from various interested parties in this problem, especially from the managers of motor omnibus companies saying that they are well aware of the nuisance they are creating, and are doing all in their power to secure better and more silent vehicles and are also using every endeavor to educate their drivers to such a point that the emitting of these noxious fumes will be reduced to a minimum. The chief trouble appears to be in the matter of lubrication, as it is not automatic, but largely under the control of the driver, who pumps oil into the engine, which is vaporized and emits huge volumes of smoke, especially on starting. The older vehicles will undoubtedly have to disappear from the streets, as their depreciation is such that they are either inefficient, or create such a horrible noise that they will not be permitted in the streets. The matter of depreciation in these vehicles must be something enormous, and much money will have to be spent before the perfect vehicle is evolved. It is generally now conceded, that no amount of complaint will kill the industry, and while there are thousands of complainers, yet there are also tens of thousands of people who are benefitted by these motor omnibuses, and for the next ten years, at least, they will most indubitably be a feature of the London streets. Railways and tramways had their bad days; the motor buses are going through a similar period, but their emergence into the full light of public approval is just as sure.

The London County Council bill for authority to establish large central stations in London for the purpose of supplying electricity in bulk to authorized distributors, has been rejected by the select committee of the House of Commons, so that this year it is a "dead letter." The decision, however, was accompanied by important qualifications, and the committee recommend that the Council bring forward another bill next year much more comprehensive in its details, and state that the scheme should extend over the whole of London and to adjoining districts. They also state that the London County Council should be the authority. Pending the reintroduction of the Council's new bill, all other bills relating to the same subject are suspended. The committee also refer particularly to the matter of voltage, and point out

that the bill previously brought forward by private enterprise, known as the administrative and county bill, referred to the voltage as 20,000 as against only 6600 proposed by the Council.

The House of Lords Select Committee has also allowed the clause in the London County Council General Powers Bill, relative to the supply of electric fittings, to proceed. It will, therefore, be possible for metropolitan boroughs and authorities under the scheme to supply fittings on the hire purchase system, and will result undoubtedly in educating small manufacturers to use more electrical energy. The London County Council has backed up the metropolitan boroughs in regard to this bill, many of the municipal authorities having hitherto been unuccessful in secur-

ing the rights for themselves.

The London County Council has at last succeeded in its intention of securing permission to run tramways across Blackfriars and Westminster Bridges and along the Victoria Embankment, the scheme having at last passed its formal stages of third reading and has secured the royal assent. It is therefore now only a question of time when electric cars will be running along the Embankment and across these bridges, giving valuable connections between the northern and southern portions of London and providing also circular routes so as to relieve the congestion of traffic at the bridge termini. The benefit of a portion of the scheme will not, however, be felt for some years, as the running of cars across Blackfriars Bridge is conditional upon the widening of that bridge, which will necessarily take several years. There is no embargo, however, upon the running of cars over Westminster Bridge, and doubtless as soon as the London County Council can undertake the work it will be commenced. has ended a bitter fight, which has been continued for the past five years, the efforts of the London County Council to put tramways along the Embankment and across the bridges having been bitterly fought by the various omnibus companies, and by the House of Lords who have always objected to the beautiful Embankment being spoilt, as they claim, by anything of so cosmopolitan a character as an electric tramway, preferring, doubtless, that it should be preserved as an avenue for motor broughams and private carriages. The opposition has at last, however, been beaten down, and soon the people of London will have some right to an avenue which was originally built for their own convenience.

The highways committee of the Council have also decided to buy the London Southern Tramways Company's undertaking and to electrify it immediately. This tramway extends at present from Vauxhall to Norwood, and the estimated total expenditure will be about £325,000, including the necessary street widenings. The lines comprise about 534 miles of horse tramways, and about 4 miles will be reconstructed on the overhead system, and 134

miles on the conduit system.

With regard to the danger threatening the continued working of the Greenwich Observatory, owing to the proximity of the new power house of the London County Council, it is only necessary to say that a committee of the London County Council and the Observatory officials are working amicably together for a solution of the difficulty. In the meantime, the London County Council has determined not to continue the erection of the two other chimneys, and they have been stopped at present about 50 ft. short of the height intended for them. There is no doubt that a settlement will be arranged in time, and careful experiments will be made during the next few months to find out definitely just what derangement is liable to take place at the Observatory.

It has been for some time well known that the new Baker Street and Waterloo tube has not been getting sufficient revenue to make it a paying enterprise, and it is now announced that the management have decided to change their method of charging fares. It was opened on the American system of having a uniform fare for the whole distance, which has proved quite successful on the Central London Railway. The conditions on the "Bakerloo" tube are, however, different, and it has now been decided to adopt a graduated fare, so as to try to attract more passengers. It might also be said that the District Railway, the omnibus companies, and, in fact, all the companies connected with transportation in London, are gradually reducing their fares.

A. C. S.

RAILROAD MAP OF NEW JERSEY

T. G. Kitchen, of Trenton, has issued a map of New Jersey showing all of the steam and electric railways, freight lines, etc. The map is drawn to the scale of $4\frac{1}{2}$ miles to the inch, and is sold for \$1.50 to \$2.50, the higher priced map having the counties printed in colors.

PARIS LETTER

(From Our Regular Correspondent.)

Paris, July 21, 1906. The Union des Tramways de France (French Street Railway Association) has now taken definite shape and a permanent committee has been appointed under the presidency of M. Boulanger, who is president also of the Paris General Omnibus Company. The membership includes representatives from all the Paris traction companies, those of the suburbs and also a selection from the provinces. The offices of the union are at 15 Rue de Madrid, Paris, and the secretary is M. Coste. The objects of the association are, of course, the protection of tramway interests in France, the examination of novel schemes and the exchange of views relative to operation, public service, new construction, and generally all that concerns the welfare of the tramway companies. From the membership it may be gaged that the union is a strong one and may have an important influence on the future policy of municipalities and public authorities inclined to impose stringent regulations upon this or that branch of the industry.

The consideration of the reorganization of public traction in the streets of Paris, although shelved for the moment, is no nearer a solution than ever. The situation is becoming more and more acute as the term of the franchises becomes short, and the authorities may well find themselves in the same dilemma with their traction situation as exists at present with the public lighting. Proposals have been made to cut off the tramway franchise from the General Omnibus Company's franchise, but this has been coldly received by the Omnibus Company, this being one of

the most lucrative parts of its services.

On account of the extended tunneling operations beneath the Seine, for the various lines of the Paris Metropolitan Railway, the Prefect of the Seine decided to obtain the opinion of a committee appointed to consider the hygienic conditions of the workmen in the compressed air locks. To this end a commission, composed of Drs. Armand Gautier, Roux, Haller and Walckemaer, was appointed early in the year. The report of this committee has been presented to the Academy of Medicine and contains the following conclusions:

I. That so long as work in the compressed air is done as at present under a pressure less than 2 kg per square cm (28.44 lbs. per square inch) above surrounding air pressure, the duration of work may be the same for the workmen as for work in the

open air.

2. It would be an advantage from the standpoint of the health of the workmen that they be submitted but once during 24 hours to the change of pressure necessitated by work in the caissons. The duration of work should be a maximum of 10 hours consecutively, including time of entering and leaving the caissons.

3. In case it should be necessary for a workman to start work twice within 24 hours, a complete repose of 8 hours at least is necessary between such starts. In any case, overwork and accidents can only be avoided by the observance of the following rules:

4. Medical inspection, periodical and frequent, is essential to verify the physical ability of the men for work in compressed

5. The duration of the period of entrance and exit from the workings by stages should not be less than five minutes per kg

pressure per square cm (14.22 lbs. per square inch).

6. The exit from the pressure should always be long and progressive, and precautions should be taken that the pressure should not be completely changed in less than four minutes, by means of a special tap for this purpose. An experienced and responsible man should be appointed for carrying out the duty connected with the change of pressure.

7. In each caisson a medical post should be established for

immediate needs.

In view of the importance of these recommendations, which are issued by the best medical men in Paris, it is highly probable that they will be accepted in their entirety for the compressed air workings beneath the Seine.

Rumors are current of the sale of both the California Street Cable Railroad Company and the Presidio & Ferries Railroad Companies of San Francisco. Both properties are not in the best of condition on account of the damage by earthquake and fire. In addition, the application of the Presidio & Ferries road to the Board of Supervisors to run the road by electric power has been hung up, and the prospects of that company are therefore not very promising, since its franchise has only a few years to run.

STREET RAILWAY ASSESSMENTS IN CHICAGO

The Chicago board of tax review has failed to act in response to the plea of Corporation Counsel Lewis that higher assessments be made against the street railway companies. The Union Traction Company's personality was reduced from \$10,925,000, the valuation of the assessors, to \$8,484,809 as scheduled by the officials of the company, while the Consolidated Traction Company's schedule of \$1,763,195 was accepted instead of the valuation appraised by the assessors at \$3,501,096. The valuation of \$9,425,000 placed by the assessors on the personality of the Chicago City Railway Company was confirmed, in spite of the demands of the representatives of that company that the valuation be reduced to \$8,000,000, on which it paid taxes last year.

FINAL REPORT ON APPLEYARD LINES

B. R. Cowen, special master commissioner in the foreclosure proceedings against the Appleyard system of traction lines, which were sold by the commissioner last February, has filed his final reports winding up the affairs of four of the five lines of this system. Report of the Urbana-Bellefontaine Railway states that the property was sold for \$175,000. Receipts have been filed with the commissioner on claims aggregating \$526,397. The greatest creditor is the New York Trust Company, which has a claim of \$500,000. The report of the Columbus, London & Springfield shows that the property was sold for \$240,500. Preferred claims aggregate \$12,964; general claims, \$766,856; claims disallowed \$2,128,000. Among the latter were claims for \$499,800 by Frank W. Rollin, Arthur K. Hunt and others, of Philadelphia, and that of Adkins & Company, of Boston, for \$122,700. The report of the Columbus, Grove City & Southwestern, shows that the property sold at \$35,000; the preferred claims aggregating \$520,000; general claims, \$133,000, and those disallowed, \$250,-The report of the Central Market Street Railway, of Columbus, shows that the property was bid in for \$150,000; preferred claims amounting to \$6,639; general claims, \$290,048; disallowed, \$527,402.

WAGE INCREASE IN PORTLAND, OREGON

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An increase in wages that has been granted by the Portland Railway Company to all the car men in its employ puts Portland second highest of all coast cities, including Spokane, with the exception of San Francisco and Oakland, in the wages paid to similar labor. The increase amounts to an average of I cent an hour and affects about 600 employees. The new schedule became effective July I.

The latest increase is one of a number of similar increases since ten years ago when all city roads were paying 16% cents an hour to car men. The wages just announced are about 50 per cent more than trolley car operators realized at that time. First an increase to 18 cents an hour was made by the companies in this city; then to 20 cents and a little later a sliding scale was announced running from 20 cents for new men to 22½ to those who had been in the employ of the road for some time. Finally, about two years ago, an increase to 21 cents as the minimum wage and 25 cents as the highest was announced, which has since been in effect, although a temporary increase was allowed during the Exposition. All these increases have been voluntary on the part of the company. The latest was the result of a petition from a number of the car men, made early in May. The petition set forth the increased cost of living, and asked that wages paid to the men be raised accordingly.

The new scale is as follows, depending on length of service with the company: Twenty-one cents an hour for the first six months; 22 cents an hour for the second half-year; 23 cents for the third; 24 cents for the fourth; 25 cents for the third year; 26 cents for the fourth year and including the tenth year of service, after which the men will be paid 27 cents. The wages of

conductors and motormen are the same.

The new salary list is an average increase of 1 cent an hour. For the first six months there is no increase in the wages paid, for the second six months the increase is 1 cent, for the next six months it is half a cent, while for the next six months it is 1½ cents. After the tenth year of service the increase over the present wage is 2 cents.

THE CLEVELAND TRACTION FIGHT

Events of importance in the street railway situation have been following one another with great rapidity in Cleveland during the past week. On July 24 Mayor Johnson and the Board of Public Works, with a large force of city employees, made a grandstand play by tearing up the tracks of the Cleveland Electric Railway on Fulton Road to make room for the tracks of the Forest City Railway Company, the Mayor's low-fare company. Surrounded by half the police force and with detectives mounted on bicycles scouting the neighborhood looking for imaginary enemies,



TEARING UP THE TRACK ON FULTON STREET

the city pulled up a quarter of a mile of track in record-breaking time. The rails were welded into one solid strip, and the manner of pulling up the track looked like the pictures one sees in old histories of the way Gen. Sherman pulled up the railroad

tracks on his famous march to the sea. A big gang of men would raise one side with jacks and then the whole crew would tip over several hundred yards of track, sawing it up with hack-saws after it had been thrown over.

Mayor Johnson was asked by the STREET RAILWAY JOURNAL representative for his authority for taking such action, and he replied that the original franchise to the company provided that the city should locate the track, which it did at that time in the center of the street. Two months ago the city granted a franchise to the Forest City street. Railway Company for a single-track line at one side of the street and it ordered the old company to move its tracks to the other side. The company denying that the city had the right to make it change after the track had once been placed, paid no attention to the order. Instead of having recourse to the courts to decide the question, the Mayor took the matter in his own hands with the results mentioned. The matter of the expiration of franchise on this street did not enter into the controversy.

The Cleveland Electric Railway Company, upon hearing of the action, immediately applied for an injunction, and notice of a temporary restraining order was issued to the city authorities engaged in the work at 11:18 a. m. Instead of obeying the order, the Mayor made a joke of the matter, pretending that the order did not state specifically what he was restrained from doing. He said he thought probably the order restrained the men from eating their dinner, and ordered them not to stop, the work being continued until late in the afternoon, by which time all the track on the street had been pulled up. Immediately thereafter the Forest City Company commenced laying its track. Work had not progressed very far when the court issued another order commanding all work on the street to stop and ordering the Mayor and director of public works to appear to show reason why they were not in contempt of court. The hearing was held on Tuesday morning, and the case was laid over for one week to permit the city authorities to prepare their side of the case. The city attempted to show that the injunction had been obtained under false representation and that the Cleveland Electric Railway officials should be charged with contempt.

> As stated in the last issue, the Cleveland Electric Railway has submitted a proposition offering a reduction in fare to seven tickets for a quarter with universal transfers, the building of several new lines and the building of subways or elevated structures as the city might direct in return for a twenty-fiveyear extension. The company asked that the matter be submitted to a popular vote of the people and offered to pay the cost of the election.

> The Municipal Traction Company, which is supposed to have leased the Forest City Company, has come out with a proposition which it placed in a parallel column with that of the other company, asking that it also be submitted to a vote of the people. In brief, it offers the following: Three-cent cash and ticket fare; universal transfers under Council regulation; revocable grants; franchises to be terminated at any time; Council to have full power of regulating service under penalty of revoking franchises; extensions left to discretion of city; subways and elevateds to be built whenever Council directs, and at a three-cent fare; road to

be capitalized at \$50,000 per mile and but 6 per cent dividends to be paid, balance going to bettering the service; city ownership whenever desired by the people and permitted by the Legislature; title to the streets to remain absolutely in control of the city



THE DIRECTOR OF PUBLIC SERVICE ACCEPTING THE RESTRAINING ORDER

for all time; books to be open to all who may care to examine them; submission to vote of the people of any question at any

The Cleveland Electric Railway Company has entirely changed its policy relative to publicity, and has secured the services of H. T. Newcomb, of Washington, D. C., an expert on street railway matters, who will assist the company in placing its proposition before the public. This campaign of education has been started in the daily press, the company having announced that it

has purchased large spaces in the leading daily papers, through which mediums it will state its position. One of the first of the

"Street Railway Talks" is in part as follows:

"The Cleveland Electric Railway Company is a Cleveland enterprise owned and operated by Cleveland people, who are bound up with the interest, progress and development of the city. The street railway business, more than any other, depends for its success upon the prosperity of the community served. At the same time the prosperity of any city requires the best possible street railway service. You must see that its own interests force a street railway company to give the best possible service for the lowest fare possible. Cleveland needs increased rapid transit facilities, elevated or subway lines for travel at high speed and many extensions of existing lines. All these the company is ready to supply and is ready to reduce the rate of fare to 31/2 cents, continuing the present free transfer system and extending it to new lines to be constructed. On its part it asks the city merely to extend its franchises for the short period of twenty-five years from the expiration of grants now in force. The proposed fare is lower than has ever been offered to any city anywhere near Cleveland's size.

"It will cover a trip of 19 miles from Rocky River to Euclid Beach, or one of any possible length from any point to any other point in the city or its suburbs. With the building of extensions and subways, the growth of Cleveland will begin at once. On the other hand, refusal to accept this company's offer and the acceptance of the Forest City Company's offer will mean but the beginning of years of confusion involving many impediments to

Cleveland's tranquility and progress.

"Think it over. If you approve the acceptance of the offer of the Cleveland Electric Railway Company and the immediate settlement of street railway questions, we solicit your active support."

Another statement places the two propositions together in an interesting manner in parallel columns, as follows:

CLEVELAND ELECTRIC RY.

Lines cover entire city and all suburbs now.

FOREST CITY RAILWAY

One line distant from and not now reaching the center of the city.

RATE OF FARE

Three and one-half cents now.

Three cents, some time, perhaps.

TRANSFERS

Universal, as at present, from any point to any other point in city or suburbs for one fare now.

Limited to its system and by city boundaries.

SERVICE

Highest quality. Number of cars in use now 855.

Unknown. Number of cars ordered, 24.

EXTENSIONS

Whenever and wherever needed as fast as the Council will permit.

No trunk lines from which to extend.

SUBWAYS OR ELEVATED

At once if Council will permit.

Perhaps, some time, if and when capital can be secured.

CAPITAL

Sufficient to guarantee that all promises will be kept.

Insufficient or not in sight. Responsibility for large undertaking not shown.

DIVIDENDS AND PROFITS

Reasonable if they can be earned through good service and economical management.

Guaranteed by a paper company of \$10,000 capital at the rate of 6% per cent of the amount paid on stock.

POPULAR VOTE

To settle, and honestly settle, the traction question on most favorable terms to the city now.

To mark the commencement of a period of greater uncertainty and confusion than any American city, except Chicago, has ever known.

FINALITY OF SETTLEMENT

Obtained, so far as the laws of Ohio will permit, now.

Impossible until the grants of the Cleveland Electric Railway expire, an average time of eight years, running in some cases beyond twenty years. RELATIONS TO THE CITY GOVERNMENT

Free from corrupting influences.

A dangerous and vicious partnership between business and politics that would soon debauch both.

SAVING TO THE PEOPLE

One million dollars or more annually now. From \$8,000,000 to \$12,000,000 before the existing grants expire.

Nothing until present franchises of the Cleveland Electric Railway Company expire.

THE CLEVELAND ELECTRIC RAILWAY COMPANY,
By HORACE E. ANDREWS, President.

Not satisfied with the present strenuous fight, the city authorities are making it unpleasant for the company by many petty annoyances in other directions. Director Springborn, of the board of public service, has ordered the company to tear up a large piece of new track on Jennings Avenue, because the sand used in grouting the pavement between the tracks was not sifted to the consistency demanded. This was not "discovered," however, until a long section of track had been relaid.

The neighboring village of Newburg, at the instigation of Mayor Tom, has demanded that the old company immediately commence laying track on a street where a franchise has recently been granted, under penalty of having the franchise revoked and turned over to the Forest City Company. This in spite of the fact that the authorities are well aware that the company cannot secure the rails for some little time to come.

Under the attacks of the city, the stock of the Cleveland Electric Company declined last week from 74½ to 66, but strengthened at the end of the week to 70. It is believed that this was caused largely by manipulation, as the insiders are not selling. The proposition made by Henry Everett to lease the Cleveland Electric Railway is said to have been declared off, Mr. Everett being unwilling, it is understood, to attempt to guarantee payment of dividends on a basis of seven tickets for a quarter.

A new tangle has been created by the announcement of Frank DeHaas Robinson, who was formerly prominent in the street railway business in Cleveland, that he would bid against the Municipal Traction Company on a 3-cent fare basis. He would not accept a franchise which would be terminable at any time, however.

STRIKE IN NEW BEDFORD

Since July 24 the car men of the Union Street Railway Company have been on strike. There were a number of riotous demonstrations on the first day, but since then the police have been able to prevent further violence. The dispute between the company and its employees is due to the refusal of the former to make an agreement with the Amalgamated Association of Street Railway Employees which would virtually have put that organization in the position of controlling the management of the railway. There was no real dispute as to wages—in fact the company has promulgated a wage schedule which will enable car men to attain the maximum wage of 25 cents an hour in five years, instead of fourteen years as formerly. After a tripartite conference on July 26 between the State Board of Arbitration, President Crapo, of the Union Street Railway Company, and representatives of the strikers, the latter voted to remain on strike.

At the present writing the company has succeeded in securing a number of outside men, and cars are running as regularly as usual.

The New Hampshire Electric Railways recently entertained over one hundred members of the Suburban Press Association, at Canobic Lake Park. The party left Boston eary in the morning over the Boston & Maine Railroad and were met at Hampton by Superintendent Hayden, where they were taken by trolley cars to Hampton Beach. Here they were met by Robert H. Derrah, advertising agent of the company, and Col. W. H. Phinney, manager of the Casino, theatre, hotels, etc. In the afternoon they visited the Canobic Lake Park, where they were met by Mr. Williams, superintendent of the park, and where they were entertained at dinner. Late in the afternoon they were given a trolley ride to Lawrence, from which place they returned to Boston on a special car.

MAP SHOWING PROGRESS OF INDIANA INTERURBAN LINES

The progress during the last six months of the interurban industry in Indiana is illustrated by a map, showing all the traction lines in operation and under construction in this State, just issued by the American Engineering Company, of Indianapolis. Compared with a similar map issued by the same company six months ago, the new map shows that 220 miles of electric road have been put into operation since Jan. I, and that construction work has

been begun on almost 400 miles additional.

The new lines which have begun operations since the first of the year are the Winona Interurban Company, between Goshen and Winona; the Toledo & Chicago Interurban Railway, from Waterloo to Auburn and from Garrett to Ft. Wayne; the Marion, Bluffton & Eastern, from Ft. Wayne to Bluffton; the Muncie & Portland, from Muncie to Portland; the Terre Haute Traction Company, from Farmersburg to Sullivan; the Evansville & Mt. Vernon Traction Company, from Evansville to Mt. Vernon; the Evansville, Suburban & Newburg, from Evansville to Boonville and from Evansville to Newburg; the Ft. Wayne & Springfield Railway, from Ft. Wayne to Lecatur, and the Indianapolis & Western, which will be running cars from Indianapolis to Danville within a few weeks.

The lines upon which construction has started since Jan. I are the Winona Interurban, from Warsaw to Peru; the Ft. Wayne & Wabash Valley, from Logansport to Lafayette; the Indianapolis, Crawfordsville & Western, from Indianapolis to Crawfordsville; the Evansville & Princeton, from Princeton to Vincennes; the Indianapolis, Columbus & Southern, from Columbus to Seymour; the Indianapolis & Louisville, from Seymour to Sellersburg; the Indianapolis & Cincinnati, from Rushville to Connersville, and from Shelbyville to Greensburg; the Evansville & Eastern, connecting at Newburg for Rockport and Grand View; the Indianapolis, Newcastle & Toledo, from Indianapolis to Maxwell, from Maxwell to Greenfield, from Greenfield to Shirley, from Shirley to Anderson, and to NNewcastle, and from Newcastle to Muncie, to Winchester and to Richmond.

Traction lines that will be put in operation during the next six months are given as follows: The Northern Indiana, from South Bend to Laporte; the St Joseph Valley, from Lagrange to Angola; the Toledo & Chicago Interurban Railway, from Garrett to Kendallville; the Marion, Bluffton & Eastern, from Bluffton to Marion; the Indianapolis, Crawfordsville & Western, from Indianapolis to Crawfordsville; the Indianapolis & Western, from Plainfield to Brazil, and the Indianapolis & Cincinnati, from Rushville to Connersville, and from Shelbyville to Greensburg.

Lines projected that probably will be placed under construction before the beginning of the coming year are the Indianapolis, Huntington & Columbus City; one from Lafayette to New Albany, by way of Crawfordsville, Greencastle, Spencer, Bloomington, Bedford and Salem; one connecting French Lick, Paoli, Salem. Scottsburg, Madison, Aurora and Cincinnati, and three lines out of Vincennes, one to Sullivan, another to Washington, and a third to Petersburg and Jasper.

NEW PUBLICATIONS

"Carbon Brushes, a Practical Treatise," by J. S. Speer. Published by the Speer Carbon Company, St. Marys, Pa. Cloth,

30 pages.

Mr. Speer is a well recognized authority on the subject of carbon brushes and his little book contains a very interesting discussion of the proper qualities of a brush and methods of using it. Among other points Mr. Speer expresses himself strongly against the idea that a high voltage motor requires a high resistance carbon, and vice versa. He states that the terminal voltage of the machine does not play a very important part in determining the quality of the carbon brush to be used. One of the prime requisites of a good brush is that it shall contain in its composition ingredients that render it of suitable resistance to limit the cross-currents in the short-circuited coil or coils which are undergoing commutation, and also that it should wear off the mica and copper over which it rides at an equal rate. It should also contain enough lubricating material to polish the commutator surface. In other words, a successful carbon brush must have resistance, cutting anl lubricating qualities, each in due proportion. The practice of lubricating the commutator is gradually being superseded by placing the lubricant in the brush itself, and the author quotes some very interesting examples showing how direct lubrication of the commutator has been discontinued with very satisfactory results. The results of some tests are given showing temperature of brush according to amperes per square inch of brush contact, wattage loss in terms of peripheral speed of commutator, voltage drop in terms of amperes per square inch of brush contact, etc. Some interesting views and particulars are also given concerning contact devices for carbon brushes. The book is written primarily to bring out the favorable features of the Speer carbon brush, but also contains a great many valuable hints on the use of brushes.

PERSONAL MENTION

MR. C. O. SIMPSON has tendered his resignation as general manager of the Little Rock Railway & Electric Company. Mr. Simpson has been elected vice-president of the Citizens' Savings Bank & Trust Company, of Birmingham, Ala., his former home, and as soon as he is relieved he will return to the Alabama city, to accept this position.

MR. CHARLES A. BRAGG, manager of the Philadelphia office of the Westinghouse Electric & Manufacturing Company, died Saturday evening, July 28. Mr. Bragg was one of the oldest members of the Westinghouse staff, having become connected with the organization in 1887. The funeral was held on Monday afternoon from his late residence, 4111 Locust Street, Philadelphia.

MR. EDGAR JAY RAUCH, of Newark, Ohio, has been appointed general superintendent of the Saginaw-Bay City Railway & Light Company, to succeed Mr. J. C. Young, resigned. Mr. Frank Gavigan, of Saginaw, becomes superintendent of electrical properties for the company. Mr. Rauch was formerly superintendent of the interurban system connecting Columbus, Newark and Zanesville. He assumes his duties at once.

MR. J. C. ROSS, who recently resigned as general manager of the Steubenville Traction & Light Company, was the recipient of a surprise party a few night ago, tendered him by his former associates. Mr. Ross was presented with an elegant solid silver loving cup, of beautiful design, as a token of the esteem of his coterie of friends. Mr. Ross has been appointed general manager of the Utah Light & Power Company, of Salt Lake City, Utah.

MR. HARRY B. IVERS, treasurer and general manager of the Pawcatuck Valley Street Railway and the electric lighting companies in Westerly and Mystic, sent his resignation to the board of directors, to take effect July 31. Mr. Ivers resigned his position for the purpose of entering into a partnership with Philip H. Farley, of Boston, a banker, and president of the Midford Electric Light Company, of Midford, N. H. The new company will be known as Farley, Ivers & Company, and will build and deal in the securities of lighting plants and electric railways.

MR. W. B. TARKINGTON, whose resignation as superintendent of the Detroit, Monroe & Toledo Short Line was announced in the Street Railway Journal of July 14, has become superintendent of transportation of the Milwaukee Electric Light & Railway Company. Mr. Tarkington's excellent work for the Short Line made his departure one regretted by the personnel of the company and its patrons. As a token of their good feeling the employees gave a surprise party to their retiring chief and presented him with a silver loving cup. Mrs. and Miss Tarkington were also honored with a bouquet and bon-bons, respectively.

MR. J. L. ADAMS, general manager of the Indiana, Columbus & Eastern lines, west of Columbus, has announced several changes in the operating force. Mr. B. M. Brown, heretofore superintendent of the roads out of Columbus, has been transferred to Dayton, as superintendent of the Dayton & Richland, and Dayton & Union City divisions. Mr. Walter Hurst has been appointed general passenger and freight agent of the system, and Mr. N. A. Thomson has been appointed soliciting passenger and freight agent for the lines of the company in Columbus, while Mr. C. O. Baker will have a similar position for the roads of the system

entering Dayton.

COLONEL ALVA J. SMITH, general passenger and ticket agent of the Lake Shore & Michigan Southern Railway, died July 26, at Harriettstown, N. Y., in the Adirondack Mountains, where he was taken from Cleveland several weeks ago with the hope of saving his life. Mr. Smith was 66 years of age. An attack of pneumonia early this spring was followed by an abscess on the lungs, which was the direct cause of death. Mr. Smith began his railway career in 1866 as a clerk in the general offices of the Cleveland, Columbus & Cincinnati Railway Company. He rose rapidly in the ranks and was finally made general passenger agent of the road. In 1888 he was appointed general passenger and ticket agent of the Lake Shore road.

TABLE OF OPERATING STATISTICS

Notice.—These statistics will be carefully revised from month to month, upon information received from the companies direct, or from official sources. The table should be used in connection with our Financial Supplement "American Street Railway Investments," which contains the annual operating reports to the ends of the various financial years. Similar statistics in regard to roads not reporting are solicited by the editors.

* Including taxes.

† Deficit.													
Company	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Available for Dividends	Company	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income Amount Available for Dividends
AKRON, O. Northern Ohio Tr. & Light Co	1 m., June '06 1 '' '' '05 6 '' '' '06 6 '' '' '05	92,984 85,163 461,056 425,478	48,895 45,841 257,473 236,918	44,089 39,322 203,583 188,561	22,738 23,017 136,072 137,602	21,352 16,305 67,512 50,960		1 m., May '06 1 '' '' '05 12 '' '' '06 12 '' '' '05	43,636 551 997	*29,624 *27,228 *341,837 *328,985	19,553 16,408 210,161 65,342		11,861 7,501 108,829 †35,425
BINGHAMTON, N. Y. Binghamton Ry. Co	1 m. June 'C6 1 " ' '05 12 " '06 12 " '05	291,943	14,147 11,961 150,889 186,862	16,106 14,265 141,054 124,262	7,423 7,207 87,790 84,491	8,682 7,058 53,263 39,771	LEECHBURG, PA. Pittsburg & Alleghany Valley Ry. Co	1 m., June '06	4,463	2,181	2,333	2,165	167
BOSTON, MASS. Boston & Worcester St. Ry. Co	1 m., June '06 1 " '05 9 " " '06 9 " " '05	323,000	26,077 215,787	20,507 19,431 107,213 80,343		====	MANILA, P. I. Manila Elec. R. R. & Lt. Co., Railway Dept Total, all depts	6 " " '06	262,080 73,750	131,235 35,750	21,500 130,846 38,000 217,609		
CHAMPAIGN, ILL. Illinois Traction Co	1 m.,'June,''06 1 " '05 6 " '06 6 " '05	1,344,830	*132,758 *101,866 *766,995 *608,130	104,111 87,216 577,835 486,583			MILWAUKEE, WIS. Milwaukee El. Ry. & Lt. Co	1 m., June '06 1 " '05 6 " '06 6 " '05	1.671.660	133,318 840,212	154,393 147.538 831,448 769,256	79,041 514,405	77,399 68,497 317,043 318,508
CHARLESTON, S. C. Charleston Cons. Ry. Gas & Elec. Co	1 m., June '06 1 '' '05 4 '' '06 4 '' '05	210,487	29,964 128,144	23,468 23,608 82,343 79,860	18,017 13,167 51,917 51,917	19,452 10,441 30,426 27,944	Milwaukee Lt., Ht. &		65,751 55 164 293,241 256,825	123,046		21,568 145,962	13,282 11,070 24,233 16,549
OHICAGO, ILL. Aurora, Elgin & Chicago Ry. Co	1 m., May '06 1 " '05 2 " '06 2 " '05	192,514	55,730 49,966 107,479 97,380	46,803 41,764 85,035 74,218	24,939 24,313 49,878 49,232	21,864 17,451 35,157 24,986	MINNEAPOLIS, MINN. Twin City R. T. Co	1 m., June, '06 1 '05 6 '1 '06 6 '05	484,590 392,528 2,554,608 2,171,470	177,853 1,214,382	214.675 1,340,226	100,875 660,016	158,454 113,800 680,209 544,559
Chicago & Milwaukee Elec. R. R. Co	1 m. June, '06 1 " '05 6 " '06 6 " '05	331,823	27,255 22,266 143,793 104,017	57,300 30,952 188,080 107,957			MONTREAL, CAN. Montreal St. Ry. Co	1 m., June '06 1 " '05 9 " " '06 9 " " '05	287,595 248,200 2,193,785 1,923,992	152,835 137,594 1,367,193 1,258,520	110,607 826,592	52,034 29,514 319,008 199,168	82,727 81,093 507,584 466,303
CLEVELAND, O. Cleveland, Painesville & Eastern R.R. Co		113,888	*14;247 *13,200 *66,10? *63,147	13,011 10,741 47,786 36,270			NEWBURGH, N. Y. Orange Co. Trac. Co	1 m., May '06 1 '' '' '05 5 '' '' '06 5 '' '' '05	11,726 11,445 43,898 39,016	34,793	4,174 4,656 9,105 7,365		
Cleveland & South- western Traction Co.		237,376	31,777	21,628 27,281 88,483 116,117			NEW ORLEANS, LA. New Orleans Ry. & Lt. Co.	1 m., June '06	446,277 2,889,087	261,319 1,530,467	184,958 1,358,620	155,123 916,286	29,835 442,334
Lake Shore Electric.	1 m., May '06 1 '' '05 5 '' '' '06 5 '' '' '65	* 300,210		26,8°5 24,195 115,695 97,971	20,404	6,481 3,790 13,674 †4,049	OAKLAND, CAL. Oakland Trac. Con	1 m., Apr. '06 1 " '05		67,817 57,003	83,709 65,248		48,030
DETROIT, MICH. Detroit United Ry	1 m., June '06 1 ''' '' '05 6 '' '' '06	525,957	*303,486 *266,530 *1609823	222,471 194,992 1 068 513	95,154 93,364 564,176	127,317 101,628 504,337	PEEKSKILL, N. Y. Peekskill Lt'g & R.R.Co	6 /05	65,976 56,478	7,065 6,619 35,985 34,366	8,154 6,285 29,991 22,112		
DULUTH, MINN. Duluth St. Ry. Co	1 m., May '06 1 " '05 5 " " '06 5 " " '05	289,238			17,513 16,811 87,519	8,859 39,509	PHILADELPHIA, PA. American Rys. Co	1 m., June '06 1 " '05 12 " '06 12 " '05	2 100 150				
EAST ST. LOUIS, ILL. East St. Louis & Su- burban Co	1 m., May '06	94,790 93,729 422,465	46,992 38,467 230,367	170,196 47,798 55,262 192,098			ST. LOUIS, MO. United Railways Co. of St. Louis	1 m., June '06 1 " '05 6 " " '06 6 " " '05	4,400,267	*483,854 *451,128 *2724282 *2699179	294,973 1,675,985	198,840 1,189,322	109,522 96,133 486,663 151,572
FT. WAYNE, IND. Ft. Wayne & Wabash	1 m., May '06 1 " '05 5 " '06	87,327 74,062 398,958	55,847 46,031 250,526	31,480 28,031 148,432			SAVANNAH, GA. Savannah Electric Co.	1 m., May '06 1 " '05 12 " '06 12 " '05	53,174 50,569 609,734 562,297	*30,694 *27,936 *369 463 *322,923	22,480 22,633 240,271 239,374	10,554 129,634	11,460 12,079 110,637 112,451
FT. WORTH, TEX, Northern Texas Tr. Co	1 m., May '06	71,485 57,080 720,553	*42,695 *30,966 *440,259	28,790 26 114 280,294	9 942 10,326 119,660	15,787 160,634	SEATTLE, WASH. Seattle Electric Co	1 m., May '06 1 '' '' '05 12 '' '' '06 12 '' ''05	243,632 208,608 2,739,385 2,378,040	*154,420 *132,775 *1764783 *1632848	89,212 75,834 974,602 745,192	24,955 299,524	61,832 50,879 675,078 443,776
GALVESTON, TEX. Galveston Elec. Co	1 m., May '06 1 '' '05 5 '' '' '06 5 '' '' '06	27,721 22,252	*74,148	251,115 11,201 8,143 33,148	4,166 4,167 20,833	7,035 3,976 12,315	SYRACUSE, N. Y. Syracuse R. T. Co	1 m., June '06 1 " '05 6 " '06 6 " '05	454,010	52,375 46,243 296 574 266,025	36,615 34,546 220,541 187,984	24 267 165,018	8,367 10,279 55,522 42,268
GREENSBURG, PA. Pittsburg, McKeesport & Greensburg Ry. Co.	1 m., June '06 1 " " 05 6 " " '06	22,798 17,701 96,483	10,742 9,277 57,168	12,056 8,424 39,315 29,401	4,442	7,614 15,956	TERRE HAUTE, IND. Terre Haute Tr. & Lt. Co	1 m., May '06 1 " ' '05 12 " ' '06 12 " '' '05	60,473 51,749 692,720 588,558	*37,397 *36,143 *437.238 *379,145	23,076 15,606 255,482 209,413	10,854 137,686	9,434 4,752 117,796 95,760
HANCOCK, MICH.	1 m., May '06	18,212 10,993 205,679		6,713 +699 61,345 7,552	3,966 3,627 45,642 41,452	2,747 †4,326 15,703	TOLEDO, O. Toledo Rys. & Lt. Co	1 m., May '06 1 " '05 5 " " '06 5 " '05	154,492 784,391	*93,855 *82,740 *420,494 *382,889	73,992 71,752 363,897 349,678	42,243 41,894 211,451 212,043	31,749 29,858 152,446 137,635
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NEWS OF THE WEEK

CONSTRUCTION NOTES

LOS ANGELES, CAL.—A combination of subway and tunnel is the project of the Los Angeles Pacific Railway for securing a line which will enable quick time to be made from this city to the beaches, and will give the company a new outlet to relieve the Sixteenth Street and Hollywood lines. A ravine extending from Vermont Avenue southeasterly to a point about 200 ft. northwest of Sixth Street will be utilized for the subway portion of the new cutoff. The tunnel from Sixth Street to beyond Wilshire will be about 1700 ft. in length, 17 ft. high and about 70 ft. wide.

LOS ANGELES, CAL.—Representatives of H. E. Huntington have secured a right of way through the Wolfskill Ranch, which is adjacent to the Hammel & Denker Ranch, recently purchased by Mr. Huntington and his associates, including several officers of the Associated Oil Company. Both of these properties are in the territory heretofore held exclusively by the Los Angeles Pacific Company. It was denied at the Pacific Electric offices that Mr. Huntington intended to build in that region, but no explanation was offered of why he had secured a right of way. It is of interest to know, also, that Mr. Huntington has ordered the construction of a 3-mile extension of the interurban system of the Sixth Street line. This will begin at the terminus now at Rampart and Sixth Streets and extend west on Sixth, crossing Normandie and Western Avenue, to a point 1320 ft. west of the latter, and thence north to Fourth Street, on a private right of way.

NORWICH, CONN.—Preliminary operations have been begun by the Consolidated Railway Company for the construction of a line from Norwich through Jewett City and Plainville to Central Village. Here connection will be made with the Danielson & Putnam Division. The topography of the country traversed is such that very little grading will be necessary.

NORWICH, CONN.—The Consolidated Railway Company has completed plans for the erection of a large car house in this place. It will be of brick, 150 ft. by 200 ft. Provision will be made for a repair shop, waiting room and manager's office. The cost of construction and equipment will approximate \$100,000.

EDWARDSVILLE, ILL.—The extent of the improvements to the McKinley syndicate's power house in Edwardsville were made known last week at a meeting of the City Council, when it was announced that \$100,000 had been set aside for the purpose. The plant will be largely increased to make it an auxiliary sub-station for the running of the interurban lines, and it is said that Edwardsville will be the connecting point for other lines which are in contemplation. The company applied for a franchise to construct another city line in Edwardsville from the city square north along Second Street to the city limits, and it was granted. Work will begin shortly.

COLUMBUS, IND.—The Columbus Street Railway & Light Company is preparing to build a new power plant.

INDIANAPOLIS, IND.—The Indiana Rapid Transit Company, P. M. Dunn, president, is reported to have announced that the bonds have been sold assuring the building of a line from Logansport to Terre Haute, and that bids for the construction of the road would be invited soon.

MARSHALLTOWN, IA.—Hamilton Browne, who has the contract for the construction of an electric line from Marshalltown to Ferguson, at which latter point connections are to be made with the Milwaukee Road, has secured an option on the property of the Marshalltown Electric Light & Gas Company, which operates the street railway system of Marshalltown. Mr. Browne expects to run the street railway system in connection with the interurban line. He states that he will construct an extension to Conrad, Ia., immediately after constructing the line to Ferguson, and that he also expects to extend several city lines as soon as he secures control of the city railway system.

SIOUX CITY, IA.-W. R. Burch, of Chicago, and J. W. Browning, of Kansas City, have been in Sioux City negotiating for the purchase of the Sioux City, Homer & Southern Railway Company, which was constructed from South Sioux City to Dakota City about two years ago by H. H. Talbot. The deal was finally consummated on July 18. The new owners have organized a company under the name of the "Nebraska & Southern Railway Company," and the necessary arrangements for the transfer of the property of the old company to this new one have all been completed. The new owners have agreed to run the road in connection with the Sioux City Traction Company's line to South Sioux City, and the work of connecting the two lines in South Sioux City has already commenced. The two companies have agreed on rates, and, under the new arrangement, the fare from Sioux City to South Sioux City will be 5 cents, and from Sioux City to Dakota City, 10 cents. The Sioux City Traction Company has entered into a contract with the Nebraska & Southern Railway Company to furnish electric power to the said company for a period of twenty-five years. The new company will probably extend the line from Dakota City to Homer within a short time. Homer was the terminus Talbot had in mind when he started the construction of the line, but he was compelled to stop construction work about 1 mile south of Dakota City on account of lack of funds. The line has not been operated since it was constructed. The new company expects to operate cars over the line within thirty days.

HUTCHINSON, KAN.—Work on the electric street railway is progressing satisfactorily to the company. J. P. Shunk was asked how things were progressing from a company standpoint. He said that of the \$51,000 subscribed for the stock, about \$800 would not be paid, but that most of the rest had been paid in. He was asked what effect it would have on the company should the courts decide the city cannot issue the \$20,000 in

bonds voted. Mr. Shunk replied that this would tor a time prevent the laying of the Fourth Avenue line on out to the packing house, from the Fourth Avenue school building, but that the company had funds enough in sight to lay the Main Street, Avenue F, Avenue A and the Fourth Avenue lines.

LOUISVILLE, KY.—The Louisville, New Albany, French Lick & West Baden Railway Company, which proposes to construct an electric line from New Albany to French Lick and West Baden Springs, purchase the electric line equipment of the Kentucky & Indiana Bridge Company and extend the electric line of the bridge company in Louisville, has applied to the New Albany Board of Public Works for a right of way over a number of the streets of that city. The company is composed of Louisville, New Albany and Southern Indiana capitalists, and, it is claimed, is backed by ample capital to carry out the purposes for which it was organized.

SOMERSET, KY.—Construction has begun on the railway of the Somerset Water, Light & Traction Company. The line will be about 6 miles long

NEW IBERIA, LA.—The subject of an electric road for New Iberia, and extending to Franklin, is again eliciting much interest. W. P. Conery, of New Orleans, to whom was recently granted a tranchise for twenty-five years, is here completing the legal formalities. The City Council held a special session and passed an ordinance unanimously giving Mr. Conery and associates a franchise for the operating of a street railway in this city for twenty-five years. New Iberia will be the center of the system, which will take in the country east to Franklin 25 miles, and west about the same distance

NEW ORLEANS, LA.—Leigh Carroll, president of the Algiers Electric Railroad Company, has sent a reply to Mayor Bchrman with reference to his recent inquiries as to when actual building of the line would begin. Mr. Carroll says that the modified contract provided in the ordinance of June 1, this year, had been prepared and was now awaiting the signature of the surety company, which would be signed, and then the work would be proceeded with. The franchise of the Algiers Electric Railroad Company is for fifty years. The road is to start from the intersection of the Orleans-Jefferson Parish line at Teche Street, along Teche Street to Opelousas Avenue, across Opelousas Avenue to Bouny Street, and thence in a more or less circuitous route to the Mississippi River.

ANNAPOLIS, MD.—The Washington, Baltimore & Annapolis Electric Railway, which is pushing work on its connection between Washington and Baltimore, and will use the line of the old Annapolis, Washigton & Baltimore Railroad for trolley service to Annapolis, now wants to come into Annapolis. Application has been made to the Council for a forty-year franchise granting the road the right to lay tracks and run cars over some of the principal streets of the town. George T. Bishop, president of the corporation and the advantages which a city trolley service would give to Annapolis. The company's present intended terminal is at the station of the Annapolis, Washington & Baltimore Railroad. A bond is offered the municipality to insure that the work will be done and the cars running by Jan. 1, 1908.

BOSTON, MASS.-A syndicate representing financial and manufacturing interests in Massachusetts will petition the Railroad Commissioners in a few days for the right to construct an electric interurban railroad between Beverly and Boston, passing through Salem, Peabody, Lynn, Saugus, Revere and Chelsea. From Peabody a line will be extended to Danvers via Danvers Port. This enterprise has been slowly gathering headway for the last two years, and in the meantime a number of the men interested have labored together with other capitalists and electric railway men in behalf of the new interurban railroad law, which provides for the building of fast electric lines over private land, and which was passed at the late session of the Legislature. The road will be known as the Boston & Eastern Electric Railroad, and is planned to be of the high-speed class, wholly upon private right of way, and will have no grade crossings whatever. All crossing over or under streets will be reinforced concrete arches, and all bridges over other railroads will be of steel, to permit of high speed, if the road is ever built. The road, as planned on paper, is to be double track the entire length, with provisions for four tracks from Lynn to Boston. The branch from Peabody to Danvers is to join the main line in such a way that through trains will be run from Danvers to Boston; and yet the main-line tracks will not be cut, as is usual on steam railroads. Actual surveys have been made, including the taking of levels once in 100 ft., and oftener at some places, of every foot of the line, and plans made of all private property, tide waters and streets that are to be crossed. The new road aims to connect in Boston with the Boston "L," so passengers may go from any point on the line to any part of Boston and to Cambridge (when the new subway to that ciy is built). The promoters say the cars on the Boston & Eastern will run at higher speeds than the trains on the steam railroads running out of Boston, and yet the fares will be considerably lower than those of the steam roads. The men behind the proposed Boston & Eastern are prominent in financial and manufacturing circles. The articles of association contain the names of John H. Bickford, Salem; Arthur Sturgis, Brookline; Harry P. Graves, Lowell; William H. Grove, Salem; George Vaughn, Salem; Melville Woodbury, Beverly; William S. Nichols. Salem; Fred A. Norton, Salem; William E. Bixby, Haverhill; John H. Linehan, Beverly; E. Bertram Newton, Boston.

BRIMFIELD, MASS.—The Springfield Street Railway Company has asked the Selectmen of Brimfield for an amended location over highways and private right of way in East Brimsfield.