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Of this issue of the ELECTRIC RAILWAY JOURNAL 9000 copies are printed.

The Record in Technical Journalism

The present issue of the ELECTRIC RAILWAY JOURNAL completes the numbers of the paper published during October. During this time five regular issues, four daily issues, and one Souvenir Convention issue have been published, making nine issues in all, which aggregated over 580 reading pages, or considerably more than in both of the first two annual volumes of the STREET RAILWAY JOURNAL.

The ELECTRIC RAILWAY JOURNAL during October contained over 850,000 words, and in addition, a Dictionary of Electric Railway material was published and mailed gratis to each subscriber. This dictionary contains about 180,000 words, making a total of 1,030,000 words. A better conception of the extent of matter thus supplied to readers of this paper is obtained by comparing it with standard treatises in the electric railway field. One of the most voluminous of these, as well as one which is deservedly widely read, is "Bell's Power Transmission." Another well-known book is the report of the Electric Railway Test Commission. The ELECTRIC RAILWAY JOURNAL during October printed four times as much matter as is contained in the former book and more than five times as much as in the report of the Electric Railway Test Commission. In number of words, the issues during October even slightly overtop the "Standard Electrical Hand Book," with its 1303 pages of fine type.

Rejection of the Cleveland Plan

The result of the referendum vote in Cleveland on Oct. 22 is, from a legal standpoint, rejection of the ordinance, commonly termed "the security franchise," granting a renewal of the street railway privileges of the Cleveland Electric Railway. The important underlying result, as most observers seem to agree, is the rejection by the people of Cleveland of the plan for control of the street railway system by Mayor Johnson and his friends. In legal form, the necessary question before the people was the approval or disapproval of the franchise. When the technicalities are disregarded, however, it is plain that those who favored the acceptance of the franchise were Mayor Johnson and his supporters, and that those who opposed the franchise felt that it did not stand by itself, but was coupled, in apparently an inseparable manner, with the lease of the property to the Municipal Traction Company. The people of Cleveland have placed themselves on record against the perpetuation of control by the mayor and his supporters. Whatever may be the outcome of the legal conflict which will probably take place, nothing should be permitted to befog the fact that the voters of the Ohio city have registered themselves in opposition to the various theories of street railway operation of which Mayor Johnson has been the principal advocate during the last few years. We shall not attempt to pass on the legal merits of the claim of Mayor Johnson, that the repudiation of the franchise does not invalidate the lease of the Cleveland Railway. The mayor has been a successful business man, and by setting up this claim he may or may not be able to secure the return of the property of the Forest City Railway, which was sold to the Cleveland Electric Railway prior to the

execution of the lease; it is possible that time only will reveal whether the strong moral effect of the referendum vote will be borne out by the legal effects.

Since the result of the Cleveland election is the annulment of the security franchise and the rejection of at least the essential part of Mayor Johnson's plan, it is worth while to state the grounds upon which the rejection was based. We quote F. H. Goff, president of the Cleveland Trust Company, because he expresses confidence in the integrity of Mayor Johnson. It is believed that Mayor Johnson regards Mr. Goff as his friend. Mr. Goff states that in his opinion the failure of the referendum grant is due to three or four things, which he enumerates in an interview published in the *Cleveland Plain Dealer* of Oct. 24, as follows:

To some extent a distrust of the Mayor.

Dissatisfaction to some extent with the holding company plan.

Opposition of the labor vote.

The greatest difficulty was dissatisfaction with the service. It was not the plan that was voted down but the management; in fact, it was the offence the public took to the Mayor's insistence that he and his associates should be perpetuated in power.

Mr. Goff emphasizes the dissatisfaction with the service which prevailed in substantially all sections and with all classes of people in Cleveland. The fact of the matter is that the public, not only in Cleveland but elsewhere, desires good service. That is its first and principal desire. Not only Mayor Johnson, but some others, make the grave mistake of assuming that what the public wants first is a low rate of fare. If the people of Cleveland or any other community have before them the question of low fares and poor service or 5-cent fares and good service, their final decision is always for the higher rate of fare, which alone makes possible an adequate and efficient service. Low rates and good service do not go hand in hand permanently in the street railway or any other business.

It has been intimated by Mr. Goff that the difficulties with which the new company found itself surrounded were due in part to the failure of Mr. Johnson to appreciate that the cost of rendering street railway service had undergone changes during the last few years, the inference being that the Mayor and his party found it was a physical impossibility to render good service with the reduced revenues received under the fare and transfer plan which was adopted. Those who are familiar with the costs of operation have insisted from the beginning that the low-fare plan in Cleveland was foredoomed to failure, and they have not been surprised at the efforts of the management to make the most of a dubious situation by cutting various routes in two at the public square, abandoning lines and reducing car mileage materially in the effort to get revenues and expenses and charges closer together. Not only throughout the summer, when complaint regarding the service in Cleveland was increasing steadily and to an extent that did not promise safety for the new management, but constantly since that time, dissatisfaction regarding the service has grown. It was plainly to be seen that the deterioration in the quality of the service had aroused many patrons of the lines.

It is relatively a simple matter for outside individuals, politicians, or even some duly constituted State commissions, without proper appreciation of the facts, to criticise con-

ditions in public utility properties which they would be unable to remedy if they themselves were in the places of those who were criticised. Mr. Johnson taught the people of Cleveland to believe that inadequate fares could be coupled with good service. Whether by statement or by inference, he led them to think that if he were given control of the properties they would have 5-cent service with 3-cent fares, promises which, if made, were impossible of fulfilment. The experience at Cleveland not only shows that he was mistaken, but that any one else who tries to do the same thing will encounter failure.

The financial aspects of the situation which has developed since the result of the vote became known are complicated by the opposing claims of the interests in the Cleveland Railway Company and the Municipal Traction Company. It has been stated that the Municipal Traction Company has incurred liabilities of something like \$350,000, representing largely the purchase of materials and supplies. We do not know what the attitude of the Cleveland Railway Company will be respecting these liabilities, but presume that its position will be determined to a large extent by the result of investigation into the uses to which the materials were put. If the expenditures should have been met through operating expenses but were charged to capital account because the gross earnings of the lines were not sufficient to meet the proper needs of the system, the condition of affairs will be rendered more complex. The lease provided for the maintenance of the property, and if maintenance was not possible with the revenues received, the Municipal Traction Company should have taken advantage of its right to increase the rate of fare to a more nearly adequate figure.

An aspect of the situation which we regret to observe is the suggestion of the directors of the Cleveland Railway, proposed though only in tentative form, that they will grant seven fares for 25 cents. We do not believe that fares on that basis will permit full maintenance of the property and provision for all liabilities, which should be made during a franchise limited to 25 years.

The New York Commissions in the Present Campaign

The question of the desirability of public service commissions is an issue in the present campaign in New York State. Governor Hughes upholds the principle and the work of the board appointed by him. Lieutenant-Governor Chanler, the Democratic nominee for Governor, criticises the results so far accomplished by the commissions, and urges that the men who serve on these boards should be elected by the people, not appointed by the Governor. The large number of queries and answers which have come from both Governor Hughes and Lieutenant-Governor Chanler on this subject is proof of the lively interest that is felt by the public in the controversy between the opposing nominees regarding the results attained by the commissions since their appointment.

The subject which has provoked this campaign controversy divides itself into two parts, one relating to the law, the other concerning the commissioners who have been appointed to carry out its strict provisions. We think that the law and the principles underlying it deserve some favorable as well as some adverse criticism. To the extent that

the law provides for reasonable regulation and adequate protection of all interests, we believe that it is desirable from the standpoint of the corporations as well as that of the people whom they serve; in so far as it permits the commission to decide questions, which for the proper protection of the owners of the property should rest wholly with them, we think that it is unjust and should be altered. All who are even tolerably familiar with the subject will understand that the New York State law permits stricter supervision of public utilities than that in force in any other State. This is probably due to the fact that the law was passed during the culmination of the anti-corporation frenzy, which swept the country last year, aided undoubtedly by the insurance disclosures then recent. The strongest powers were conferred with the idea that they were necessary to secure compliance by the corporations, but, if exercised wisely, may prove of great assistance to the latter in securing relief from burdensome enactments under which they now suffer. That is, a small body of men devoting their attention to a particular industrial condition will more quickly appreciate the necessity for reforms in it and be able more promptly to apply them than a large body of irresponsible legislators. This fact is entirely independent of the question as to whether it is safe, or in accordance with the American ideals of government, to intrust such powers to the hands of a commission.

Among the questions put by Mr. Chanler to Governor Hughes was one asking why he had not appointed as members of the New York Commissions men who had practical experience in railroad work. The Governor's reply was that he had done so—in the case of one member of the Second District Commission, Mr. Sague. The proportions cited by the Governor make us wonder whether he recalled the fate of the ancient city, which would have been saved by the righteousness of 10 men, but for which the righteousness of one did not suffice. We intend in no way to criticize the personnel of the present commission, but believe that the custom which has prevailed in the selection of members of the corresponding body in Massachusetts, the Massachusetts Railroad Commission, is wiser. The commission in that State consists of three members: a practical railway man, a lawyer and a business man. If this practice had prevailed in the State of New York, the two commissions would have contained three or four men of practical railway experience.

Membership in the Association

Progress in an industry can usually be gauged by the activity of the association representing that field and the benefits which it confers upon its members. Judged upon this basis, the street railway industry is fortunate in possessing the group of associations represented by the American Street & Interurban Railway Association and its affiliated bodies; but the report of Secretary Swenson indicates that if this work is to be carried on with its present efficiency, there must be a larger number of supporting members both in the company-member class and in that of associate members. In the issue of Oct. 17 we took occasion to point out some of the advantages of membership, so far as companies are concerned, but the small number of associate members indicates that the value of alliance with the or-

ganization on the part of individuals is not generally recognized.

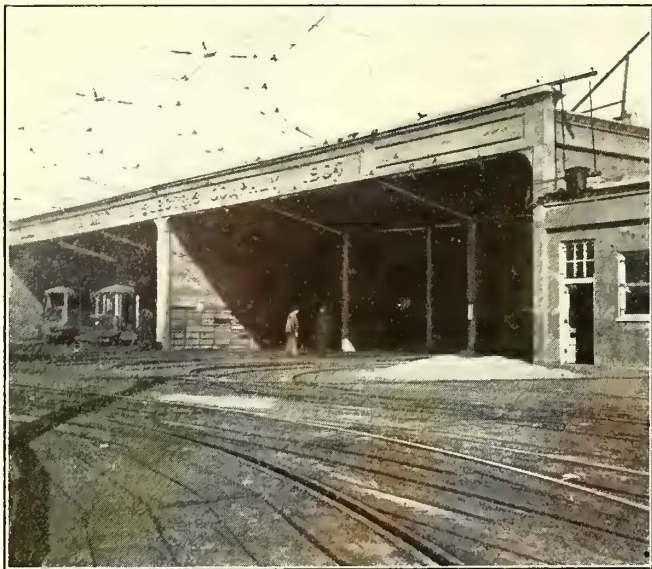
Many street railway men, whose companies are members of the association, seem to consider that no particular benefit will accrue to them as individuals from associate membership, but this is very far from the case. The fact that a person is identified with the organization and is privileged to wear its badge is itself a matter for personal satisfaction. In addition, however, each associate member is entitled to a printed copy of the official proceedings of the affiliated association which he may decide to join, and the volumes for each year possess a technical value which it is quite likely will become enhanced as time elapses. Finally, associate membership for a person connected with a member-company is an individual possession which a man can keep even after he leaves the employ of the operating company.

The same advantages of associate membership apply with perhaps even greater force to any one interested in the industry who is not connected with an operating company, especially to those engaged in the manufacture of street railway apparatus, to consulting engineers and also to young men who have selected the electric railway business as a profession and are commencing their careers. We believe that every professor of electrical engineering would be fully warranted in recommending membership in the association to members of his graduating class who contemplate entering the railway field either as a certainty or as a possibility. To such, a knowledge of the principal subjects which are being discussed by active workers in the field and an insight into their methods of undertaking problems cannot be acquired too soon, and there is no simpler or quicker way of gaining this information than by attending the conventions and reading the printed proceedings. Moreover, the collection of a file of the proceedings thus commenced at an early period in a person's life and maintained, and the association with the industry thereby acquired, may prove of great individual benefit.

It is largely upon members of the association themselves that the responsibility of increasing the membership of the association lies, and such an increase is practically necessary for its existence. Concerted action in associations of this kind counts enormously; in fact, it is the only way in which material progress can be made. There seems to be no reason why the American Association should not have 500 company-members and 1,000 or more associate members. Up to within seven or eight years ago the National Electric Light Association, which corresponds perhaps more nearly to the street railway association than any other organization, had less than 150 company-members. It now possesses 683 company-members and over 1,600 members among individuals or firms who correspond with those who are eligible as associate members in the American Street & Interurban Railway Association. This enormous growth cannot be attributed, of course, to the corresponding development of the industry during the past six or seven years, but to well-directed missionary efforts on the part of all interested in the future of the association. If each member of the street railway association should adopt President Shaw's suggestion and appoint himself an honorary member of the Committee on Membership, the work of that body would be greatly facilitated.

CONCRETE CARHOUSE AND SUBSTATION OF THE SEATTLE ELECTRIC COMPANY

The radical changes in grade now being made in Seattle have effected not only the operation of the Seattle Electric Company's car service,* but also obliged the company to build its latest structures with a view to the ultimate levels which will prevail when the regrading is completed.



Seattle Car House—View Showing Open Front and Wooden Covering on Trestle

This condition will be understood by a study of the concrete car house and substation erected about a year ago at Republican Street and Fifth Avenue, north. At present the site chosen for the structures is so much lower than the final street surface that the tracks of the North Queen Avenue line are 12 ft. beneath the level of the car floor. This extraordinary condition made it necessary to build the car house on concrete piers ranging in height from 12 ft. to 20 ft., and to bring the cars in over a floored trestle, as illustrated.

THE CAR HOUSE

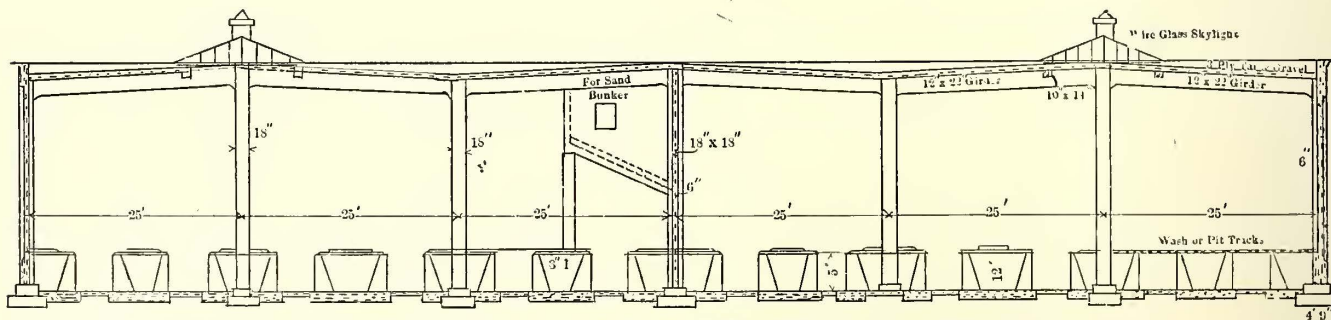
The car house is entirely of concrete, with Johnson reinforcement. It is 191 ft. 8 in. long x 190 ft. 2 in. wide,

same thickness separates it from the car house proper. The roof is supported by the walls and eleven 14-in. x 14-in. reinforced concrete posts in the center. The height from floor to roof is 13 ft. at the center and 12 ft. 6 in. at the wall, giving a 6 per cent double slope to the roof.

The storage section is divided into two parts, and has a roof with three 4 per cent double slopes, supported by 18-in. square concrete posts, spaced 25 ft. centers transversely and 15 ft. 10 in. centers longitudinally. These posts carry 10-in. x 14-in. reinforced beams running the full length of the building. The roof girders are 12 in. x 22 in., and are spaced 15 ft. 10 in. Illumination through this roof is afforded by eight 10-ft. x 14-ft. arched wire-glass skylights. The rear of the building has windows extending the entire width of the building, so that the interior is well lighted.

The reinforced concrete piers under the car house proper are in 12 rows, spaced 12 ft. centers, and are 8 ft. apart. There are 25 piers per row, or 300 in all. One row has all piers 12 in. square, and the next has alternately 12-in. x 12-in. and 18-in. x 18-in. reinforced supports. The car-house has an area of about 29,000 sq. ft., or about 96 sq. ft. per pier. One of the illustrations shows the arrangement of these piers as seen from the back of the car house. At both ends of the building 45 deg. concrete braces are placed as shown. The piers are on 2-ft. x 3-ft. concrete bases carried down to solid foundation. The office is supported by two rows of 18-in. x 18-in. piers, 11 in each row. All of the piers were made by the contractor from rough sketches furnished by the company's engineer, and cost \$25,000 up to the established grade line.

The floor of the car house is of reinforced concrete throughout, 12 in. thick in the pits and 4 in. between them. It is carried on transverse and longitudinal concrete beams. Each half of the car house has six tracks, 183 ft. long inside the building, and spaced 12 ft. 6 in. centers. A walkway extends the width of the building across the tracks in the rear. The top of the floor is 5 ft. below the car track level at the entrance. There are no car pits in the usual sense of the word, as the tracks are carried at intervals of 8 ft. on cast-iron horses, 4 ft. 6 in. high and 2 ft. wide at the base. The devil strip consists of planking laid on 3-in. I-beams placed on these horses. This open construction is economical, and is appreciated



Seattle Car House—Cross-Section, Showing Pit Construction

divided into three parts: An office 38 ft. wide x 191 ft. 8 in. long; a storage floor, 191 ft. 8 in. long x 75 ft. wide; and a repair floor, 191 ft. 8 in. x 77 ft. wide. An ornamental front rises a few feet above the roof proper, which is of 6-in. reinforced concrete covered with sand and tar for waterproofing.

The office has a 6-in. outside wall, and a wall of the

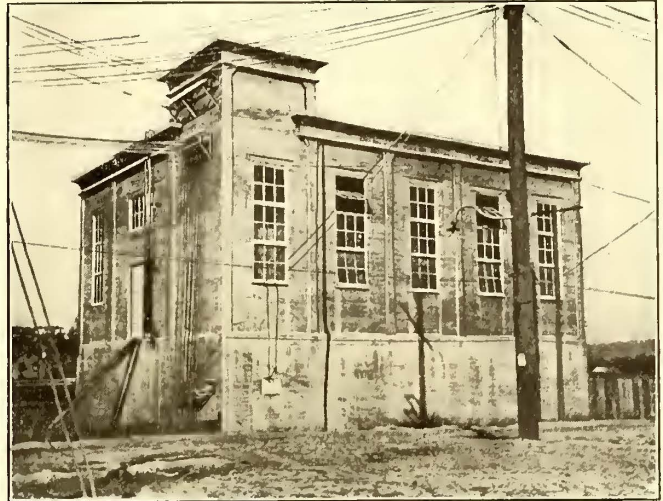
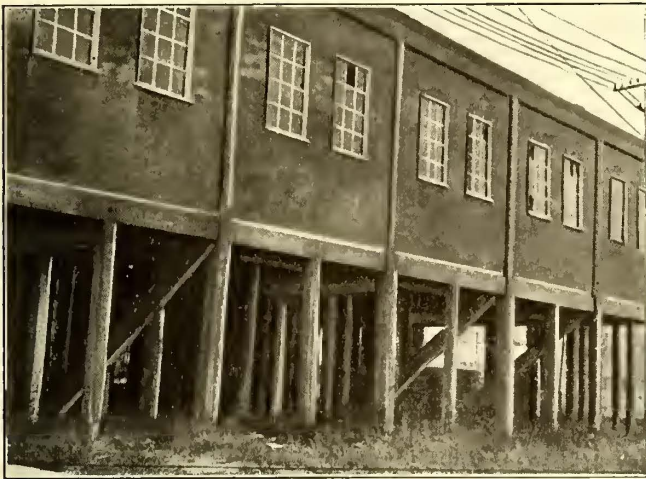
by the men for its convenience. The repair section is equipped with two car hoists and two jib cranes located as shown on the plan.

The general arrangement of the office and utilities section also is shown on the general plan. A hallway and ticket room directly inside the door connect the starter's office, the vault and stationery department on one side and the trainmen's quarters on the other. The starter's office is 33 ft. x 18 ft., giving ample room. The trainmen's quar-

*See "Changing Grades in Seattle," ELECTRIC RAILWAY JOURNAL, Oct. 10, 1908.

ters, 90 ft. 6 in. x 38 ft., are well lighted, contain two tables, chairs, etc., and 238 16-in. x 22-in. wire lockers for the trainmen. Adjoining the lockers on the farther side

weather conditions in Seattle, that part of the car house is entirely open. The first 15 ft. from the front has no pits, and is entirely unobstructed except for the center wall



Seattle Car House—Rear View, Showing Reinforced Concrete Piers

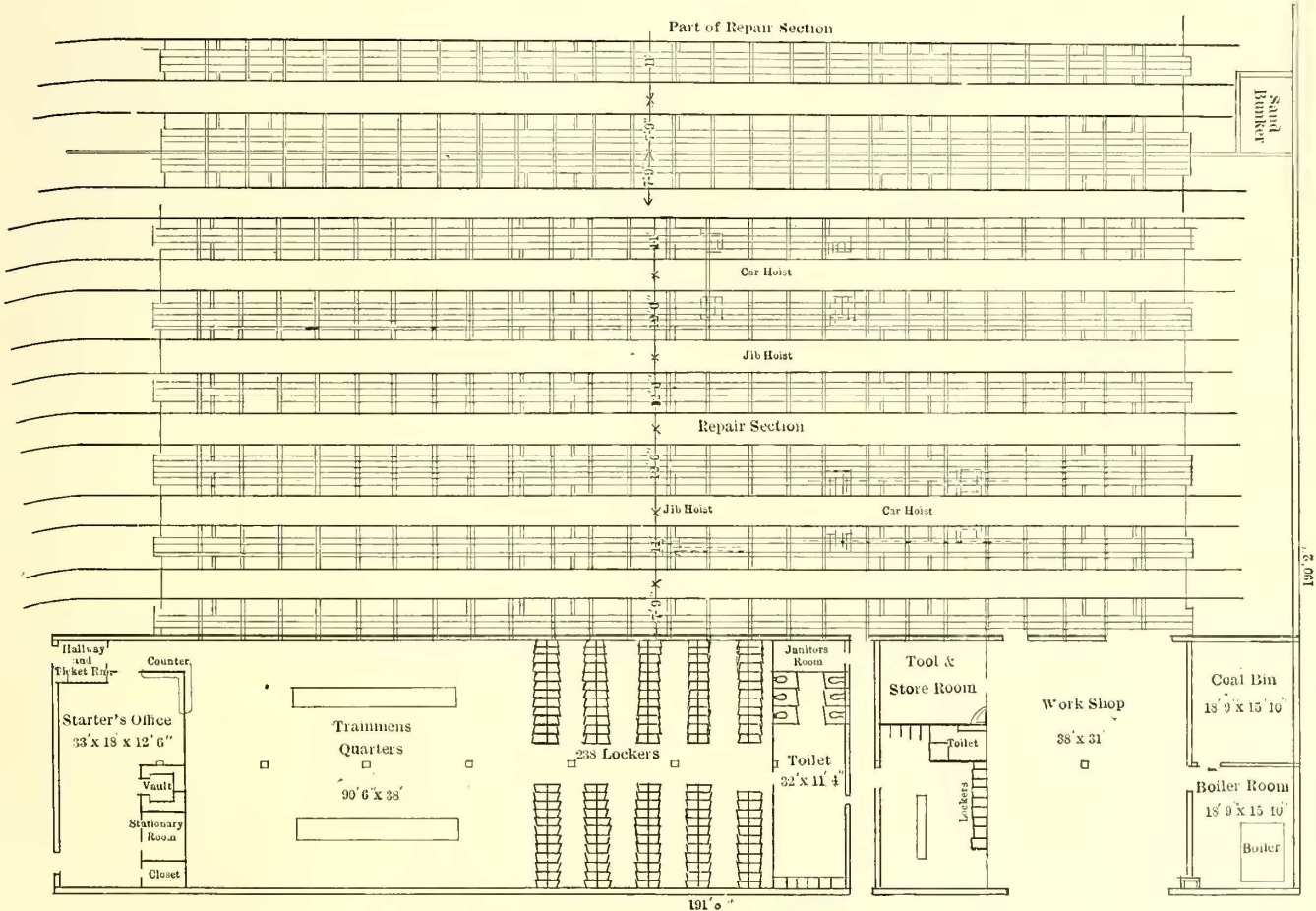
Seattle Substation—Present View, Showing Foundation Walls Exposed

is a toilet room, 32 ft. x 11 ft., with hot and cold water. This room opens on a hall, through which egress may be had to the street.

which supports a steel cantilever truss for the roof. This gives the building a very open appearance.

Back of the trainmen's quarters and adjacent to the hall on the other side are the lockers, toilets, tool and storerooms for the shop. A workshop, 38 ft. x 31 ft., fitted

The storage capacity is 50 cars, with outside trackage for 200 cars during fair weather. All washing is done outside, on a specially constructed platform, and during the winter inside. Since the company's offices at Fifth



Seattle Car House—Plan of Office and Shop Bays

with several small lathes and benches, communicates with the three-track repair section by a 10-ft. sliding fire door. A small boiler furnishes heat when necessary.

Avenue, North, and Pine Street are now inadequate, and as this new North Side barn is centrally located, a second floor may be added, thereby placing the offices over the car house and converting the basement into a storeroom.

As even a temporarily closed front is not required by

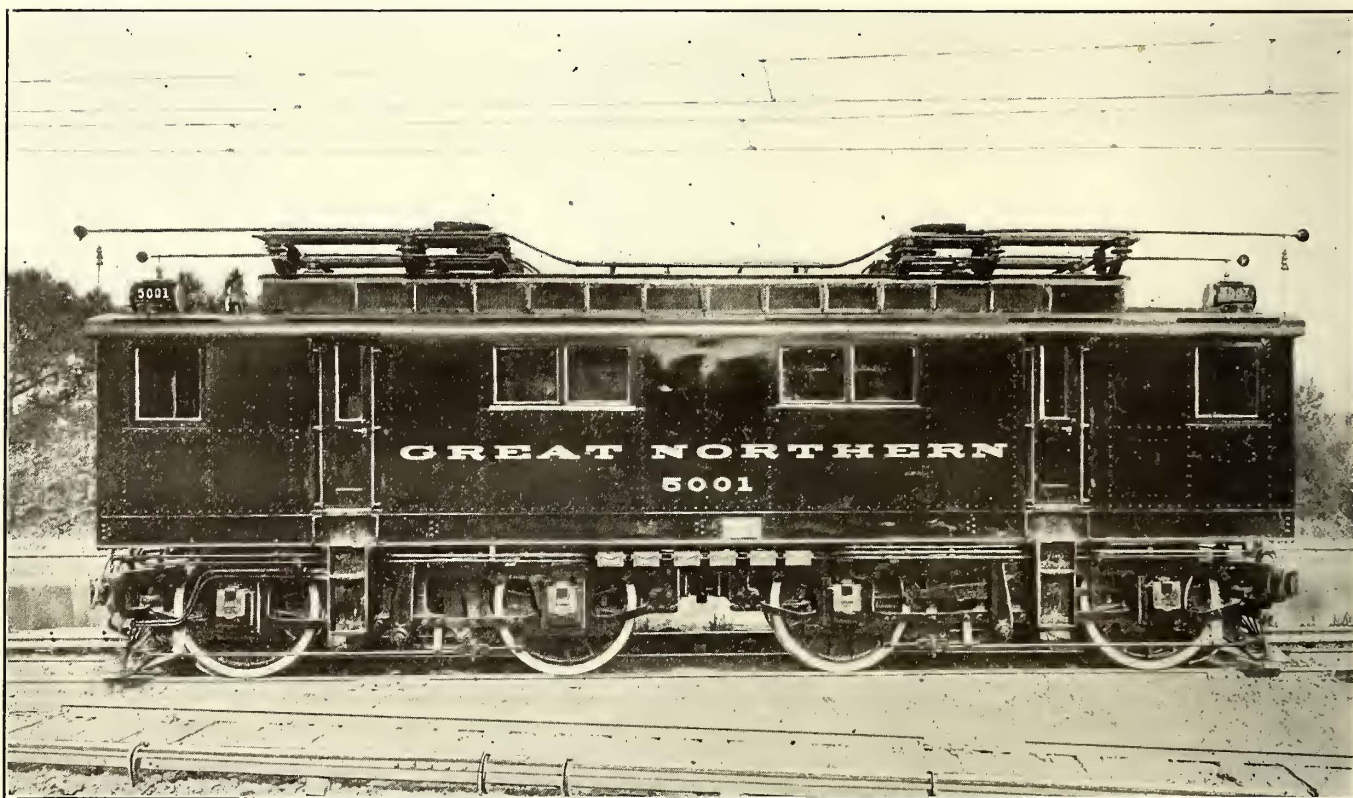
THE SUBSTATION

The substation near this car house is two stories high, with the foundation walls still exposed as shown. The first floor contains three three-phase remote control 13,000-volt oil switches and a 1060-hp 13,200-volt to 4620 or 6600-volt G. E. starting compensator for the 550-volt d.c. motor-generator set. The high-tension oil switches are in concrete cells separating the three phases. The 13,200-volt transmission lines come in on the top of the building and pass down through a separate fireproof division in the back of the building.

The second story, or operating room, is lighted by six enclosed arcs. It now contains one G. E. 13,200-volt, 1400-hp synchronous motor running at 514 r.p.m., direct-connected to a 1740-amp, 525-575-volt d.c. generator. One G. E. 144-amp, 125-volt d.c. exciter is placed on an ex-

THREE-PHASE LOCOMOTIVE FOR THE GREAT NORTHERN RAILROAD

One of the four locomotives which the General Electric Company will supply to the Great Northern Railroad for hauling trains through the Cataract Tunnel has been completed and is now being subjected to an exhaustive series of tests under service conditions. The locomotive body and trucks were supplied by the American Locomotive Company. Although a liberal air-gap of $\frac{1}{4}$ in. has been allowed, the power factor remains above 80 per cent throughout the whole operating range and reaches a maximum of 86 per cent. The maximum torque is at least three times the guaranteed full-load running torque and is more than sufficient to spin the wheels under any condition of track. It is noteworthy, moreover, that the motors, being of the



Three-Phase Locomotive for Great Northern Railroad

tension of the main generator shaft. The station is built to provide for three sets of this size.

The high-tension system has multi-gap lightning arresters grounded through a water box in the basement, with choke coils placed below the arresters to protect the machines. The switchboard consists of six feeder panels, each of which is equipped with a single, two-pole switch connecting the feeders, one Thomson astatic 1500-amp ammeter, and a G. E. Type C 1200-amp circuit breaker. There is a 700-volt Thomson astatic voltmeter mounted on the end of the board. The generator panel has a 2000-amp recording Thomson voltmeter, a 4000-amp ammeter, and a 5000-amp circuit breaker. The synchronizing panel has a synchroscope, synchronizing voltmeter, power factor meter, five-pole starting switch and a time limit relay for the remote control oil switches.

While the building is not equipped with a crane, beams have been provided upon which a crane can be placed when required. A double door in the second story provides ample entrance space for new machinery.

three-phase induction type, with plain secondary circuit rheostatic control, are capable of exerting this torque at any speed from standstill to within a few per cent of synchronism.

A view of the completed locomotive is given in the accompanying illustration. The locomotive is of the double-truck type, and there are two motors per truck. The total weight is 230,000 lb., all of which is on the drivers. The over-all length is 45 ft. and the rigid wheel-base is 11 ft. The wheels are 60 in. in diameter.

As stated above, the motors are of the three-phase induction type. The secondary circuit of each motor is mounted on a shaft geared at both ends to one axle of the locomotive. The gear ratio is 1 to 4.28. The motors are wound for eight poles and when operated at 25 cycles have a synchronous speed of 375 r.p.m. The motors are equipped with slip rings for plain rheostatic control. In order to obtain the maximum of simplicity, no effort has been made to operate the motors in cascade or to use any pole changing device. It was held that the saving in energy by the

introduction of speed-changing schemes was of no importance because the energy is obtained from a hydro-electric station where there is no storage available, and any saving at the motors will represent merely a saving in water, which would then be allowed to flow over the dam.

In arranging the apparatus and controlling devices within the locomotive, the keynote has been simplicity. Step-down transformers, contactors, blowers, air-compressors, etc., are placed within a fireproof compartment located in the center of the body of the locomotive, a wide alley-way being arranged on all four sides of this compartment. The transformers for changing the line pressure of 6600 volts to 500 volts for use at the motors are of the air-cooled two-coil type. A negligible saving in constructive material could have been obtained by using auto-transformers for this purpose, but the improved insulation and the reduction in the risk to life by the use of two-coil transformers were considered of predominating importance. The air which is forced through the transformers passes upward through ventilating openings in the top of the locomotive after having passed through the speed-controlling rheostats. The motors also are cooled by air, all of the low-pressure supply of air being obtained from a centrifugal blower driven by a three-phase induction motor.

As will be noted from the illustration, the locomotive is equipped with four wheeled trolleys, two of which will be used for operation in each direction, the rail being employed as the third conductor. The normal trolley potential will be 6000 volts, but it will reach a value of 6600 volts during starting conditions on account of the fact that Tirrill regulators will be employed at the station for increasing the electromotive force, with increase in load. It is expected that the speed regulation of the driving turbines will not be close, but this condition is looked upon as advantageous rather than disadvantageous. For example, under starting conditions when the load is heaviest the speed will be lowest. The reduction in speed does not involve a decrease in electromotive force, but merely a lowering of the frequency. This change in the frequency will assist the locomotive in starting a train and will cause a shift of the load from other locomotives which may be running at full speed to the locomotive which is accelerating.

One of the advantages of a three-phase locomotive which was considered of much importance in the Great Northern equipment is the tendency to operate at constant speed. The gearing is such as to give to the locomotive a speed of about 15 m.p.h., which will be maintained on the upgrade and will be only slightly exceeded on the downgrade. When the train is going downgrade a certain amount of energy will be returned to the supply system. No importance was placed upon the return of this energy, but the limiting of the maximum speed was considered as of great importance. The tendency to limit the speed will not be affected by the removal of one trolley wheel from contact with the overhead wire.

According to present plans, the locomotives will be used only through the Cataract Tunnel, which is somewhat less than 3 miles in length and has a uniform grade in one direction of about 1.7 per cent. However, in event of the satisfactory operation of the locomotives, it is probable that at least the two grades in the immediate neighborhood of the Cascade Tunnel will be operated electrically in the near future. The consulting engineer for the Great Northern Railroad Company is Dr. Cary T. Hutchinson, under whose supervision the entire installation is being made.

HEARING ON JOINT RATES AND THROUGH ROUTES IN NEW YORK

During the hearing before the New York Public Service Commission, First District, in the case involving the proposed joint rates and through routes between the Metropolitan Street Railway and the Central Park, North & East River Railroad, Charles F. Uebelacher, chief engineer of Ford, Bacon & Davis, and acting at present as chief engineer for the receivers of the Metropolitan Street Railway, was called as a witness. Mr. Uebelacher said that since 1904 he had been employed by Ford, Bacon & Davis almost entirely on financial and operating work. In that connection he had worked on 15 or 20 street railway situations, making reports as to the cost of putting the properties in proper shape and operating them economically, and the probable earnings which could be obtained from the economical operation of the companies.

Mr. Uebelacher said there had been a large increase in the expense of carrying passengers on street railways. In the first place, the service rendered for the fare had been largely increased. What really cost money in street railway traffic was the number of miles the passengers rode. It cost practically twice as much to carry a passenger two miles as to carry him one mile. The length of ride was what measured the cost of the service and that had been very largely increased by the transfer requirements. The transfer had been added to the fare, which was originally a flat rate of 5 cents. Mr. Uebelacher thought that the increase in speed of the cars and the present methods of operation of the roads, as compared with their old methods, had also increased the length of ride. He thought that the increase in the comfort of the service had produced a tendency for the people to stay in the cars longer, which also increased the length of the ride.

The amount of service given and the distance carried had undoubtedly increased on the average largely in the last 10 or 12 years, Mr. Uebelacher said. In addition to that, the character of the service, which was high, cost more money. As an instance, the cost of the horse car equipment was given, leaving out of the question the additional cost of track and other facilities. The ordinary horse car cost about \$900 and five teams required to operate it cost about \$1,500 or \$2,400 per car. One car with its power equipment, etc., now cost \$14,000 to \$15,000. In addition, there was an increase in the actual cost of labor and material, which went to make up a service equivalent to what was given when the 5-cent fare rate was established.

Probably the best measure of this increase would be operating expense per car mile. In 1897 the Metropolitan Street Railway reported its operating expenses at about 16 cents per car mile. Mr. Uebelacher would say that a fair average of the present condition, based on the company's reports, would be 22 cents, being the average between 20 cents in 1907 and 24 cents during the period of receivership, representing an increase in 10 years of about 6 cents for the same unit. In 1897, if the witness recalled correctly a conversation with Mr. Vreeland, the company paid 20 cents an hour, \$2 a day, for conductors on the cable lines and \$2.25 for gripmen. The present wages were \$2.15 and \$2.45 for conductors and \$2.25 and \$2.60 per day for motormen, depending on the length of term of service, varying from 1 to 5 years. This showed that in that item alone there had been a material increase in the expense of doing business.

INCREASES IN PRICES OF MATERIALS

Another element that undoubtedly increased the cost of doing business was the abuse of the transfer system. The price of materials had also increased. A car body, which costs to-day about \$2,000, cost in 1900, or perhaps 1898, Mr. Uebelacher thought, about \$1,200. The cost of the trucks had increased in that period from about \$215 to about \$250 or \$260 each. With the possible exception of Pittsburg, wages were higher in New York than in any other city in the East that he recalled.

The price of steel rails in 1897, Mr. Uebelacher said, was about \$18 a ton. It had increased until at present the price is \$28 for T-rail sections. Prices of other rails varied in accordance with the difficulty of rolling them. The prices for girder rails were about \$37 or \$38. Mr. Uebelacher said he could give no exact figures on the difference in the expense of maintenance of an overhead trolley and an underground conduit system, but he would say that the use of the underground conduit system was a great additional burden in the cost of carrying passengers. The cost of installation was much larger, and it was indeterminate and could not be estimated in advance with any reasonable accuracy on account of the large amount of obstructions encountered during construction and the cost of relocating them. There were generally no accurate maps of such structures. The expense of operation was largely increased on account of the trouble which was experienced with the electrical conductors in the underground conduit, where they were subject to a great deal of moisture and could not be inspected properly.

The plow was also a great source of trouble. It had to be made very thin in order that the slot in which it operated should not be wide enough to catch the thinnest wheel tire, and the thinness of the conductors and the insulation covering them exposed to slush and dirt in the street was a source of constant trouble. Every time a car had to be pushed in the expense of repairing the car and the cost of delay on the road in getting the schedule straightened out amounted to considerable.

Mr. Uebelacher thought that the equivalent expense in an overhead trolley system in a large city would be about 16 cents per car mile, comparing with 19 cents for underground trolley. One of the causes of extra expense was the collection of snow in the conduit.

In speaking of transfers, Mr. Uebelacher said that the legitimate use of the transfer increased the burden, in that it required service to be furnished on intersecting lines, not only for the passengers which they carried, but for that portion of the fares which other lines transferred to them. In other words, if there was a 60 per cent transfer movement it meant that 60 per cent more seating capacity had to be provided. The abuse of the transfer meant that the company was carrying for nothing so many additional passengers, who cost just as much to carry as the passengers from whom fares were received.

ABUSE UNAVOIDABLE

Mr. Uebelacher said he knew of no means of absolutely avoiding abuse of the transfer privilege if it was once established at all. The situation in New York was complicated by the fact that the law permitted a reversal of direction east and west. That opened the opportunity for extensive abuse of the transfer system. How to prevent abuse of the transfer privilege was a most serious problem with street railway companies in the collection of revenue. First, there was the actual securing of rides to which the passenger was not entitled on transfers, and second, there

was the question of obtaining the revenue for the rides for which the passenger paid. Mr. Uebelacher thought it was preferable not to register transfers. When transfers were registered the conductors could be checked by counting the passengers on the car, but transfers could then be traded.

In answer to an inquiry from John G. Milburn, of counsel for the receivers of the Metropolitan Street Railway, the statement was made by Mr. Uebelacher that the present rate of fare under existing conditions was not sufficient to warrant an investment in additional facilities for additional business. Mr. Uebelacher said the general condition was that the company would have to spend for cars, power, etc., \$2.00 to \$3.00 investment for every \$1 per year of increase in gross. Taking as an example a car that would be needed for increasing business, it would cost, say, \$5,000 or \$7,500; the power house, substations and feeders, etc., to supply the power for that car would cost about \$6,250. This was estimated on the basis of \$250 per kilowatt at the power house for power house, substation and feeders. The car houses and the real estate required on which to construct them would cost on the average in New York about \$3,000 per car; the shops would cost about \$250 per car. Miscellaneous items would be about \$1,000 additional. The cost of plans and engineering, etc., would make a total at the least of \$15,000 for each car added to the carrying capacity of the road, exclusive of fixed investment in track and office buildings and other items that did not vary materially with the amount of traffic.

If it was assumed that the car had a capacity of 75 passengers and cost \$15,000, then for each passenger capacity there would be an investment of something over \$200 in car and equipment. For every \$200 or over of investment there were carried, say, not to exceed 2000 to 3000 passengers a year. For those passengers about 3 1/3 cents each was received, yielding somewhere between \$66 and \$100 a car per year. That \$100 per year received, if a return of 10 per cent was figured on the \$200 investment, went as follows: For return on the investment of \$200 at 10 per cent, \$20; for operation at 65 per cent of gross, \$65; for taxes at 10 per cent of gross, \$10; for reserves, depending on the basis on which they were figured, somewhere between \$10 and \$20.

FARE INADEQUATE

Mr. Uebelacher said this made a total of \$105 to \$115, which had to come from the \$100 received; consequently there was not enough in the present rate of fare, under the conditions existing in New York City, to make it profitable to introduce equipment for additional business, even leaving out of the question the investment in track, etc., which did not have to be largely increased with the growth of business. In other words, there was not enough revenue to take care of the increased business. If 20 per cent of the gross should be set aside for reserve, the interest on the investment would amount to a little over 1 per cent on the cost of equipment alone, and there would be no profit whatever. Operating expenses were fully 65 per cent, including maintenance, but that did not include reserves. The 65 per cent would take care only of the expenses of current operation without extraordinary renewals. This percentage would not pay for keeping the underground system up to original condition. There were not included in this computation the cost of track and other items, which remained constant. About 20 per cent of gross revenue would continue to take care of the renewals and bring up the system to its original standard of effi-

ciency and provide for all other usual reserves. Mr. Uebelacher added that the surface lines had been running very seriously behind.

Chairman Willcox, of the commission, said that if a heavy loss were occurring in the system it would not take a great many years to destroy the entire value of a system, even capitalized as heavily as the Metropolitan Street Railway. Mr. Milburn said he thought the situation was not understood at all and he wanted to have the facts brought out and examined and criticized, so that the truth would be developed. Mr. Milburn read the law fixing 10 per cent as a reasonable return on the capital actually expended. Mr. Uebelacher said he had taken that percentage because of this law. He said there must be sufficient earnings to guarantee the investor against any curtailment of the interest in case of, for instance, some casualty like that which took place in San Francisco; also against the usual variations in business conditions and the possible infringement on earnings by competition that could not be foreseen. Mr. Uebelacher said that it was possible with adequate maintenance to maintain any portion of the road or the whole road at its original efficiency. He would not allow anything for depreciation for a railway which spent year by year the sum necessary to maintain the property fully. If that amount of money had not been expended and an allowance was made, he would not call it an allowance for depreciation, he would call it an allowance for deferred maintenance.

Mr. Uebelacher said that much further increase in operating expense would mean simply the curtailment of all construction, provided the rate of fare remained the same. There was nothing that he could see in the tendencies that were causing the operating expenses to be increased that could be obviated in the future; in other words, he thought that operating expenses would continue to increase. In order to assure a satisfactory return of 10 per cent on the assessed valuation, each passenger paying a fare would have had to pay a fare of 7.81 cents; in order to insure a 6 per cent return on this valuation each cash passenger would have had to pay 6½ cents.

SHORT AND LONG RIDES

Mr. Uebelacher said that the essence of the flat rate system to which the law tied the company was that the profit from short riders must pay for the loss from long riders. The law compelled that and prevented a charge of more than 5 cents. As long as that situation prevailed, Mr. Uebelacher did not see how any zone fares could be introduced, because zone fares would cut down the receipts from the short riders below the average and the company would thus lose what the law allowed it to have in order to make up the loss on the long rider. If the receivers were not getting on the average a sufficient amount to give a fair return to meet the cost, they should not be asked to charge any less in a joint rate, since what they were charging today did not bring a fair return for the average passenger carried on the entire system. In other words, suppose the rate charged was more than what was required to give a fair return on the individual passenger paying it, yet the company would be entitled to charge that rate in order to help out in other sections of the city where it was not earning a fair average return per passenger. The moment the zone system was introduced the man who rode 10 miles would have to be charged more than the man who took the average or less than the average ride. Any establishment of the zone system would involve the readjustment of fares in the entire city.

Mr. Uebelacher described a continuous line as a set of cars that are operated continuously from one end of the line to the other. He described a through route as the course over which a continuous line of cars was run.

COST OF RENDERING SERVICE

Henry W. Brown, auditor for the receivers of the Metropolitan Street Railway Company, was called as a witness. He had prepared a statement, which showed that the entire cost of carrying passengers per passenger (including taxes and 10 per cent interest on investment) during the period of operation of the receivers up to and including June 30, 1908, meaning by total passengers the total of revenue and transfer passengers, was 4.9962 cents. This did not include the calculation of any expense in connection with transferring passengers between independent lines. It had already been testified to that the average receipts per passenger were about 3.35 cents.

Charles F. Uebelacher was called to the stand again. He was asked what his conclusion had been in considering the question of service involved in a joint rate arrangement between the longitudinal lines of the receivers of the Metropolitan company and the Fifty-ninth Street crosstown line, as to the compensation for one ride on the Metropolitan line and the continuation of the trip on the Fifty-ninth Street and a second ride on the Metropolitan line. Mr. Uebelacher replied that the Metropolitan company should get for the first ride described, which he termed an "L" transfer, meaning thereby one ride on the Metropolitan and one ride on the Fifty-ninth Street line, 5 cents plus an allowance for the expense of handling the joint rate ticket for each passenger so transferred. For a "Z" transfer, which was the name by which he would describe the second class of fare, where a passenger rode twice on the Metropolitan line and once on the Fifty-ninth Street line, 10 cents plus an allowance for the cost of handling the joint rate ticket.

Mr. Uebelacher was cross-examined in the course of the hearing, and stated that there was not enough money in the 5-cent fare to pay the reasonable cost of furnishing the service.

Leo Bukers, bookkeeper for the Central Park, North & East River Railroad, was called as a witness. He testified that the gross earnings of this company from operation, from Aug. 6, 1908, to and including Sept. 30, 1908, were \$89,197.22. The operating expenses and for leasing of equipment during that period were \$82,181.71. The total number of car miles run was 348,877. There were carried 1,757,896 revenue passengers and 86,383 transfer passengers, making a total of 1,844,279 passengers. There were collected in cash fares \$87,894.80, the balance of \$1,302.42 being obtained from advertising.

If to the operating expenses there were added taxes, including the franchise tax and the city and real estate tax, the expense per passenger carried would be 4.829 cents. The average revenue per passenger carried, transfer and cash, was 4.766 cents. The estimate of expenses included nothing for damages resulting from accidents or on account of depreciation. The total amount of cash fares on the Fifty-ninth Street crosstown line during the period was \$29,212.35.

In view of the possibilities afforded by the electrification of the Italian State roads the Westinghouse and Brown-Boveri companies have erected large and well-equipped works at Vado and Milan for building and erecting electric railway material and locomotives.

SCHEDULES OF ROCHESTER RAILWAY BASED ON WEATHER CONDITIONS

The Rochester Railway Company follows the practice of adapting its schedules of trains to weather conditions, using the Sunday schedules as a basis. Explanation will make clear the method of operation under the "Sunday board" in force on the St. Paul & South Avenue line during the August traffic season.

The schedule is divided into four sections, which are illustrated herewith. The fourth section relates to a suburban line with runs into the St. Paul end of the city line, and is operated to the center of Rochester. Under this plan of operation, if the weather on Sunday, for instance, was disagreeable or rainy, the only trains placed in operation were those shown on the first section and part of those indicated on the fourth section. From the latter section, the short runs designated as trains Nos. 546, 548, 550 and 552 were eliminated. If the weather conditions were fair, the entire fourth section was added. If the weather conditions were fine, the trains shown on the third section were added.

It will be noted that if weather conditions were wholly unsatisfactory, the maximum number of trains is 15. If the weather conditions were not poor, but still not sufficiently promising to justify the introduction of all the trains, the use of the first, second and fourth sections would mean that 30 trains would be operated on the line during the day. The addition of the third section would increase the number of trains by 22, making a total maximum number operated by schedule of 52 trains.

Taking as an example the run starting at 2 p. m., shown in the first section as train No. 502, it will be observed that the next train started at 2:08 p. m., making an 8-minute headway. If the second section should be added, the effect would be to make a 4-minute headway, while the use of all the sections would mean that the cars would run at intervals of 2 minutes apart.

The lapse of time between the completion of one run and the beginning of another may be explained by citing as an example train No. 501. The left-hand column is marked "main," indicating the center of the city, while "end," over the right-hand column, means, of course, the end of the line, and may mean one end or the other. The figures "623" indicate the time of leaving the car house for the first run, 6:23 a. m.; "635" is the time for leaving the center of the city, the letter "S" indicating that the train is southbound; "652" is the south end of the line, there being no lay over; "710" is the center of the city again, the letter "N" designating a northbound train; "727" is conse-

ROCHESTER RAILWAY COMPANY (2nd SECTION)

Table with columns for TRAIN LEAVING, ST. PAUL & SOUTH AVENUE (501-514), and MAIN END (515-544). Rows include train numbers and times for various sections.

Rochester Time Table—First Section, Regular Daily and Poor Weather Rochester Time Table—Second Section, Added to Secure a Four-Minute Headway Rochester Time Table—Third Section, Added to Give 22 Additional Trains Rochester Time Table—Fourth Section, Added to Give 22 Additional Trains

ROCHESTER RAILWAY COMPANY (3rd SECTION)

Table with columns for TRAIN LEAVING, ST. PAUL & SOUTH AVENUE (545-552), and MAIN END (553-582). Rows include train numbers and times for various sections.

Rochester Time Table—Fourth Section, Added to Give 22 Additional Trains

quently the time for the north end of the line; and "745" is the schedule time for the center of the city. The "1148" shown in parenthesis means the time at the center of the city, while the figures below that, "1201," indicate the time at the car house.

On the fourth section it will be noted that the headings of the columns differ from those in the other sections. "Court" means Court Street, or the south end of the line in the city, and "Beach" and "W. B." refer to Windsor Beach, the north end of the line at the line. The time spacing is the same as that of the city line.

The first section is the regular daily schedule on this line and the poor weather Sunday schedule. The second and third sections are generally called by the officials and employees of the company "sunshine schedules." The use of this term has caused the schedules to be called "sunshine boards."

The advantage of this arrangement lies in its flexibility and easy adaptability to changes of weather and traffic. Different sections of the schedule can be introduced if traffic conditions justify the addition of trains during part of the day, and can be withdrawn later if the weather conditions change so greatly as to make the number of trains excessive.

The information contained in this article has been fur-

of the latter exceeds the elastic limit of the material, or at least approaches it. These conditions occur:

(1) When the metal in the tire of the wheel is harder than that in the head of the rail.

(2) When the wheel slips on the rail, especially (a) when braking is rapid and intense; (b) when too high acceleration is used; (c) in passing around curves; (d) owing to the eccentric position of the gears in transmitting the power to the axle; (e) through other conditions, such as difference of diameter of the wheels on the same axle, lack of correspondence between the section of the tire and the section of the rail, worn tires, unequal resistance on the head of the rail, etc.

(3) When there is any combination of the causes mentioned above, even if one alone is not sufficient to cause corrugation, especially combinations of the following causes: (a) vibrations which are caused by the method of traction or other conditions; (b) increase of speed; (c) greater pressure on the wheel, especially of weight which is not spring supported; (d) too narrow a surface of contact of the wheel on account of a badly selected section.

INVESTIGATION BY MR. FELL

The subject has also been investigated by A. L. C. Fell, chief engineer of the London County Council Tramways.

NO. 658								ST. PAUL & SOUTH		SUNDAY		4th SECTION.	
545	546	547	548	549	550	551	552						
COURT BEACH	COURT W.B.	COURT W.B.	COURT W.B.	COURT W.B.	COURT W.B.	COURT W.B.	COURT W.B.						
608	1268	745	118	646	135	828	166						
820 858 748 818 900 868 1020 1058 1140 1218 1140 1218 220 258 220 258 340 418 320 358 620 688 740 818 840 918 1020 1058 (1140)		800 838 920 968 1040 1118 1200 1298 120 158 120 158 260 308 240 318 400 438 520 558 640 718 760 828 860 898 1000 1108 (1200)	118	700 728 820 858 940 1018 1100 1168 1220 1298 140 218 260 308 300 338 410 448 530 598 650 728 810 848 940 1018 1060 1128 (1220)		150 228 310 348 430 508 550 628 710 748 830 908 950 1028 (1110)		210 248 330 408 450 528 570 648 730 808 850 928 1000 1068 1070 1048 (1130)					
1156	1206	1216	1286	1236	1126	1136	1146						
1006	646	921	645	1006	601	837	601						
12	8	2	18	18	7	11	7						
98.72	59.02	86.78	69.02	93.22	62.08	79.84	52.08						
SUMMERVILLE.													
748	428	712	428	748	352	636	352						
117.00	72.00	108.00	72.00	117.00	62.00	99.00	63.00						
NOTE: This line returns via Andrew, State, Exchange, Court & South Ave.													

Rochester Time Table—Fourth Section, Covering Suburban Line with Runs Into St. Paul Line

nished by W. R. W. Griffin, general superintendent of transportation, Rochester Railway. When asked for the main reasons why this method had been found satisfactory, Mr. Griffin said: "The principal reasons are that it is always suitable for any weather conditions and the crews choose the runs with the understanding that if the cars are not called out no time accrues."

The schedules used by the Rochester lines have been based on this plan for several years.

RAIL CORRUGATION ABROAD

The electric railway companies in Europe have been giving considerable attention to the subject of rail corrugation, which seems more prevalent abroad than even in this country. The subject has been investigated by both the International Street & Interurban Railway Association and the German Street Railway Association. A committee of the latter association at the meeting at Mannheim in September, 1907, presented a report the conclusions of which were as follows:

SUMMARY OF REPORT OF GERMAN ASSOCIATION

Corrugation in electric railway rails occurs through the action of the wheels on the rail when the molecular tension

In a report presented at the last meeting of the Municipal Tramway Association of Great Britain, at Manchester, about a year ago, Mr. Fell suggested the following as possible causes of corrugation:

- (1) Irregular surface of the rail due to rolling.
- (2) Effect of cold rolling of the rail by the wheels.
- (3) The use of too soft material in the rail as compared with the weight of the rolling stock.
- (4) The presence of dust and gravel on the rails.
- (5) Defective joints.
- (6) Wheels out of gage with respect to the track.
- (7) Defective joints between rails or rails and special work, permitting a vertical play.
- (8) Trucks out of square or flexible trucks.
- (9) Slipping of wheels on curves.
- (10) Difference in the diameters of wheels.
- (11) Flat spots on wheels.
- (12) Too rapid acceleration and deceleration, causing slipping of the wheels.
- (13) Defective brakes or too rapid braking.

INVESTIGATION BY THE INTERNATIONAL ASSOCIATION

In view of these widely diverse opinions as to the causes of corrugation, the International Street & Interurban Railway Association decided to make another careful study of

the problem, and appointed a committee to report on this subject at its meeting in Munich, Sept. 7 to 10. The committee consisted of Messrs. Boulvin, general manager of the General Railway & Electric Company, Brussels; Busse, chief engineer of the Berlin Tramways; Culin, chief engineer of the Hamburg Tramways; d'Hoop, manager of the engineering department of the Brussels Tramways; Dubs, manager of the Marseilles Tramways; Fischer, manager of the Phoenix Rail Mills, Rurholt; Mariage, chief engineer of the General Omnibus Company, of Paris; Reitz, chief engineer of the Municipal Tramways of Munich; and t'Serstevens, general secretary of the International Street & Interurban Railway Association.

This committee has been engaged in collecting statistics from all of the members of the association, and has received replies from the data sheets sent to different member companies. The latter were requested to give details of the depth and length of corrugations on their lines; the extent to which it occurred; data on the type of rail, construction, weight of car, extent of traffic and wheels used; theory of the cause, and reasons for this theory; whether the commencement of corrugation was coincident with changes in the track, cars or other alterations of the equipment, and whether the companies had succeeded in finding any satisfactory remedy.

Sixty-four replies were received to the data sheet from surface, elevated and subway companies in all of the principal countries in Europe. It will not be necessary to reproduce all of these answers in full, as many of them are very voluminous, but the following is a brief extract of the experience obtained from some of the principal cities:

SOME OF THE REPLIES

Aachen, Germany.—Corrugation has been noticed for about three years on rails in use for seven years. The corrugations average 1.5 mm in depth and from 50 to 75 mm in length. They have occurred on sections particularly exposed to dust and mud and less on city lines than on suburban lines; more on curves of large radius than of small. The track is laid on broken stone ballast, some in paved streets, others in macadam. No superelevation is used at curves. The grades are low, not over 0.3 per cent. Corrugation commenced to be noticed after the company had increased the weights of its cars and their wheel base. The company considers the cause due to nosing of cars, and explains its presence on curves of long radius and not on curves of short radius from the fact that the blows of the wheels against the rail in short radius curves are at such frequent intervals as to produce a uniform wear. The only remedy is filing the rail, but after this is done the trouble reappears after about a year.

Aberdeen, Scotland.—This road has experienced the trouble only on a short section originally constructed for horse cars and where the rails were too light for the track. When heavier rails were substituted the trouble disappeared.

Amsterdam, Holland.—Corrugations have been noticed since 1905. The depth of the corrugations is 1.5 mm and the length 55 to 65 mm. The phenomenon occurs only in places and has not been noticed on curves of short radius nor on sections where a moderate speed is employed. The track is laid directly on a subsoil of clay, or where that is not present on a concrete foundation with wooden ties. In this way the rail is firmly held in place, a plan which the company thinks is one means of avoiding the trouble. The company believes that corrugation is caused on straight track by the rail getting out of vertical alignment. This causes the axles of the car to take an oblique position and the grinding effect of the wheels on the rail produces a vibration in the rail which results in corrugation. On curves a vibration is caused by slipping. The company recommends as a remedy on high-speed lines the use of a long wheel base or possibly radial axles, and the use of tires which are not too hard; to reduce the lateral play between the truck and the car; to keep the track rigid; to file the

corrugations as soon as they appear; to keep the track carefully to gage by the use of a large number of tie-rods; to select a rail which would have resistance against lateral vibrations, and to drain the track well.

Antwerp, Belgium.—This road has experienced corrugations for two years. Their length is about 70 mm and depth 1 mm. Generally speaking, no part of the road is exempt. The company hesitates about theorizing on the subject, but believes it may be caused by variations in the hardness of the rail, variations in the pressure on the rail due to periodic oscillations occurring through gearing, or on account of the method of spring support, or else variation in the mechanical characteristics of the metal caused by the vibrations to which it is subjected. The company has no remedy to suggest.

Basle, Switzerland.—The phenomenon has been observed for three years. The depth of the corrugations is from 0.35 to 0.40 mm and their length is 100 to 130 mm. Corrugation has been observed throughout the entire system. It is attributed to cold rolling by the wheels, because it is observed mostly on lines of comparatively large traffic.

Berlin, Germany (Grosse Berliner Strassenbahn).—Corrugation has been noticed for a number of years. The length varies from 9 mm to 600 mm and the depth from 0.2 to 3.8 mm. Corrugation is noticed on all lines, whether on tangents or curves; on grades and on level track; whether the substructure is gravel, stones or concrete; whether the street is paved with stone, asphalt or macadam; whether the speed is high or low; whether the traffic is large or small. It should be stated, however, that where it has occurred it has been at places where always or generally cars are accelerated or braked. This occurs even in large radius curves. The corrugation is always accompanied by a slipping and appears when one of two bodies are in contact and in vibration. The cause, in the opinion of the company, is expressed in the report at the Mannheim meeting of the German Street Railway Association, although the company has not yet terminated its investigation of the subject.

Berlin, German (Berlin Elevated Railway).—Corrugation has been noticed since the summer of 1902. The length varies from 30 to 750 mm. When the depth reaches 4 to 5 mm the rails are replaced. It has occurred particularly on rails of 180 mm in height mounted on ties which are connected by stringers to the metallic structure. It has been less apparent on rails 115 mm high which are mounted on ties resting on ballast. It is especially noticeable on braking sections, to a less degree on acceleration sections, occurs rarely between stations, and is especially absent at points where the car is operated at a constant speed. The company inclines to the theory of the German association mentioned above.

Bordeaux, France.—Corrugations have been noticed for six years on all lines, but some more than others. It occurs even on lines equipped with the underground conduit, where the track is held rigidly in concrete and on cast-iron yokes, but it rarely ever appears on opposite rails of the same track. The company believes the corrugation to be occasioned by the slipping of the wheels caused by nosing of the cars, difference in diameter of the wheels, difference in coning of wheels, and other causes.

Brussels, Belgium.—Corrugation has occurred during the last five or six years. The crests are from 60 to 80 mm apart and the depth about 1 mm. The underground conduit lines seem most affected. The company uses the side conduit, in which the slot of the conduit is employed as one of the service rails. One of the reasons suggested is that owing to the shape of the slot rail, which is similar to a T-rail, the coefficient of traction is only 5 to 6 kg per ton, or about half that of the grooved rail on the other side of the track. This gives a tendency for the axles to assume an oblique position on the track. Other causes similar to those already suggested by other companies are mentioned. The use of wooden ties seems to diminish the trouble. Other remedies tried are milling and filing the rail. The company has also noticed that the corrugation tends to diminish in summer and to increase in winter. This may be due to the fact that being heated and more closely confined in the pavement, the rail is less subject to vibration during summer.

Cologne, Germany.—Corrugation has been noticed since 1905, especially near the joints, and is perceptible to the

hand. The greatest depth is 0.15 mm and the length 35 to 70 mm. The corrugations seem to be pitched in the direction of movement. They occur principally in asphalt streets with tracks laid on concrete, and to be absent from tracks laid with ordinary paving on ballasted or gravel substructure. It never occurs in two consecutive rails, but no sections seem to be completely exempt. For the most part it is on the right rail of the track, the opposite rail being smooth. It is produced particularly on tracks on which high speed is attained. Curves of 100 to 150 m radius are exempt, but those of greater radius are affected on the inner rail. The cause is attributed to unequal rolling resistance, which results in vibrations at too high speeds, too rigid a substructure and too great a pressure on the top of the rail.

Dresden, Germany.—Corrugation has been noticed since the introduction of electric traction. The depth is 1.5 mm and the length about 65 mm. It has been noticed on practically all the sections, but especially where the motors are working up to full capacity. On track laid with wooden ties no trouble has been experienced, but track laid with the same rails on concrete substructure develops the trouble. One cause may be the difference of hardness of the rail and tire. In support of this theory the rails that have been laid for some time, which are softer than the more modern rails, are less affected. To test this theory the company proposes to lay some track in which rails of different degrees of hardness are alternated.

Frankfort, Germany.—Corrugation has been noticed ever since the introduction of electric traction, and especially during the last three years. It has been found to develop six weeks after the installation of new rails. The depths of the corrugations are in some cases as great as 3 mm and their length 100 mm. It occurs principally on lines laid with concrete substructure and less on rails laid on a broken stone ballast covered with pebbles. The company has fitted up a motor car with carborundum blocks to grind out corrugations.

Glasgow, Scotland, has been troubled with corrugation for three years, and in some cases on rails laid only three months. The length is 60 mm and the difficulty appears in general where the motors are operated under current. It occurs rarely in curves except in those of long radius. The company has no theory to suggest.

Hamburg, Germany.—Corrugation made its appearance in Hamburg in 1896, coincident with the introduction of tires having a resistance of 93 kg per square millimeter. The depth of the corrugations varies from 0.5 to 2 mm and sometimes is as great as 3 mm. The length is rarely more than 55 mm or less than 45 mm. It occurs on all lines, but is especially noticeable on new rails, which are harder than the old rails. This is in spite of the fact that the same wheels run over both tracks. The old track possesses an ability for compression greater than the new, and there is possibly a connection between this fact and corrugation. After filing, the corrugations sometimes reoccur, but are not so accentuated, and if not given attention they usually disappear after having reached a maximum. The company agrees with the conclusions of the German Street Railway Association.

Copenhagen, Denmark.—Corrugation appeared in 1902, a year after the introduction of electrification, and is especially prevalent on heavy traffic lines laid in asphalt on the sections where the cars operate without current at braking. The company has made tests to determine whether there is any change in the structure of the rails where corrugated, but the acid and drop test did not indicate any difference between the crests and valleys of the corrugations, although the tops of both corrugated and non-corrugated rails show a greater hardness than other parts of the rail, indicating the effects of cold rolling. In some sections the corrugations have disappeared of themselves, especially where the cars were braked with shoe brakes.

The electrification of the Italian State Railways has made such rapid strides that it has been decided to establish in Milan an office to deal exclusively with all matters relating to the electrification of the various lines. Resort will be had as much as possible to water power, as the Italian Government is averse to the importation of foreign coal.

MEETING OF THE NEW ENGLAND STREET RAILWAY CLUB

The first fall meeting of the New England Street Railway Club was held at the American House, Boston, on Oct. 22, with President M. C. Brush in the chair. About 135 members were present, and 30 new members were admitted to the club. The speaker of the evening was Prof. D. C. Jackson, head of the department of electrical engineering at the Massachusetts Institute of Technology. His subject was "Appraisals of Electric Railway Properties." An abstract of the address of Prof. Jackson follows:

There is a need of an annual inventory or stock taking in general mercantile establishments; for several reasons few railways have approached the processes of enlightened merchants in this matter. The managers have been too busy providing the necessary service, and the insurance companies do not require an inventory as in a mercantile business. Once in five or ten years should, in general, be often enough for the taking of an electric railway inventory.

The difficulty and expense of an inventory often seem more formidable than they really are. No auditor's record, however, can give the full and complete record of an inventory and appraisal. A striking reason for paying more attention to the appraisal question is the very small proportion that the gross business bears to the capital invested in an electric railway. An ordinary merchant expects to turn over his capital perhaps several times a year, but the electric railway which earns from 20 to 33 1/3 per cent of its capital investment in a year is doing well. Relatively, the capital account is more important than in a manufacturing business.

A thorough inventory gives the owner full knowledge of what the property consists, and which can be obtained in no other manner. It also affords a basis for determining the true value in discussing the company's affairs with municipalities. In some cases where a property has been built up by consolidations and reorganizations the book values do not match the property values, and the actual valuations may really be greater than the sum of the book values.

In making an appraisal, the actual first cost of the property or the cost of duplicating the plant new may be considered, and also the present value of the property in relation to the state of depreciation. The latter value should be used in apportioning taxes. This corresponds to the assessed value of land and buildings, although the first cost demands the dividends. For some reason these facts have not been properly appreciated in some States. Reconstruction reserve, depreciation reserve, deferred maintenance fund, or whatever it is called, should be based on a percentage of the cost of the property new. Such a sum, set aside regularly, is as important as the payment of salaries, wages or taxes. Most electric railway plants are neither so large, so old nor so diversified that a settled rate of depreciation due to obsolescence has been established. The depreciation reserve should be set aside regularly. The only right way to figure depreciation is to figure the life of each individual part. Electric railways will do this within the next 25 years, in a systematic way.

An important aspect of an inventory is its relation to the problem of rate making. Most people outside a company have a prejudice against book values, whereas they will accept an inventory by an unbiased engineer as fair and reasonable. The inventory should be taken so thoroughly that there can be no objection to it, and every single item of the company's equipment should be covered. The inventory is useful also as a check on later inventories made by public authorities. Thorough inventories should help to determine the reasonableness of a rate in any part of a large system, particularly as such questions are frequently coming up now before the public authorities.

The essentials of making a thorough inventory are a complete organization planned in advance, exact forms for recording every type of apparatus, and specific rules which must be followed without infractions. Separate sheet forms arranged for filing in loose leaf books are desirable. The cost of a thorough appraisal may seem large, but it is well worth while. The engineers making it should see every

piece of equipment that the company owns except that which is located under ground or under water, and they should be reasonably sure that they cover all the hidden equipment of the latter character. It may not always be advisable to use present market values, as in the recent excessive rise in the price of copper. An average or fair price is what is needed. Replacement of obsolete apparatus by equipment of modern design is difficult to figure, but with care it can be done properly. It is of primary importance to determine fair unit costs at first, and usually these should cover the apparatus erected in place. With every precaution an inventory generally falls short of all the facts of the investment. The work should be handled in a symmetrical way, figuring the total number of each kind of apparatus, and, if necessary, making categorical classifications when the costs of similar apparatus vary considerably in different conditions. Multiplication of the unit costs into the totals will then give the fair valuation of each class of equipment.

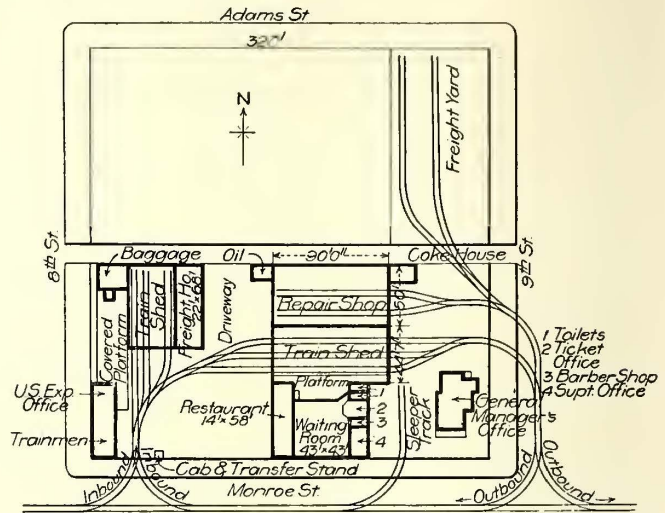
After the complete enumeration and cost of the physical equipment have been made, considering labor and material, from 25 to 50 per cent should be added to cover other legitimate and necessary expenses that the public rarely appreciates. Among these are the cost of engineering, contractors' and subcontractors' profits, supervision, interest during construction, fire, fidelity and casualty insurance, the cost of organizing, preliminary advertising, a cash working capital, and the cost of disposing of securities. All these aggregates should be added above the cost of labor and material. In many cases 50 per cent may be too low. The layman should be brought to see this, in fairness to the public service corporation.

In answer to an inquiry, Prof. Jackson stated that the cost of a proper inventory might be figured approximately at from \$1,500 to \$3,000 per \$1,000,000 of actual valuation. It could be done for less, but not in a proper and unassailable manner.

NEW INTERURBAN STATION AT SPRINGFIELD, ILL.

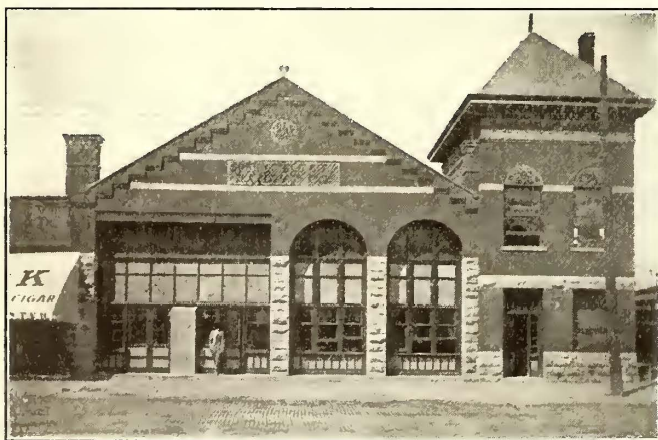
The Illinois Traction System has just completed one of the largest interurban terminal station layouts in the Middle West at Springfield, Ill. It includes an express building, covered freight house, freight team tracks, passenger station and waiting rooms, shop and inspection room and office quarters for the general superintendent of transportation, terminal superintendent, general traffic manager

tween Eighth and Ninth Streets, to occupy a new shop and barn on the outskirts of the city, the Illinois Traction System purchased the building and all of the property facing on Monroe Street between Eighth and Ninth Streets and a lot facing on Ninth Street and running through to Adams Street. With this property and the old car barn available, a complete and comprehensive terminal layout was planned as shown by the accompanying drawing.



Springfield Interurban Station—Plan of Tracks and Buildings

The old frame passenger ticket office and waiting room has been transformed into a trainmen's room and quarters for the United States Express Company, which operates over the lines of the Illinois Traction System. A covered platform facing on Eighth Street affords loading and unloading facilities for express matter and baggage. Three stub-end freight tracks separate the platform from the covered freight house, 22 ft. x 68 ft. On the lot bounded by Ninth and Adams Streets two freight team tracks 150 ft. long have been laid for loading and unloading carload



Springfield Interurban Station—Entrance on Monroe Street



Springfield Interurban Station—Interior of Waiting Room

and division offices for the use of the general manager. Springfield is the junction of the St. Louis-Springfield division, the Lincoln-Peoria division and the Decatur-Springfield division, and is the most important traffic center on the system. The old freight and passenger station, located at the corner of Eighth and Monroe Streets, was badly congested, and when the Springfield Consolidated Railway abandoned its old car barn facing on Monroe Street be-

or other large freight shipments which would unduly congest the freight house if unloaded and stored.

The old car barn has been completely remodeled, although the original brick walls were left standing. The front of the building is used for a passenger ticket office and waiting room. The waiting room is 43 ft. x 43 ft., and is entered directly from Monroe Street. It is ceiled and is finished in severely plain dark woodwork. On the east side

of the room are the ticket office, barber shop and toilet rooms, while on the other side is a restaurant and lunch room 14 ft. x 58 ft. The covered train shed, 90 ft. long by 47 ft. wide, is in the rear of the waiting room, and is reached through two large double doors opening on to a platform or concourse. There are three tracks in the train shed, each long enough to hold three interurban cars under the shelter of the roof.

In the rear of the train shed is a division inspection and repair shop 90 ft. x 50 ft., which contains a pit track holding two cars and a wash track, also holding two cars.

As will be seen from the track layout the train shed tracks form part of a loop and all car movements are from west to east. In-bound passenger cars of all divisions,



Springfield Interurban Station—Train Shed and Shop

whether running east or west on Monroe Street, enter over the Y-curves near Eighth Street and leave over the track on Ninth Street. All other tracks in the layout with one exception branch off this main loop. A short stub track turning out from Monroe Street in front of the waiting room is used for storing sleeping cars at night. As is well known, the Illinois Traction System operates sleeping cars in both directions between Springfield and East St. Louis and the cars are stored on this stub track between 9 p.m. and leaving time at midnight and in the morning from time of arrival until 8 a.m.

The station and shop are heated with steam. The location of the station is very near the business center of Springfield, being only one block from the City Hall and three blocks from the Court House Square.

CHICAGO TRACTION BOARD REPORT

The Board of Supervising Engineers, Chicago Traction, will shortly issue a complete report of the rehabilitation and construction work of the street railway lines in Chicago carried on under its direction during the year 1907. The report will comprise a profusely illustrated book of more than 200 printed pages. Inasmuch as the operating and rehabilitating arrangement, by virtue of the 1907 ordinances, between the railways and the city of Chicago, is unique, this first report of the Board representing all interests, which definitely explains the correlation of the "partnership," will be most interesting to students of traction affairs.

The report begins with a summary of the traction events in Chicago since 1856. The historical facts are interwoven to form a very readable chronology of early traction affairs. Next follows a discussion and interpretation of the main points of the traction ordinances of February, 1907, which created the Board and made possible the rehabilita-

tion of the traction system of Chicago. The work of evaluating the physical properties and the franchises of both railway systems as performed by the Valuation Commission of 1906 is presented in abstract. Then follows a summary of the work undertaken and accomplished by the Board of Supervising Engineers for the year ended Jan. 31, 1908.

This summary includes considerable statistical information of general as well as technical interest. Analysis of the division of gross receipts is included, showing "where the nickel goes." The exact division of the fare is given as follows:

Disposition.	Cents.
Paid in wages to employees.....	2.24
Paid for material, supplies and other expenses incident to the maintenance, operation and management of the railways	1.16
Paid for taxes.....	.10
Interest on value of properties.....	.75
Profit paid to the railways.....	.34
Profit paid to the city.....	.41
<hr/>	
Total	5.00

The financial exhibits of the Chicago Railways Company and the Chicago City Railway are most complete. These show for each road separately the income account, material and supplies, value of properties, damage claim reserve, operating statistics, balance sheet and additions to capital account. The latter shows location and detail cost for each item. A statement also is presented showing the amounts of the rehabilitation and construction certificates issued by the Board for money expended by the railways.

Data of interest also are presented for the combined properties. * These data include a combined balance sheet showing liabilities, income account and value of property. The report shows that the two railway systems have 10,886 employees drawing wages of \$9,040,396 for the year.

Data on passengers carried by both roads are as follows:

Passengers carried for revenue.....	372,123,199
Passengers carried on transfers and free.....	246,177,067
Total passengers carried.....	618,300,266
Average earnings per passenger carried, in cents	3.036
Average expense of hauling each passenger, including 5 per cent interest on agreed valuation of properties, in cents.....	2.578
Average profit per passenger carried, in mills...	4.58

The increase of capital accounts of the two companies, in accordance with provisions made in the ordinances for crediting them with the value of improvements, is shown as follows:

	Value	
	June 30, 1906.	Jan. 31, 1908.
Chicago City Railway.....	\$21,000,000	\$29,052,125
Chicago Railways Company.....	29,000,000	32,589,047

The joint financial statement of the companies for the year is:

Gross earnings	\$18,775,768.47
Operating expenses and taxes.....	13,143,037.93
Net earnings	5,632,730.54
Interest on capital investment.....	2,802,167.43
Net income	2,830,563.11
Railway companies' proportion.....	1,273,753.40
City's proportion	1,556,809.71

The latter half of the Board's report comprises the report of the chief engineer, Bion J. Arnold. This includes a summary of the work done by him preliminary to the inauguration of the Board of Supervising Engineers. Then follows a detail description of the organization and personnel of the Board, together with a statement of how the work is subdivided into various divisions.

The work of each departmental division of the Board is discussed in detail. The trackwork design and execution and a statement of the track building completed in 1907 are presented. Likewise in the description of the electrical power distribution work such subjects are discussed as the consideration of the proper voltages for underground distribution and a study of three-phase conductors for power transmission. In the description of the work of the division of buildings and fixtures, the question of "Open vs. Closed Storage" is argued. The discussion of the power plant work includes illustrated descriptions of typical substations of the two railway companies. The methods of the division of accounts are described and illustrated with reproductions of report blanks. The last division of the work to be discussed is that of the drafting room. Standard methods and improved facilities are used here.

This most interesting report concludes with a considerable number of tables and special data that will be found of value in connection with the descriptive matter.

STOREROOM ECONOMIES OF THE PHILADELPHIA RAPID TRANSIT COMPANY

The Philadelphia Rapid Transit Company applies certain economies in its storeroom department which are small individually, but save a great deal of money in the aggregate besides educating the men to appreciate the value of material handled. The cardinal principle governing the issue of supplies is that so far as practicable a depot man who desires a new part must give up an old one. Thus old bolts are turned in and receipted for by the storekeeper to the extent of 60 per cent to 70 per cent of the total issued on stock requisitions. Journal bearings are exchanged on a basis of one for one, while varying percentages apply to check plates, brass trimmings, etc. This rule prevents the reckless ordering of material and makes the depot masters keep closer watch on the car equipments in their charge.

A large proportion of the old material handed to the storekeeper is profitably worked over for reuse in smaller sizes, and it is customary to credit such available material at a reasonable percentage of the market cost. Bolts are sent to the shop, where, after tumbling and cleaning in sawdust-filled boxes, they are carefully examined. Some of the bolts are threaded again and others cut down to different sizes for stock. As the result of this policy, only a few odd-sized bolts have been bought within the last two years. Returned checkplates and journal bearings are machined for smaller axles. About 25 per cent longer life is secured from the more expensive carbon brushes by cutting them down for reuse on smaller motors. About 60 per cent of the old brushes are returned to the storekeeper. Duplicates of the receipts given for the new brushes are sent to the assistant general manager to keep him in touch with the consumption of this important item on different divisions.

The management believes that the expensive brass parts on cars should be reduced to a minimum. Since galvanized malleable iron was substituted for brass in the construction of signboard brackets, there has been a noticeable drop in requisitions for this item. Gilded iron also is used with success for grab-handle brackets, open car seat handles, hood post tees, hood sign brackets, bells, register and bell-cord eyes, etc. To be sure, these substitutes are not as durable as brass, but as they do not find their way into obscure junk shops, they prove a good deal cheaper in the annual reckoning.

COMMUNICATIONS

TRAIN ORDER BLANKS

EVANSVILLE RAILWAYS COMPANY

EVANSVILLE, IND., Oct. 21, 1908.

To the Editors:

The new rules adopted by the Indiana interurban lines and approved by the Indiana Railroad Commission require that written train orders be taken by trainmen in duplicate.

**EVANSVILLE RAILWAYS CO.
TRAIN ORDER**

Order No..... Date.....190...

TO MOTORMAN AND CONDUCTOR

Train No... Car No... At.....

Meet Train No... Car No... At.....

Meet Train No... Car No... At.....

Meet Train No... Car No... At.....

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And Report At.....

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Form of Train Order

\$18, made up of 1000 pads of 50 original and 50 duplicates. These pads are put up with the carbon paper bound to the pad, so that it is always in place. For use by the crews the pads are inserted in leather covers which are just the right size for carrying in the trainmen's pockets.

W. A. CARSON,
General Manager.

BOSTON ELEVATED RAILWAY INSTALLING STEEL TIES

The Boston (Mass.) Elevated Railway is making a trial of steel tie construction in building 425 ft. of new surface car track in Washington Street, near Cornhill. The tie used is the Carnegie Steel Company's section M 24, 7 ft. long, 4¼ in. high, 6 in. wide at the base and 4 in. wide at the top. The weight per foot is 14½ lb. The rails used in the track are 9 in. girders, Pennsylvania Steel Company's section 273, weighing 125 lb. per yard. Two ties are used at each joint, the ties being 16 in. apart on centers. The spacing of ties outside the joints is 5 ft. on centers. The rails are bolted to the ties, which rest upon a concrete foundation composed of 1 part cement, 1 part sand and 1 part stone. Weber joints are used, with four bolts per joint between ties and rail. The concrete base is 2 ft. wide at the bottom, below each rail, but is cut away for a depth of 6 in. in the middle to save material and form an arch. Concrete is carried about half-way up the rail height to the bottom of the wooden block paving, which is 4 in. deep. On the inside of the rails and between the head and the flange is a filling of mortar composed of 1 part cement and 3 parts sand.

The Liverpool Tramways Committee has begun experimental use of first-class cars on the Liverpool street railway lines.

PEOPLE OF CLEVELAND VOTE AGAINST SECURITY FRANCHISE

The voters of Cleveland disapproved on Oct. 22, by a majority of 605, the security franchise granted to the Cleveland Railway Company at the time the property was leased to the Municipal Traction Company. The result of the vote was a surprise to many people in Cleveland. Mayor Johnson, of the Municipal Traction Company, had expressed over and over again his confidence that the franchise would be sustained by a majority of at least 10,000 or possibly a greater number, and many other men had come to his way of thinking, after looking over the situation carefully. Not until the last day or two did there seem to be much prospect that the opponents would come near winning against the Mayor's organized campaign, but a careful canvass of a few of the west side precincts, which gave Mr. Johnson a large vote in the last Mayoralty election, appeared to change the feeling somewhat at the last moment. This is attributed to the fact that the traction company had not been furnishing the service desired and that its officials would not listen to protests.

The majority against the franchise, 605, was not a particularly strong showing on the face of it, but out of over 75,000 votes cast, Mayor Johnson had a large working force.

SUIT BROUGHT FOR RECEIVER

As a result of the conditions that now exist, serious legal complications for the Municipal Traction Company may result. The first indication of this came on Saturday evening of last week, when the Ingersoll-Rand Company, through the law firm of Smith, Taft & Atter, brought suit for a receiver in the United States Circuit Court. The bill in equity filed alleges that the company is grossly insolvent and that its debts amount to more than \$400,000, while the assets are less than half that amount. The action is to collect a balance on a bill of \$4,518, incurred in July, on which but \$2,000 has been paid and that on Oct. 14. The terms, it is claimed, were net 30 days. The law firm stated that it had several other claims for collection.

In the United States Circuit Court the hearing for the appointment of a receiver for the Municipal Traction Company was postponed to Wednesday, and it was supposed that the balance of the claim involved would be paid, although it is said that attorneys for the company hold that the claimant had no right to bring proceedings until a judgment had been obtained and failure to collect it had followed.

The Cleveland Frog & Switch Company has brought suit against the Municipal Traction Company to recover \$21,021.97 on a claim for materials. It is said that a portion of the material was furnished to the Cleveland Electric Railway, but that the Municipal Traction Company assumed the debt when it took the property over. This suit has no connection with the receivership case.

According to the terms of the lease, the appointment of a receiver would cause the property to revert to the Cleveland Railway Company at once. Every effort will be made to prevent this by the officers of the Municipal Traction Company. Mayor Johnson said he presumed that the payment of the bill would, perhaps, straighten matters out.

At a meeting of the board of directors of the Cleveland Railway, called on Friday morning by Vice-president John J. Stanley, the officials were authorized to demand the restoration of the company's properties at once, and this

was done by H. J. Davies, the secretary. On the authority of the board the banks carrying deposits of the Municipal Traction Company were notified to pay out no more money on checks of that company, the lease giving this right in case the lease or franchise is nullified.

To this letter demanding restoration of the property, the following reply was made by A. B. du Pont, president of the Municipal Traction Company:

DENIES FORFEITURE OF LEASE

We acknowledge receipt of your communication on this day enclosing copy of resolution of your board of directors, in which your board has, by resolution, declared that the lease held by this company of the property of the Cleveland Railway Company has been forfeited by reason of the fact that the franchise passed by the Council of the city of Cleveland on April 27, 1908, was, by a vote of the qualified electors of the city of Cleveland, made inoperative on Oct. 22, 1908, and demanding possession of all the property, moneys, credits, rights and franchises so held by this company under said lease, including all property deeded and transferred to your company by the Forest City company.

In reply permit us to say:

First—The Municipal Traction Company is ready and willing to complete and carry out all agreements with reference to the lease of the property of the Cleveland Railway Company in letter and spirit. It was agreed between F. H. Goff, acting for the Cleveland Railway Company, and Mayor Tom L. Johnson, acting for the city, that if for any reason the arrangement entered into on April 27, 1908, which included the lease and the 25-year franchise, should not be ultimately consummated to the entire satisfaction of Mayor Johnson and Mr. Goff, then, and in that event the Forest City Railway Company, the Low Fare Railway Company, the Cleveland Electric Railway Company and the Municipal Traction Company should be restored to all property and rights belonging to each of said companies, respectively, on and prior to said date. This company feels that Mr. Goff and Mr. Johnson are bound to see that each of the said companies is restored to the position which it occupied on and prior to said date, and this company is ready and willing to do any and everything to facilitate a complete restoration of the status quo. A failure to do so would be a fraud upon the rights of all the stockholders of the Forest City Railway Company and the Low Fare Railway Company, as well as of the Municipal Traction Company, to say nothing of the rights of the people and citizens of the city of Cleveland. We fail to see how either in law or in morals you can justify your claim to ownership and immediate possession of all of these properties in the event it shall be certified by the canvassing board that a majority of votes were cast against the franchise. We not only ask, but we demand that you co-operate with Mayor Johnson and Mr. Goff to the end that the Cleveland Electric Railway Company, the Forest City Railway Company, the Low Fare Railway Company and this company may each be restored to all the rights, privileges, properties, possessed by each respectively on and prior to April 27, 1908.

Second—The Municipal Traction Company recognizes the paramount interest of the public in the entire street railway question. It follows that while questions may exist between the Cleveland Railway Company and it, and while the interests of the stockholders and creditors of both companies should be fully protected, yet the maintenance of public service and the promotion of the convenience and interest of the entire people of the city in their use of car service should be constantly borne in mind. This company feels that the series of transactions consummated April 27, 1908, were an effort in good faith to settle and adjust finally the entire street railroad question, and if it should turn out that the franchise by popular vote was rejected, and the plan then acted upon frustrated, this company will be glad to approach the whole question in the largest and most equitable spirit with a view to the formulation of other plans which will prevent hostility, litigation and loss to the companies involved, and will meet

and satisfy the expectations of the people of the city, in whose interests a composition of our difficulties is greatly to be desired.

Third—Again, we call your attention to the fact that no canvassing board has yet convened, canvassed the result of the referendum election of Oct. 22, or certified to such result, as provided by law, so that in any event your demand is premature.

Fourth—We are advised that no forfeiture of said lease has occurred, and that no cause of forfeiture has arisen, for the reason that by the express terms of the said lease the Cleveland Railway Company agrees to lease and does lease a franchise passed on April 27, 1908, by the Council of the city of Cleveland, granting the right to the Cleveland Electric Railway Company to maintain and operate its street railway system in said city for the period of 25 years. This franchise your company not only expressly agreed in the lease to deliver, but your company did, in fact, attempt to make delivery of the same and covenanted that this company should have the quiet enjoyment thereof during the full period of the said grant. Within 30 days thereafter a petition to submit said franchise grant to a vote of the people having been filed, the said franchise did not become operative by the express provisions of the statute. Notwithstanding the fact that the same did not become operative, and that, therefore, you failed in the first instance to deliver to this company and to secure to it the quiet enjoyment and peaceable possession of the said franchise, your company, after that date, accepted the sum of \$220,000 as rental under said lease, and with full knowledge of the fact that by reason of the fact of the filing of said referendum petition the said franchise did not become operative, and also with such full knowledge you permitted this company to go forward during the recent summer and early autumn and expend more than \$300,000 in improvements and betterments upon the property so leased to this company; and, further, at the time of the execution of the lease of April 27, 1908, the Municipal Traction Company surrendered and delivered up to the predecessor of your company a valuable lease of certain street railway property and franchises in the city of Cleveland, the said property and franchises being the property of the Forest City Railway Company and the Low Fare Railway Company, respectively; therefore, we claim that the provision of said lease providing for a forfeiture in case the expired portion of any then existing franchise or any future franchise should be less than 15 years, is not applicable to the present situation. Inasmuch as you have never delivered to this company any franchise granted by the city of Cleveland, the unexpired portion of which was as much as 15 years or more, the conditions under which a forfeiture under this provision of the lease might be claimed have never yet arisen and do not now obtain. We claim also that by the acceptance of rent and by your acquiescence in this company's expenditure of the sums of money before referred to, that you have waived whatever right or claim of forfeiture you might otherwise have had (which right we wholly deny), and that in any event you cannot claim a forfeiture until you restore to the Municipal Traction Company the lease upon the properties of the Forest City Railway Company and the Low Fare Railway Company, which it surrendered to you as a part of the consideration for which the existing lease was executed and delivered.

EFFECT ON LEASE

Attorney W. H. Boyd said in a speech a short time ago that to nullify the franchise would not forfeit the lease, and the officers of the Municipal Traction Company are relying to some degree upon this idea, from the statement in the letter of refusal to deliver control of the properties.

F. H. Goff, who acted as arbitrator for the Cleveland Electric Railway, has expressed the opinion that the lease will be forfeited in case the vote is against the franchise, but says that the companies should get together and figure out what will be necessary to restore all former conditions. He is not sure but that this will be impossible, but in that case thinks that the best arrangement obtainable should be made.

Various attorneys claim that the new lines and the franchises granted the Johnson companies were purchased and paid for by the Cleveland Railway Company, and that they cannot be restored to the former owners, as conditions have changed since the transaction was made.

POSITION OF CLEVELAND RAILWAY

President Horace E. Andrews of the Cleveland Railway Company returned to Cleveland from the East on Saturday

Good Service Before Low Fare.

The most impressive lesson of the defeat of the security franchise at Thursday's election is that the people of Cleveland care more for adequate service than for a low rate of fare. Other causes contributed to the defeat of the franchise, but no one factor was so important. Public sentiment was unmistakable. Many who are sincere admirers of the mayor, who have repeatedly voted for him, and who will vote for him again if given the opportunity, cast their ballots against the franchise in hope that out of the inevitable confusion following the defeat of the grant there may come a regime in the street railway management that will consider paramount the necessity of providing service of the highest standard.

Everyone knows that to Mayor Johnson is due the credit for bringing lower fare to Cleveland. Without his efforts it is likely that no important concessions would have been offered or imperatively demanded. At the same time it is felt that too much stress has been laid on this feature of traction progress, and that, to fulfill pledges made at a time of lower costs, when it would have been possible to carry them out, the mayor, baffled in some degree by changed conditions, sought to make 3-cent fare effective by sacrificing the comfort of the traveling public. The deterioration of service was not carried to the point that many seemed to think, but it was sufficient to cause widespread dissatisfaction. Whatever future settlement may be made, it may be taken for granted that the public will demand service—service above every other consideration.

Three-cent fare has long been the loud slogan. Three-cent fare is undoubtedly desirable, but there are other things more desirable, even absolutely essential in any traction arrangement that shall meet the demands and the necessities of the people of Cleveland.

It is evident also that many good people took umbrage at the idea that a self-perpetuating board of trustees had been placed in charge of a quasi-public corporation. But whatever the causes which have led to such a reversal of the popular vote, it behooves both the Cleveland Railway Co. and the Municipal Traction Co. to take a very calm view of the situation and to reach, if possible, an equitable adjustment of the many problems complicating the present situation before resort is had to the courts.

Editorial from "Cleveland Plain Dealer" of Oct. 24, 1908

morning and a meeting of directors was called at once to formulate plans. The result was that the following statement was made public as representing the views of the Cleveland Railway Company:

The board of directors is entirely satisfied that the operation of the street railway lines in Cleveland under the so-called holding company plan has proved a complete failure, and must be abandoned, for the reason that, under it, it has been found impossible to give proper and satisfactory

service to the public and impracticable to finance the affairs of the company in such manner as to secure to the public the equipment and service to which it is entitled. The board, therefore, rejects all suggestions as to any holding company plan of operation, but proposes that the company shall immediately upon regaining possession of its property put in operation a rate of fare of seven tickets for 25 cents over its entire system, including adjoining suburbs, with transfers, including double transfers on crosstown lines, and that this low rate of fare shall be accompanied by first-class service.

It is the disposition of the directors to do everything in their power to restore good service to the public, and they stand ready to take up with the public and the city government, in a broad way, the consideration of the whole subject.

The promptness of the restoration of good service now depends upon the speedy return to the company of its property.

As to the lines which have grants calling for 3-cent fare, President Andrews stated that the offer of seven tickets for 25 cents, with liberal transfers and the same rate to all points, would be better than patrons of these lines would get under the old grants.

Mayor Johnson had not abandoned hope on Saturday that the vote may not be final. He had an examination of the voting machines made to ascertain whether enough irregularity could be found to ask that all precincts using the machines be thrown out. This would allow the franchise to be carried by a small majority. It was found that many mistakes had been made in voting on the machines, wrong spaces having been used in many cases. This would record the vote, but in the wrong place. Those who made the examination said that the lost votes were pretty evenly divided, but some voted in such a manner that nothing could be told about the ballots. Some other technicalities were discovered, but the election board states that the laws provide for everything and that there is little opportunity for a successful contest in the courts.

The Chamber of Commerce, by a large majority, voted to oppose the franchise on Tuesday night of last week. The question came up over the report made by the committee appointed some time ago to investigate the traction situation. The report was an exhaustive analysis, but contained no recommendations as to the support of the franchise. Some of the members felt that the organization should not go on record as favoring or opposing the measure, but a resolution introduced by C. A. Otis, opposing it, was finally adopted.

The financial report of the Municipal Traction Company for September shows a decrease of \$20,929.74 in operating expenses from the preceding month, and a surplus of \$10,606.88, as compared with \$5,407.34 in August. The figures for the month are as follows:

Gross earnings	\$411,956.75
Operating expenses	*287,895.22
Net earnings	\$124,061.53
Taxes	
Interest rental	\$40,076.67
Dividend rental	73,378.00
Total	\$113,454.67
Surplus	10,606.86
Total deficit to Oct. 1, \$43,035.29.	
*Increase in taxes (about \$22,000).	

The canvassing board, apparently divided on political lines, has refused to certify the result of the referendum vote until informed by the attorney-general as to whether the board has a right to go behind the returns made by

the judges in order to investigate the methods of voting. Several attorneys appeared before the board and stated that they had never heard of a board endeavoring to do anything more than canvass the vote and make its report, and that it is clearly against the fundamental idea of the right of suffrage to throw out votes of entire precincts because of the ignorance of some voters in the use of the ballot or the voting machines.

Friends of Mayor Johnson assert that the spaces in the machines should have contained the words, "For the franchise" and "Against the franchise," after the title of the franchise. The spaces contained the words, "Yes" and "No," as the spaces were not large enough for the phrases. Representatives of the voting machine company say that the rules are plain, and that people who lost their votes were at fault.

A meeting of the directors of the Cleveland Railway Company was held on Monday of the present week, but it was said that nothing was done, with the exception of a

No More Experiments.
(EDITORIAL.)

There are two things that the Cleveland Railway Company, the mayor and the city council should understand at the outset of the traction negotiations.

First, the people of this city don't want any more security grants or holding companies. They want the street railway business of Cleveland conducted on a business basis. They are done forever with political tractions and traction politics. They have had enough of trusteeships and guarantees and all other theoretical clap-trap.

And, second, the people of Cleveland want the lowest rate of fare consistent with good service, but they want GOOD SERVICE. They want good service not some places, but every place. They don't want any zone systems and they don't want any penny-in-the-slot transfer arrangements. They want well equipped, well manned, well managed street cars and they want plenty of them.

The people of this town have had all the promises and speeches and placards and theories they need for the next generation or two. Now they want service—first-class, high-class street railway service. And the traction directors and city officials who are to find a basis for settlement must, if their negotiations are to have the voters' approval, meet the public's wishes at the outset.

Editorial from "Cleveland Leader," Oct. 24, 1908

discussion of plans for the future. Mr. Johnson let it be known that he is willing to turn the former Cleveland Electric Railway properties over to the Cleveland Railway Company in case the vote is against the grant, if the properties of the Forest City Railway Company and the Low Fare Railway Company are returned to those companies. The Mayor claims that a "gentlemen's agreement" between himself and F. H. Goff, arbitrator for the Cleveland Electric Railway in the valuation proceedings, provided for this. The Cleveland Railway officials are said to consider that this agreement ended when the lease was signed and the papers were delivered to the holding company.

A question has been raised regarding the guaranteed stock, which was widely advertised and sold by the Municipal Traction Company through its own stock exchange. President du Pont, of the Municipal company, is quoted as stating that \$1,200,000 stock has been issued in this way.

Late advices from Cleveland say that the Attorney General and Secretary of State of Ohio have informed the board of election that it cannot go behind the returns of the judges of election to seek evidence of irregularities or to hear testimony on that subject. The only duty of the board is to certify to the vote as found. Mayor Johnson contends that the lease of the Cleveland Railway has not been invalidated by the repudiation of the franchise, and says that unless the low fare lines are returned to their former owners, the Municipal Traction Company will continue to hold all of the property. Two mechanics' liens, aggregating \$5,300, have been filed against the Municipal Traction Company.

ELECTRIFICATION OF STEAM RAILROAD TERMINALS IN CHICAGO

The practicability of electrifying the steam railroad terminals of Chicago has been investigated by a commission appointed about 8 months ago by Mayor Fred A. Busse, of that city. The membership of this commission is as follows: Messrs. W. A. Evans, commissioner of health; Milton J. Foreman, chairman of the local transportation committee of the City Council; H. H. Evans, consulting mechanical engineer; Paul P. Bird, chief inspector of the city smoke department, and Gilbert E. Ryder, assistant inspector of that department. This commission, which has carried on a somewhat comprehensive study of the various features of terminal electrification as a remedy for the locomotive smoke evil in Chicago, with special consideration of the Illinois Central R. R., submitted a voluminous report to the City Council on Oct. 19. The material and information contained in this report and the additional information and ideas upon which the conclusions reached by the commission were based were obtained from a great number of sources.

It is stated in the beginning of the report that the questions which the commission has tried to determine are: 1—Does the smoke from the present method of locomotive traction do harm, and if so, how much? 2—Would the substitution of electric traction within the city of Chicago rectify this condition? 3—Has electric traction developed to a point where it has demonstrated its availability? 4—Would electrification of the terminal zones be a reasonable demand on the railroads? The fourth point is considered to resolve itself into two sub-questions: (a) Is electrical operation physically feasible? (b) Are the financial situations such as to make it feasible?

The major portion of the study has been on the fourth question, and especially on division (a) of it. This division in turn was divided into three parts: Suburban passenger, through passenger and freight business. The report holds that the advantage from handling suburban business electrically is generally conceded, and that the operation of through passenger business is probably proved. Most of the investigation was consequently confined to the electrical operation of freight trains in terminals, and the report states that the freight business is the greatest nuisance of the three, although, singularly enough, it is the one to which the least thought has been given.

The commission did not consider its function was to suggest plans or to specify details, except in so far as they are necessary to give a clear comprehension of what is proposed.

The Illinois Central was selected as the basis of the study for two reasons: First, the terminal of this railroad is in one of the best parts of the city and occupies much of the lake front, adjacent to which is a large section of the extensive municipal park and boulevard system. Second, as a refutation of several reasons outlined by J. T. Harahan, president of that railroad, in an open letter showing why his company could not feasibly undertake electrification of its terminal under the existing situation.

The commission firmly believes that the operation of this entire terminal electrically is quite feasible. This conclusion is reached for the following reasons: It is claimed that not only are the needed funds available, but that electrical operation will save the railroad company enough in the cost of operation to pay the fixed charges on the added investment and also furnish a safe depreciation fund.

Greater track and train efficiency will be obtained, the report holds, so the physical limitations now hindering the operation of the terminal will be removed. The commission is also led to consider the problem of electrifying the extensive downtown freight yard included in this terminal as exceptionally simple.

The advantages to the railroad of electrification of its through passenger service are given as follows: First, so far as fuel is concerned, freedom from smoke and economy of coal will be obtained. Then, with regard to operating conditions, better control, higher rate of acceleration, better efficiency in starting and stopping, greater pulling capacity, greater speed, faster schedules and higher economy under a varying load factor will result. And, finally, in connection with maintenance, less up-keep on locomotives, less locomotive-ton mileage, less dead runs for locomotives, less round-house cost and less storage track will be required, while the regularity of service in stormy weather will be greater.

The electrification of the suburban service is considered to include all of these and many other advantages. Chief among the additional advantages to be secured by the electrical operation of this service, the report shows, is a greater frequency of trains at a smaller cost of operation.

Handling the freight traffic at the terminal is likewise advantageous, the commission considers. In this connection the suggestion is made that the electric locomotives used during the day in pulling through passenger trains could be employed at night for freight.

The commission submits alternative plans of electrification with or without a central generating station, depending on whether the railroad decides to purchase or to generate the current for operation. Exclusive of this station, the report estimates the cost of electrification of the Illinois Central terminal at less than \$4,000,000.

The estimates show a net saving for a year of \$264,097. Even if no added traffic comes as a result of the electrification, the report states, this saving will pay 7.87 per cent on the investment, or 6.6 per cent on an investment of \$6,000,000, should better construction be adopted.

The suburban service of the Illinois Central runs from Randolph Street on the north to Flossmoor on the south, with three spurs now in operation and a fourth just ready to begin. The western service leaves the main line near Sixteenth Street and runs to Addison, a distance of 25 miles. There are but four trains a day over this line, making it a local rather than a suburban service.

The remaining services now in operation use four tracks to Sixty-seventh Street, 8.4 miles, except from a point just south of Van Buren Street to a point at Randolph Street, 0.83 mile, where there are two tracks, and a short neck at Randolph Street, where there is but one track. The two east tracks are reserved for an express service running to Hyde Park, 6.57 miles. All four of these tracks are exclusively suburban in every division of their service.

Southeast of Sixty-seventh Street there is a two-track line, 4.51 miles, to South Chicago. This track is also used for freight. From Sixty-seventh Street to Blue Island Junction, 6.74 miles, there are two suburban tracks not used for other purposes. From Blue Island Junction, 3.83 miles, is a single-track road used for all purposes. The suburban service is continued over the four-track system to Calumet Junction, and the remainder over the two-track system to Flossmoor, 24.92 miles from Randolph Street.

The Kensington & Eastern will run an electrically hauled suburban service in connection with the Chicago, Lake

Shore & South Bend Railroad, from South Bend, through Gary to Kensington, where it will, for the present, transfer passengers to the regular Illinois Central service.

The Woodlawn service is local. It is usually done with two-car trains with side-loading doors. There is a train every five minutes during the rush hours. The service is every 30 minutes at the laxest times. There is no service from midnight to the early morning.

The Illinois Central suburban service has demonstrated the potentiality of a railroad to determine the direction of growth of a city. Its patrons are not guided by time cards. As with street car service, it must conform to the operation methods of a local transportation service or go into the scrap heap, according to the laws of economics, states the report.

What might be termed the radiating systems from Sixty-seventh Street are suburban services. South Chicago is largely self-contained, and in consequence does not support a service into the city the proportion its population suggests. Yet to put this line on the basis of a suburban electric line with a proper feeding system will develop the region and the patronage of the road will give the same economics of administration that suburban electric lines always give in competition with locomotive traction.

The Flossmoor service is now brought in competition with electric traction, and must therefore give equal service or suffer. The Blue Island service must go to electric traction to compete with the shorter haul of the Rock Island. Over none of these lines do the trains make sufficient speed to require the most rigid type of construction. Therefore, the report suggests that third-rail or catenary construction will probably not be required on any except the Flossmoor service and the Kensington & Eastern.

While a considerable portion of the report is devoted to the consideration of the electrification of the Illinois Central terminal, a large amount of attention has been devoted to the general situation in regard to terminal electrification in Chicago and elsewhere. The harm of smoke is discussed from a financial as well as a public health standpoint by Dr. W. A. Evans. The prevention of smoke in Chicago is taken up by Paul P. Bird, who, as chief inspector of the city smoke department, has done most excellent work in that direction during the past year. G. E. Ryder, one of Mr. Bird's assistants, outlines briefly the relation of the railroads to other smoke producers in Chicago, and then discusses the possibility of smokeless steam locomotive traction.

Electrification as a remedy for the smoke produced by steam locomotives, with special consideration of the Illinois Central, covers 273 pages of the 354 pages in the report, and has largely been compiled from various sources by H. H. Evans. Aside from the situation as it exists in Chicago, a brief review of the general aspects of electrification, of the system available for electrification and of the existing installations of electric traction abroad as well as in this country give considerable data which are of general value.

On Oct. 21, at the annual meeting of the stockholders of the Illinois Central R. R., the following resolution was passed: "Resolved, that it is the sense of the stockholders of the Illinois Central R. R. Company, in annual meeting assembled, that the board of directors proceed with all reasonable dispatch to electrify the service within the corporate limits of the city of Chicago." At the meeting of the board of directors of the company the following resolution was passed: "Resolved, that in the opinion of this board, the demand on the part of the city and citizens of

Chicago that the railroads entering the city should take such steps as will reduce to the lowest possible limit the annoyance caused by noise and smoke, is a reasonable demand, and this company should and will give immediate attention to the attainment of that end." This action is considered very important in Chicago.

CHICAGO CITY RAILWAY-COMMONWEALTH EDISON POWER CONTRACT

The terms of a contract for the supply of electric power to the Chicago City Railway by the Commonwealth Edison Company have just been officially made public in Chicago, although announcement of the fact that such a contract had been made was given in these columns in June.

The power is to be supplied by the power company to the railway company in the form of three-phase 25-cycle 9000-volt current. The railway company is to pay a minimum primary readiness-to-serve charge of \$1.25 per kilowatt of demand per month. The kilowatts demanded are to be taken as 21,000 as a minimum for the first year of the contract, and as much more as may be demanded. For the remaining nine years of the contract the railway company shall pay according to the following provisions for determining the maximum demand.

The railway company's maximum demand in kilowatts for each month upon which the primary charge is made shall be determined by taking three consecutive days in the month out of which there shall be selected two hours, of which one shall be the hour of greatest output in kw-hours in the first half of the day, and the other the hour of greatest output in the second half of the day. The combined output of the six hours selected in the manner thus indicated shall be greater than the combined output of six hours similarly selected from any other three consecutive days in the month. One-sixth of the aggregate number of kw-hours consumed by the railway company during the six hours selected shall be considered as the number of kilowatts constituting the railway's maximum demand.

If the railway's maximum demand exceeds 21,000 kw during the first year, the railway is to pay \$1.25 per kilowatt of demand for each month for all in excess of 21,000 kilowatts. In addition to the primary or readiness-to-serve charge the railway company is to pay 0.415 cents per kw-hour for all energy used up to Jan. 31, 1910, and 0.4 cents per kw-hour for the remainder of the contract.

The power company is always to stand ready to supply a maximum demand equal to the highest previous maximum demand established for any previous month and also such additional demands as may be required under one or more of the following provisions: The railway company may make a written demand for an increase of supply to go into effect after May 31, 1909. The power company must be given five months' notice if the increase demanded is to be not more than 4000 kw, and 10 months' notice if the increase demanded is to be more than 4000 kw. At least 5 months shall elapse before the railway company can have the right to make another demand for an increase to go into effect within 10 months. The Board of Supervising Engineers Chicago Traction must approve all demands for an increase made under this contract.

The minimum amount which the power company shall be obliged to stand ready to supply and upon which primary charges shall be made shall not be less than 30,000 kw for the nine years ending May 31, 1918. The power company is to stand ready to supply a temporary excess of 10 per cent

of that provided for under the foregoing provisions, but the railway company shall not rely upon such excess energy to supply large numbers of new cars or the acquisition of additional lines. Whenever an increase shall be desired for such reason it must be provided for by written demand. Demands for increase during the last three years of the contract shall have the effect of extending the contract for three years after the last of any such increases shall have gone into effect.

Underground transmission lines shall be used, and these shall be installed and maintained at the expense of the power company. The railway company is to maintain and operate the substations. The power company may occupy substations jointly with the railway company under mutual agreement. The 9000-volt transmission lines shall consist of three copper conductors, each 250,000 circ. mil. area. The power company guarantees that the average loss of energy transmitted in any one year from its power stations to the railway substations shall not exceed 5 per cent of the total under conditions of unity power factor. The maximum demand in kilowatts and the kw-hour consumption is to be determined by meter at the power station. The meters are to be read at noon the last day of each calendar month to determine the kw-hours used during the month.

All meters shall be tested and calibrated every month in the presence of duly appointed representatives of both parties. Either party can make a written request for test of meters. Any meter found to be not more than 2 per cent from normal shall be considered correct as to the registration of the number of kw-hours used in the past. If the error is in excess of 2 per cent, the readings for the previous month may be corrected in accordance with the error found. The power company is not to be held responsible or liable for any damages on account of the non-delivery of electrical energy by causes beyond its control. One clause of the contract provides for arbitration in case of differences as to the obligations of the contract.

The railway company is not to sell the power it purchases to other consumers, except certain railways named in the contract. The railway will not generate electrical energy or take energy from any other source for operating its system, after the first year of the contract, except that after June 1, 1915, the railway company may generate in its own plant any quantity of energy which it may need over and above that which the power company may then be obliged to supply or stands ready to supply. If the railway company begins to generate any energy at its own plants after 1915, it agrees to use enough to maintain a 35 per cent load factor for any month. If the load factor falls below 35 per cent; that is, if the average load in kilowatts is less than 35 per cent of the maximum load for the month, the railway is to pay for a kw-hour consumption corresponding to 35 per cent load factor.

In regard to the interest of the city in this contract, Bion J. Arnold, chairman Board of Supervising Engineers, Chicago Traction, is quoted as follows: "Under the terms of the proposed contract the railway is buying the energy for the same price that it could produce, under the plan for establishment of a railway power plant, which was considered. The contract arrangement does away with the investment which the railway company would otherwise have to make and will keep the investment down to a minimum until it is known about the question of consolidation of the railway systems of the city. The contract also permits the railway to take advantage of any improvements in the modes of generating electrical power during the next 10 years.

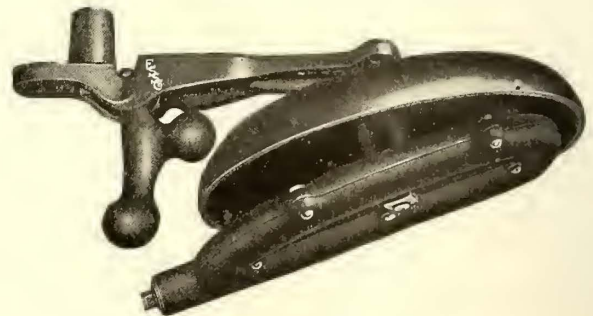
GEAR AND PINION CONTACT

It is admitted that the shape of gear and pinion teeth should be such as to insure rolling friction to the exclusion of ordinary wiping friction. On a testing rack where the distance between the pinion and the gear centers can be accurately adjusted, this is probably true; and if this distance could be maintained constant in railway operation, it would also be true in the latter case. However, as it is so difficult to keep a pitch circle right, the qualifying condition of rolling contact—that the gear and pinion pitch circles touch at a common tangent—can hardly be attained with certainty, and cannot be profitably maintained on a car motor in service. Assuming all motor housings and bearings to be correctly machined, the bearings to be bored concentrically, and the gears to be standard, the conditions of rolling contact are established; but error in any of these contributing factors, either initially or as a result of normal wear, changes the length of the center line and introduces wiping friction, depending to a degree on the extent of irregularity existing. The evidence of early modification of the rolling friction condition is especially marked on the gears of single-end cars, where practically all wear is on one side of the teeth.

Assuming all initial conditions to be right, wiping friction can only be avoided by changing bearings with prohibitive frequency, but can be reasonably controlled by proper care in maintaining bearings and housings. True rolling friction wears a gear after the manner of locomotive pilot wheels, but wiping friction is analogous to the wear caused by brake shoe application.

PNEUMATIC GONG RINGER

The Electric Service Supplies Company, Philadelphia and Chicago, exhibited at the Atlantic City Convention the Keystone pneumatic gong or bell ringer which is shown in the accompanying engraving. This bell ringer is designed to be used on cars equipped with air brakes. It is operated by a small auxiliary air valve placed immediately over the motorman's brake valve or in any other convenient place so as to be operated by pressure of the motorman's thumb. Only a small amount of air is required. The illustration shows the bell ringer attached to an ordinary type of foot gong. It



Pneumatic Gong Ringer

consists of a race-way in which rotates a ball. The air entering at the lower end throws the ball through the straight section of the race-way against the gong, and the ball returns through the oval path. The bell ringer will operate in any position and can be attached to the gong without affecting in any way the ordinary operation of the gong with the foot pedal. It rings the gong with a clear tone and is under perfect control by the operator, who may ring only a few taps or cause it to operate continuously like an electric alarm bell.

AUTOMATIC BLOCK SIGNALS ON THE BOSTON & WORCESTER STREET RAILWAY

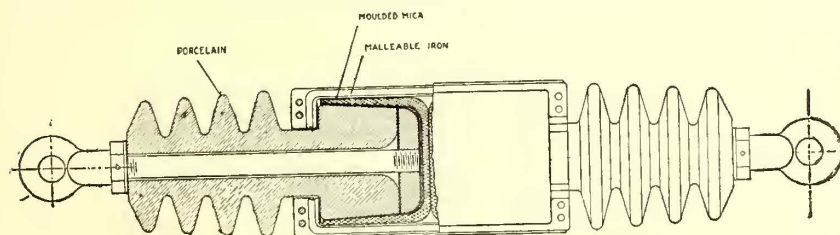
In the automatic block signals recently installed on the main line of the Boston & Worcester Street Railway, a novel plan has been introduced by giving the stop or proceed indications at night by the relative positions of two red lights instead of by extinguishing and lighting two red lights, as stated on page 930 of the issue of this paper for Oct. 10. The 16-candlepower lamps, which are mounted behind red lenses near the ends of the semaphore arm, burn continuously and indicate stop when in a horizontal line and proceed when in a vertical line. M. V. Ayres, electrical engineer of the Boston & Worcester Street Railway Company, states that the company does street lighting in many of the cities and towns which it reaches, and that it has been found convenient to connect the signal lamps on the street lighting circuits so that they are burning all the time that the street lamps are lighted.

A NEW STRAIN INSULATOR

In bringing out its new strain insulator for catenary construction, the Johns-Manville Company states that molded insulators have given universal satisfaction for low-voltage work, but have not proven so satisfactory for the higher voltages. Porcelain is better suited for high voltages, but in most designs the insulators lack mechanical strength and reliability. The ideal strain insulator for this service is considered to be the one in which the porcelain is placed in pure compression without the possibility of any other kind of strain.

In the spool type porcelain strain insulator two difficulties are met: First, to get a shaft that will carry the load without bending, as in large loads, the shaft would be of such great diameter that the complete insulator would be heavy and cumbersome; second, the load being applied by a cable around the porcelain such a small portion of the material is in actual compression that it is quickly strained to the breaking point, unless made of very large size. The second difficulty is met in any form of strain insulator in which the load is applied by cables.

Fig. 1 shows a section view of this company's "J-P" porcelain strain insulator, in which it is impossible for the load to be applied to the porcelain otherwise than in compression. The design is such also that sufficient stock can be put in the porcelain "head" to carry the required load without excessive stresses. The load is applied to the porcelain between two parallel surfaces, lead or soft copper cushions being provided to take up any slight irregularities



Strain Insulator for Catenary Construction

in the metal or porcelain surfaces. An insulator of this type having a head $4\frac{3}{8}$ in. diameter x 3 in. long stood a strain of 34,000 lb. before breaking. The amount of porcelain under compression was 19 cu. in., the area to which it was applied being $6\frac{1}{3}$ sq. in., making a stress of approximately 5370 lb. per square inch.

The electrical properties of this insulator are as interesting as its mechanical features. It is necessary to keep the head carrying the load as short as possible. To do this the surface insulation of the head is made just sufficient to give the desired test when clean and dry. A mica cap is cemented over the head to keep away dirt and moisture. It is further protected by packing all joints to keep moisture from entering the case at all. The insulator can be immersed in water for an indefinite time without reducing the insulation when removed from the water.

It will be noted that the porcelain surface exposed to the atmosphere can be of almost any desired length. The insulator, which stood a 34,000-lb. strain, was designed for use on a railroad with frequent steam locomotive service. It has an exposed surface of 28 in. It was tested at 45,000 volts for five minutes without failure and after immersion in water for five minutes the test was repeated without failure. In this test the case filled up with water. The packing is intended to make the interior of the case weather-proof, but not waterproof. A further feature of the insulator is that in case the porcelain became cracked so that current would leap across, the cable would not be burned and let the line fall, as might happen where the cable rests directly on the porcelain.

BIG BOILER STACK ERECTED AT AMPERE

The improvements to the plant of the Crocker-Wheeler Company, of Ampere, N. J., manufacturers of electrical machinery, have reached the stage where work is being started on the new power house, which when completed will have a capacity of 4800 boiler hp. This entire capacity will not be installed at once. To furnish draft for the boilers temporarily, until the complete plant is installed, the company has just erected a steel stack 72 in. in diameter and 105 ft. high, standing 125 ft. in the air.

This stack will supply natural draft to 800-hp water tube boilers (burning No. 2 buckwheat coal), with an ultimate capacity under artificial draft of 1600 hp. The boilers are of the modern high-pressure water tube type (steel castings) for generating steam at 200 lb. pressure. The furnaces of the boilers are each 9 ft. 8 in. wide by 10 ft. deep. The breeching connection between the stack and the boilers is 6 ft. wide and increases in height as it reaches the stack to provide for future boilers.

The breeching is built of the arched top and bottom plate construction to make it self-supporting. The weight of the stack and breeching is approximately 18 to 20 tons, and the stack was hoisted into position in one piece, which shows the progress of engineering construction, as this would have been impossible a few years ago. The present stack is to be used temporarily until further development of the plant, at which time it is contemplated to erect permanent brick chimneys. For that reason the stack is located at present in a position to provide for future development until the last boiler installation is made, and is erected on one of the future boiler setting foundations. This foundation is built of concrete, and that portion on which the base of the stack rests is reinforced with steel.

The stack was designed and erected by the engineering construction office of Walter Kidde, New York City. It was built by the Dover Boiler Works, of Dover, New Jersey.

ELECTRIC RAILWAY LEGAL DECISIONS

LIABILITY FOR NEGLIGENCE

Alabama.—Carriers—Street Railroads—Injury to Passenger—Complaint—Sufficiency—Negligence—Wilful Misconduct—Contributory Negligence—Plea of Contributory Negligence—No Admission of Negligence—Pleading.

A complaint against a street railway company, alleging that a passenger was thrown very violently to the ground through the negligence of the company's servants and agents in carrying him as a passenger, though general in its averments of negligence, conforms to the rule permitting in such cases a non-specific allegation of the negligence relied on.

Contributory negligence is no defense to a claim for injury caused by wilful or wanton misconduct.

A plea of contributory negligence does not admit negligence of the pleader, where the general issue is also interposed.

In an action against a street railway company for injury to passenger, by pleading, besides the general issue, contributory negligence, and by answering interrogatories filed under express authority of Code 1896, section 1850 et seq., the company did not waive the necessity for plaintiff supporting by proof averments that the car on which plaintiff was a passenger when injured was operated by the company and that the negligence imputed was that of its employees; the interrogatories and answers not being in evidence.—(Birmingham Ry., Light & Power Co., v. Haggard, 46 Southern Rep., 519.)

Illinois.—Damages—Personal Injuries—Evidence—Master and Servant—Injuries to Servant—Assumed Risk—Contributory Negligence—Misconduct of Counsel—Amount of Verdict.

In an action for injuries to a servant, evidence that plaintiff could not read and write well, and did not have sufficient education to fill a clerical position, was admissible under the rule permitting all evidence tending to show the character of the ordinary pursuits followed by the party injured, and the extent to which the injury has prevented and will prevent him from following them.

A motorman injured in a collision on a single track did not assume the risk of the danger of the collision resulting from the street car company's failure to notify the operatives of the other car that plaintiff's car had been ordered to follow the regular car, and was expected to meet them at a certain switch.

In an action for injuries to a motorman in a head-on collision, evidence held to require submission of plaintiff's contributory negligence to the jury.

A statement of plaintiff's counsel, in argument of an action for injuries to a servant, that plaintiff was an active man whom defendant trusted and employed, that he was personally injured, and that the sum of \$10,000, which he asked, was what he should fairly have, was not objectionable, counsel being authorized to state in argument what they considered fair compensation for the injuries received.—(Graham v. Mattoon City Ry. Co., 84 N. E. Rep., 1070.)

Illinois.—Carriers—Injuries to Passengers—Declaration—Requisites—Res Ipsa Loquitur—Declaration—Evidence—Relevancy—Res Gestæ—Declarations to Physician.

In an action for injuries to a passenger, the declaration must allege the existence of a duty on the part of the defendant to protect plaintiff from the injury of which he complains, defendant's failure to perform such duty, and an injury to plaintiff resulting from such failure.

Where an accident happens to a passenger on a street railway and the instrumentality which caused the accident was within the railway company's control, and the passenger at the time of the accident was in the exercise of due care, proof of such facts is sufficient to establish a prima facie case of negligence against the railway company without proof of the cause of the accident.

A declaration in an action against a street railway company for injuries to a passenger, alleging that plaintiff was a passenger on defendant's railway, and that it was its duty to carry plaintiff safely, that defendant failed to perform such duty, but permitted the car on which plaintiff was a passenger to collide with a certain other car of defendant, and as a result of such collision plaintiff was thrown with great violence against a seat of the car on which she was a passenger, and was injured, stated a sufficient cause of action, especially when challenged by a motion in arrest of judgment.

Declarations of an injured party when made as part of the res gestæ or to a physician during treatment, or on an examination prior to and without reference to the bringing of an action to recover damages for the injury, are admissible, but declarations to a physician who has made an

amination of a party with a view to qualifying himself to testify only are inadmissible.—(Greinke v. Chicago City Ry. Co., 85 N. E. Rep., 327.)

Indiana.—Negligence—Proximate Cause—Essential to Recovery—Carriers—Injury to Alighting Street Car Passenger—Proximate Cause—Interrogatories—"Negligence"—Carriers—Street Railroads—Injury to Alighting Passenger—Proximate Cause.

To be actionable negligence must be the proximate cause of the injury complained of.

"Negligence" is the proximate cause of an injury when one of ordinary sense ought to have foreseen that the act would probably result in such injury or some like injurious consequence, and whether one of ordinary sagacity ought to have foreseen the probable consequences of the act is to be inferred from a consideration of all the facts and circumstances surrounding the case, and is a question for the court, and not a proper subject of an interrogatory addressed to a jury; and hence, in an action against a street railway company for injury to a passenger while alighting, a question whether it was reasonably probable in the circumstances that she would, after the conductor gave the signal to stop the car, leave her seat and take a position that would be rendered perilous by the stopping of the car in the manner in which it was stopped, could not properly be decided by an answer to an interrogatory.

The act of the conductor of a street railway summer car requiring the motorman to stop it in such a way as to produce a violent lurch and backward motion was the proximate cause of injury to a passenger thrown to the street by the lurch, where, when the conductor gave the signal, he might reasonably have expected that the passenger would at once, before the stop was made, take a position at the edge of the car preparatory to alighting, as she did.—(Richmond St. & I. Ry. Co. v. Beverley (No. 6207), 84 N. E. Rep., 558.)

Iowa.—Appeal—Harmless Error—Admission of Evidence—Prejudicial Effect in General—Carriers—Carriage of Passengers—Personal Injuries—Setting Down Passengers—Actions for Injuries—Questions for Jury.

In an action against a street railroad for personal injuries from the starting of a car while plaintiff was alighting, defendant's manager, after testifying that he was on the car at the time and giving his version of the circumstances, which showed no negligence on the part of defendant, was permitted, on cross-examination, to testify that he had seen such accidents at other times, and that they were of frequent occurrence. Held, that such evidence, though it might have been properly excluded as irrelevant, was not prejudicial to defendant.

Though a street car passenger took a transfer to another line, justifying the assumption that she would remain in the car until the junction with such line was reached, she still had the right to alight at any intermediate stopping place, and if, while so alighting, the car was started on the conductor's signal, and she was injured thereby, and the conductor actually saw her starting to alight, or alighting when he gave the signal, or, by the exercise of the proper care imposed upon him, should have seen her so doing, the company is liable for her injuries, even though the signal was not given until the car had waited a reasonable time for passengers to alight and the other passengers had safely alighted.

In an action against a street railroad for injuries to a passenger while alighting, the questions whether she indicated her purpose to alight, whether reasonable time was given her so to do, or whether she waited until the car was starting and then stepped out, were properly left to the jury.—(Farrell v. Citizens' Light & Ry. Co., 114 N. W. Rep., 1064.)

Kentucky.—Carriers—Street Railroads—Passengers—Contributory Negligence—Negligence—Evidence—Instruction.

It is not per se negligence for a passenger on a street car to make preparations to alight from the car before it comes to a standstill, or to get off before the car actually stops.

When a car has slackened its speed to enable a passenger to alight therefrom in obedience to notice by him of his purpose to the persons in charge of the car, and the car is running at such a rate of speed that a reasonably prudent person in the exercise of ordinary care for his own safety might attempt to alight, it is negligence to suddenly and violently increase the speed of the car before the passenger has had reasonable opportunity to alight.

Where, in an action for injury to a street car passenger, plaintiff's theory was that, when the car had slackened its speed in obedience to a signal given to the conductor to permit him to alight, and he was in the act of preparing to

alight, the motorman suddenly and violently started the car, throwing plaintiff to the street, and the theory of the company was that plaintiff, without giving any notice that he desired to alight, jumped from the car when the speed had not been reduced, and all the evidence in the case, including the testimony of plaintiff, established that he attempted to alight from the car before it stopped, an instruction that if plaintiff attempted to alight before the car was brought to a standstill, and in so attempting to alight he was injured, the verdict should be for the company, was erroneous, because in effect a peremptory instruction to find for the company.—(Sandlin v. Lexington Ry. Co., 110 S. W. Rep., 374.)

Kentucky.—Street Railroads—Collision with Vehicle—Care Required—Contributory Negligence—Negligence—Imputed Negligence—Driver of Wagon—Concurrent Negligence—Joint and Several Liability—Injuries to Travelers—Last Clear Chance.

A street railway company, while entitled to the use of its railway track on a street for the free passage of its cars, is also bound to use ordinary care to discover a vehicle also entitled to use the street, and to avoid injuring it or the persons therein in a collision.

Plaintiff, the rear man on a covered ice wagon, was injured in a collision between the wagon and one of defendant's street cars. The cover extended beyond the step on the rear of the wagon, so that plaintiff could only see the track by leaning backward and around the cover. He testified that he did not see and could not discover the presence of the car until the wagon was on the track and the collision imminent, and that it was then too late for him to jump out of the way of the car, in which statement he was not contradicted, but was corroborated by the physical facts. Held, that plaintiff was not negligent.

Where plaintiff, the rear man on an ice wagon, was injured in a collision with a street car, the negligence of the driver of the wagon would not be imputed to plaintiff, though they were fellow servants of the same master, the driver not being the agent or servant of plaintiff.

When plaintiff's injury resulted from the joint or concurrent negligence of the driver of an ice wagon on which plaintiff was employed and of the motorman of defendant's street car, both defendant and the driver of the wagon were liable, and a recovery might be had against either.

Where, in an action for injuries in a collision between a street car and an ice wagon on the rear of which plaintiff was employed as a delivery man, there was evidence that the motorman, notwithstanding the negligence of the driver of the ice wagon, by the exercise of ordinary care could have stopped the car in time to have prevented the collision, but failed to do so, such failure was negligence entitling plaintiff to recover against the railway company, whether the motorman's failure to stop the car was caused by his running it at too high a speed or on account of his not maintaining a lookout.—(Paducah Traction Co. v. Sine, 111 S. W. Rep., 356.)

Massachusetts.—Street Railroads—Persons Driving Toward Track—Motorman's Duty—Collision—Action for Injury—Questions for Jury—Duty of Driver—Municipal Corporations—Streets—Rights of Travelers—Collision with Vehicles—Instructions.

When a motorman sees one driving toward the track, so that if both pursue their course a collision will ensue, he must stop his car, though the driver ought not to proceed.

In an action for injury caused by a street car striking a wagon, whether the motorman was negligent and plaintiff was guilty of contributory negligence, held, under the evidence, questions for the jury.

One, in attempting to drive across street railway tracks, should use due care to see whether he can cross safely.

One of two persons driving in a street, who, in pursuing his course and not increasing his speed, will naturally reach an intersecting point before the other, has the right of way, and the other "ought" to give way to his rights, but is not bound to do so.

In an action for injury caused by a street car striking a wagon, an instruction that one of two persons driving in a street, who, by pursuing his course and not increasing his speed, will naturally reach an intersecting point before the other, has the right of way, and the other must give way to his rights, was improper, as tending to lead the jury to believe that the fact that plaintiff was the first to reach the place of collision was decisive of his right to recover, whereas the decisive question was whether the accident was caused by the company's or his negligence.—(Carrahan v. Boston & N. St. Ry. Co., 85 N. E. Rep., 162.)

Michigan.—Railways—Accidents at Crossing—Evidence—Admissibility—Prior Similar Occurrence—Change of Condition.

Where decedent's wagon caught between the rail of the

track and the planking of a diagonal crossing so that a car ran into it, evidence that a dozen rigs had been struck at the same crossing from the same cause within two years is admissible, notwithstanding defendant admitted full knowledge of the actual condition of the crossing for six months prior to the accident in question, for it was proper to show negligence in view of the danger.

Where a jury is properly permitted to view the scene of an accident, evidence is admissible to show any changes since the accident.—(Woodworth v. Detroit United Ry., 116 N. W. Rep., 549.)

Minnesota.—Street Railroads—Collision with Wagon—Evidence.

Under the circumstances of this case, it was not error to receive evidence of the speed of the street car for a distance of eight or ten blocks prior to its collision with respondent's wagon.—(Hillary v. Minneapolis St. Ry. Co., 116 N. W. Rep., 933.)

Minnesota.—Carriers—Injury to Passenger.

The evidence does not reasonably tend to sustain the charge that respondent's fall, and consequent injuries, were caused by the violent or unusual starting of the car at the time she was stepping from the vestibule into the car proper.—(Wiek v. St. Paul City Ry. Co., 116 N. W. Rep., 929.)

Missouri.—Carriers—Injury to Passengers—Actions—Sufficiency of Evidence.

In an action against street car companies for injuries sustained by the starting of the car while plaintiff was in the act of boarding it, evidence examined, and held sufficient to go to the jury as to the negligence of one of the defendants.—(Berry v. St. Louis Transit Co. et al., 109 S. W. Rep., 661.)

New Jersey.—Negligence—Res Ipsa Loquitur—Carriers—Injury to Passenger—Negligence.

The application of the maxim "Res ipsa loquitur" depends upon the circumstances of each case.

Where a little girl, impatient to alight from a trolley car, arose and walked to the rear platform, and stood near the edge of the platform with her left hand loosely holding some part of the car, and the conductor rang the bell for the next street crossing, and the car slowed down and ran into a turnout just before reaching the crossing, and by reason of the motion caused by the car entering the turnout the child fell from the platform, held that no inference arose that the accident occurred by reason of some negligence in handling the car.—(Pascell v. North Jersey St. Ry. Co., 69 Atl. Rep., 171.)

New Jersey.—Street Railroads—Care of Track—Negligence—Evidence.

Where a trolley company applies a lubricant to its tracks along a public street in order that its cars may pass around a curve more easily, it is its duty to make the application in such manner as not to endanger the safety of persons entitled to use the street.

In crossing a public street at a corner where a pavement crossing has been laid, the plaintiff had a right to assume that it was a safe place to walk over, and that there was no danger in doing so, unless warned to the contrary, and, when passing along the crossing, was not guilty of contributory negligence, because, in observing an approaching street car, to avoid danger from it, she inadvertently stepped upon a portion of the crossing covered with oil, put there by defendant as a track lubricant, and was thrown down and injured.—(Slater v. North Jersey St. Ry. Co., 69 Atl. Rep., 163.)

New York.—Carriers—Carriage of Passengers—Duty of Carrier—Protection from Fellow-passengers.

Where a carrier fails to perform its duty in preserving order and removing dangerous and offensive persons from a car, it is liable for any injury to other passengers which might reasonably be anticipated in view of the circumstances, and where the fact of the riotous conduct of offending passengers is made known to a guard, it is his duty to avoid injury to other passengers, and he should suppress the disturbance or remove the offenders, summoning proper aid, which was at his command, and the company is liable for his failure to do so.—(McMahon v. Interborough Rapid Transit Co., 110 New York Sup., 876.)

New York.—Street Railroads—Injuries to Persons on Tracks—Contributory Negligence—Children.

Though a pedestrian has a right to cross a street at a point not a crossing, a street railway has a paramount right to the use of its tracks, and it is incumbent on the pedestrian to prove that he exercised due diligence to discover the approach of a car.

The mere fact that at the time a pedestrian left the curb he thought he had time to cross ahead of a street car did

not relieve him of the obligation to again look for the car after he left the curb and before he reached the track.

A pedestrian, who, after he leaves the curb and before he reaches the track, does not again look for a car, is guilty of contributory negligence as a matter of law.

Though the same degree of care is not expected of a child of 13 years as from one of maturity, yet this rule would not absolve the child from again looking for a car after it left the curb and before it reached a street railway track.—(*Glynn v. New York City Ry. Co.*, 110 N. Y. Sup., 836.)

Pennsylvania.—Carriers—Injury to Passengers—Evidence.

In an action by a passenger to recover from a street railway for injuries received by being thrown from the rear platform of a street car, a non-suit held properly entered on the evidence.—(*Moor v. Pittsburg Rys. Co.*, 69 Atl. Rep., 76.)

Pennsylvania.—Street Railroads—Injury to Person on Track—Contributory Negligence.

In an action against a street railway to recover for personal injuries while crossing defendant's tracks, evidence held to show plaintiff guilty of contributory negligence in running into an approaching car, authorizing a judgment of non-suit.—(*Piatt v. Pittsburg Rys. Co.*, 69 Atl. Rep., 72.)

Pennsylvania.—Street Railroads—Collision with Wagon—Evidence—Question for Jury.

In an action against an electric railway company to recover for the death of plaintiff's husband in a collision between a car and the wagon which the husband was driving, judgment for plaintiff held sustained by the evidence.

In an action against an electric railway company to recover damages for the death of plaintiff's husband in a collision between a car and a wagon which he was driving, it is for the jury to determine whether the motorman failed in the performance of his duty.—(*Vincent v. Lehigh Valley Transit Co.*, 69 Atl. Rep., 812.)

Rhode Island.—Appeal and Error—Review—Harmless Error—Admission of Evidence—Damages—Personal Injuries—Excessiveness.

In an action for injuries to plaintiff's daughter by being struck by defendant's street car, defendant was not prejudiced by evidence that the stop made by the motorman at the time of the accident was apparently much slower than usual under similar circumstances, and that the witness first obtained that impression when he saw the child on the rail.

In an action by a father for loss of services of his minor daughter, 4½ years of age, and for increased cost of her maintenance until majority, due to the amputation of her right leg just below the knee, caused by defendant's alleged negligence, a verdict for plaintiff for \$4,860 was excessive, and should be reduced to \$3,000.—(*McHugh v. Rhode Island Co.*, 69 Atl. Rep., 853.)

Texas.—Street Railroads—Injuries to Persons on Track—Sufficiency of Evidence—Negligence of Defendant and Plaintiff—Discovered Peril—Evidence.

In a personal injury action against a street railroad company, evidence held sufficient to go to the jury on the question of defendant's negligence and plaintiff's contributory negligence.

In a personal injury action against a street railroad company, evidence held to support a finding that defendant's motorman discovered that plaintiff was about to go upon the track in front of the moving car in time to have avoided injury by using the means within his power, but negligently attempted by increasing speed to pass plaintiff before he actually got on the track.—(*Northern Texas Traction Co. v. Smith*, 110 S. W. Rep., 774.)

Virginia.—Negligence—Contributory Negligence—Children—Instructions—Street Railroads—Collision with Pedestrian—Last Clear Chance.

In case of injury of a boy between 11 and 12 years old, the jury should be plainly instructed that, being under the age of 14, but over 7 years of age, he was to be presumed incapable of contributory negligence, but the presumptions might be overcome by the evidence and circumstances of the case tending to prove his maturity and capacity; and an instruction that such presumption might be overcome by evidence that he had "more than the average capacity of children of his age," and that the presumption must be overcome by evidence establishing his intelligence, maturity, and capacity before contributory negligence could be relied on as a defense, was confusing and misleading.

The doctrine of "last clear chance" has no application where one struck by a street car came out into the space between the two tracks, and into the view of the motorman, from behind a team on the other track, just as the car reached that point.—(*Norfolk Ry. & Light Co. v. Higgins*, 61 S. E. Rep., 766.)

CHARTERS, FRANCHISES AND ORDINANCES

California.—Specific Performance—Contracts Enforceable—Contracts for Construction of Railroad—Mutuality of Remedy—Contracts for Continuous Acts During Long Period—Part Performance.

Since under general equity principles, and under Civ. Code, sec. 3386, providing that neither party to an obligation can be compelled specifically to perform it unless the other party thereto has performed, or is compellable specifically to perform its obligations, the remedy of specific performance must be mutual, and since a contract to construct and operate a railroad cannot be specifically enforced, a contract by defendant to convey a right of way in consideration of plaintiffs constructing and operating a railroad across the land could not be specifically enforced by plaintiff, there being no mutuality of remedy.

Equity will only decree specific performance where the subject-matter of the decree is capable of being embraced in one order and is immediately enforceable, and will not decree specific performance when the duty to be performed is a continuous one, extending possibly over a long period of time, and which, in order that the performance may be made effectual, will necessarily require the constant personal supervision and oversight of it by the court.

Where plaintiff agreed to construct an electric railroad extending from one city across defendant's lands and thence to another city, about one-third of the road to be on defendant's land, in consideration whereof defendant agreed to grant plaintiff a right of way over their lands, and also deeded certain land as a bonus, the construction of the other two-thirds of the road only was not such substantial performance on plaintiff's part as entitled it to enforce specific performance of the contract by defendant.—(*Pacific Electric Ry. Co. v. Campbell-Johnston et al.*, 94 Pac. Rep., 623.)

Illinois.—Evidence—Opinion Evidence—Damages to Property—Value—Eminent Domain—Compensation—Measure—Growing Trees—Damage to Land Not Taken—Double Compensation—Measure of Damages—Evidence—Leaseholds—Apportionment of Damages—Trial—Argument of Counsel—Appeals to Prejudice.

In condemnation proceedings for a railroad right of way it was not error to permit witnesses to testify how much the damage would be to the leasehold, instead of what would be the decrease in the rental value of the land; and as to what the damage would be to the land not taken, instead of what the value of the land was before and after the construction of the railroad, as the jury were not bound by the opinion of the witnesses, and while it was proper to disclose the basis of their opinions, such opinions were admissible in evidence, and it was the duty of the jury to determine the amount of damages from all the evidence.

In condemnation proceedings, while it would not have been proper to prove the value of trees on the land taken, independent of the value of the land, it was proper to include, in the value of the land taken, the value of the shade trees thereon, and if the evidence showed an exaggerated notion of the value of the land because of the trees, that went only to the weight of the evidence.

In condemnation proceedings, where a witness was asked the value of the land taken as it was when the railroad took it, including trees as a part of the farm—the trees, land and all together—and the witness stated the amount of the damage in answer to the question, the owner was thereby permitted to include in the value of the land taken the element of injury to the remainder of the farm, and then to prove the damages to the remainder of the farm by reason of taking the land, which was improper as duplicating the compensation.

In condemnation proceedings, it was improper to ask a witness what the land taken was worth when taken by the railroad, since the proper measure of damages was its fair market value, and the examination should have been confined to that question.

In condemnation proceedings, where the lessees claimed damages for injury to their leasehold in addition to the damages claimed by the owner, the jury having been instructed that in assessing damages to the fee, they should allow such damages for the land not taken as such land would sustain its fair market value, the court should have also instructed that so much of the damages as consisted of depreciation in the rental value of the land during the unexpired portion of the lease should be allowed to the lessees, and deducted from the amount allowed the owner.

In condemnation proceedings by an electric railroad to take land, remarks by counsel to the effect that the capitalists of New York and Toronto were not interested in the farmers of that community, but were there to invade their premises for their own interest, and it was the jury's duty as citizens to give every dollar of damages suffered, were

improper as an appeal to the prejudice of the jury, and should have been excluded.—(Peoria, B. & C. Traction Co. v. Vance et al., 84 N. E. Rep., 607.)

Maine.—Street Railroads—Mortgages—After-Acquired Property—Receivers—Actions—Leave of Court to Sue Receiver.

Where, after a street railway corporation with a franchise for a street railway had been duly organized, and a copy of the survey and location of its route had been filed with the railroad commissioners, it proceeded to purchase land for a power house, and to make arrangements for rights of way over private property wherever the location was outside of the highway, and subsequently executed a mortgage of its franchise and all its property, real and personal, then existing and thereafter to be acquired, including roadbed and materials and equipment of every kind, to secure an issue of bonds which were afterward issued, and the mortgage contained a description of the route of the road as located, by courses and distances, and which said mortgage had been duly recorded both in the registry of deeds in the county and in the town where the railway was wholly located, held, that it was not necessary that the corporation should have been actually possessed of tangible property at the time the mortgage was given, approximating in value the amount of the bonds which the mortgage was given to secure, in order that an express provision therefor in the mortgage might be legally operative to include subsequently acquired property. Such a requirement would defeat the principal purpose for which such a mortgage is given, which is for the purpose of procuring the necessary funds for the construction and equipment of such railway, and it would be a self-destructive provision that would require such railway, fully constructed and equipped, as the only legal basis of such a mortgage.

In the case at bar the defendants were the receivers of the Rockland, South Thomaston & Owl's Head Railway, a corporation. The plaintiff brought an action of trover against the defendants for the alleged conversion of certain steel rails, which were a part of a quantity purchased by said corporation for use in the construction of its street railway. The defendants were appointed receivers of said corporation prior to the alleged conversion, and these steel rails had come into their possession as a part of the property of said corporation, and had been used by them in completing the railway. Previous to the appointment of the defendants as receivers the plaintiff, in an action of assumpsit against the aforesaid corporation, had attached the steel rails alleged to have been converted by the defendants, and on a judgment obtained after the appointment of the defendants as receivers, and without leave of court, the attached rails were seized and sold on the execution issued on the judgment, the plaintiff being the purchaser of the rails at the execution sale. The action of trover also was brought against the defendants without permission of the court. Prior to the plaintiff's attachment of the rails in his action of assumpsit the aforesaid corporation had executed a mortgage of its franchise and all its property, real and personal, then existing and thereafter to be acquired, including roadbed and material and equipment of every kind, to secure an issue of bonds, which were afterward issued, and which said mortgage was duly recorded. Also prior to the plaintiff's judgment and the sale on execution in his aforesaid action of assumpsit equity proceedings were instituted praying for a foreclosure of the aforesaid mortgage and the appointment of a receiver, and thereupon the defendants were appointed receivers of the aforesaid corporation, and took possession of all the property of the corporation, including the aforesaid rails which, as aforesaid, were used by them in completing the railway.

Held: (1) That the defendants were legally appointed receivers of the aforesaid corporation.

(2) That while the action of trover was brought against the defendants as individuals, yet, whatever was done by them in using the aforesaid rails in completing the street railway was done by them in their capacity as receivers, and not as individuals.

(3) That the aforesaid mortgage was a valid mortgage, and included the after-acquired property.

(4) That the rails alleged to have been converted by the defendants were included in the description of after-acquired property in the aforesaid mortgage.

(5) That the rails alleged to have been converted by the defendants legally passed into the custody of the defendants as receivers, and were thus in the custody of the law.

(6) That the plaintiff, without leave of court, had no authority to seize and sell the rails on execution issued on the judgment in his action of assumpsit, which was taken after the receivers were appointed, and such a sale has no validity, and passes no title. Property in custodia legis is not thus subject to seizure and sale on execution.

(7) That, when property is lawfully in the hands of a

receiver, a suit therefor cannot be brought against the receiver except by leave of court.—(Chalmers v. Littlefield, et al., 69 Atl. Rep., 100.)

Massachusetts.—Licenses—Street Railroads—Privilege Tax—“Gross Earnings.”

Under St. 1897, p. 504, c. 500, sec. 10, amending St. 1894, p. 768, c. 548, sec. 21, which required a street railroad company to pay a franchise tax computed on the “gross earnings,” so as to provide that it shall pay for the privileges granted, and for use and occupation of the streets by its lines, a sum in each year depending on the dividend for that year, to be seven-eighths of 1 per cent of the gross earnings of all its lines of railroads, in case the dividend does not exceed 6 per cent, with a certain amount to be added in case the dividend is larger, it is the earnings from the railway in the transportation of passengers, as distinguished from all other income incidental to the business, on which the tax is computed.—(Boston Elevated Ry. Co. v. Commonwealth, 84 N. E. Rep., 845.)

Missouri.—Constitutional Law—Deprivation of Property—Due Process of Law—Equal Protection of Law.

Rev. St. 1899, sec. 1085 (Ann. St. 1906, p. 933), in so far as it requires railroad companies to furnish free return transportation to shippers of stock by carload over the line of their road or roads to the point from which shipment is made, is invalid as a deprivation of property of the carrier without due process of law, in violation of the 14th amendment of the Federal Constitution.

Such section is also invalid as a denial to the carrier of the equal protection of the law, in that it denies to railroad companies the right to charge and exact payment of tolls or fares for the transportation of shippers of stock over their lines which they are allowed to charge other shippers for the same service.—(McCully et al. v. Chicago, B. & Q. Ry. Co., 110 S. W. Rep., 711.)

Missouri.—Constitutional Law—Impairing Contract Obligations—License Tax on Street Railways.

An inviolable contract between a municipality and street railway companies which will prevent the exaction of a license tax under an acknowledged power of the municipality is not created by ordinances passed in the exercise of authority to grant the use of the streets, under which the companies have agreed to pay certain sums for the use of such streets for a given period, where such ordinances do not expressly relinquish the right to exact license fees or taxes.—(City of St. Louis v. United Rys. Co., St. Louis Transit Co. et al., 26 Sup. Ct. Rep., 630.)

New Hampshire.—Electricity—Municipal Corporations—Trees Along Streets—Rights of Electric Companies—Use of Streets—Rights of Abutters.

Pub. St. 1901, c. 81, sec. 2, authorizes the Selectmen of a town to grant a license for electric light lines, etc., and to locate the routes. Sec. 5 forbids the cutting, etc., of any shade tree in the erection or maintenance of such lines without the owner's consent, or, if this consent cannot be obtained, until the Selectmen decide, after a hearing, that the cutting, etc., is necessary and assess the damages occasioned thereby, and the damages are paid or tendered. Under sec. 6 any person damaged by the stringing of wires may apply to the Selectmen to assess his damage. Held, that an electric light company is liable as a trespasser for cutting limbs from a shade tree standing near a street line in stringing wires, where it has not complied with sec. 5, though licensed to erect its line on the street; sec. 6 providing for compensation for injuries to property other than shade trees under a license obtained under sec. 2, and hence not affording the owner a remedy.

One owning land abutting on a street may maintain trespass against one cutting his trees overhanging the street or in any way invading his possession.—(Darling v. Newport Electric Light Co., 69 Atl. Rep., 885.)

New York.—Street Railroads—Regulation—Licenses and Taxes—Compensation for Use of Streets—Action for Compensation—Sufficiency of Complaint—Nature of Charge.

Laws 1863, c. 361, sec. 6, authorizing the construction of street railroads in certain towns, was amended by Laws 1892, p. 703, c. 340, so as to allow the corporation formed under that act to consolidate with any street surface railroad then or thereafter to be incorporated in certain towns, and defendant corporation was formed by such consolidation. Sec. 2, p. 705, of the amended act, required all the duties imposed on the company so incorporating to be assumed by defendant. By sec. 3 certain provisions of General Railroad Act, Laws 1890, p. 97, c. 555, were not to be applied to defendant. By sec. 4 defendant was required to make a verified statement to the Comptroller of the City of New York annually by Sept. 1 of its gross receipts for the

year ending June 30 preceeding, and a detailed statement of daily earnings for that period, and that whenever such earnings should "during any period of six months exceed an average of \$1,700 per day" defendant should thereafter annually pay into the treasury of the city a sum equal in the aggregate to 1 per cent of its gross earnings, and an additional payment of 1 per cent thereof for each multiple of \$1,700 per day of such average gross earnings; such payments to be in lieu of all other percentages which any of the roads were theretofore liable to pay on its receipts. In an action by the city to collect an amount due under the statute, the complaint alleged that defendant's gross earnings for the six months from March 1, 1903, to Aug. 31, 1903, amounted to a certain sum, which made an average of \$3,400 daily during that six months, and that the gross earnings from March 1, 1903, to June 30, 1904, amounted to \$1,710,759, and there was therefore due to plaintiff from defendant 2 per cent of that sum to which defendant demurred on the ground that the statute only required that, if during any six months wholly within one fiscal year from June 30, the daily receipts aggregated \$3,400, defendant should pay 2 per cent of its earnings, and, as there was no allegation of that fact, the complaint was defective. Held, that the purpose of the statute was to relieve defendant from payment until its road was constructed and it could afford to pay the amount imposed, and its obligation to pay that amount arose when its earnings during any six months exceeded the sum stated, and continued irrespective of its subsequent earnings, and hence the complaint stated a good cause of action.

The obligation imposed by Laws 1802, p. 705, c. 340, sec. 4, was not a tax on defendant or its property, but a charge for the use of the streets by the consolidated company, and in lieu of all other charges theretofore imposed on the constituent companies.—(City of New York v. Union Ry. Co., 110 N. Y. Sup., 944.)

New York.—Street Railroads—Franchises—Construction—License—Amount of Fees—Accord and Satisfaction—Payment Not Constituting License Fees.

The grant of a right to construct and operate a street railroad must be construed most favorably to the public.

A grant of a right to operate a street railroad, conditioned that the "cars shall be licensed by the mayor and the grantees shall pay the annual fee of \$20 per car for such license," requires payment for each car operated over the line, and not merely for the greatest number in daily use during the busiest season of each year, and the city is not estopped from demanding such payment because for several successive years the fiscal officers accepted a lesser amount than the contract called for; the contract being too clear for the application of the rule of practical construction.

A street railway company being bound to pay a city an annual license fee for each car operated over its line, there was no accord and satisfaction of the city's right to such payment through payment by the company of part of the fees in a year according to its own estimate of the number of cars it was to run that year.—City of New York v. New York City Ry. Co., 110 N. Y. Sup., 720.)

Pennsylvania.—Injunction—Infringement of Corporate Rights—Street Railroads—Use of Streets.

The jurisdiction given a court of equity, under Act June 19, 1871 (P. L. 1360), to determine a contest between two street railway companies as to the location of their lines, does not extend to questions involving the validity of the charters of the contending companies or the forfeiture of their charter rights, as such questions can be determined only in quo warranto by the State.

Where, on sheriff's sale, the rights, privileges and franchises of a street railway company were sold and bought by an individual, and subsequently the companies reorganized under the statute, and the purchaser does not participate therein, the reorganized company, without any conveyance by the purchaser to it of the franchises and property bought at the sheriff's sale, has no standing to enjoin another street railway company from laying its tracks on streets over which the original company had a right to locate its line.

Equity will not in an action by a street railway company under Act June 19, 1871 (P. L. 1360), enjoin a rival street railway from using certain streets for its tracks, unless plaintiff's title is clear and certain, and the injury threatened is of a permanent and irreparable nature.—(Myersdale & S. St. Ry. Co. v. Pennsylvania & M. St. Ry. Co., 69 Atl. Rep., 92.)

Wisconsin.—Eminent Domain—Interurban Railways—Use of Streets—Consent of City—Necessity—Statute—Necessity of Taking.

Laws 1880, page 255, chapter 221, authorized the formation of corporations for the building and operating by ani-

mal power of railways in villages and towns, but not in cities, and by various acts the powers of rural railways were enlarged, all the acts requiring the consent of the local governing body before tracks could be laid in streets. Laws 1897, page 290, chapter 175 (St. 1898, section 1863a), prohibits the condemnation of streets or alleys in cities. Laws 1899, page 537, chapter 306, amending the former laws, extended the right to villages, and Laws 1901, page 686, chapter 465, amending St. 1898, section 1863, now embodied in Sanb. St. Supp. 1906, section 1863a, provided that all the statutes relating to the exercise of eminent domain by railways should apply to street railroads, but nothing therein should apply to any street, alley, etc., in any city or village, unless the use of the street, etc., should first be granted to the street railway by a franchise duly passed by the board of trustees or council of such village or city. Petitioner sought to condemn the streets of a city for the purpose of operating an interurban street railway therein, but had never secured the consent of the city to use the streets for interurban purposes. Held, upon consideration of the statutes and the history of the legislation, which always required the consent of a city to the use of the streets for the purpose for which they were used, that "the use of the streets," required by section 1863a, was the use of the streets for interurban purposes only, and the fact that the use of the streets had been granted petitioner for local street railway purposes was not sufficient within the statute, and, since petitioner had never secured the use of the streets for interurban purposes, the condemnation proceedings were properly dismissed.

Where no condemnation of land was necessary to operate a street railway in a city, the petition to condemn a right of way for that purpose was properly dismissed.—(Beloit, D. L. & J. Ry. Co. v. Macloon et al., 116 N. W. Rep., 897.)

MISCELLANEOUS

Georgia.—Carriers—Carriage of Passengers—Questions for Jury—Pleading—Conclusion of Plead.

The court did not err in overruling a general demurrer to the petition, it appearing that the petitioner's cause of action arose from an assault upon him by the conductor and motorman of the defendant company's street car, upon which he was a passenger, made under such circumstances that the jury would be authorized to find, should the allegations in the petition be supported by evidence, that the assault, though it occurred in the street, was a continuation of an altercation that took place while he was a passenger on the car, and that, upon leaving the car, he was immediately pursued by the conductor and motorman, who assailed him and inflicted upon him severe personal injuries.

An averment that the assault alleged in the declaration "was done in the prosecution of the company's business," and said conductor and motorman were acting within the scope of said company's authority," was not open to the criticism, made by special demurrer, that such allegations "are mere conclusions of the pleader, state no facts, are not supported by any allegations of fact." Such an allegation as that demurred to was traversable. It contained a statement of facts which had been amplified by the previous recital of facts and circumstances involved in the case.—(Savannah Electric Co. v. McCants, 61 S. E. Rep., 713.)

New York.—Street Railroads—Franchise—Construction.

Under a New York City street railway franchise, providing that each car used on the line should be annually licensed by the mayor and that there should be paid annually for such licenses such sum as the Common Council should thereafter determine, and under an ordinance, reenacted without material change, imposing an annual license fee of \$50 on passenger railroad cars, excepting horse cars, on which a \$25 fee is imposed, the holder of the franchise is required to pay a license fee for each car operated over its line.—City of New York v. New York City Ry. Co., 110 N. Y. Sup., 722.)

Pennsylvania.—Street Railroads—Mortgages—Foreclosure—Preferred Claims.

Where receivers were appointed for two traction companies in mortgage foreclosure proceedings, and the property brought less than the mortgages, but a fund was provided to pay preferred claims, and it appeared that one-fourth of an expenditure for repairs to a bridge were necessary for the continued operation of the roads, and had been performed on the credit of the earnings within six months prior to the appointment of the receivers, and that three-fourths of the work was unnecessary, the claimant was entitled to a preference only to the extent of one-fourth of the amount due.—(Guaranty Trust Co. of New York v. Philadelphia & L. V. Traction Co. et al. Same v. Lehigh Valley Traction Co. et al., 160 Fed. Rep., 761.)

News of Electric Railways

Chicago & Oak Park Elevated Railroad Improvements

Clarence A. Knight, president of the Chicago & Oak Park Elevated Railroad, has presented to the City Council of Chicago the proposed ordinance for an extension of the franchise of the company as outlined in the *ELECTRIC RAILWAY JOURNAL* for Oct. 24. Mr. Knight asked that the franchise be extended 14 years, to Oct. 1, 1944, provided the company fulfills the requirements of the track elevation ordinance in Austin; that the time limit for the construction of the Humboldt park branch be extended to Dec. 31, 1910; that the company be permitted to remove its stations at Campbell and Oakley Avenues and replace them with stations at Western Avenue and Leavitt Street; that the company be permitted to remove stations at Morgan and Sheldon Streets; that the company be permitted during 1909 to relay its tracks from Market Street to Fifty-second Avenue with 80-lb. rails; that the provision requiring that all trains go east along Lake Street as far as Wabash Avenue be abolished; that the company be permitted to place advertising matter on railings and in stations and carry mails and express, and that a headroom of 16 ft. instead of 20 ft., as required by the original ordinance, be allowed where the road passes over the tracks of steam roads.

New York Liable for Subway Damage

The Appellate Division of the Supreme Court of New York has handed down a decision to the effect that the city of New York is liable for damages in the suit brought by property owners in Joralemon Street, Brooklyn, to recover for losses said to have been sustained by them as a result of the extension of the New York subway under the East River to Brooklyn. The matter came before the court on an appeal filed by John Nottman, Wilhelmus Mynderse and George B. Abbott from awards that were made them as abutting owners on Joralemon Street. Their claim was that the commissioners of appraisal had adopted an erroneous rule of damages and that the awards made were not sufficient to compensate the owners affected for the damages sustained by them. It was claimed in the action that the city was not the owner of the fee of the street and it did not appear that any of the appellants were owners of the fee, but the court ruled that the city must pay substantial damages to the abutting owners.

It was contended by the city that under the decisions of the Court of Appeals in several cases the owners of the abutting lots could not recover substantial damages for injury to their buildings if that damage was caused by the construction of any great public work like the subway. The Appellate Division ignored all of these decisions and held the city liable, not only to the same extent as a private corporation, but enlarged the liability heretofore existing for such a corporation.

Controller Metz, of New York, says that if the rule is sustained by the Court of Appeals, subway building in Brooklyn will be so expensive that the damages which the city will have to pay will be four or five times more than the cost of subways themselves, and will prohibit the building of any new lines.

The Public Service Commission of the First District, New York, issued the following statement regarding the decision by the court:

"If this situation obtains Manhattan and the Bronx, which have fee streets, will get all the subways. The remedy is to open Brooklyn streets anew in so far as they are needed for subway purposes. This would mean, for instance, to start a street opening proceeding in Lafayette Avenue to open that street as a fee street under the present charter. Each abutting owner claiming fee ownership in the street could then prove his damages; in other words, the damage he was caused because Lafayette Avenue ceased to be an easement street and became a fee street. The total awards made by the condemnation commission, together with the expenses of the commission, would then be assessed upon the abutting owners, as required by law. There would then be no inducement for the abutting owners to claim large damages, because these damages would be assessed upon the abutting property.

"Section 970 of the charter states that the city of New York is authorized to acquire title in fee for the use of the public to any of the land required for streets and to cause the same to be opened, or to acquire title as above stated to such interests in lands as will promote public utility, the acquisition of which is not elsewhere provided for, and the

Board of Estimate and Apportionment is authorized to specify what use is required of the land which it may determine to acquire for public use and the extent of such use, and to direct the same to be acquired whenever and as often as it shall deem it for the public interest so to do. It is no new thing for the city to acquire a fee in streets where it has had an easement before and assess the entire cost of the proceeding upon the abutting property.

"Controller Metz's estimate of \$25,000,000 damages against the city on account of the subway construction in Joralemon Street, Fulton Street and Flatbush Avenue is probably very much too large. Fulton Street is partly if not wholly an old Dutch road, and therefore the same rule would not apply as in Joralemon Street. If the Court of Appeals confirms this decision steps will need to be taken by the city to have abutting property owners pay for opening their own streets as modern streets, that is, fee streets, before the city will place subways in them."

Consolidation of "Electrical Review" and "Western Electrician."

Chas. W. Price, president of the *Electrical Review*, has issued the following statement:

"The *Electrical Review* has purchased the *Western Electrician* and the two journals will be issued from Chicago as one publication. The first number of the *Electrical Review* and *Western Electrician* will be dated Nov. 7, 1908.

"The present form of the *Electrical Review* will be continued, and there will be no change in the personnel or management. The publication office will be in the Marquette Building, Chicago, and the present New York offices at 13 Park Row, supported by a strong editorial and business organization, will be maintained.

"We believe this consolidation will be of great benefit to the entire industry and provide an electrical weekly of exceptional value and influence."

These two papers are to be congratulated upon getting together and the consolidated paper should enjoy a wider field of usefulness than either has heretofore had. The trend of the day is toward consolidation, and it is marked as strongly in the technical newspaper field as in any industry. The consolidation of business and editorial forces is a benefit to both reader and advertiser in a technical paper, because it enables the publisher to serve both in more efficient manner. On the other hand, any dissipation of energy among several papers, when they have to duplicate largely the work of each other, is detrimental to the entire industry. Both the *Electrical Review* and the *Western Electrician* have long and honorable records of achievement in the past, and other technical newspapers will wish the consolidated paper every degree of success.

Hudson River Tunnel to Be Extended.—The Hudson & Manhattan Railroad, operating the tunnel under the Hudson River, between New York and New Jersey, is to build an extension from the Pennsylvania Railroad station in Jersey City to the Communipaw station of the Central Railroad of New Jersey. Work on the new connection will not be started until the completion of the main line tunnel from Hoboken to the Hudson Terminal Buildings, New York.

New York Commission Looking Into Water Power Development.—The Public Service Commission of the Second District of New York is investigating the question of undeveloped water powers in the Adirondacks to determine whether enough cheap electric power can be secured to operate the railroads at present run by steam through the woods. This question has a bearing on the subject of forest fires, because it is said that 95 per cent of the fires are started by sparks from locomotives.

Kansas Franchise Suit Appealed to Supreme Court.—The suit for \$76,000 damages brought against the city of Olathe, Kan., by the Missouri & Kansas Interurban Railway, Kansas City, Mo., for cancelling and repealing an ordinance granting the company certain rights within the city has been appealed to the Supreme Court of Kansas by the company. The lower courts sustained the city's demurrer. The city, in contesting the suit, said that the company did not comply with the terms of the franchise.

New Street Railway System Opened in Chihuahua, Mex.—The Compañia Electrica de Ferrocarriles de Chihuahua, S. A., recently completed the electrification of its system and placed it in operation Oct. 4. The road was formally

opened by Gov. Creel and was followed by a ride through the city on cars by invited guests of the company. The present lines consist of 11 km and 800 m of broad gage track through the principal streets of the city and to Colonia Pacifica. An eight-cent fare is charged with 20-ride tickets for \$1.50.

Quarterly Meeting of the Street Railway Association of the State of New York.—The next quarterly meeting of the Street Railway Association will be held at the Butterfield House, Utica, N. Y., at 9:30 a. m., on Nov. 10. The general subject to be considered will be "Track Construction." R. A. Dyer, Jr., will present a paper on "T-Rail in Paved Streets," and Charles H. Clark will present a paper on "Steel and Concrete Ties." It is expected that these two papers will result in a full discussion, and it is earnestly desired that heads of departments in charge of construction attend the meeting.

St. Louis Tax Case Decided Against the Company.—The Supreme Court of the United States has denied the application of the United Railways Company, St. Louis, for a rehearing of the suit by the company to restrain the city of St. Louis from imposing a tax of 1 mill per passenger. The company, in contesting the case, contended that the tax was in the nature of a license fee or toll, which, not having been stipulated in the franchise, could not be levied. The court decided that the imposition made by the city was in the nature of a tax which could be imposed under the city's revenue powers.

Changes in the Electrical Inspection Service, New York City.—Commissioner John H. O'Brien, of the Department of Water Supply, Gas and Electricity, in New York City, has placed Charles F. Lacombe, chief engineer of light and power, in charge of the electrical bureaus of that department in all the boroughs, and at Mr. Lacombe's request has assigned Hubert S. Wynkoop, electrical engineer, in charge of the Brooklyn bureau, as assistant engineer. The advisory board consists of the gentlemen mentioned and Prof. George F. Sever, of Columbia University, consulting electrical engineer to the department.

Third Avenue Railroad Provident Association Assured.—As more than 50 per cent of the employees of the Third Avenue Railroad, New York, and the three affiliated companies, of which Frederick W. Whitridge is receiver, have signified their intention of joining the provident association, suggested by Mr. Whitridge in August, as reported in the ELECTRIC RAILWAY JOURNAL for Aug. 15, the success of the organization is assured. If more than 80 per cent of the employees join by Nov. 1, the company will make a contribution to the association equal to that of the men, each of whom is to pay 50 cents a month.

Libel Suit Filed by Philadelphia Rapid Transit Stockholders.—John B. Parsons, president, and P. A. B. Widener and George D. Widener, directors of the Philadelphia Rapid Transit Company, have brought suit for libel against George D. Codman, a lawyer representing J. M. Fogelsanger and other stockholders of the Union Traction Company, for having given out for publication a letter whose contents are said to have been untrue. The officials of the company were accused of being connected with the Smith Construction Company, which built the subway, and to have participated in the profits.

Car House Partially Demolished in Los Angeles.—The car house of the Pacific Electric Railway, Los Angeles, on Fair Oaks Avenue, Pasadena, was partially demolished on Oct. 19 and the bodies of two cars were reduced to kindlings as the result of the splitting of a switch by a car of the company entering the house. The car crashed into a supporting pillar, and the shock to the structure was so great that the arch which supports the offices on the second floor gave way, carrying to the ground the front wall of the second story which buried two cars under it as it fell. Several persons were slightly injured, among them J. D. Turner, assistant superintendent of the northern division of the company.

Paving in Los Angeles.—Assistant City Attorney Wilson, Los Angeles, has rendered an opinion to the Council that it has the right to compel a street railway to pave between its tracks in a given time. The decision was brought about by a petition to the Council from residents in the southwestern section of the city, asking the Council to compel one of the local Los Angeles companies to pave between its tracks on Vermont Street before the winter rains. Mr. Wilson declared the Council had the right to order the company to perform work similar in all respects to that already ordered to be performed under the same specifications with the same materials, within the same time and to the like satisfaction as the work on the remaining portion of the street.

Financial and Corporate

New York Stock and Money Markets

Oct. 27, 1908.

A strong market with light trading was the history of Wall Street during the last week. Prices have been advanced generally, and in many instances, especially in the case of those stocks known as market leaders, have reached about the highest figures of the year. The fact that trading was light was not surprising. There is always a tendency on the part of traders to keep out of the market immediately preceding a Presidential election. Traders, even though they may feel perfectly confident of the result, prefer generally to adopt the safest course and await absolute certainty. There are many reasons why the market should be strong. It is believed that a very small amount of floating stock is available for purchase, a condition which would bring certain disaster to any campaign organized for the purpose of depressing prices. Then, the interests behind the advance movement are the strongest in Wall Street and are able at any time to take care of all offerings. The traders generally are convinced that the election of Mr. Taft is practically assured, and it is the popular belief that commercial and industrial business will come with a rush as soon as the election uncertainty is over.

One of the most encouraging features of the week was the report of the United States Steel Corporation for the September quarter. It shows earnings of \$27,106,274, an advance of about \$7,000,000 over the previous quarter, and is much the best report of the year. The unfilled orders amount to 3,421,977 tons, an advance over the previous quarter. The surplus for the quarter, after paying the fixed charges and the regular dividends on the stock, will amount to \$5,152,023, which compares with only \$195,000 for the June quarter and \$7,865 for the March quarter. The returns were more than \$1,000,000 better than had been anticipated in Wall Street and added vastly to the general feeling of optimism.

Conditions in the money market were practically unchanged, with plenty of funds in the banks and demands light. Call money was quoted at 1¼ to 1½ per cent, and 90-day funds were 3 per cent.

Other Markets

In the Boston market there was little activity in traction securities. Small lots of Boston Elevated sold at 134, Massachusetts Electric preferred at 52 and West End preferred at 105.

The principal evidence of life in the Philadelphia market was in Philadelphia Rapid Transit and Philadelphia Electric. Both of these issues were active and prices were strong. The Rapid Transit stock closed at 23½ and the Electric at 11½. There was also some movement in Union Traction at 51½, and a few lots of Philadelphia Traction changed hands at 89.

In the Chicago market there was marked strength in Chicago Railways, series 1, which advanced to 113, while series 2 sold as high as 45. This advance was due to a report that a dividend would probably be declared next week. The bonds were also somewhat active.

In the Baltimore market, United Railways bonds were still features. The 4s sold up to 85¾, the incomes at 53½ and the funding 5s at 80½. Some small lots of United Railway stock sold at about 10½.

Quotations for various traction securities as compared with last week follow:

	Oct. 20.	Oct. 27.
American Railways Company, Philadelphia.....	44¼	44
Boston Elevated Railway.....	133	134
Brooklyn Rapid Transit Company.....	48¾	50
Chicago City Railway.....	a175	a175
Cleveland Railway.....	90	—
Consolidated Traction Company of New Jersey.....	a68½	a69
Consolidated Traction Company of New Jersey, 5 per cent bonds.....	a104	a104
Detroit United Railway.....	*38½	43½
Interborough-Metropolitan Company.....	10	10
Interborough-Metropolitan Company (preferred).....	30	29¾
Manhattan Railway.....	137	*137½
Massachusetts Electric Companies (common).....	a10	a9½
Massachusetts Electric Companies (preferred).....	a51	a52
Metropolitan West Side Elevated Railway, Chicago (common).....	a13	a13
Metropolitan West Side Elevated Railway, Chicago (preferred).....	a43	a43
Metropolitan Street Railway.....	*28	*28
North American Company.....	65¼	65
Philadelphia Company, Pittsburg (common).....	38¼	38
Philadelphia Company, Pittsburg (preferred).....	39¾	40
Philadelphia Rapid Transit Company.....	23¾	23½
Philadelphia Traction Company.....	90	89
Public Service Corporation, 5 per cent collateral notes.....	a97	a97
Public Service Corporation, certificates.....	a67½	a67½
Twin City Rapid Transit Company, Minneapolis (common).....	90	90¾
Union Traction Company, Philadelphia.....	51¾	51¾

a Asked.
* Last sale.

Annual Report of the Kansas City Railway & Light Company

Gross earnings from all sources of the Kansas City Railway & Light Company during the year ended May 31, 1908, showed a gain of 7.95 per cent over the previous year. Operating expenses amounted to 52.66 per cent of the gross revenue. The earnings in the last three years are stated as follows:

Year ended May 31:	1906.	1907.	1908.
Gross earnings (per books)....	\$5,099,116.23	\$5,677,998.57	\$6,070,116.91
Deduct, operating expenses (per books)	2,562,995.45	2,895,657.33	3,228,174.04
Net earnings from operations (per books).....	\$2,536,120.78	\$2,782,341.24	\$2,841,942.87
Add, miscellaneous income....	31,361.06	43,999.43	105,679.94
Total	\$2,567,481.84	\$2,826,340.67	\$2,947,622.81
Less, adjustments (net) recommended by accountants....	10,155.00	20,038.01	23,918.39
Total earnings and income from all sources.....	\$2,557,326.84	\$2,806,302.66	\$2,923,704.42
Deduct, fixed and other charges (as adjusted):			
Taxes	\$394,685.80	\$432,376.15	\$453,358.71
Interest on floating debt (net).....	46,882.54	135,848.79	121,107.49
Interest on bonded debt.....	1,167,845.82	1,171,925.00	1,282,672.85
Discount and commission on bonds and notes and preliminary and organization expenses, etc.....	99,528.46	101,596.53	158,437.44
Bond sinking fund provision...	55,000.00	55,000.00	55,000.00
Total charges.....	\$1,763,942.62	\$1,896,746.47	\$2,070,576.49
Net income.....	\$793,384.22	\$908,656.19	\$853,127.93

In a statement to stockholders, discussing the condition of the properties, Bernard Corrigan, the president, states: "The results, in view of the unsatisfactory financial conditions that have prevailed during the greater part of the fiscal year, while not as favorable as anticipated, may fairly be regarded as reasonably satisfactory.

"The physical condition of the properties has been maintained at a high standard, and at the conclusion of the fiscal year may be stated to be first class.

"There has been added to the track mileage of the railway companies during the year 5.4 miles of single track, making the total mileage 244.466 miles.

"Much new paving and track reconstruction has been done, and additional and expensive equipment and machinery has been purchased, necessitating the expenditure of large sums of money, resulting, however, in better tracks and better equipment, with improved facilities for meeting the reasonable demands of the public for transportation, light, heat and power.

"Since May 31, 1908, the close of the company's fiscal year, \$770,000 treasury bonds of the Kansas City Railway & Light Company, first lien refunding 5's, and \$196,000 treasury bonds of the Metropolitan Street Railway consolidated 5's have been disposed of and the proceeds of these issues have been applied in the liquidation of bills payable.

"The relations between the operating companies and the people of the municipalities in which the properties are located continue pleasant, and no friction exists to embarrass an efficient and successful operation of the properties.

"As to the future, a conservative forecast warrants the statement that the present year may reasonably be expected to at least be as favorable as that of 1907-'08."

The accounts of the company have been audited by Dickinson, Wilmot & Sterrett, certified public accountants, of Chicago, whose statement to the directors is published in the report. It refers to an examination of the accounts for the period of five years from the date of organization of the company to May 31, 1908, and states:

"We have investigated the charges to property accounts for the entire period, and are satisfied that they represent either expenditures for new properties, extensions and additions to existing systems, or outlays for the electrification and reconstruction of cable lines and other properties as contemplated under the plan and agreement dated May 9, 1903.

"During the five years ending May 31, 1908, the sum of \$829,813.87 has been set aside out of income toward accruing renewals and depreciation, but after allowing for the fact that during a great part of this period the property has been in process of reconstruction this amount is not, in our opinion, adequate for the maintenance of the property over a series of years.

"The inventories of stocks on hand as certified by the responsible officials have been carefully and accurately valued at or below cost; full provision has been made for bad and doubtful accounts and bills receivable and for all ascertainable liabilities; and we have verified the cash and

securities by actual inspection or by certificates from the depositories.

"The deferred charges represent expenditures reasonably and properly carried forward to the operations of subsequent years.

"And, subject to the foregoing remarks, we certify that, in our opinion, the balance sheet is properly drawn up so as to show the true financial position of the company and its subsidiary companies on May 31, 1908, and that the relative income account is a fair and correct statement of the net earnings for the five years ending on that date."

The following statistics are presented:

	1906.	1907.	1908.
Gross earnings, per cent of increase....	15.39	11.51	7.95
Net earnings, per cent of increase....	15.50	9.70	4.22
Operating expenses, per cent of gross earnings	50.15	50.96	52.66
Street railway department:			
Passengers carried for revenue.....	88,296,480	94,996,998	100,858,027
Passengers carried on transfers.....	37,810,545	41,074,800	43,485,312
Gross earnings per car mile.....	21.61c.	21.36c.	21.92c.
Operating expenses per car mile.....	11.25c.	11.24c.	11.70c.
Net earnings per car mile.....	10.36c.	10.12c.	10.22c.
Gross earnings per car hour.....	\$1.954	\$1.920	\$2.027
Operating expenses per car hour.....	\$1.017	\$1.010	\$1.082
Net earnings per car hour.....	\$0.937	\$0.910	\$0.945
Track mileage between termini, all roads	113,838	124,998	127,655
Track mileage, single track, all roads..	222,715	239,038	244,466
Electric light department:			
Connected load in 16-cp equivalents...	380,832	546,790	583,271
Increase over previous year.....	115,687	165,958	36,481

NOTE.—The above statistics for the street railway department, except as to track mileage, do not include the Kansas City & Westport Belt Railway.

Camden & Trenton Railway, Camden, N. J.—Daniel Killian, a bondholder of the Camden & Trenton Railway, which is in the hands of a receiver, made application on Oct. 26 to the United States Circuit Court for an order directing the Provident Life & Trust Company, Philadelphia, trustee for a bond issue of \$1,300,000, to institute foreclosure proceedings. Counsel for the Provident Life & Trust Company said that a foreclosure bill was being prepared. The court took no action on Mr. Killian's application.

Danville Railway & Electric Company, Danville, Va.—Preliminary negotiations are in progress between the Light Committee of the City Council of Danville, Va., and the officers of the Danville Railway & Electric Company, looking toward the proposed purchase of the property of the company by the city, and its operation under municipal ownership.

Gainesville (Ga.) Electric Railway.—Judge Newman, in the United States Court, at Atlanta, on Oct. 12, placed this property in the hands of Samuel C. Dunlop, Gainesville, as receiver, on application of the Knickerbocker Trust Company, New York, as trustee under a mortgage made in 1905 to secure \$400,000 bonds. Of these bonds \$250,000 are said to be outstanding.

Haverhill & Amesbury Street Railway, Merrimac, Mass.—Frederick J. Bradlee, Arthur Wainwright and William C. Williams comprise a committee which invites holders of 6 per cent debenture notes of the Haverhill & Amesbury Street Railway to deposit the notes with the Boston Safe Deposit Company in order that the committee may better protect the welfare of the note holders. Interest on the notes was defaulted on June 1, 1908, and is expected to be defaulted on Dec. 1.

Roanoke Traction & Light Company, Roanoke, Va.—This company, having taken over by purchase the property of the Roanoke Water Power Company and the Roanoke Heat, Light & Power Company, and the entire \$500,000 capital stock of the Roanoke Railway & Electric Company, has made a mortgage to the Baltimore Trust & Guaranty Company, as trustee, to secure an issue of not exceeding \$3,000,000 first mortgage and collateral trust 5 per cent bonds, dated Aug. 1, 1908, and due Aug. 1, 1958, but subject to call, all or any, when drawn by lot on any interest day at 105 and interest. The bonds may be issued as follows: Forthwith, \$1,250,000; reserved to retire \$750,000 bonds of Roanoke Railway & Electric Company, dated 1903 and 1953, \$750,000; reserved for extensions, additions and improvements, but issuable to an amount not exceeding 85 per cent of the value of such extensions, etc., \$1,000,000. An annual sinking fund is provided as follows: Payable on Feb. 1, 1919 to 1928, an amount equal to 1 per cent of the outstanding bonds; 1929 to 1958, 1½ per cent annually. The mortgage covers all property, real and personal, now owned or hereafter acquired, provided that the lien of the indenture shall not cover shares or other securities of any corporation now owned or hereafter acquired unless these be deposited with the trustee. The capital stock of \$1,000,000 is all of one class and is all outstanding. The par value of shares is \$100.

Traffic and Transportation

Bondholders Asked for Suggestions Regarding Operation of Their Property

Frederick W. Whitridge, receiver of the Third Avenue Railroad, New York, addressed the following letter to the bondholders of the company on Oct. 23:

"SIRS:—As receiver of this company under the orders of the United States Court, I am making every endeavor to improve the service which we give to the public in the hope that the earnings of the property may thereby be materially increased.

"I am also making every endeavor to stop all leakages and peculation, which seem to be an inevitable, if not a necessary element, in the running of a street railway. No-body can be as much interested in the successful result of these endeavors as the bondholders, who are really the owners of the property, and I venture, therefore, to suggest to you that you shall, wherever your convenience permits, use the railways belonging to this system—the Third Avenue Railroad, the Forty-second Street, Manhattanville & St. Nicholas Railway, the Dry Dock, East Broadway & Battery Railroad and the Union Railway, and that you will do me the favor to make any suggestions to me which occur to you as desirable in respect to their management, and in particular call my attention to any evidence of peculation, inattention or incivility on the part of its employees.

"I am aware that this letter is an unusual one to be addressed to bondholders, but I think that, as the manager of this property, I may fairly appeal for ideas, assistance, support, and even detective service, to its owners."

Decision in New York Car Advertising Case

Judge Lacombe, of the United States Circuit Court, on Oct. 27 denied the petition of the Morton Trust Company, asking that the court's approval of the agreement supplementary to the advertising contract of October, 1902, entered into by the Railway Advertising Company on the one hand and Receivers Joline and Robinson, of the Metropolitan Street Railway, New York, on the other, be reconsidered. When the Third Avenue Railroad was placed in the hands of Frederick W. Whitridge as receiver, a new advertising contract for 10 years was negotiated, but the court failed to approve it. An agreement supplementary to this contract was entered into and approved by the court whereby Messrs. Joline and Robinson were released from any obligation to furnish advertising privileges on the lines owned or operated by the Third Avenue Railroad. It is this agreement that the Morton Trust Company now asks the court to reconsider.

Judge Lacombe says: "Some months ago this subject of advertising in street cars was examined into exhaustively by the receivers and a hearing was had at which every one, including the petitioner, was fully heard. The peculiar nature of the business was brought out, and after consideration the court reached the conclusion that, although it would not be wise to extend the term of the old contract with the advertising company, the receivers might properly agree to a modification which would relieve them from any obligation to furnish space in cars of the Third Avenue system and would at the same time increase the compensation to be received for space in their own cars. Such a contract of modification was approved in writing by the court and no one sought to review that disposition of the matter.

"During the long time that has since elapsed the advertising company has paid to the receivers considerable sums it would not have been obligated to pay, except for the modification, and has presumably entered into contracts with third persons agreeing to secure them advertising space during the term originally specified. To undertake now to reopen the whole matter would not be fair to that company. Moreover, nothing is now brought forward which was not before the court and fully considered when the memorandum of April 29 was filed."

More Pay-As-You-Enter Cars for Chicago.—The Chicago Railways has announced that on Nov. 1 it will put in service on the West Madison Street line 50 of the new pay-as-you-enter cars, which have been built during the summer. They will be operated under license from the Pay-As-You-Enter Car Company.

Michigan Company to Use Placards to Educate Women Passengers.—The Michigan United Railways, Lansing, Mich., has given an order for a number of large lithographs, showing the proper way for a lady to board or alight from a street car, and will place them in the cars of both the city and the interurban lines.

Accident at Springfield, Ohio.—A peculiar accident occurred on the Ohio Electric Railway at Springfield, Ohio, on Oct. 21. As a car running at high speed entered a stretch of new track the motorman applied the brakes, and the car stopped within a short distance so suddenly that the body was wrenched loose from the trucks. The trucks, however, remained on the tracks. Several persons were injured.

Montreal Street Railway Pays Operating Tax.—The Montreal (Inc.) Street Railway has filed with the city of Montreal the record of its earnings for the year ended Aug. 21, 1908, which serves as a basis for fixing the amount paid by the company to the city for operating rights within the municipality. The earnings on which a percentage is due amounted to \$3,146,447, and the tax for the year aggregated \$241,967, an increase over the previous year of \$28,284.

Ohio Supreme Court Says Company May Abandon Route at Will.—In the case of B. F. Stafford against the Cleveland Electric Railway, the Supreme Court has rendered a decision to the effect that a company cannot be compelled to build where it has secured a right of way. Mr. Stafford had given the right of way through his farm and two streets were laid out near Windermere, in the eastern part of East Cleveland. The company afterward abandoned its plan and Mr. Stafford sued for \$25,000 damages. The suits were decided against him in the lower courts and the decisions were sustained by the Supreme Court.

Western Ohio Railway's New Time Card.—This company has issued under date of Oct. 10 its official eight-page winter time card of the short line between Toledo and Dayton and intermediate points. The schedules are given of the Findlay-Lima-Celina division, Wapakoneta-Sydney division, St. Marys-Minster division, the Toledo limiteds and the Dayton limiteds. There is also a table of distances and fares from Lima to 65 different towns and cities. Details are given of the electric railway connections at Findlay, Lima and Piqua and the steam railroad connections at Findlay, Bluffton, Lima, Wapakoneta, St. Marys, Celina, Sydney and Piqua. The first page of the publication contains a subject index.

Tickets as Advertisements Cause Confusion and Result in Suit.—A suit for 5 cents damages has been brought by William Riley, conductor, in the employ of the Indianapolis Traction & Terminal Company, against Gus Habich, who recently issued advertisements by means of tickets very similar in appearance to the tickets issued by the Indianapolis Traction & Terminal Company. It is averred that Habich unlawfully allowed one of his tickets to pass into the hands of an unknown person and that that person gave the ticket to Riley, who accepted it as a legitimate ticket good for a ride. W. H. Latta, attorney for the Indianapolis Traction & Terminal Company, prepared the complaint. The company hopes, it is said, to prevent further distribution of the advertising tickets.

NEW PUBLICATIONS

Road Preservation and Dust Prevention. By W. P. Judson. New York: The Engineering News Publishing Company, 1908; 144 pages (6 in. x 4 in.) and 16 illustrations; cloth bound. Price, \$1.50 net.

The subject of dust prevention is one of interest, both to the street and interurban railway operator in its relation to the comfort of the passenger and the maintenance of rolling stock equipment. Track engineers, therefore, should find Mr. Judson's book of value in this branch of their work, since it brings together in one handy volume the needful amount of data regarding most of the methods now in use for the preservation of roadways. The descriptions are accompanied by statements of the results obtained.

Lokalbahnen in Galizien und der Bukowina (Railways of Galicia and Bukovina). Vol. II. By E. A. Ziffer, Vienna; Lehman & Wentzel; 1908; 138 pages (10 in. x 13¼ in.); illustrated in addition to 67 inserts and 35 tables; paper bound.

This work, prepared by Mr. Ziffer, the dean of the Austrian steam and electric fraternity, is a comprehensive treatment of the steam city and country railroads in the provinces of Galicia and Bukovina, with a map showing the connections of these lines with the trunk railroads of Austria, Germany, Russia and Roumania. Lemberg, the capital of Galicia, is still served by a steam tramway, 22.3 km (14 miles) long. The author describes the roadbed, bridges, rolling stock, station and office buildings, discussing in particular the improvements made under his direction since 1891. In general, this work will give the American reader a clear idea of the construction standards followed abroad in building the lighter class of steam railroads.

Personal Mention

Mr. F. L. Richmond has been elected president of the Albia (Ia.) Interurban Railway Company, to succeed Mr. J. P. Reese.

Mr. N. B. McPherson has been appointed auditor of the Toledo & Chicago Interurban Railway, Kendallville, Ind., to succeed Mr. C. H. Hubbell.

Mr. A. E. Williams has been appointed assistant superintendent of the Ohio Electric Railway, with offices at Springfield, succeeding Mr. E. J. Egolf, who has been appointed to the eastern division.

Mr. William Dolan has resigned as roadmaster of the Ft. Wayne & Wabash Valley Traction Company, Ft. Wayne, Ind., and Mr. J. Brennan, chief line foreman, has been appointed to succeed him.

Mr. W. J. Britson, formerly connected with the Chicago, South Bend & Northern Indiana Traction Company, South Bend, Ind., has been appointed rate clerk for the Central Electric Railway Traffic Association, with headquarters in the Traction Terminal Building, Indianapolis.

Mr. Ray W. Reynolds, Lebanon, Ind., has been appointed general superintendent of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., to succeed Mr. Charles G. Lohman, who has been appointed general traffic manager of the company. Mr. Reynolds has been superintendent of the northwestern division of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., in charge of operation from Indianapolis to Lafayette, Ind., and from Indianapolis to Crawfordsville, Ind.

Mr. L. H. Van Allen, formerly general superintendent of the New York Central & Hudson River Railroad, has been appointed general manager of the Buffalo, Genesee & Rochester Railroad, under the charter and franchises of which the Buffalo & Depew Railway will be extended to Rochester. Mr. Van Allen was at one time division superintendent of the Lehigh Valley Railroad. Later he became connected with the New York Central & Hudson River Railroad as superintendent of shops at Buffalo, and subsequently was appointed superintendent of the Buffalo division, afterward being promoted to the position of general superintendent.

Mr. Charles G. Lohman, general superintendent of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has been appointed general traffic manager of the company, in charge of passenger and freight traffic. Mr. Lohman has been identified with electric railroading for some 10 years. In 1899 he entered the employ of the Indianapolis (Ind.) Street Railway and served successively as inspector and division superintendent of that company, and subsequently as division superintendent of the Indianapolis Traction & Terminal Company, which succeeded the Indianapolis Street Railway. In 1905 he resigned from the Indianapolis Traction & Terminal Company to become superintendent of transportation of the Indiana Railway Company, at South Bend, Ind., and remained with this company until 1907, when he was appointed general superintendent of the Chicago, South Bend & Northern Indiana Railway, by which company, on Oct. 15, he was appointed general traffic manager with headquarters at South Bend.

Mr. Joseph A. Kucera, formerly assistant manager of The Wilson Company, Chicago, which published *The Railway Age* and the *Electric Railway Review*, has been appointed business manager of the ELECTRIC RAILWAY JOURNAL. Mr. Kucera came with the McGraw Publishing Company last June, when the consolidation of the STREET RAILWAY JOURNAL and *Electric Railway Review* was perfected, and has been actively engaged in the advertising department of this paper since that time. This experience and that had with The Wilson Company, together with Mr. Kucera's extensive acquaintance among electric railway companies and manufacturers of and dealers in electric railway supplies, well fit him to perform the duties which will devolve upon him in his new position. Before entering the journalistic field Mr. Kucera was employed in the freight department of the Big Four Railway, and later was connected with the legal department of the Santa Fé Railroad. Subsequently he was admitted to the Illinois bar and became associated with a law firm in Chicago.

Mr. P. W. Ripple, whose appointment as engineer of power and equipment of the New England & Investment Security Company was noted recently in the ELECTRIC RAILWAY JOURNAL, was connected with the Westinghouse Electric & Manufacturing Company from 1896 until 1903, being employed in the testing, construction and engineering department. He then became connected with the

Lehigh Valley Railroad as electrical engineer, and remained with that company until 1906, when he accepted the position of construction engineer for the West Penn Railways. In April, 1907, Mr. Ripple was appointed electrical engineer for the New England Investment & Security Company, with offices in Boston, Mass. At present Mr. Ripple is electrical engineer for that company and engineer of power and equipment for the Berkshire Street Railway, Central Massachusetts Electric Company, Milford, Attleboro & Woonsocket Street Railway, Springfield Street Railway, Uxbridge & Blackstone Street Railway, Western Massachusetts Street Railway, Marlboro & Westboro Street Railway, Worcester Consolidated Street Railway, Worcester & Blackstone Valley Street Railway, Worcester & Holden Street Railway and Worcester & Southbridge Street Railway, with offices in Springfield.

Mr. A. H. Church, whose appointment as superintendent of the Helena Light & Railway Company, Helena, Mont., to succeed Mr. T. Kelkoin, was announced in the ELECTRIC RAILWAY JOURNAL of Oct. 3, began his railway and business career with the Washington Electric Light & Gas Company, Washington C. H., Ohio, in 1890. Subsequently, he became connected with the Northeast Electric Railway, Kansas City, Mo., and later with the West Side Electric Railway, Kansas City, with which he served about four years. Leaving the West Side Electric Railway, Mr. Church entered the employ of the Metropolitan Street Railway Company, Kansas City, with which he remained about a year. He then went to Detroit and became connected with the Fort Wayne & Belle Isle Electric Railway. Mr. Church next identified himself with the Standard Engineering Company in the construction of lighting plants and electric railways, and assisted in the construction of the Detroit & Lake Shore Electric Railway, the Plymouth & Northville Railway and the Detroit & Northwestern Railroad for the Standard Engineering Company. He returned to Kansas City in 1900 and entered the employ of the Kansas City-Leavenworth Electric Railway, with which he remained about a year. Mr. Church then re-entered the employ of the Metropolitan Street Railway, Kansas City, from which company he subsequently resigned to become master mechanic of the Helena Light & Railway Company, Helena, Mont.

OBITUARY

Henry DeWitt Carey, president of the Pelham Park Railway and the City Island Railway, New York, is dead.

Allan Langdon McDermott, formerly president of the Washington Railway & Electric Company, Washington, D. C., died at his home in Jersey City on Oct. 26 of heart failure. Mr. McDermott was born in South Boston on March 30, 1854, and removed to Jersey City in 1871 and established the *Jersey City Herald*. He studied law and was admitted to the bar in 1877, and was successively corporation attorney, district court judge and finance commissioner. In 1886 he became clerk of the chancery court and was a member of the Assembly for three terms and a member of the 56th and 57th Congresses. It was during his term to Congress that he served as president of the Washington Railway & Electric Company.

Henry A. Butters, president of the Northern Electric Railway, Chico, Cal., is dead. Mr. Butters was a mining engineer by profession and was one of the American mining engineers who, with John Hays Hammond, took a prominent part in the development of the Rand and other gold-bearing districts in South Africa. While there the possibilities of an electric railway system in Cape Town presented themselves to Mr. Butters, who secured a franchise and constructed the Cape Town line about 1897-1898. His success was so great that he subsequently purchased and equipped the electric tramway system of Port Elizabeth, and later, with the cooperation of Wernher, Beit & Company, the prominent London and South African financiers, purchased the electric railway system at Mexico City. All of these lines were then operated by managers from America. Mr. Butters conducted these negotiations personally and in the Mexican instance, it is said, secured the consent of the Spanish owners to the sale only by showing to them a large amount of the purchase price in gold. Later, with the assistance of other American capitalists, he purchased the street railway system at Geneva, Switzerland, which was then equipped electrically under the direction of Stephen D. Field and Richard McCulloch, of St. Louis. Mr. Butters was also interested in other railway projects in Europe, notably in the proposal to install a very extensive interurban system near Lille, France. Considering opportunities greater in this country, he returned to California about five years ago and organized the Northern Electric Company, Chico, Cal., the most extensive third-rail line in California.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Berkeley, Cal.—The Town Trustees have granted to the San Francisco, Oakland & San Jose Railway a franchise to build the Key Route line along Sacramento Street, from the southern boundary of the city to Hopkins Street, and along that thoroughfare to the northern boundary of the city. The franchise is to run 48 years, work to be commenced one year from the time the franchise is granted and to be completed within three years. The road may eventually be extended to Martinez.

Ocean Park, Cal.—Application has been made to the Trustees of Ocean Park by the Los Angeles-Pacific Railway for a franchise to maintain for a period of 40 years a line on Lorelie Avenue.

Sand Point, Idaho.—V. M. Smith has applied to the City Council for a 30-year franchise for a street railway in Sand Point.

Elkhart, Ind.—The Board of Public Works has granted the St. Joseph Valley Traction Company a 50-year franchise to build and operate a traction line over certain streets, work to begin on Jackson Street line within 30 days.

Kansas City, Kan.—The Kansas City & Olathe Electric Railway, Kansas City, Mo., has been granted a franchise by the Wyandotte County Commissioners to extend the line north from the present terminus in Rosedale to Kansas City, Kan. The company is hereby given the right to build an electric railway along the south side of the range of hills dividing Turkey Creek Valley from the Kaw Valley, adjacent to the St. Louis & San Francisco right of way. It provides also for the right to construct a tunnel through the hills to a point near the Fifth Street bridge.

Fitchburg, Mass.—The Fitchburg & Leominster Street Railway has petitioned the Railroad Commission for approval of a location on Water Street, Fitchburg, for authority to operate in part upon private land in that city and to carry baggage and freight over its locations.

Detroit, Mich.—Application has been made to the City Council for a franchise for the proposed Windsor Tunnel & Lake Erie Electric Railway, which contemplates building just as soon as the proper authority can be procured from the city. [E. R. J., Aug. 15, '08.]

Owego, N. Y.—The Binghamton (N. Y.) Street Railway has asked the Board of Trustees for an extension of its franchises for two years from the date of expiration, Nov. 1.

Albany, Ore.—A. Welch, representing the Albany Street Railway, has been granted an electric street railway franchise covering several streets for a term of 30 years. The franchise stipulates that work must begin in 30 days, the line covering the present horse-car line on First and Lyon Streets to be in operation within six months.

Grants Pass, Ore.—The County Court of Josephine County, upon application of the Rogue River & Oregon Southern Railway, has granted a franchise for 50 years for an electric railway from Grants Pass to Waldo, a distance of about 40 miles. Among other things provided in the franchise is that work shall be commenced within 12 months and that the company may have the use of the new Rogue River bridge for a period of three years free of charge. The right of way is 16 ft. wide and may be taken from either side of the county road. [E. R. J., Sept. 19, '08.]

RECENT INCORPORATIONS

***Chicago & Proviso Railway, Chicago, Ill.**—Incorporated to construct a street railway in or near Division Street, from the eastern boundary of River Forest, through Oak Park and Austin, and into the western part of the city. Incorporators: F. D. Kilmer, J. M. Swanson, H. L. Fearing, M. A. Rawson and N. C. Fisher.

***Niangua & Western Railway, Springfield, Mo.**—This company has been incorporated in Missouri to construct an electric railway, from Lebanon through Long Lane, Buffalo and Halfway to Bolivar. The length of the road will be 60 miles. It is stated that the company owns the entire right of way, and that the roadbed is now ready for the laying of steel, except a small part where some grading will have to be done. The route of the proposed line is that of the old Laclède & Ft. Scott Railroad, which was organized years ago for the purpose of constructing a steam railroad from Lebanon to Ft. Scott, Kan. Capital stock, \$600,000. Incorporators: George Lovan, James

Lovan, S. L. O. Lovan, A. B. Lovan and J. N. Smith, all of Springfield, Mo.

***McKenzie River Power & Railway Company, Eugene, Ore.**—This company has been incorporated to build an electric railway from Eugene to Belknap and Foley Springs. Capital stock, \$1,000,000. Incorporators: George Sengstake, G. A. Lyman and Zera Snow.

***Dakota Southern Railway, Pierre, S. D.**—This company has been incorporated to construct a line from Rapid City to Williston, by way of Lemmon. Headquarters at Lemmon, S. D., and Dickinson, N. D. Capital stock, \$90,000.

***Bay Shore Street Railway, Green Bay, Wis.**—This company has been incorporated to construct a street railway to Bay Beach. Capital stock, \$15,000. Headquarters, Green Bay. Incorporators: Fred A. Rahr, Frank E. Murphy and Arthur C. Neville.

TRACK AND ROADWAY

Fresno (Cal.) Traction Company.—A. G. Wishon, general manager, writes that this company expects to add 3 or 4 miles of track to its system in Fresno. All material is on hand with the exception of some special work, contracts for which were placed with the Falk Company, Milwaukee, Wis.

Pacific Electric Railway, Los Angeles, Cal.—This company has just completed and placed in operation its new extension to La Habra. The line is about 11 miles in length and leaves the Whittier road at Los Nietos.

San Joaquin Valley Electric Railway, Stockton, Cal.—Morris L. Brackett writes that this company's entire engineering corps is in the field making the final surveys for the route for this projected railway system. The entire right of way has been secured, and Mr. Brackett states that as soon as the surveys have been made construction work will be started. The road as projected will be standard gage and will extend from Stockton through French Camp, Manteca, Moreno, Summer Home, Ripon, Salida and Wood's Colony to Modesto. Its length will be about 35 miles. The company proposes to operate gasoline motor cars. The repair shops will be built at Stockton. Koch's Grove, an amusement park, will be reached by the road. Headquarters, 518 East Main Street, Stockton, Cal. Capital stock, \$1,000,000, of which \$35,000 has been subscribed. Bonds have been authorized to the amount of \$500,000. Officers: H. C. Holmes, New York, president; Morris L. Brackett, New York, vice-president; Charles E. Dickey, San Francisco, Cal., secretary; H. E. Teter Stockton, treasurer. [E. R. J., Oct. 24, '08.]

Vallejo & Northern Electric Railway, Vallejo, Cal.—T. T. C. Gregory, president of this company, is said to have announced that the directors of the proposed road had determined to run the main line direct from Vallejo to Sacramento, and that Suisun, Vacaville and Woodland would be reached by branches. The estimated cost was given at \$6,500,000. [S. R. J., Oct. 19, '07.]

***Venice, Cal.**—It is reported that Abbot Kinney, Venice, Cal., is planning to build an electric railway through Rialto, touching Tokio, going east as far as the Compton road, thence north through the Seagirt tract and back to Venice.

Colorado Interurban Railroad, Denver, Col.—It is said that Ohio capitalists have subscribed for \$1,300,000 of the bonds, and the company is now completing the work of securing subscriptions for an additional \$700,000 worth from the northern part of the State, and it is expected that construction work will begin about the first of the year. The Interurban Construction Company is the holding company for the Colorado Interurban Company and has the contracts for building the road. The company expects to build a line from Denver to Greeley and will operate into Denver over the tramway tracks. The line will parallel the Union Pacific, touch Fort Lupton, and will also go into the heart of the northern coal district for the purpose of entering the coal-carrying trade. The main line from Denver to Greeley will be 54 miles and a branch will be built from Fort Lupton to a connection with the Burlington Railroad at Idaho Creek. Feeders will be constructed in all directions where the prospective revenue will warrant it. The system will be operated by electricity to be developed at a power plant, which will be constructed near Firestone, in Weld County. The company will do both a freight and passenger business. E. N. Reaser and C. H. Pierce are two of the principal organizers of the company. [E. R. J., Oct. 10, '08.]

Kansas-Colorado Railroad, Pueblo, Col.—This company is said to have begun the construction of its projected electric railway at a point near Garden City, Kan. [E. R. J., July 4, '08.]

***Suwannee River Railway & Power Company, Jacksonville, Fla.**—This company is reported to have been organ-

ized with a capital stock of \$3,000,000 for the purpose of operating a series of electric railways extending 75 miles in four directions therefrom, also furnishing power for manufacturing purposes to many cities within the circle named. It is also the intention of the company to dam the Suwannee River, near White Springs, Fla., and there erect a power station. An application for a charter for the road is to be made shortly. Among those interested in this enterprise are D. G. Zeigler, Atlanta, Ga.; Jasper R. Walker, White Springs, Fla.; N. Johnson, White Springs, Fla.; J. H. Phillips, W. I. Phillips, Jacksonville, Fla. Arrangements have been made for floating \$3,000,000 bonds for construction work. D. G. Zeigler & Company, engineers, will begin to take bids on construction work in about 60 days. All correspondence relating to this project should be sent to the engineering company at Jacksonville, Fla.

Evansville & Southern Indiana Traction Company, Evansville, Ind.—The directors of this company have decided to enter upon the work of constructing the extension of the line from Patoka northward to Terre Haute. They also voted to expend \$10,000 on its power plant in Evansville.

Chicago, Ottumwa & Western Railway, Hamilton, Ia.—It is announced that construction contracts will not be let by this company until next spring. Surveys are partly made and considerable right of way obtained. It is stated that about 75 per cent of capital for construction has been secured. The line will be 90 miles long, connecting Des Moines with Hamilton and Ottumwa. T. J. Avery, Hite-man, Ia., president. [E. R. J., July 4, '08.]

Topeka (Kan.) Railway.—This company expects during the next six weeks to rebuild and pave 1 mile of track, for which all material has already been purchased.

Wichita (Kan.) Street Railway.—This company is said to be planning to extend three of its lines. They are the stock yards line, the Pattie Avenue line and the Cleveland Avenue line.

Boston (Mass.) Elevated Railway.—This company has begun excavation in preparation for foundation construction at City Square, Charlestown, in connection with the extension of the station platforms and remodeling of the station design from the present island type to the double-track outer platform type. In the new arrangement there will be a separate platform and headhouse for north and south-bound trains. The platforms will be extended at present for six-car train service, with eight-car trains as the ultimate requirement.

Lowell, Acton & Maynard Street Railway, Maynard, Mass.—An official writes that this company will build about 2 miles of track, construction work to begin at once.

Pittsfield (Mass.) Street Railway.—This company is said to have secured options on rights of way over private land in the town of Hancock, and a force of surveyors, under the direction of Barnes & Spaulding, are now laying out a route over this land for the line the company is to build to the New York State line to connect with the electric railway New York State capitalists are building from Albany to the Hancock town line. The company has also secured options on rights of way over private property in Pittsfield.

Michigan United Railways, Lansing, Mich.—Jan. 1, 1909, is the farthest date set by the officials of this company for the running of the first car over the Lansing-Jackson interurban line from Lansing to Mason. Work on the bonding of the rails on this portion of the road has been begun, and it is said that the laying of the third-rail will commence in about a week.

Gulfport & Mississippi Coast Traction Company, Gulfport, Miss.—It is announced that this company is arranging to extend its line from Gulfport to Pass Christian. J. A. Jones, general manager.

***Columbia, Mo.**—It is reported that O. W. Sprate, St. Louis, Mo., and V. M. Dissaffrey, Buffalo, N. Y., are backing a project to connect Columbia and Mexico with an electric railway. The length of the road would be about 30 miles. It is said that three St. Louis trust companies stand ready to finance the company, which will be formed to build the road if it is found on further investigation to be a feasible and profitable project. The promoters have submitted a proposition to the Commercial Club of Columbia that a syndicate be formed there and \$5,000 raised. The money is to be used in making a preliminary survey, preparing plans and acquiring right of way.

Kansas City, Ozarks & Southern Mansfield Railway, Mansfield, Mo.—It is announced that the Ozark Southern Construction Company, Mansfield, Mo., which has the contract for building this line from Mansfield to Ava, Mo., 15 miles, has graded 85 per cent of the line. About 5 miles

of track are laid, steel is on hand for 4 miles additional and the balance is on the way. The right of way has been secured and the final surveys are made. Albert Parker, Kansas City, Mo., president; G. W. Wilhelm, Mansfield, secretary; J. B. Quigley, Mansfield, chief engineer. [E. R. J., Sept. 12, '08.]

Yellowstone Valley Traction Company, Billings, Mont.—Work of surveying a right of way for the electric railway from Billings to Laurel, which this company intends constructing, has been begun by B. C. Lillis and a corps of surveyors. It is said that the work of grading for the new line will be started before winter. This company has been organized by Norman S. Poole and his associates, who have secured the Yege franchise for a line in Billings. It is the intention of the company to build a line in Billings and a suburban line to Laurel. Articles of incorporation of the company have not yet been filed, and it is understood that they will not be until one of the leading promoters of the corporation, who is now in the East, returns. [E. R. J., Aug. 22, '08.]

Atlantic City & Shore Railroad, Atlantic City, N. J.—It is reported that this company is planning to build a line running the entire length of Arkansas Avenue, from the meadow to the beach.

Chittenango, N. Y.—The ELECTRIC RAILWAY JOURNAL is informed that De Witt C. Hadcock is promoting the construction of an electric railway, 2½ miles in length, which will connect Chittenango with the West Shore Railroad. A company is to be organized the first part of next year and a charter applied for. It is probable that active work on the road will begin in the spring of 1909. Overhead trolley system will be adopted. The capital stock will be \$50,000.

Western New York & Pennsylvania Traction Company, Olean, N. Y.—This company has completed and opened for traffic its new extension from Little Valley to Salamanca, a distance of 9 miles.

Crescent Electric Railway, Vade Mecum, N. C.—It is announced that this proposed standard-gage electric railway will be built from Winston-Salem, N. C., to Stuart, Va., via Rural Hill, in Forsyth County, Capella Gap, Vade Mecum, Moore's Springs, Piedmont, Danbury and Sandy Ridge, in Stokes County, N. C., to Stuart, a total distance of 68.9 miles. The whole line has been surveyed and the right of way purchased. Part of the road has been graded and made ready for the ties, the latter being ready for delivery. Dr. H. P. MacKnight, lessee and proprietor of Vade Mecum Springs, Vade Mecum, N. C., is quoted as saying that there will soon be an opening for bids for furnishing T-rail and equipment, and that he would like to communicate with firms or individuals who can manufacture an electric motor car that would suit his purpose for both freight and passenger traffic. The estimated cost of the enterprise, including power plants and rolling stock ready for operation, is \$750,000. [E. R. J., Oct. 24, '08.]

Youngstown & Ohio River Railroad, Salem, Ohio.—This company has arranged for an entrance to East Liverpool that will take it to Sheridan Avenue, within 1500 ft. of the Diamond or center of the business district, over its own tracks. Track has been laid to within a few miles of East Liverpool.

Southwestern Interurban Railroad, Mangum, Okla.—J. O. McCollister advises the ELECTRIC RAILWAY JOURNAL that rights of way for this proposed interurban line are now being secured, and when this is done the permanent survey will be made between Mangum and Francis, 22 miles west of Mangum. The company contemplates beginning construction work this coming spring. The road will connect Mangum, Granite, Altus, Blair, Hollis, Vinson, Reed and Cordell. The motive power will be electricity, it having already been decided to install the overhead trolley system. The power station and repair shops will be located at Mangum. Capital stock, \$1,000,000. Office, Mangum. Officers: J. W. Solomon, Reed, Okla., president; H. M. Ferguson, Mangum, vice-president; J. C. McCollister, Mangum, secretary; James Duffy, Vinson, Okla., treasurer. [S. R. J., Sept. 5, '07.]

***McAlester, Okla.**—It is reported that H. A. Hicks, of Raydon, Okla., has arranged for a meeting to take place at an early date, the purpose of which is to interest McAlester capitalists in the projection of an electric railway from McAlester to Raydon.

Sapulpa & Interurban Railway, Sapulpa, Okla.—This company is reported to have let a contract to D. Murey for its new extension to be completed in two months. Right of way is being secured to Keifer and Glenn Pool. E. C. Reynolds, president.

Cumberland Railway, Carlisle, Pa.—Gov. Stuart has ap-

proved an application for the extension of the route of this company, which was granted a charter last week to operate in Middlesex Township. The extension covers 13 miles of Carlisle streets and various townships in that vicinity. W. E. Glatfelter, Balfour, president. [E. R. J., Oct. 17, '08.]

Greenville & Hendersonville Electric Railway, Greenville, S. C.—John P. Rowland, one of the directors, is reported as saying that financial affairs have been completed to begin construction of this road, and headquarters for the construction forces will be at Greer. [E. R. J., July 18, '08.]

Wisconsin Rapid Transit Company, Fond du Lac, Wis.—Charles D. Smith, president of this company, writes that the main line of this proposed electric railroad system will start from a connection with the Chicago & Milwaukee Electric Railway, and run around the west side of Milwaukee, between West Allis and Milwaukee, and thence north-west to Templeton and Sussex and Holy Hill and Hartford, and thence north to Fond du Lac, Ripon, Green Lake and Berlin, a total mileage of about 115 miles. Branches will be built from Theresa to Beaver Dam through Mayville, Horicon, Minnesota Junction and Rolling Prairie, about 23 miles; from Beaver Dam junction to Minnesota junction, and from Neosho to Watertown, a distance of about 40 miles; a branch line to Menominee Falls, a distance from the main line of 4 miles; also a 6-mile spur from Hartford to Cedar Lake via Schleisingerville, making a total mileage of about 188 miles.

POWER HOUSES AND SUBSTATIONS

Inter-Mountain Railway, Denver, Col.—This company has begun construction of a power station at a point three-quarters of a mile west of the line which divides Denver from Jefferson County, with the intention of completing its electric railway from Fifteenth and Arapahoe Streets to Golden, to which point it now has a steam line.

Evansville & Southern Indiana Traction Company, Evansville, Ind.—It is announced that this company is planning to make a number of improvements to its power station at Evansville, which it is estimated will cost \$10,000.

Portland (Ore.) Railway, Light & Power Company.—Contracts have been recently awarded by this company for putting its wires underground. It is stated that the material for all the work has been ordered and that work will begin at once.

Kittanning & Leechburg Railways, Kittanning, Pa.—The ELECTRIC RAILWAY JOURNAL is informed that this company expects to purchase one 500-kw, 2300-volt, 60-cycle, alternating direct-connected generator. The company has recently placed an order for another 800-hp gas engine. F. A. Moesta, president.

SHOPS AND BUILDINGS

Fresno (Cal.) Traction Company.—A. G. Wishon, president of this road, writes that plans are being made for a new car house and repair shop to be erected during this winter.

Dominion Power & Transmission Company, Hamilton, Ont.—This company, through its board of directors, has authorized the construction of new car shops which, it is said, will be equipped for the manufacture and repair of rolling stock.

Portland (Ore.) Railway, Light & Power Company.—It is stated that work will begin within the next 12 months by its company on a 7-story steel structure at the corner of Seventh and Alder Streets. The basement will be used for dynamos and the upper floors for the business offices of the company.

Springfield (Vt.) Electric Railway.—The car house of this company, together with two large combination passenger and baggage cars, two open cars and one side-seated car, also about \$7,000 worth of supplies and the work shop, were destroyed by fire on Oct. 18. The loss is estimated at \$25,000, partly covered by insurance.

AMUSEMENT PARKS

Louisville & Southern Indiana Traction Company, New Albany, Ind.—This company is said to have entered into an agreement to construct a large auditorium at Glenwood Park, a few miles northwest of New Albany.

Marion, Bluffton & Eastern Traction Company, Bluffton, Ind.—This company expects to purchase Goldthwait Park, located along its line. A new roller coaster will be installed in the park. S. D. Dewell, Marion, Ind., park manager.

Sarnia (Ont.) Street Railway.—The ELECTRIC RAILWAY JOURNAL is advised that this company will purchase devices for an amusement park, which is to be established on the shore of Lake Huron. H. W. Mills, manager.

Manufactures & Supplies

ROLLING STOCK

Dominion Power & Transmission Company, Hamilton, Ont., operating the electric railways in that city, has authorized its board of directors to purchase five double-truck pay-as-you-enter cars.

Washington Water Power Company, Spokane, Wash., has placed an order with the J. G. Brill Company, Philadelphia, Pa., for 20 city cars and 7 interurban cars. Of the 7 interurban cars only 2 will be equipped with motors, as the others will be operated as trailers. Delivery will be made in March, 1909.

Philadelphia (Pa.) Rapid Transit Company has decided to rebuild for operation on the pay-within system 300 of its present cars. The plan of the company is to have the J. G. Brill Company, Philadelphia, reconstruct 150 of the cars and to reconstruct the other 150 cars in its own shops. The cost of carrying out this work is estimated at \$500 a car.

TRADE NOTES

Wilson Trolley Catcher Company, Boston, Mass., has received an order from the Public Service Railway, Newark, N. J., for 439 Wilson trolley catchers and also an order from the Philadelphia Rapid Transit Company for 50 equipments.

National Machinery & Wrecking Company, Cleveland, Ohio, dealers in and appraisers and wreckers of electric railway and light stations, has issued a special bargain list on belted and direct-connected railway units, alternators and street car motors.

Indiana Harbor Construction Company, Indiana Harbor, Ind., has been incorporated to construct street, interurban and steam railroads, power houses, streets, highways and to do a general construction business. Directors: John Jakust, Edwin Molinder and Harry Emvart.

Alonzo G. Delany has been engaged as representative of the Chicago Car Heating Company, Chicago, Ill. Mr. Delany for the past two years has been connected with the Safety Car Heating & Lighting Company, and previous to that spent 10 years in the mechanical department of the Chicago, Burlington & Quincy Railroad.

Electric Service Supplies Company, Chicago and Philadelphia, reports that the Philadelphia Rapid Transit Company has installed about 1200 Type R7 International fare registers, part of the order for 2255 of this type which was placed with the Electric Service Supplies Company early in 1908. These registers are to be delivered at the rate of 200 per month. By spring the company hopes to have all of its cars equipped with International registers of the type mentioned.

Muralt & Company, New York, have secured the contract for the enlargement and improvement of the hydro-electric plant of the Riverhead (L. I.) Electric Company. The old water wheels will be taken out and new Trump turbines of the vertical shaft type will be installed. The electric equipment will be of the three-phase alternating-current type, with a frequency of 60 cycles per second and 1100 volts. There is also an auxiliary steam plant for emergency purposes.

Ward Equipment Company, New York, at a meeting of its stockholders on Oct. 12, elected the following directors and officers for the ensuing year: John E. Ward, president; Alfred W. Kiddle, vice-president; T. V. Bates, secretary and treasurer. A. E. Robbins was appointed Eastern representative and Henry G. Horn, Western representative. The business of the company, in both the car heating and ventilating departments, is growing rapidly, and the president was authorized to purchase or erect a suitable building in New York, where both the offices and the warerooms of the company could be located.

Lord Electric Company, New York, reports, as an echo of the recent street railway convention at Atlantic City, that it was highly gratified with the interest shown in its exhibit of electric railway specialties, and that during the week a number of substantial orders were received. The "Controlator," a new type of controller regulator made by this company, attracted particular attention from the railway officers present, as did the new "Hydro-ground" and "Multi-Vapo-Gap" lightning arresters. During the last six weeks a decided improvement in business conditions has been the experience of this company, and it states that its factory is now working at its full capacity in turning out recent large orders.

McConway & Torley Company, Pittsburg, Pa., through

its representatives, reports great interest in the company's automatic radial coupler as a result of the elaborate exhibit which the company made at the Atlantic City convention. The exhibit consisted of models of two cars coupled together, operating on a curved track, and was very instructive, as it showed the practicability of the Janney passenger type of coupler on short radius curves and sharp changes in vertical grade. The company has made important improvements in this coupler since it was exhibited at the 1907 convention at Atlantic City, and believes now that it is as well adapted to electric railway work and as suitable for general adoption there as the company's steam railroad coupler is for use in steam railroad service.

Philander Betts, who for some years has been the advisory engineer for the contract department of the Potomac Electric Power Company, has resigned his position and has opened offices in the Metropolitan Bank Building in Washington, D. C., for the general practice of consulting engineering. Mr. Betts was engaged in electric railway work in the pioneer days of electric railroading, and since that time has been in close touch with a variety of phases of the work, especially the problems involved in power economies. In addition, he has had large experience in motor equipment of shops and factories and the distribution of light, heat and power for buildings and groups of same. He recently completed a series of tests and investigations to ascertain the various losses of power in the distribution system of the Washington Railway & Electrical Company, which brought forth some interesting data which will be available for comparison in the near future.

H. W. Johns-Manville Company, New York, at the Atlantic City convention showed the use of Linolite for interior illumination at its exhibit booth, which was entirely outlined with 10-ft. sections of Linolite connected together. The booth presented the appearance of a continuous "line of light," from which the new method of illumination receives its name. Visitors commented favorably on the brilliant illumination obtained, which was particularly noticeable at night. The simplicity of the Linolite system, its flexibility and its general adaptability to a large variety of uses are the principal advantages claimed for it. The company's exhibit of catenary line material also drew many visitors, owing to the general excellence of design and workmanship of the apparatus displayed. The principal feature of the catenary line construction advocated by the H. W. Johns-Manville Company is that the trolley wire is flexibly suspended by means of special clips and section insulators, which allow some vertical play to the trolley wire.

National Brake & Electric Company, Milwaukee, Wis., reports a decided improvement in business conditions in the air-brake field, as indicated by substantial orders for air-brake apparatus recently placed with this company which will keep the company's shops working to their full capacity for at least four months. This company placed on the market its new National motor-driven straight air-brake equipments only a little more than two years ago. They met with immediate approval on account of the many new features incorporated in them by the experienced staff of engineers of the company. It is stated that the majority of complete motor-driven straight air-brake equipments purchased in the United States and foreign countries since the National air brakes were placed on the market have been manufactured and sold by the National Brake & Electric Company and its foreign sales agency. In addition to the National straight air-brake equipment, this company is now making apparatus embodying a number of improvements and refinements for straight air-brake systems, including emergency valves of several types, quick-release valves, automatic straight air combinations, pneumatic governors, including pneumatic and oil-pneumatic, and electro-pneumatic types, an improved type of motorman's valve made entirely without ground seats.

ADVERTISING LITERATURE

Weber Gas Engine Company, Kansas City, Mo.—This company has issued the 1908 edition of its Brochure No. 53, which illustrates a number of recent Weber gas power installations in mills, factories, municipal water works and electric light plants, and describes concisely Weber engines and bituminous and non-bituminous producers.

Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y.—This company has issued Bulletin No. 1000, the first of a new series to be issued by the company, which describes its Mine-A-Phone system. In size, form and general character, the bulletin is different from those the company has been publishing. The bulletin is more in accordance with the publications now issued by most manufacturers of electrical apparatus.

Brilliant Electric Company, Cleveland, Ohio.—"After Dark" is the title of a folder issued by this company to describe the merits of the Brilliant tungsten lamps. The publication is divided into chapters with the following headings: Says the Manager, Why Brilliant, Brilliant Selection, Try It On, Brilliant Tungsten Lamps. The proof of a lamp is in its light giving qualities, not for a night, but for its life.

Sanitary Rag Company, Kalamazoo, Mich.—This company is mailing to power users, central stations, isolated stations and street railway companies a folder in which its sanitary wiping rags are described and their advantages set forth. The company prepares soft cotton rags for wiping purposes by a process of its own and sterilizes and launders every rag. Undesirable rags, such as undergarments, are rejected and are sold to the paper mills at Kalamazoo. The company says that despite the care taken in preparing its rags they are cheaper than waste.

Russell Car & Snow Plow Company, Ridgway, Pa.—The different plows of this company manufactured for steam and electric railway service are described in an eight-page folder. The electric plows featured are the No. 3, the No. 4, the combination car and plow known as No. 6 and the pedestal electric plow No. 6. The details given include the length of body, length over all, width of body, height of body, length of steel nose, width of bit and the weight. The company's adjustable and detachable steel noses are also illustrated. They can be attached to the No. 6 electric combination car and snow plow and the No. 6 pedestal electric snow plow.

Ohio Brass Company, Mansfield, Ohio.—The bulletin of this company for October contains as its feature a description of the company's new "Universal" air sand trap, intended for use in connection with the company's new "Universal" air sander valve, which was described in the September issue of the bulletin. The trap consists of a one-piece casting with a removable bottom plate fastened by a nut and lock washer, which makes it easy to rid the trap of caked or frozen sand. A rubber gasket, under the bottom plate, prevents moisture from entering the trap. The curved surfaces inside the trap offer a minimum resistance to flow of sand when under air pressure and facilitate cleaning. It is impossible for water to enter the trap from the outside, as the only opening in the top of the trap is protected by a flange which projects up into the hopper in the car and the only joint in the trap (when the removable bottom plate is fastened) is made water-tight by means of a heavy rubber gasket.

ELECTRIC RAILWAY PATENTS

[This department is conducted by Rosenbaum & Stockbridge, patent attorneys, 140 Nassau Street, New York.]

UNITED STATES PATENTS ISSUED OCT. 20, 1908.

Railway Tie, 901,316; John A. Berquist, Mason, Wis. App. filed April 27, 1908. A rail-chair interlocking with the tie and provided with jaws to engage over the foot of the rail upon one side, a tie-bar overlapping the rail-chair and provided with a jaw to engage over the foot of the rail upon the opposite side and interlocking means between the rail and jaw to prevent displacements of the parts.

Electric Railway Signal, 901,331; Edward A. Everett, Detroit, Mich. App. filed June 27, 1906. Means for use in connection with relays employed in the operation of automatic block signals for effecting an auxiliary release or circuit-breaking device, whereby the signal circuit will be automatically broken even if the contacts are fused at the usual circuit-breaking lever.

Electric Railway System, 901,377; William Robinson, Brooklyn, N. Y. App. filed April 18, 1905. This patent and those following in the same name relate to a single subject-matter of invention, and include all of the electrical and mechanical features of a complete signal system for alternating-current railway installations. The claims relate to detail features throughout the series of patents.

Electric Railway System, 901,378; William Robinson, Brooklyn, N. Y. App. filed April 9, 1906.

Electric Railway System, 901,379; William Robinson, Brooklyn, N. Y. App. filed Aug. 13, 1907.

Electric Railway System, 901,380; William Robinson, Brooklyn, N. Y. App. filed March 13, 1905.

Electric Railway Signal, 901,381; William Robinson, Brooklyn, N. Y. App. filed Jan. 26, 1905.

Electric Railway System, 901,382; William Robinson, Brooklyn, N. Y. App. filed Oct. 27, 1902.

Electric Railway System, 901,383; William Robinson, Brooklyn, N. Y. App. filed July 20, 1904.

Concrete Railway Tie, 901,403; William B. Westbrook,

Cliff, Ky. App. filed Nov. 20, 1907. A concrete cross-tie having cavities or recesses for rail-blocks or chairs, and a series of binding wires for reinforcing the same.

Rail Joint, 901,391; Frederick J. Shelly, Philadelphia, Pa. App. filed May 9, 1908. Details of construction.

Amusement Device, 901,435; Percy W. Fuller, Boston, Mass. App. filed July 8, 1907. A hollow drum has armature coils embedded in its periphery and which co-operates with field coils in an inclined track so that the drum will roll up the inclined track.

Selective Signaling System, 901,441; Orlando W. Hart, Fall River, Mass. App. filed Aug. 10, 1907. Means whereby the operator at a central station can cause a signal at any one or two or more places to be set, and automatically locked in operative position until the person sending back a signal to the central station restores it to normal position.

Electric Railway System, 901,477; William Robinson, Brooklyn, N. Y. App. filed Oct. 5, 1904. The third rail is divided into insulated sections normally disconnected from the conductor.

Railway Tie, 901,574; Thomas W. Welsh, Mitchell, Ind. App. filed May 18, 1908. Provides a trough-like body formed of sheet metal and having combined cushioning and supporting blocks secured therein, the body being so constructed as to securely tie the blocks together and to receive a quantity of ballast so as to prevent the tie from creeping.

Rail Fastener, 901,658; Emery Stem, Spokane, Wash. App. filed March 3, 1908. A bed of wood or elastic material on which is placed a metal block permitted to move freely in a vertical direction. This block carries the rail and is fastened thereto by means which become operative by pressure upon the rail. As soon as the pressure is removed the rail is partially released.

Safety Apparatus for Railways, 901,668; Samuel L. Adelson, New York, N. Y. App. filed March 18, 1908. Track apparatus arranged in blocks and a car provided with an

other, so that the conductor can cut off the ingress and egress at will.

Passenger Car, 901,787; Warren M. Smith, Moore, and Samuel M. Curwen, Haverford, Pa. App. filed May 28, 1908. A "pay-as-you-enter" car provided for the inclosing of the platform by a sliding and pivoted door on one side and a sliding door on the opposite side, the doorways leading from the platform to the body of the car being always open.

Switch Structure, 901,803; Heenan Sylvester Goughnour, Johnstown, Pa. App. filed Dec. 2, 1907. Relates to means whereby the area of the supporting surface for the heel of the tongue is increased.

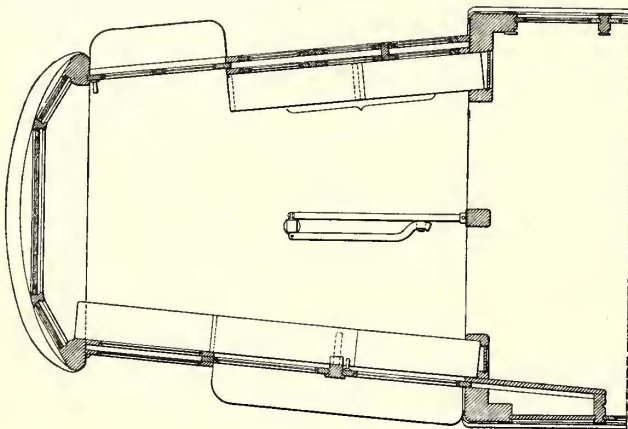
Trolley Wire Anchor, 901,816; Allan McIsaac, Hartford, Conn. App. filed March 4, 1908. An anchor for trolley wires whereby the latter are securely supported on cross wires, arms or the like.

Railroad Tie, 901,845; Jesse T. Spaulding, Port Byron, N. Y. App. filed Sept. 13, 1907. A composite metallic and wooden tie in which a metallic casing is combined with blocks of wood, which serve to directly support the rails.

Trolley Wire Bearing, 901,878; William M. Caswell and Joseph A. Schoefield, Warren, Pa. App. filed Dec. 16, 1907. The axle on which the trolley wheel is journaled is hollow to contain oil and it is threaded into blocks, which are clamped within the split portions of the trolley harp and journal boxes.

Brake Head, 901,872; George A. Bowman and Cyrus L. Harmeyer, Fort Wayne, Ind. App. filed May 21, 1908. Comprises a thrust block provided with a key way or opening therethrough, a divisible and removable head provided with openings which register with the key way or opening and a key passing through said key way and registering openings whereby the divisible head is secured to the thrust block.

Electric Contact Spring for Trolley Harps, 901,885; Albert L. Cole, Auburndale, Mass. App. filed Sept. 28, 1905.



Passenger Car—Patent No. 901,903

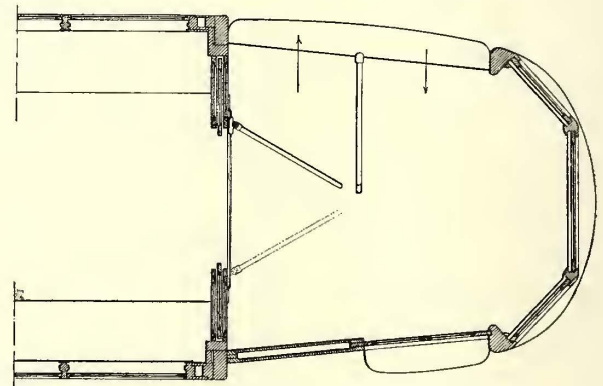
alarm, the car having a movable arm for actuating said alarm when moved and means for holding the alarm circuit open.

Retaining Device for Switch Points, 901,726; Archie Rolfe Murray, Johnstown, Pa. App. filed Feb. 19, 1908. Has an adjustable connecting member between the switch point and the pivoted lever and a yielding member confined between the ends of the lever and adapted to hold the free end of the lever in its extreme positions.

Switch Structure, 901,752; Henry Charles Stiff, Johnstown, Pa. App. filed Dec. 2, 1907. A pinless tongue, having an enlarged circular heel, whose center is at a point near the gage line of the tongue, the bearing surface of the heel being on a line with the bearing surface of the tongue.

Universal Switch Box, 901,776; William M. Brown, Johnstown, Pa. App. filed Dec. 2, 1907. Relates to spring boxes for switches and especially to that class of switches known as derailing switches or crossing protectors. Provides a box which will be of a universal character, or adjustable to meet the requirements for different rail sections, different angles of crossing and location of switch levers.

Passenger Car, 901,786; Samuel M. Curwen, Haverford, Pa. App. filed May 13, 1908. Relates to "pay-as-you-enter" cars. The doorway is in the center of the end partition and a guard is provided projecting over the platform and adapted to move from one side of the doorway to the



Passenger Car—Patent No. 901,786

Spiral springs are contained between the trolley wheel and the harp so as to establish good connection between the parts.

Electric Signaling System for Railways, 901,899; William J. Higgins and Christopher J. Sheridan, Buffalo, N. Y. App. filed Dec. 27, 1907. An overlap railway signal system having a mechanism whereby semaphore arms may be set for danger or distance signals and whereby cab signals in a locomotive are simultaneously actuated.

Passenger Car, 901,902; Henry Howson, Philadelphia, Pa. App. filed May 23, 1908. A "pay-as-you-enter" car having sliding doors for closing the ingress and egress passageways at the side of the platform with a panel between the passageways for receiving one or both doors.

Passenger Car, 901,903; Henry Howson, Philadelphia, Pa. App. filed May 25, 1908. A "pay-as-you-enter" car wherein one side of the platform is closed by doors so arranged that they will not interfere with passengers standing on the platform. The platform is entirely inclosed and the doors are not needed in the partition dividing the platform from the body of the car.

Air Brake, 901,923; James F. McElroy, Albany, N. Y. App. filed March 2, 1907. A novel arrangement of valve which serves to supply the auxiliary reservoir from the train-line, and to admit train-line air to the brake cylinder in advance of the admission thereto of air from the auxiliary reservoir, in the event of a sudden application of the brakes.