

Electric Railway Journal

Vol. XLI

NEW YORK, SATURDAY, JANUARY 25, 1913

No. 4

PUBLISHED WEEKLY BY

McGraw Publishing Company, Inc.

JAMES H. MCGRAW, President. C. E. WHITTLESEY, Secretary and Treas.
239 West 39th Street, New York.

CHICAGO OFFICE.....1570 Old Colony Building
PHILADELPHIA OFFICE.....Real Estate Trust Building
EUROPEAN OFFICE....Hastings House, Norfolk St., Strand, London, Eng.

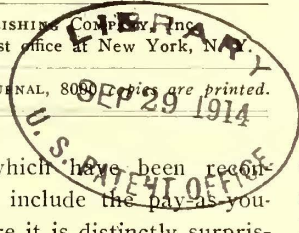
TERMS OF SUBSCRIPTION

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, \$3.00 per year; Canada, \$4.50 per year; all other countries, \$6.00 per year. Single copies, 10 cents. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving old as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

Copyright, 1913, by MCGRAW PUBLISHING COMPANY, INC.
Entered as second-class matter at the post office at New York, N. Y.

Of this issue of the ELECTRIC RAILWAY JOURNAL, 8000 copies are printed.



A NEGLECTED FEATURE IN REBUILT CARS

On cars which have been reconstructed to include the pay-as-you-enter feature it is distinctly surprising to find that in some instances the mutually operated half-doors which used to be customary in the old-style designs have been retained, notwithstanding the fact that the stanchion separating the entrance and exit passages on the platforms completely obviates the necessity for the wide doorway. The prime object, of course, of the pay-as-you-enter design is to eliminate confusion through the segregation of incoming and outgoing passengers into two orderly single files, and under these circumstances the necessity for a clear opening of great width becomes nil. When the device for making the two half-doors operate in conjunction is left in the car after its transformation into one of the pay-as-you-enter type, it results in the first place in a burden upon the passenger in compelling him to open two doors when the movement of one would be sufficient, and in addition it involves a certain amount of expense in maintaining the utterly useless mechanism for effecting the mutual operation. These points may perhaps seem obvious, but the fact that cars in just this condition are now being operated is evidence that in some cases at least the subject has been completely overlooked.

REDUCING SHOP ACCIDENTS

The methods of accident prevention used in European electric railway shops should furnish ample guidance for others in countries where this subject is beginning to attract much attention. A railway shop is far from being as hazardous as a mine or foundry, but it necessarily contains some avoidable dangers. One plan followed abroad is to give the shop foremen a yearly premium in proportion to the freedom from accidents in their departments. When the plan was inaugurated the foremen were advised that the management had set aside a certain percentage of the annual payroll, based on previous experience, to allow

for accident costs. Thereafter every foreman was to receive at the end of the fiscal year one-third of any remainder from the amount reserved for his department. This offer proved so great an incentive that the annual cost of accidents was more than halved. The same company has also fitted up a "Red Cross" room, where there are surgical and medical facilities to care for shop accidents. Even the slightest wounds are treated here because proper antiseptic dressings will remove all danger of blood poisoning and hasten healing. It is true that the development of such methods abroad has been due largely to the laws relating to the compulsory compensation of disabled employees, but more than one American company has found that the expense of litigation may be even greater than where the law provides a fixed compensation for each kind of injury. In either case prevention should prove better than cure.

WORKINGMEN'S COMPENSATION LAWS

An examination of the activities of the legislatures now meeting in most of the states shows that in many of them questions in connection with the establishment of public service commissions and the passage of workingmen's compensation laws hold a most prominent place. The latter subject, so far as liability insurance is concerned, was one of the topics most actively discussed at the recent meeting of the Wisconsin Electrical Association, as reported in the last issue of this paper. Altogether, workingmen's compensation laws are in force in seventeen states, and the approval given to proposed bills of this kind in the messages of the different governors indicates, we believe, that the passage of some sort of legislation of this kind will be as widespread among the states in the near future as the passage of legislation establishing some kind of public service commission rule. The principle of the substitution of some statutory plan of employers' liability for the wasteful remedies and in many respects inadequate remedies now open to the employee under the common law has much to commend it. The principal danger is in the direction of radical legislation, and the fear of this on the part of employers has considerable foundation because of the lack of experience with the practical working of the workingmen's compensation laws now in force. It is not too much to say of all of them that they are still in an experimental stage, and they leave many questions to be solved. As yet, we believe, all of the existing laws are of an elective character, owing to the general constitutional provision against compulsory compensation, as required in England and Germany. As with commission regulation, we do not think that such a radical feature can be grafted on our system of government easily, and the real benefits to be derived by both employer and employee are yet to be determined. However, out of this confusion and experiment some main principles will be evolved which may prove to be worth all of the trouble required to bring them forth.

CORPORATIONS AND THE COMMUNITY

The difficulties encountered when a company tries to do business on a contract basis with the public are illustrated by the attempt being made at this late date by certain politicians in New York to upset the status of the present agreement in regard to new subways. Every attendant circumstance indicates that the clamor now made is for political purposes only, but politics are practically sure to enter into the conduct of the affairs of any large community, especially in its relation to its public utility companies, and this is one reason why its affairs cannot be conducted with the economy and wisdom of those of a private corporation. Briefly, the agreement between the city and the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company was reached some nine months ago after years of negotiations and concessions on both sides. It is a matter which could have been settled in one-fifth the time if the rapid transit interests of the city had not been made a football to be kicked around first in the interests of one candidate for political preferment and then in those of another. Since the preliminary agreement was accepted by both sides, the attorneys representing each party have been preparing the formal contracts for signature. Undoubtedly during the reduction of this contract to written form differences of opinion in regard to the construction to be placed upon some of the minor parts of the agreement have developed. That such differences exist is indicated by a recent statement of the chairman of the Public Service Commission and the president of the borough of Manhattan. It is unfortunate that they could not have been discovered earlier, but they are not on the basic agreement and do not affect the dual plan, the system of preferential payments and other foundation features of the original agreement. An adjustment on these points could easily be reached by both sides.

The other protest, which is being made on the main principles, should fail, because the companies have expressed a willingness to live up to their part of the agreement and the city has sunk many millions of dollars in construction work which would be almost useless without an operating agreement with one of the existing companies. But the incident possesses wider significance than that illustrated by its local aspect. It shows the readiness with which persons with political aspirations will attempt to defeat the best interests of a city if by doing so they think they will be better able to pose as defenders of the community against corporations—an attitude which current events make every politician believe to be a very popular one at present. It also proves how easily such men can secure a large following among the thoughtless among the community. It often seems strange to a person who has given a great deal of thought to an important and greatly needed public improvement that many of his fellow citizens will regard it lightly. The facts are, however, that few people really give very much consideration to any matters other than their own immediate affairs. Occasionally, as at the time of a political upheaval, they will become aroused and will put one party out and another in. The question of their own personal interests or business, however, will soon again occupy their entire attention and cause them to lapse into a condition of indifference in regard to public matters.

This characteristic of most American citizens emphasizes the importance of definiteness in any contract made between a public utility and a city. If all points upon which disputes may arise in the future are not covered clearly and definitely at the start, the company will be apt to find that little respect will be paid later to questions of abstract justice in which the rights of the company are involved. In this respect the plan under which the new subways are to be built is well drawn. The terms under which the profits will be apportioned, the amount of capital which each party to the contract is to supply and the terms of recapture of the system by the city at definitely stated intervals are clearly set forth. In too many cases in the past, however, and even very recently, there has been the tendency on the part of companies to ignore these essentials of a franchise and to trust that, in the future, the sense of fairness of the community or the protection of the courts will be amply sufficient to insure all of the rights which a company should have. Hence a great deal of attention will be given to minor details in such a franchise and little or none to the essentials, which are the rate of return to be allowed on the capital invested and the disposition at the termination of the franchise of that part of the property which cannot be removed or turned to other uses. It has been owing to neglect of a clear understanding upon these points in the past that most of the ills to which public utilities have been subjected have occurred, and this experience should be a warning for the future. No one will believe, for example, that the original investors in most or any of the present older public utility enterprises in this country expected that the return to be allowed to them would be calculated upon the physical value of the property or even upon the actual investment in the property, or that the rate of such return on either valuation would be limited to the 6 per cent, 8 per cent or 10 per cent which is now claimed by many as adequate in the case of a successful enterprise.

The other refuge upon which the companies have depended against injustice in connection with ambiguous contracts, the protection of the courts, has also proved a weak defence. The reason for this is that the only protection which the courts can give against the forced establishment of low rates is that the rate must not be so low as to amount to a "confiscation" of property. But a non-confiscatory rate is by no means synonymous with a remunerative rate or even with a "fair" rate, any more than the auction value of a house so located that but few people can use it is equal to the real value of such property. People are encouraged to make investments in new enterprises by promises of large returns, not by the cold comfort that if the enterprise should be successful the capital invested will not be confiscated. The courts do not even seem ready to throw their cloak of protection about the investment, but apparently are disposed to construe the term "property" in its narrowest sense, although "property" in any other enterprise, according to the generally accepted meaning of the word, is not limited to the investment but is the opportunity to earn 20 per cent, 50 per cent or 100 per cent in that enterprise. We realize that such an idea is contrary to modern political thought in connection with public utility enterprises, but we firmly believe that the original investors in most of the older public utilities whose rates are now

being regulated were encouraged to make their investments because of their understanding that their property was their right to earn such an unlimited return.

For these reasons we believe that a public utility franchise to be granted in the future will be defective unless the permissible rate of return on the investment is specified so that a company shall not be obliged to reduce its rates until this rate of return is obtained, unless the meaning of the term "investment" is clearly defined, and unless there is some clear statement as to the disposition of the property if the term of the franchise is limited in any way. We also believe that in any laws establishing rate-making bodies some similar limits to any action of the commissions in reducing rates or terminating franchises should be embodied.

THE ALTERNATE-STOP PLAN IN CLEVELAND

Although a great many suggestions have been made as to the desirability of reducing the number of stops made for passengers on street railway lines, most American companies cling to the old plan of stopping at every corner. Cleveland is one exception. There the alternate stop plan has been developed and has been found to have a number of interesting advantages and disadvantages. The purpose of the alternate stop, which is now effective over about one-half of the city, was to increase the speed and thus offer more service in a given period without increasing the platform expense. When the alternate-stop schedule was arranged instructions were issued to the crews that stops would be made every two blocks on the inbound trip and at the intervening corners on the outbound trip. Thus a passenger would board at one street intersection and alight a block either side on his return. There has been practically no complaint on the part of the public relative to this method of operation, and it has served to increase the schedule speed, thus resulting in economies in operation and increased service. It is now proposed to extend the alternate-stop service over the entire city.

Although the increased service and operating economies obtain when single-car trains are operated, the addition of trailer service has tended to do away with the benefits when all trains are not provided with trail cars. A natural result of trail-car operation is to increase the average number of stops on a given route, thus lengthening the schedule time. Consequently there is a continual piling up of single-car equipment following the two-car trains in the rush hours. From this it is evident that the entire schedule is retarded on lines where single cars and two-car trains are run. In some cases it has been found that the total time on a given run is increased as much as one-third.

Another result noticed is that passengers do not distribute themselves well between the cars during the rush hours. They will insist upon boarding the first car which arrives, and if this happens to be a two-car train it will become crowded and will delay the schedule. The company hopes, however, that as the number of trail cars is increased people will recognize the probability of their securing a less crowded car by a wait of a few minutes and this trouble will disappear. Altogether the experiment

is a very interesting one, and while we would not recommend trailer operation in a city with steep grades on account of the slow acceleration, or where the street congestion requires many stops, we believe it worth consideration under favorable conditions of grade and traffic, especially when it can be combined with the alternate corner stop plan.

PAINTING CARS WITH BAKING ENAMEL

The new method of car painting introduced upon the Hudson & Manhattan Railroad, which is described elsewhere in this issue, is a development of distinct value in the maintenance of equipment. By the use of baking enamel instead of the customary linseed-oil paint or air-drying enamel, and by subjecting this enamel to a mild heat, the process of drying is accelerated to a remarkable degree, and in consequence cars can be put through the paint shop in two days instead of in anywhere from six to fourteen days, as is required with the usual methods.

It is, of course, true that the use of baking enamel is in itself no novelty, as it has been used for some years for automobile bodies, and on some electric railways small parts which could be readily baked in a kiln of moderate size have been treated in this manner. The application of the method to complete electric railway cars, however, has not been attempted heretofore, although the difficulties in the way of experiments along this line have been by no means serious. In consequence its introduction by Mr. See on the Hudson & Manhattan Railroad is a matter of much importance to the electric railway industry.

While the peculiar conditions on this railway make its painting problems apply only to the interiors of the cars and have resulted in the application of the new process to interiors only, the method has now been firmly established as a practical standard, and in order to extend the application to car exteriors there remains only the necessity for partitioning off a space large enough to hold one car in any paint shop and heating it with five or six batteries of heater coils. It would indeed seem that the negligible cost of such an arrangement would be an exceedingly small price to pay for the release for service of the 2 or 3 per cent of the car equipment which under ordinary circumstances is now held in the paint shop while the different coats of paint are drying.

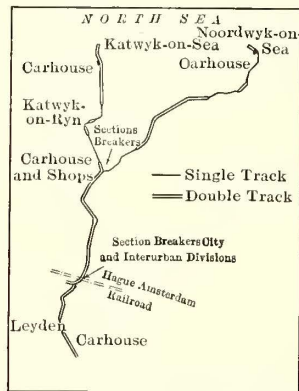
In comparison with standard paints, the finished surface given by baking enamel is undoubtedly of a harder and more glossy character than that usually obtained under ordinary methods, although it is also true that an equal finish can be obtained with air-drying enamel, provided proper care is exercised. With regard to permanence under ordinary circumstances there appears to be but little difference between the baking enamels and the air-drying enamels, as this has been a much agitated question in the automobile industry for some time past. The gain, however, which is obtained through the use of the new method in its ability to save time is really remarkable, and when cars can be put through the paint shop in one-fourth or one-fifth of the time required by the ordinary systems the consequent advantages not only of increased mileage of cars but also in saving of shop space are too obvious to require emphasis.

A 1200-Volt D. C. Line in Holland

A Description of the Leyden-Katwyk-Noordwyk Railway, Which Has Been Electrified for 1200-Volt D. C. Catenary Operation with Field Control Motors—The Entire Overhead Construction Is of Copper or Bronze Because of Atmospheric Conditions

The Noord-Zuid Hollandschen Tramweg Maatschappij (North-South Holland Tramway Company) operates an extensive steam railway system in southern and northern Holland. Among the more important parts of the system was a road from Leyden to Katwyk, including a branch from Rynsburg to Noordwyk. Both lines have now been electrified owing to the heavy increase of travel from Leyden to the sea baths at Katwyk and Noordwyk. The electrification also included a horse car line in Leyden so that the Katwyk and Noordwyk lines could pass through that city. Direct current at 1200 volts was chosen for use on both the city and country divisions. The complete overhead line, including transmission and return cables, and the through service motor cars were furnished by the Siemens-Schuckert company. The Katwyk division was placed in electrical operation in the fall of 1911, and the Noordwyk line began service in 1912.

The electrified section is a standard-gage line, most of which is double-tracked. There are no grades of any consequence, with the exception of a bridge approach at Leyden, but there are many sharp curves, some of them of only 65-ft. radius. At present the city and interurban sections are operated with different rolling stock, the former



Leyden-Katwyk-Noordwyk Railway—Map

division 5.27 miles long and the Noordwyk division 7.13 miles long. The Leyden-Katwyk division is laid principally on the highway, upon which a maximum speed of 24.8 m.p.h. is attained. A train consists of one motor passenger car

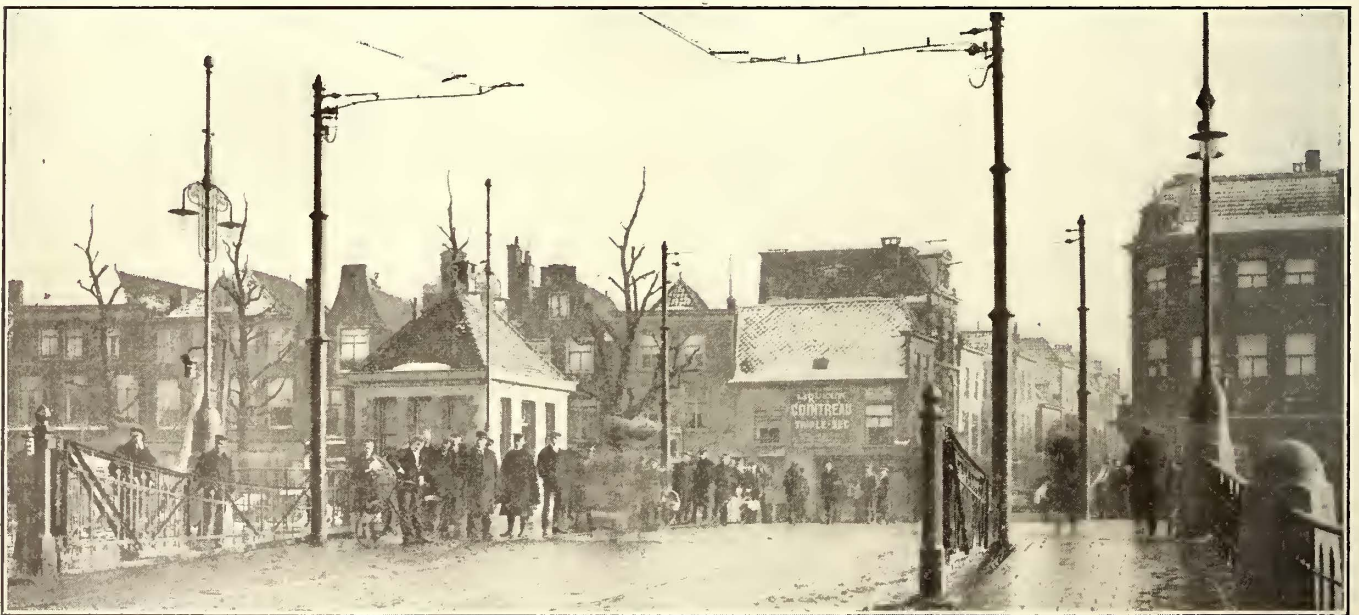


Leyden-Katwyk-Noordwyk Railway—Loop in Copper Catenary, and Idle Trolley Wire Clipped to Active One

and two passenger trailers, but freight cars are also added as required. The service is half-hourly.

MOTOR CARS

From the views of the standard motor car on page 145 it will be seen that it is mounted on a single truck of plate



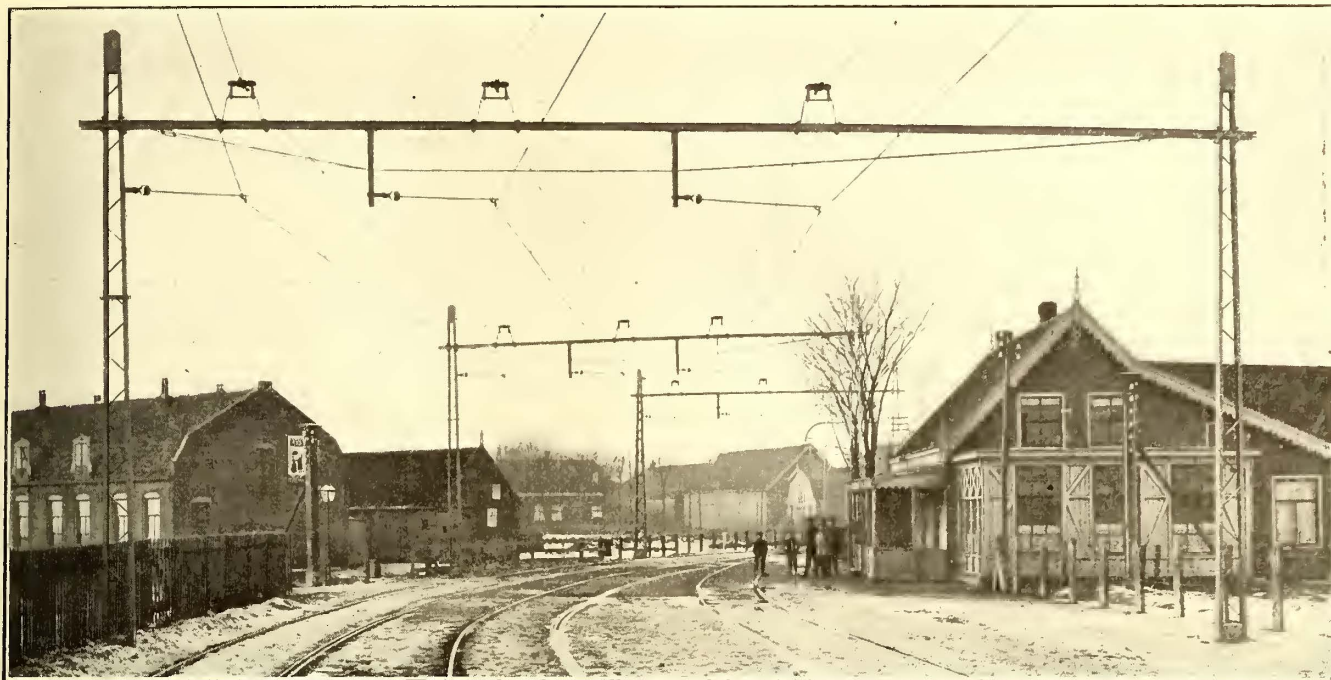
Leyden-Katwyk-Noordwyk Railway—Line Interruption at a Drawbridge in Leyden

using small motor cars and the latter the larger rolling stock hereinafter described. The interurban section begins at the Leyden station of the Hague-Amsterdam railway and thence runs to Rynsburg junction, whence it branches to Katwyk and Noordwyk, as shown in the accompanying map. The city section is 1.86 miles long, the Katwyk divi-

frame design and supported on each side by means of four semi-elliptic springs. The monitor roof has been eliminated in favor of a flat-arch roof with ventilators. The car body has an open central platform which leads to the two passenger compartments by means of sliding doors. This central passage has standing room for six passengers,

the smokers' compartment seats eleven passengers and the non-smokers' compartment fourteen passengers. The motorman's compartment at one end is large enough to serve also for a baggage room with separate exit as shown. As

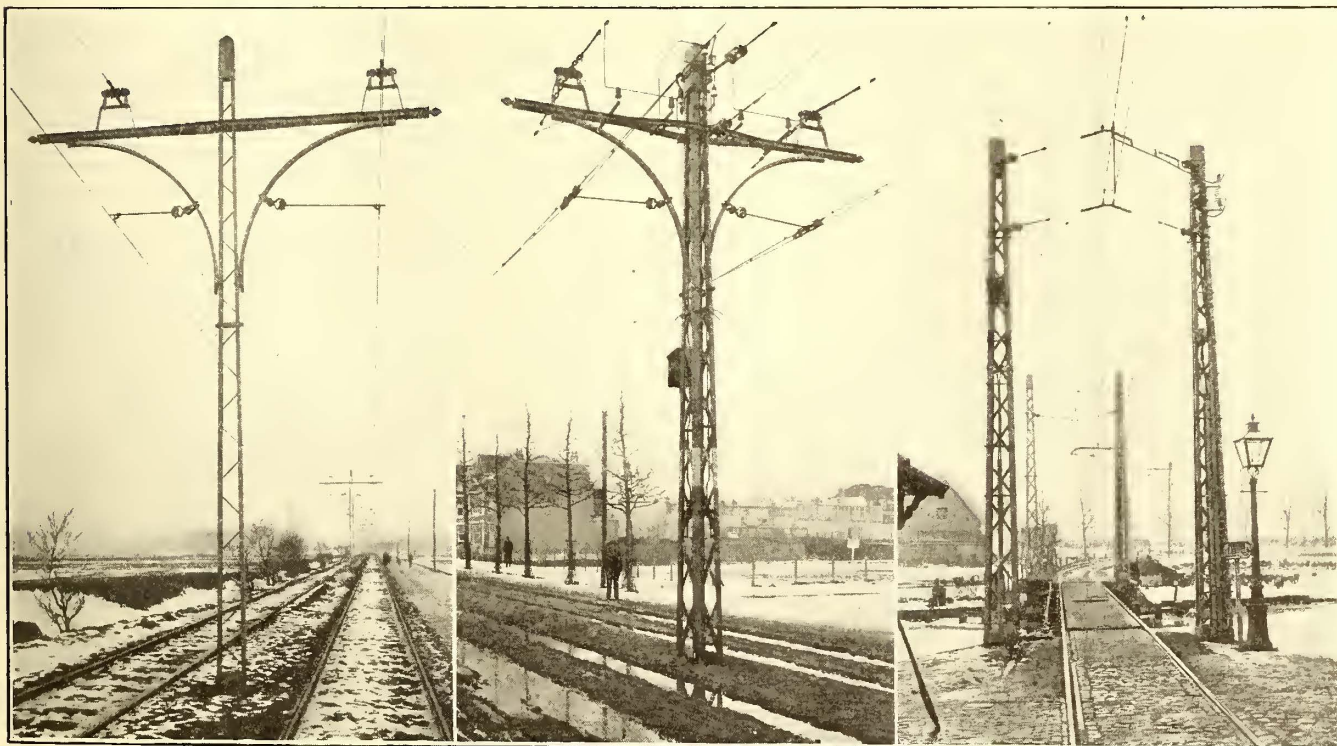
motors, mounted one on each axle. An interesting constructional feature of these motors is the use of a single-piece frame, as the builder believed that the motors would not require overhauling except at very rare intervals,



Leyden-Katwyk-Noordwyk Railway—Channel Beam Span Construction Over Three Tracks at a Station

the car is operated double-ended, a second place for the motorman is provided in one corner of the non-smoking compartment. Air brakes are used for regular operation,

particularly on account of the commutating-pole design and the ample dimensions and liberal insulation of the commutator housing. The motors are operated from the usual



Leyden-Katwyk-Noordwyk Railway—Center Pole Construction on Right-of-Way, Section Break and Line Interruption at a Drawbridge

but hand and short-circuiting brakes are available for emergencies. Current collection is by means of a single pantograph, which is controlled directly by the motorman.

Each car is equipped with two 90-hp commutating-pole

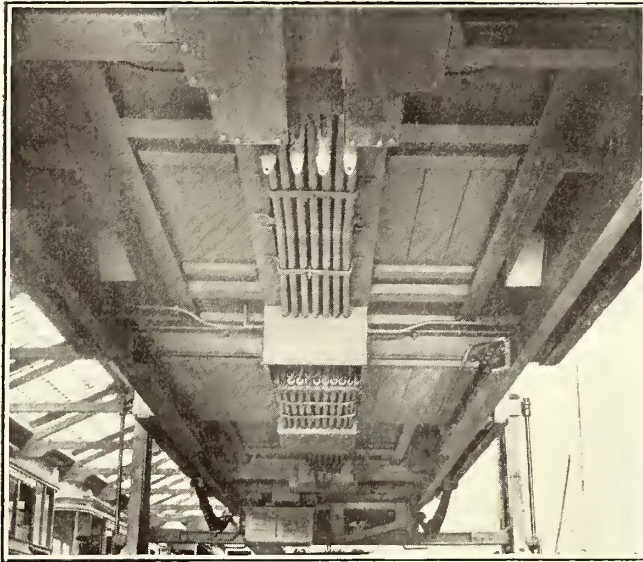
form of street car controller, although they are wound for field control whether connected in series or parallel. However, the shunt resistors for the weakening of the fields are brought into circuit by means of contactors. As indicated in

the wiring diagram on this page, the cutting in of the contactors is accomplished by the momentary controller contact *x*, just before the shunt connections are made. However, the control current for maintaining contactors *h-1* and *h-2* in circuit is not held by the controller, the con-

to an insulated metal plate on the roof of the car. All wiring is carried in steel conduit. Twenty-one tantalum lamps, divided into three circuits, are used for the illumination of the car, car signs and signal lamps.

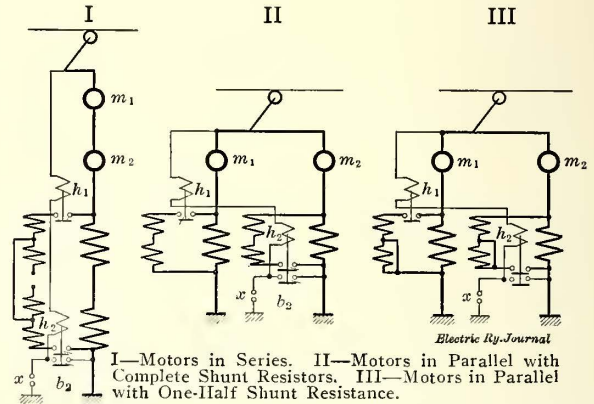
OVERHEAD CONSTRUCTION

The overhead construction on the interurban sections is carried by latticed poles, which are set about 200 ft. apart. Ordinarily these poles are furnished with channel-iron brackets set back to back as shown in one of the accompanying illustrations. One line is carried from each side of the pole. At the Rynsburg station and the Katwyk



Leyden-Katwyk-Noordwyk Railway — Steel Conduits of Motor Cars

tact *b-2* being locked to contactor *h-2*. If the main current to the motors is broken, as, for instance, in passing a section insulator, the contactors do not close upon the re-energizing of the circuit and the shunt connection to the field winding of the motors is not restored. Therefore, unlike the cutting in of a shunted motor, no short-circuit across the commutator is possible. The weakened field is restored merely by reversing the controller handle to the



Leyden-Katwyk-Noordwyk Railway—Changes in Motor Construction for Field Control

yards the overhead line is carried from light channel beam spans.

The line construction on the interurban section is of plain catenary type with a maximum distance of 39 ft. between the hangers. The contact wire is of hard copper of 80 sq. mm (approximately No. 000 B. & S.) cross-section and is zigzagged in the usual manner in order to equalize the wear due to the bow collector. The average height of



Leyden-Katwyk-Noordwyk Railway—Span Suspension on a Curve in Leyden, Showing Also the Protective By-Pass for Trolley Wire at the Hanger

point where the contact *x* can be closed momentarily, thus permitting contactors *h-1* and *h-2* to get into circuit again. The field is weakened one step when the motors are in series and two steps when the motors are in parallel.

The automatic circuit breaker and the fuses are secured

the contact wire is 19 ft. 8 in. above the tops of the rails. On single-track sections it is customary to attach the idle contact wire directly to the contact wire by means of short vertical clips, so that this part of the construction resembles the copper-steel combination of the New York, New

Haven & Hartford Railroad. An example of this kind is illustrated on page 142.

The catenary is of bronze, 50 sq. mm (approximately No. 6 B. & S.) cross-section. It serves also as a feeder. The hangers are of copper. Owing to the proximity of the sea, it was found desirable to use copper or tough bronze for all auxiliary wires and cables. Double porcelain insulation is the standard construction on all of the inter-urban sections.

In Leyden the wires are usually carried from tubular poles, although in some instances rosettes are attached to the houses. While the ordinary form of single-wire suspension is used in that city and other built-up sections, protection against the high voltage is insured by using double insulation of vulcanite for all suspension points and grooved porcelain insulators for the span wires. One of the accompanying illustrations of a non-catenary section shows that at all span hangers the trolley wire is connected to an auxiliary or by-pass wire which is carried along the insulators for a foot or more on each side. Hence the entire span will not come down if the contact wire breaks at the suspension points. This construction has been used elsewhere in Europe in connection with plain 500-volt suspensions, and in some cases it is made compulsory by municipal regulation. The insulation at all dead ends in city construction also consists of double vulcanite insulation and one porcelain insulator in series.

The city and interurban sections are isolated by means of section breakers, but can be connected by means of horn switches. Additional section insulators are used for the electrical separation of the contact wires on two-track divisions so that one track may be kept in service in case the other one is not available. Furthermore, all village sections may be cut out and the crossings over steam railroads can also be made dead when desired. In general, the anchorages or dead ends of the line coincide with the positions of the section insulators. Tension take-up devices are installed at intervals of 1000 ft.

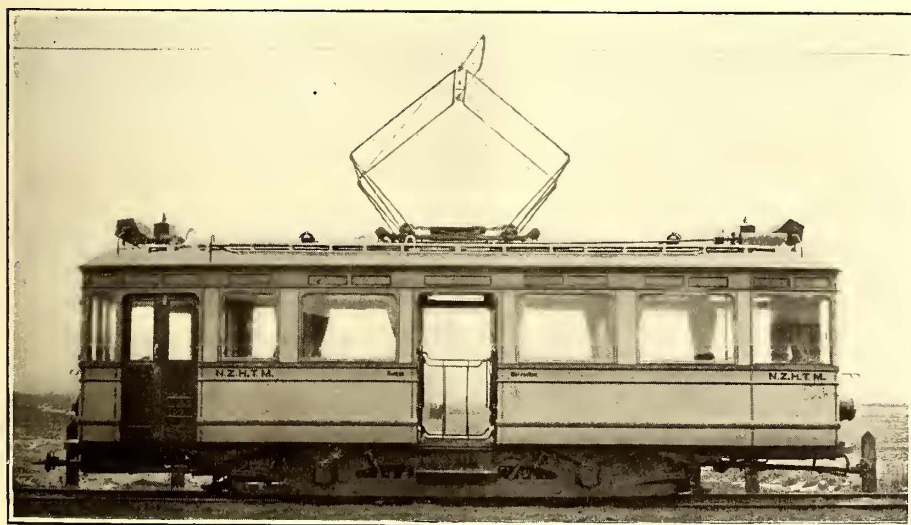
The use of the catenary as a feeder made it undesirable to interrupt its conductivity by attaching insulated tension take-up devices. To avoid this, a short loop of the catenary wire was formed between two clamps at each saddle or suspension point, whereby the catenary becomes self-adjusting. Short anchored connections are attached to the loop clamps to prevent possible injury to the catenary from

at Rynsburg, where each of the three divisions has a separate protection equipment.

The feeder system consists of two outgoing cables from Leyden to the city line and two other feeders for the inter-



Leyden-Katwyk-Noordwyk Railway—Motor Car for Through Service



Leyden-Katwyk-Noordwyk Railway—Center-Entrance, Single-Truck Motor Car

the side sway of the entire overhead line. The contact line is protected at intervals of 3280 ft. by horn-type lightning arresters. Further protection against lightning is provided

urban sections. The latter may be interrupted at a switchboard in the Leyden railway station and also at the Rynsburg carhouse, where they feed directly to the overhead line of each branch.

The Rynsburg-Katwyk, Rynsburg-Leyden and Rynsburg-Noordwyk divisions can thus be fed separately. The Leyden line has one return feeder and the interurban section has two. On account of the high trolley potential, no substations were required.

The New England Section of the Electric Vehicle Association of America and the Electric Motor Car Club of Boston held a joint meeting at Boston on Jan. 10. Arthur Williams pointed out that there are now about 30,000 electric vehicles in use in the United States, 6000 electric pleasure cars and 4000 commercial machines having been manufactured in 1912. The early machines, which date back about twenty years, were clumsy, expensive and not always dependable, the batteries being heavy and useful only for short-distance service, besides requiring expert handling.

In spite of these difficulties several models built in 1899 are still giving good service, as is a truck in Philadelphia which was built in 1893.

Baked Enamel Painting on the Cars of the Hudson & Manhattan Railroad

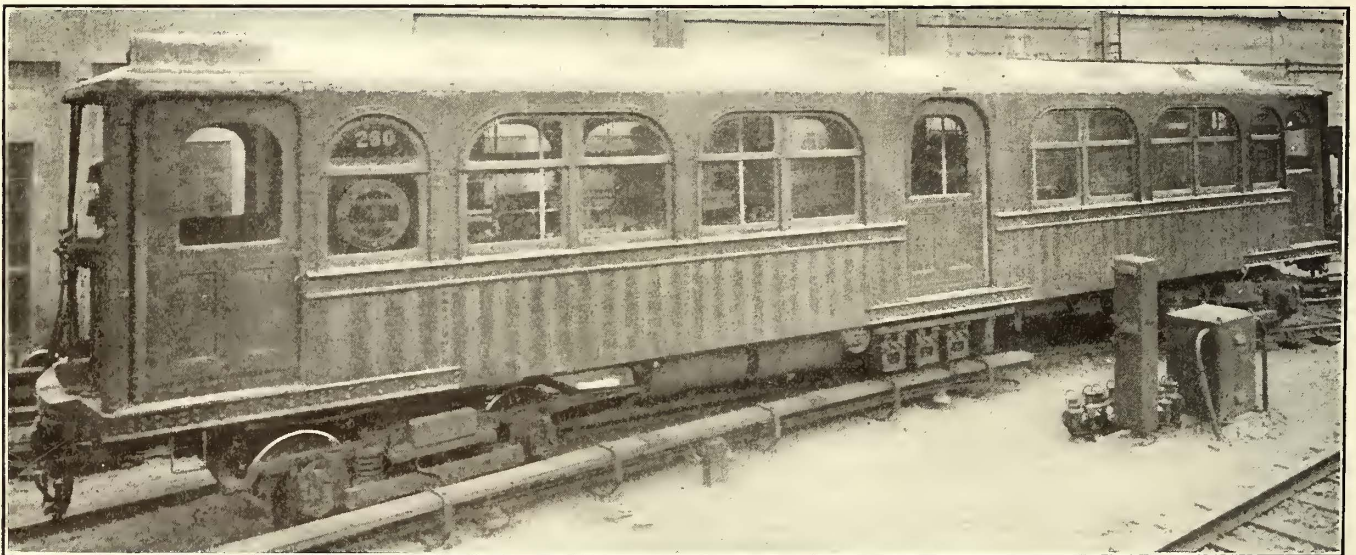
A Description of a Revolutionary Method of Car Painting by Which Cars Can Be Put Through the Paint Shop in Two Days Without Sacrifice in the Appearance or Durability of the Protective Covering

On the Hudson & Manhattan Railroad there has recently been introduced a new system of painting cars which bids fair to revolutionize paint-shop practice in the electric railway industry. Briefly, the method consists in the use of the so-called "baking enamel," which hardens within a few hours under the influence of a mild artificial heat. By its use a finish of great hardness and of extremely high gloss is obtained, so that the appearance of the finished surface is not only equal but in general superior to that given by the best grades of air-drying coach colors and rubbing varnishes.

The most important feature of the process lies in the extraordinary rapidity of the work. The baking on of a coat of enamel, instead of taking one or two days for dry-

ing is usually applied by sprinkling the material in the form of powder over the surface to be covered and then subjecting the metal to a gentle heat, just sufficient to fuse the powdered enamel into a homogeneous covering.

In the case of varnish makers' enamel no fusing of any description takes place. The action of hardening after application is produced by the evaporation of the turpentine, or "thinner," and by the oxidation of the oils used in the enamel exactly as in the case of paint, except that with enamels the hardening action is assisted by the fossil gum content. Baking enamels differ from air-drying enamels only in the details of treatment. They are made from the same gums, the same oils and the same classes of pigments; but because they are artificially dried at a rapid



Hudson & Manhattan Painting—Exterior View of Car, Showing Ventilators Covered with Paper Pasted to the Roof

ing as required by air-drying paints, is completed in about three hours. The four coats used on the Hudson & Manhattan cars therefore involve a loss of but twelve hours' time, and, with a liberal allowance of time for application, it becomes easily possible to get a car through the shop in two days. With a sufficiently large force, this time might even be made to include cleaning off, although should an extra day be allowed for the removal of the old paint the cars need be held hardly more than one-fourth as long as they would be under standard methods. The saving through the increase in equipment available for service is obvious. In fact, the coat of varnish which is given annually to surface cars could by this means be applied practically between rush hours.

DEVELOPMENT OF BAKING ENAMELS

As understood in the varnish-manufacturing industry the term enamel applies to that class of covering composed of pigment ground in varnish, just as the term paint is applied to pigment ground in linseed oil. In this application the material is in no respect similar to the enamel which is applied to metal by fusing and is used in that manner as a permanent protective covering for metals, as in the case of the sanitary white-enameled hand-holds recently introduced for use on surface cars. The latter class of enamel is in effect a glass which is fusible at low temperature. It

rate considerably more leeway is permitted in the composition, and this in turn permits the use of combinations of ingredients which give a hard, tough surface.

The astonishingly high gloss which is a characteristic of baked enamel is due largely to the fact that it can be applied in a much more freely running condition than the air-drying enamels. The result is that the material when applied is much more subject to the influence of surface tension, and the brush marks and other irregularities smooth themselves out. Carried to a hypothetical extreme, an example of this action would be found in the case of a paint with a consistency equal to that of water. If such a covering could be applied, it would obviously give an absolutely perfect surface. It would, of course, be impossible to leave brush marks in a film of water, and the microscopic irregularities in the wood or metal beneath it would manifestly have no influence on the perfect smoothness of the exterior surface of the film.

All varnishes, in order to be applied, have to be thinned with more or less turpentine. This ingredient is practically inactive and evaporates from the film during the process of drying. In the case of air-drying enamels it is necessary to have an even rate of hardening to avoid the formation of a hard surface film which would delay the drying of the varnish underneath it, and it is also necessary to

meet the condition of eliminating the turpentine content by evaporation. In consequence but little turpentine can be added, and the spreading effect, or the thinness of the material during application, is limited. The use of enough turpentine and a sufficiently freely flowing oil varnish to produce extremely easy running and a thin film involves difficulty both by increasing the time of drying and by tending to make a hard surface form while the interior layers of the coat are still soft. With baking enamel, however, the matter of time of drying is unimportant. The high temperature promptly eliminates the surplus turpentine content in practically any amount, and the material can be applied in almost any condition of thinness de-

of railways have in fact made use of it in this manner.

About two years ago attention was directed to the application of the baking process to complete ears, and some very extended experiments were undertaken. Some of these proved to be unsatisfactory, possibly because the manufacturers did not realize the vital differences in handling air-drying and baking enamel and offered exactly the same material for baking which they had been furnishing for air-dried coverings. One reason for this is that since the priming coat is required to stand two or three heats in addition to its original drying heat it should be capable of becoming perfectly hard; in other words, it should take its permanent set before the other coats are



Hudson & Manhattan Painting—View of Interior of Car After Completion of Baking Process, Showing Electric Heaters Hung from the Hand Rods

sired. In practice this is shown by the fact that approximately half as much baking enamel is required to cover a given surface as would be needed if air-drying enamel was used.

Baking enamels were first used commercially on a large scale in the automobile industry. Here the question of output was a serious one from the early days, and the rapidity of the baking process was a great advantage. In the general introduction of the process, however, there was the incidental advantage that, for the first six months at least, the baked enamels were found to possess very much more ability to resist not only the abrasive action of flying dust but also the corrosive action of lubricating oil which might be splashed onto the enameled surfaces of the body. Its use has also been extended to small fittings on cars which could be placed in small kilns, and a number

applied, and this condition does not obtain with air-drying enamels.

METHODS OF APPLICATION

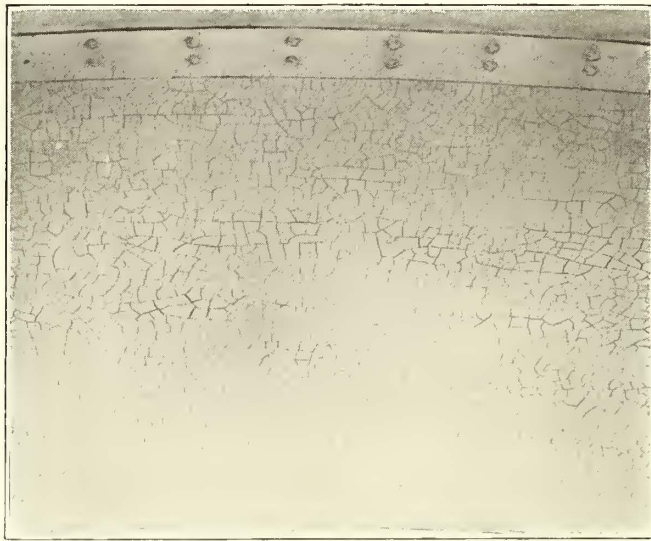
In general, however, three successful methods of baking have been developed for use with railway ears. These are to bake the primer and first enamel coat at a moderate temperature and to air-dry the subsequent varnish coats, to bake the whole ear inside and out for all four coats through the use of a kiln of sufficient size to inclose the car and to bake the interior only by sealing the ear and introducing electric heaters.

The latter method is the first to be adopted as standard on any railway and is the one which is described in this article. It has been developed by P. V. C. See, superintendent of car equipment Hudson & Manhattan Railroad.

On this line the ears are operated in a subway practi-

cally all of the time. For this reason the question of exterior appearance is immaterial, and the exterior painting is done only to keep the steel bodies from rusting. However, the interiors of the cars are carefully finished in white and green, the ceiling being a high-gloss white enamel to give the cars the clean and cheerful effect so desirable in tunnel service. In fact, the bright surface acts as a mirror, reflecting and diffusing the light so that the general illumination of the car is better than could be produced with brighter lights and a dark background.

The company has had considerable difficulty trying to find an enamel suitable for this work. Enamels that would stay white in the artificial light displayed a tendency to flake off and crack on account of the rapid changes in the temperature when the cars were taken from the open storage yard and run into the tunnel, as this remains at a constant temperature of 65 deg. regardless of climatic changes. On the other hand, white enamels that would



Hudson & Manhattan Painting—Typical Ceiling, Showing Cracks in Old Air-Drying Enamel

stand these rapid expansions and contractions without checking had a tendency to turn yellow under the continual artificial light.

In the search for a remedy to overcome this difficulty Mr. See noticed that the steel doors, which had been purchased complete and painted separately from the cars and not from the same manufacturer, did not deteriorate in appearance. Although the air-dried enamel on the vestibule sides alongside of the doors became discolored and cracked, the doors themselves retained their color almost indefinitely. An investigation brought out the fact that the doors had been baked in a kiln, and the result was, naturally, a trial of baking enamel.

An extensive test was made with small panels to find out whether baking enamels could be made to flow smoothly on the under surface of the metal when in a horizontal position. After this was completed the panels were placed in a light-proof box which was then given to the shop fireman with instructions to put it near the boiler for two hours and then put it out of doors for two hours. These rapid temperature changes were kept up for over a month, in the middle of winter. When the panels were removed from the box they were all found to be either darkened to a yellow or brown or else were more or less cracked. The test was carried still further by bending each piece through 180 deg. until the edges met. Although none of the panels came out of this very severe test in very good shape, it was definitely shown that the baking enamels were far superior to those of the air-drying type.

Experiments were then made to find out what tempera-

tures could be secured in a car without damage to the electric wiring, and it was demonstrated that 200 deg. Fahr. was not injurious. By suspending three extra equipments of electric car heaters from the hand rods this temperature was easily maintained, the consumption of power being at the rate of about 50 kw.

Three manufacturers have supplied enamels to the Hudson & Manhattan Railroad that have produced excellent results, but about the most thorough and comprehensive system which was tried was that of Flood & Conklin, of Newark. The details of this system of application are as follows:

After cleaning, the car is first heated to 200 deg. and allowed to remain at this temperature for one hour, as heating the clean surface before the application of the priming coat has been found by the manufacturers to be necessary to drive off moisture and to equalize as far as possible the injurious action of surface expansion and contraction.

After this the heat is shut off and the car is cooled down to about 115 deg., the priming coat being applied while the metal is hotter than the surrounding air to prevent condensation on the metal. The temperature is then raised again to 200 deg. and the enamel baked for three hours. The second and third coats are baked at 140 deg. for three hours and the last coat at 130 deg. for three hours. The first coat is the only one that is applied under heat, the others being applied with the air in the car cooled to about 70 deg.

In case the temperature of 200 deg. specified as necessary for baking on the priming coat cannot be obtained either through lack of facilities for heating or through other unusual conditions it is possible to obtain satisfactory results by baking the first coat at 165 deg. temperature for four hours.

The condensed list of instructions for applying the different coats issued for use in the paint shop on the Hudson & Manhattan Railroad is as shown in the accompanying table:

INSTRUCTIONS FOR APPLICATION OF BAKING ENAMEL			
GREEN BAKING ENAMEL			
	Deg.	Hours	
No. 1 brown metal primer.....	200	3	
No. 2 green baking enamel.....	140	3	
No. 3 green baking enamel.....	140	3	
No. 4 clear baking varnish.....	150	3	
WHITE BAKING ENAMEL			
No. 1 metal priming enamel.....	200	3	
No. 2 flat white.....	140	3	
No. 3 high-gloss baking enamel.....	140	3	
No. 4 high-gloss baking enamel.....	130	3	

NOTE.—After cleaning car thoroughly, heat car 200 deg., put heat down to from about 110 deg. to 115 deg. and apply priming coat. Sand between all coats. All coats after priming coat applied at ordinary painting temperature, 70 deg. to 80 deg.

The preparation of the surface of the metal before the application of the baking enamel is one of the most important features of the process. On the Hudson & Manhattan Railroad it has been found that the most satisfactory results are obtained by scraping off the old enamel by hand to remove the bulk of the covering. The surface is then gone over with a standard form of varnish remover carefully applied so that all of the old enamel is removed from the pores of the metal surface. This procedure leaves a surface which is absolutely free from paint, but in order to remove every trace of the varnish remover the surface is carefully rubbed again with waste and gasoline, thus freeing the pores of the metal from any foreign material which might serve as starting points for flaws in the paint film.

The heating of the metal prior to the application of the priming coat and the method of applying the priming coat at the high temperature of about 110 deg. are also important features necessary to assure permanency for the coats of enamel. It will be noticed from the preceding instructions for application that each coat following the primer is put on at a lower temperature so that no possibility exists

for renewed chemical action in the priming coat after it has been covered by the enamels.

As shown by the accompanying illustration, the high temperatures are obtained by hanging three equipments of electric heaters inside of the car, the temperature being controlled by a man who watches a thermometer inside of the car through one of the windows, the current being turned on and off from the heaters in accordance with the changes in temperature. The doors and windows are, of course, closed tight and all ventilators are covered with several thicknesses of newspaper pasted to the roof surface by layers of tar. This is shown in the illustration of the exterior of the car.

COSTS

The cost of application may be said in general to be about equal to that of high-grade painting. It is, however, impossible to make use of cheap materials with the baking process nor is it desirable to have the enamel applied carelessly. The results are, however, superior in general to those obtained with the best grade of air-dried enamels, for, as has been previously mentioned, the surface of the baking enamel is very much harder and more flexible than it is in a case of air-dried material.

On the Hudson & Manhattan Railroad the cost of application of a car interior is shown in the accompanying table.

COST OF BAKING ENAMEL ON HUDSON & MANHATTAN RAILROAD.			
WHITE WORK			
	Material	Labor	
Heat at 0.6 cent per kw-hr.....		\$3.60	
Connecting heaters		1.00	
Removing paint from ceiling.....		7.00	
First ceiling coat, 1½ qts.....	\$1.38	1.25	
Sanding same		0.75	
Second ceiling coat, 1½ qts.....	1.38	1.25	
Sanding same		0.60	
Third ceiling coat, 2 qts.....	1.84	1.35	
Fourth ceiling coat, 2 qts.....	1.84	1.35	
	\$6.44	\$18.15	
GREEN WORK			
Removing paint from sides.....		\$15.00	
First coat green, 2½ qts.....	\$2.30	1.75	
Sanding		0.80	
Second coat green, 2 qts.....	1.84	1.80	
Sanding		1.50	
Third coat green, 4 qts.....	3.70	1.75	
Sanding third coat		0.75	
Fourth coat, 2½ qts.....	2.30	2.00	
	\$10.14	\$25.35	

These costs apply to a car 41 ft. long between bulkheads, 8 ft. 10 in. wide over the sills, the roof being of the monitor-deck type with ventilators spaced between alternate carlines. The cost of material for baking enamel in general appears to be about one-half of that for air-drying enamel. This is due to the fact that the baking enamel covers about twice as much surface with a given volume as air-drying enamel, the costs of the two per gallon being the same. On the Hudson & Manhattan Railroad the ceiling of the car has an area of approximately 400 sq. ft. and it has been found through considerable experience that approximately 1 gal. of air-dried enamel is required for each white ceiling coat. When baking enamel is used, however, as will be seen by referring to the list of material given in the statement of costs, only 1¾ quarts of enamel is used for the average white ceiling. As the costs of the two classes of enamel are exactly the same, this makes the baking enamel, at least for white coverings, equal to about half of that for the air-dried material.

APPLICATION TO WOODEN CARS

While the use of baking enamel on the Hudson & Manhattan Railroad applies only to all-steel cars, since that company operates no wooden cars of any description, it has been demonstrated in the automobile industry that baking enamel can be applied to wood with perfect satisfaction and without injury to the wood. In fact, on the Hudson & Manhattan cars the wooden sashes are treated exactly as if they were made of steel, except that the old paint, having become thoroughly hardened, is not removed before the application of the new enamel.

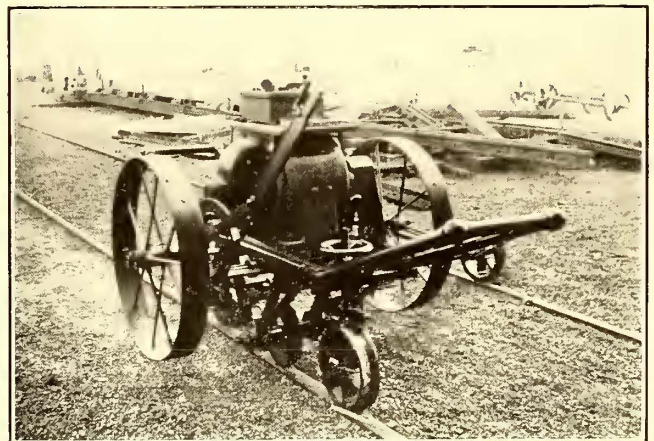
In applying the enamel to new or cleaned wooden cars,

it is only necessary to use an oil primer to fill the pores of the wood and provide a proper surface for the enamel coats. It is possible, as has been proved by experiment, to apply the enamel to clean wood with only three coats, the oil primer being considered as the first coat, and yet produce a satisfactorily smooth white surface. In the case of an old wooden car upon which the paint had become thoroughly dry and hard with age it would be quite practicable to apply baking enamel over the old paint after a thorough rubbing down.

The removal of baking enamel may be effected with any varnish remover capable of removing air-drying enamels. The surface is, however, harder, and for that reason the varnish remover has to be applied with more care as the chemical reaction takes a longer time to do its work. Standard removers will, however, serve for the purpose of removal in a commercially practical manner.

PORTABLE RAIL GRINDERS USED BY THE OMAHA & COUNCIL BLUFFS RAILWAY

The engineering department of the Omaha & Council Bluffs Street Railway has built a portable rail grinder of novel design. Heretofore all joints on both new and old track have been ground by hand. The portable grinder, as shown in the illustration, is provided with two sets of wheels, three for use on the track and two when it is desired to wheel it about on the pavement. Either set of wheels may be put in service by releasing the dog and shifting the



Omaha & Council Bluffs Portable Rail Grinder

large lever beside the motor from front to back or the reverse. Two of the wheels for use on the track may be easily detached, thus reducing the weight of the device and permitting it to be moved about a paved street with less effort.

The grinding mechanism includes a 5-hp motor, which the company considers too large but which was available for this purpose, a rheostat and a single-pole knife switch. The motor is connected to the 2-in. x 10-in. emery wheel by a set of sprockets and chain, which also serve to reduce the motor speed at the grinding tool. Energy is supplied to the motor through a flexible cable and pole connection to the trolley wire. The depth of the cut may be adjusted by a hand wheel and screw, the lower end of which forms the fork carrying the permanently attached wheel used in moving the grinder along the track. The grinder is operated by two men who push it back and forth over the work. One man, however, has complete control of the machine and regulates the cutting and the speed of the motor. It has been successfully operated on track where a three-minute headway is maintained, as only forty seconds is required for two men to remove it to clear a car.

American Wood Preservers' Convention

Abstracts Are Given of the Four Papers Presented at This Meeting of Most Interest to Electric Railway Companies—An Account Is Also Published of the Proceedings on the First Day

The ninth annual convention of the American Wood Preservers' Association was held at the Hotel Sherman, Chicago, Jan. 21 to 23, inclusive. The Tuesday morning session opened with E. A. Sterling, forest and timber engineer, Philadelphia, Pa., presiding and about seventy-five members in attendance. It was confined largely to matters of interest to the association. Following the roll call and reading of the minutes Professor Sterling made his annual address to the association. After complimenting the members on their hearty co-operation during the past year he called their attention to the fact that the association had grown from about 100 members in 1912 to over 150 this year. He also said that the ways and means committee of the House of Representatives was considering a 10 per cent import duty on creosote. He recommended that the association draft a resolution which could be presented to the ways and means committee offering objections to the proposed duty on creosote and presenting arguments showing the effects of the proposed increase on forest conservation.

Following the president's address, the secretary and treasurer, F. A. Angier, superintendent timber preservation Baltimore & Ohio Railroad Company, Baltimore, Md., presented his annual report. He also read a communication inviting the association to hold its annual convention in 1915 at San Francisco, during the Panama Pacific Exposition.

The address of welcome to the association was made by Bolling Arthur Johnson, editor of the *Lumber World Review*, of Chicago. After discussing the lumber trade in general and calling attention to its close relation to the wood-preserving industry, he said that the business had shown a wonderful growth but the industry had not improved materially in its methods. He thought that this was probably due to the fact that the lumber industry had not concentrated its interests in a single association, for a large number of associations existed in this country. He also said that it was probably due to a failure to give proper publicity to the work of the association. Concluding, he urged the spirit of publicity upon the association and said that co-operation and not competition was the life of trade.

The Tuesday afternoon session of the association opened with E. A. Sterling's paper on the production and supply of coal-tar creosote. As this subject was handled in a masterly way it left little room for discussion.

The next paper was that by H. F. Weiss, assistant director forest products laboratory, Madison, Wis. In commenting on his own paper Mr. Weiss said that the increasing shortage of hard wood for timber preservation purposes makes it absolutely necessary that the longest possible life be obtained from the timber employed at this time. As Mr. Weiss' paper was written with a view to starting discussion on the various subjects handled, several of the members had prepared written discussions which were then presented.

E. B. Fulk, chemist American Creosoting Company, Chicago, discussed several of the points presented, particularly in relation to the creosote preservation method. He took exception to Mr. Weiss' statement as to the toxicity of creosote when compared with zinc chloride. He said that his experience was that one-eighth of 1 per cent of creosote prevented the growth of certain fungi which zinc chloride retarded only after 1 per cent had been used. He said that the toxic value in both preservatives was high, and he did not want it understood that zinc chloride was better than creosote in all cases. The next point discussed was that of permanency of the preservative in the timber. He said that Mr. Weiss' comment on this seemed to indicate that

evaporation would continue until all creosote disappeared. He said this was not true, as the oldest examples of creosoted timber showed that plenty of it still remained in the wood. The rate of evaporation depends largely on the surrounding medium. It accelerates with surface exposure, and then only the more volatile constituents evaporate. If one attempted to remove these constituents from the solution up to a certain point, the cost of the preservative would be increased so that it would be prohibitive.

As to the mixing of refined tar with the creosote solutions, Mr. Fulk said it was not added as an adulterant but to reduce evaporation from the treated stick of timber. This evaporation takes place in timber in service over the outside and $\frac{1}{2}$ in. deep. The addition of tar to the preservative coats this exterior surface and prevents evaporation. He also said that tar itself was a preservative in that it was toxic, but not to so great a degree as creosote, as creosote was a concentrated solution of the toxic properties of the tar.

Following this discussion, W. F. Goltra, president W. F. Goltra Tie Company, Cleveland, Ohio, discussed the probable reasons for the increase in the use of creosoted timber and the apparent standstill in the quantity of zinc-chloride-treated timber used. He said that he agreed with Mr. Weiss as to the relative merits of the preservatives as regards toxic properties; that is, zinc first, creosote next and petroleum products and crude oil last. He said that the quantity of material treated with any preservative was no criterion as to its ability to preserve timber. In explaining the great increase in the quantity of creosoted timber used, he said that prior to 1905 zinc chloride was practically the only preservative for timber used in this country. At about that time several large steam roads made ten-year contracts with a creosoting concern, based on information they had obtained from foreign countries. Following the closing of these large contracts other steam roads fell in line, and consequently those companies which had not been convinced as to the preservative qualities of zinc chloride did not attempt to compare it with creosote but took the decision of the larger roads for granted. He said he did not believe that the preservative which possessed toxic properties was necessarily the best preservative. The primary requirement was to prevent decay but not to destroy the fungi. Any antiseptic which will prevent decay would make a good preservative. In summing up the situation he said, after all, it resolved itself into a question of cost of the timber or tie in the track. He did not believe we had been able to obtain as long life in this country as was the case in Europe, because the European method of treating was more thorough than ours. In his judgment, which he based on curves showing the average life of all treated timbers, about the same life could be obtained from zinc chloride as from creosote treatment, namely, ten to twelve years.

Continuing the discussion, F. S. Pooler, of the Chicago, Milwaukee & St. Paul Railroad, said that he was not interested so much in how long a life the treated timber would give as in obtaining a preservative which would give a life as long as the mechanical life of the timber in service. From his present experience he said that treated ties were not being removed because of decay but because they shattered and split in the track. The long life of ties obtained by the French, he said, was due to the extreme amount of care exercised in protecting the treated tie against mechanical wear.

J. H. Waterman, superintendent timber preservation Chicago, Burlington & Quincy Railroad, Galesburg, Ill., said

that in 1900 his road had treated 550 red-oak ties with zinc chloride for test purposes. These were laid in track in Colorado under heavy traffic, and it was necessary to remove only eighteen on account of decay at the end of twelve years. He said he had also treated yellow-pine ties in the same way in 1900 and placed them in main line track in the Black Hills. Traffic at this point was exceedingly heavy, but at the end of twelve years it was necessary to remove only 3 per cent. The pine ties were installed with tie plates only on the curves, but the oak ties were plated throughout. In reply to a question, he said that these ties were treated with $\frac{1}{3}$ lb. of zinc chloride per cubic foot.

In rebuttal, Mr. Weiss explained the position he had taken on a number of points. As to the relative toxic properties of creosote and zinc chloride, he said that his test was based on the fungus most common in decaying ties. The vitality in the different species of fungi varies, however, and this probably would account for the difference found by Mr. Fulk. In explaining his reason for objecting to tar in creosote, he said that its introduction into creosote was new, and it was well to try it out, but so far as he was concerned he had no data on which to base an opinion. He did say, however, that he believed that the tar would prevent penetration and at the same time leave a surface undesirable for workmen to handle.

As a further comment on the question of the relative merits of the two preservatives from the corrosion standpoint, Mr. Angier, of the Baltimore & Ohio Railroad, said that he had made a test at Sheridan, Wyo. He said that he had treated a certain number of ties with zinc chloride, another lot with water, and a third lot were not treated at all. After seven years in service the spikes, which had been carefully measured at the beginning of the test, were taken out and again measured. It was found that the spikes in the untreated tie showed $\frac{1}{24}$ in. corrosion, those in the tie treated with water $\frac{1}{28}$ in. and those in that treated with zinc chloride $\frac{1}{20}$ in.

Following this discussion, L. B. Shipley, of the Barrett Manufacturing Company, presented his paper on "Notes on Analyses in Testing of Coal-Tar Creosote." This paper dealt with experimental work on the following subjects: distillation tests of oils, comparative volatility of oils and extraction of oils from treated wood. Following considerable discussion of this paper, the meeting adjourned until Wednesday morning.

A COMPARISON OF ZINC CHLORIDE WITH COAL-TAR CREOSOTE FOR PRESERVING CROSS-TIES

BY HOWARD F. WEISS, ASSISTANT DIRECTOR FOREST PRODUCTS LABORATORY, MADISON, WIS.

Although a great many preservatives have been tested to preserve cross-ties, zinc chloride and coal-tar creosote are now by far the ones most extensively used in the United States. The author has frequently been called upon to compare these two preservatives. This paper aims to present the information which has thus been collected and to invite discussion. Please note, however, that only cross-ties are considered, and the data which follow should not be thought to apply to poles, piling or other products.

According to statistics gathered by the federal government, the number of cross-ties treated with zinc chloride in the United States shows no increase in the past four years, while the number treated with creosote has increased rapidly. (See Table I.)

This in itself might be looked upon as an answer to the query, "Which is the better of the two?" But after a careful investigation it appears that this question cannot be so easily dismissed.

The factors which I have considered in comparing the

two preservatives under discussion may be grouped as follows:

- (1) The toxicity of the preservative—namely, its ability to prevent decay.
- (2) The ability of the preservative to penetrate the tie.

TABLE I—NUMBER OF TIES TREATED WITH ZINC CHLORIDE AND CREOSOTE IN THE UNITED STATES.

Preservative	Year				
	1907	1908	1909	1910	1911
Zinc chloride	9,864,765	8,640,230	8,051,054	9,195,861	9,445,961
Creosote	5,750,874	9,620,420	9,943,360	14,841,843	16,510,721

- (3) The permanency of the preservative in the tie.
- (4) The effect of the preservative on the strength of the tie.
- (5) The effect of the preservative on the corrosion of spikes and plates, and the operation of block signals.
- (6) The financial saving due to the use of the preservative.

Of somewhat lesser importance are:

- (7) The uniformity in composition of the preservative and ease of securing it.
- (8) The combustibility of the preservative.
- (9) The ease of handling the preservative and ties treated with it.
- (10) The ease with which the penetration of the preservative can be determined.

TOXICITY OF THE PRESERVATIVE

Zinc chloride relies upon its toxic properties solely to protect ties from decay. Creosote, in addition to this, has a more or less waterproofing effect, which also acts as a protection against decay. According to the toxic tests made by Malenkovic, zinc chloride offered about twice the resistance to fungous attack (penicillium) as coal-tar creosote free from phenol. Tests made at the Forest Products Laboratory showed that ordinary coal-tar creosote had about the same toxicity as zinc chloride, four-tenths of 1 per cent being sufficient in each case to prevent fungous growth (Fomes annosus).

THE ABILITY OF THE PRESERVATIVE TO PENETRATE WOOD DURING TREATMENT

This is a feature of tie preservation which in practice receives too little consideration. All toxicity data show that both zinc chloride and coal-tar creosote are powerful fungicides, and that small quantities of them will inhibit decay. It is good practice, therefore, to diffuse the preservatives thoroughly through the tie so that as many of the wood cells as possible will be poisoned. A tie might contain 10 lb. or 12 lb. of creosote per cubic foot and yet be poorly treated if the oil was not well diffused; in fact, not nearly as well preserved as a tie having only 4 lb. to 5 lb. of the oil per cubic foot, but with the oil uniformly and deeply distributed.

It is well known that water solutions will penetrate wood more easily and thoroughly than oils; for example, in making what are called the "penetrance tests" at the Forest Products Laboratory it took about three minutes to force zinc chloride solutions through 6 in. of hemlock parallel to the grain, while creosote took over thirty minutes. Again, under similar conditions in treating red oak and maple ties we forced about 50 per cent more by volume of zinc chloride into them than we did coal-tar creosote. Any process which aims to impregnate ties with only a certain amount of preservative irrespective of the penetration secured is operated on an incorrect basis, and any specification which will enable ties to be treated in this manner is a poor specification. In treatments with zinc chloride a strong preliminary vacuum should be drawn and the solution admitted to the cylinder without breaking the vacuum, after which pressure should be applied and held to "refusal." The absorption of dry salt can then be controlled by varying the concentration of the solution rather than by varying the amount of solution forced into the ties. Unfortunately, this simple treatment cannot be used with creosote (except with certain resistant ties) because

too much oil would be absorbed and the treatment would become too expensive.

THE PERMANENCY OF THE PRESERVATION IN THE TIE

Permanency, as applied to preservation, involves two phenomena: (a) volatilization; (b) leaching.

Zinc chloride under conditions of use is non-volatile. Creosote, on the other hand, evaporates from the tie. The rate at which it evaporates depends on many conditions, such as its composition, method of injection, atmospheric conditions during seasoning, etc.

This objection to creosote has led in some cases to the use of tar as an adulterant, the idea being that such a mixture will withhold in the tie the more volatile constituents of the oil. It is quite probable that tar will do this, but there are strong objections to such practice, and its adoption should take place only after much more convincing data than we now have have been obtained.

Creosote is practically insoluble in water, while zinc chloride is readily soluble. From tests made in the Forest Products Laboratory it appears that certain amounts of zinc chloride cannot be leached out of wood even by very severe soaking. Just how much of the zinc chloride thus remains is not known, but tests on this point are now under way at the laboratory. It is claimed that the leaching of zinc chloride in ties can be retarded by air-seasoning them after treatment or by coating them with an oil, but no conclusive data on either of these claims have been obtained.

EFFECT OF THE PRESERVATIVE ON THE STRENGTH OF THE TIE

With decay largely eliminated from properly preserved ties, and with the tonnage of our roads constantly increasing, the problem of prolonging the life of ties from rail and spike cutting is becoming more and more acute. Obviously, a preservative which will decrease the strength of ties when injected will be subject to serious criticism. Tests made by the Forest Service some six years ago on loblolly pine ties indicate that the presence of zinc chloride did not weaken the wood under static loading but tended to make it brittle under impact, while no decrease in strength was noted for ties treated with creosote. Tests made since then indicate that both preservatives weaken the wood, although, if properly injected, the weakening thus caused is too small to be of practical importance.

THE EFFECT OF THE PRESERVATIVE ON CORROSION OF SPIKES AND PLATES AND THE OPERATION OF BLOCK SIGNALS

Some pieces of flange steel of equal dimensions, weight and quality were immersed, respectively, in coal-tar creosote and a 6 per cent solution of zinc chloride for three weeks and constantly heated at 98 deg. C. At the end of this time the steel in the creosote lost 0.0064 gram, while that in zinc chloride solution lost 1.4636 grams. Of course, this was a very severe test, not comparable to what takes place in the track, but even at atmospheric temperatures the corrosion of steel spikes and plates in contact with zinc-treated ties is probably greater than with creosoted ties. Whether it is of sufficient intensity to be a real detriment is not known to the author. The consensus of opinion among those who claim experience seems to be that if the zinc ties are properly seasoned before placement in the track the corrosion is of no appreciable consequence.

The presence of zinc chloride in wood is very liable to decrease the resistance of the tie to the passage of an electric current. Consequently, if the flow of current is away from the track a marked corrosion of the spikes will occur. This action may, however, take place in untreated ties, especially when wet. Zinc chloride, being deliquescent, tends to keep the ties moist, while creosote tends to waterproof them. Hence deterioration of spikes subject to the passage of electric currents is more likely to take place in ties treated with zinc chloride than in those treated with creosote.

The electrolytic action of zinc chloride and creosote in ties is a subject about which much discussion has occurred,

particularly in connection with the operation of automatic block signals. Most accurate tests bearing on this subject were made at Purdue University in 1910. These tests concluded that ties treated with creosote offer greater resistance than those treated with zinc chloride and less resistance than untreated ties, as shown in Table II.

TABLE II—SHOWING EFFECT OF TREATMENTS UPON THE ELECTRICAL RESISTANCE OF TIES

Kind of Wood	How Treated	Ratio of Resistance (Treated to Natural)
Loblolly pine	Full cell process	0.34
Short-leaf pine	Full cell process	0.79
Red oak	Burnett process	0.16

The experiences of several signal engineers are that zinc-treated ties will cause trouble with the block signals if they are placed in the track unseasoned or if the distance between blocks is too long. A shortening of the circuit to about 1000 ft. or 1200 ft. has in many instances remedied these difficulties.

FINANCIAL SAVING DUE TO THE USE OF THE PRESERVATIVES

A discussion of all factors finally simmers down to a discussion of cost. Because of the scarcity of authentic service records generalities must still be used. The numerous test tracks now placed throughout the country will, it is hoped, furnish us with accurate data upon which to base decisions. Quoting from a report of the wood preservation committee of the American Railway Engineering Association:

"Creosoting at present cannot be relied upon to preserve ties more than fifteen and one-half to nineteen years, an absolute maximum, unless the ties are protected against mechanical deterioration. If badly injected they perish from decay in five to twelve years. Burnettizing, when well done, can be relied upon to preserve ties from ten to fourteen years. There are great differences in the thoroughness with which the work can be done."

From the records quoted below we will assume that a tie properly treated with zinc chloride will last, on an average, twelve years, and with creosote seventeen years, which in an untreated condition would last five years. We will assume that the cost of the tie untreated is 45 cents, the cost of creosoting 30 cents, the cost of Burnettizing 15 cents and of placement in the track 15 cents. We then have:

- Cost of untreated tie in track, 60 cents.
 - Cost of Burnettized tie in track, 75 cents.
 - Cost of creosoted tie in track, 90 cents.
 - Life of untreated tie in track, five years.
 - Life of Burnettized tie in track, twelve years.
 - Life of creosoted tie in track, seventeen years.
- From these values, figured at 5 per cent compound interest, we find that:

- Annual cost of an untreated tie equals 13.86 cents.
 - Annual cost of a Burnettized tie equals 8.40 cents.
 - Annual cost of a creosoted tie equals 8.01 cents.
- And if figured without interest:
- Annual cost of an untreated tie equals, 12 cents.
 - Annual cost of a Burnettized tie equals 6.25 cents.
 - Annual cost of a creosoted tie equals 5.29 cents.

From this it may be deduced that both preservatives are very economical to use in comparison with untreated ties, and that of the two creosote is ultimately slightly cheaper. Under the assumptions here taken zinc-treated ties must last about twelve and one-half years in order to have the same annual charge as creosoted ties, while the creosoted ties must last fifteen and one-half years in order to have the same annual charge as the zinc-treated ties.

UNIFORMITY IN THE COMPOSITION OF THE PRESERVATIVE AND EASE OF SECURING IT

The zinc chloride produced in the United States is, for a commercial product, extremely uniform in its composition and the quality can be readily duplicated and obtained. Creosote, on the other hand, varies considerably in its com-

position and is not easily secured in satisfactory grades. The American Railway Engineering Association recently drew up three specifications for creosote to be used in tie preservation, and more discussion and argument have taken place over what kind of an oil should be used than have taken place over any other feature of wood preservation.

THE COMBUSTIBILITY OF THE PRESERVATIVE

Zinc chloride is non-inflammable; creosote is inflammable; hence a zinc chloride plant presents a lower fire risk than a creosote plant. Zinc chloride-treated ties can be considered more fire-resistant than untreated ties. When freshly treated creosoted ties are easily ignited, but their resistance to inflammability increases as their seasoning progresses. Inflammability tests gave a temperature of ignition for zinc-treated wood of 287 deg. C., 19 per cent of the wood, by weight, being burned. Freshly creosoted wood tested under the same conditions ignited at 176 deg. C., and 40 per cent of its weight was burned. When, however, it was air-seasoned after treatment for ninety days the temperature of ignition was 216 deg. C. and the loss in weight 27 per cent.

EASE OF HANDLING THE PRESERVATIVE AND TIES TREATED WITH IT

Zinc chloride solutions can be readily handled at much lower temperatures than coal-tar creosote and do not present the many difficulties of heating that accompany the operation of creosote plants; on the other hand, they cause a great plant depreciation, owing to their corrosive action.

TABLE III—SYNOPSIS OF THE COMPARISON OF ZINC CHLORIDE WITH COAL-TAR CREOSOTE FOR PRESERVING TIES

Factors Considered	Zinc Chloride	Coal-tar Creosote
Toxicity	Toxic limit about 0.4 per cent.	About same as for zinc chloride
Volatility of preservative in tie	Non-volatile	Volatile
Leachability of preservative	Leaches from wood	Does not leach from wood
Penetration of preservative	Penetrates easier than creosote	More resistant than zinc chloride
Effect on strength of ties	Produces but little weakening	Weakening of no practical importance
Corrosion of metal	More corrosive than creosote	Corrosive action insignificant
Effect as an electrolyte	Favors current leakage	Much more resistant than zinc chloride
Uniformity of composition	Very uniform	Very variable
Combustibility of treated wood	More resistant than untreated wood	Much more combustible than zinc-treated wood
Ease of handling	Easier than creosote	More difficult than zinc chloride
Ease of testing penetration	More difficult than creosote	Simple
Financial saving due to use	Slightly less than for creosote	Slightly more than for zinc chloride
Cost of treatment	Lower initial cost than creosote (about 15 cents per tie)	Higher initial cost than zinc chloride (about 30 cents per tie)
Ultimate life	Shorter than creosote (about twelve years)	Longer than zinc chloride (about seven teen years)

Trouble has been experienced in getting track men to handle creosoted ties, supposedly on account of their disagreeable nature and their effect on the health of the track men. Such objections can, however, be avoided. There have been no complaints against zinc-treated ties in this connection.

EASE WITH WHICH THE PRESERVATIVE CAN BE TESTED AND ANALYZED IN THE TIE

The presence of creosote in the ties can be detected more readily than the presence of zinc chloride, and as a knowledge of the depth of penetration is highly important, creosoted ties are much easier to examine. A chemical analysis of the treated ties is not feasible for daily use, so that the best method of detecting the depth of penetration in zinc-treated ties is to cut a section and apply chemicals to produce color changes, or to heat the freshly cut section in an oven above the boiling point of water. However, a careful inspection of the treating plant and process is worth as much, if not more, than a critical examination of a few ties.

SUMMARY OF RESULTS

All the factors discussed above are summarized in Table III. Its study will show that there are good grounds

for hesitating in the selection of a preservative to be used in treating ties, and that the conditions peculiar to each road, or even parts of the same road, should affect such a decision. No sweeping generality can have much practical significance. The more noteworthy points brought out by this study are at present:

(1) Zinc chloride and coal-tar creosote, when used under normal conditions, are both effective preservatives of cross-ties, and there is little choice between them so far as annual charges are concerned.

(2) Creosoted ties in general cost initially more than Burnettized ties, the cost of treatment being from about two to three times as great.

(3) Creosoted ties last, on an average, longer in the track than Burnettized ties, hence require less frequent renewals and changes in the roadbed.

(4) If creosote advances appreciably in price it will very probably result in stimulating the number of ties treated with zinc chloride.

PRESERVATION OF LUMBER FOR CAR CONSTRUCTION

BY J. H. WATERMAN, SUPERINTENDENT TIMBER PRESERVATION CHICAGO, BURLINGTON & QUINCY RAILROAD

The amount of lumber which it is advisable to treat with creosote for car construction will always be limited, because it is impracticable to paint timber after it has been creosoted. Most roads in this country have a standard color for their cars, and they would not want to change that color to black. But if there is no objection to that color creosoted timber is the ideal, for the cars would be permanently painted, provided the timber was framed before it was treated. So far we have treated only car sills and car decking.

FIR CAR SILLS

To date we have treated a total of twenty-three runs. We succeeded in getting an average absorption of 11.41 lb. per cubic foot. Other statistics follow:

Board feet treated, 326,204; average steam pressure, 15 lb.; average time steam, 2 hours 23 minutes; average initial vacuum, 23 in.; average initial vacuum held, 1 hour 37 minutes; average solution pressure, 175 lb.; average solution pressure held, 17 hours 26 minutes; average final vacuum, 20 in.; average time final vacuum, 1 hour.

FIR CAR DECKING

To date we have treated a total of thirty-nine runs. We succeeded in getting an average absorption of 14.33 lb. per cubic foot. Other statistics follow:

Board feet treated, 1,013,472; average steam, 15 lb.; average time steam, 57 minutes; average initial vacuum, 24 in.; average initial vacuum held, 1 hour 6 minutes; average solution pressure, 175 lb.; average solution pressure held, 13 hours 10 minutes; average final vacuum, 21 in.; average time final vacuum, 1 hour.

With fir car sills in the sap wood we got a thorough penetration, but in the hard wood not to exceed 1 in. all around. The car decking, when dry, was thoroughly penetrated with creosote. We feel that it is not only practicable but that it pays to treat the car sills and car decking for stock cars. It would be impracticable to treat car decking for box cars on account of the odor. They could not be used for flour and many other lines of merchandise, which would absorb at least the odor from the wood if treated with creosote, and we never can look for a very broad field to operate in so far as treating car lumber goes. However, I believe it is practicable to treat car decking for stock cars and flat cars. For stock cars the creosote acts as a disinfectant; from that standpoint it would be not only practicable, but, I believe, effective. For the roads that are using lumber for car sills, there is no question that it would lengthen the life very materially, but how much I am not

able to say, for we have only practised treating car sills and car decking for about one year. In all of our new stock cars now that we build with wooden sills we treat the sills and in all of them we treat the decking.

THE REQUIREMENTS FOR SUCCESSFUL TIMBER TREATMENT

BY HERMANN VON SCHRENK, ST. LOUIS, MO.

Timber treatment has grown so rapidly in the United States that the amount of material actually treated in every year now is ten times what it was seven or eight years ago, and the number of men engaged in the industry has correspondingly increased. As the use of treated wood has increased, inevitably some conditions have arisen which I believe it is well for us to consider. In the early days of timber treatment there was a good deal of experimenting as to methods, and, for that matter, there is still some experimenting, but, as the result of some twenty years' experience, some facts are sufficiently well known at the present time to all of us, and these facts have become more or less axiomatic. Briefly stated, in order to get good results from treated timber the following points must be observed:

- (1) Only perfectly sound timber should be treated.
- (2) In order to obtain the best results, properly seasoned material should be used.
- (3) A good preservative is essential to long life.
- (4) Proper injection as to quantity and penetration is essential.
- (5) Proper subsequent handling of the timber is essential.

In my investigations I have found that the premature failures of so-called treated timber were almost without exception due to the non-observance of one or more of the above principles. I am perfectly sure that in the early days a good deal of timber was treated which was sap-rotten. It was not realized ten years ago, as it is to-day, that timber may be very badly decayed in the interior and yet show absolutely no evidence on the outside. With the best intentions, therefore, many sticks of wood were doubtless treated which we would unhesitatingly throw out to-day. Many of the failures were, however, due to the fact that timber was treated because of certain contract requirements and in spite of a better knowledge of the person responsible for the actual treatment. The lessons to be drawn from failures are very obvious, and I believe we should take cognizance of them, particularly in view of more thorough knowledge of all the factors surrounding the operations which make for successful treatment.

While there is no doubt very general agreement among the men engaged in the timber-preserving industry as to the fundamental conditions enumerated above, we all know that frequently, under stress of business circumstances, they are not always adhered to. The consumer frequently makes demands which cannot be fulfilled, and if they are, they are bound to result in speedy and ultimate failure.

The inspection of material before treatment should be made with greater care. I believe that every treating company should be empowered to refuse to treat material which it knows to be defective. In other words, I do not think that anyone is warranted under any circumstances in treating material which he knows to be unfit because of various defects. A defective stick was never improved by any kind of treatment.

The same holds true for improperly seasoned material. The excuse is frequently given, in demanding treatment of absolutely green material, that emergencies have arisen which necessitate such treatment, or some similar explanation is given. Unfortunately, with the increased use of timber in its various forms, the tendency to require and do such rush work seems to me to be increasing. It is fre-

quently inconvenient to wait six or eight months, or more, to season material properly; besides, it costs considerable for interest charges.

That which has been said for the inspection of the material before treatment holds equally for the preservative used and the manner of treatment. How much service do you suppose will be obtained by treating green red-oak ties with 2 gal. of creosote oil by the full-cell process? We all know that the penetration of timber so treated is insignificant and that internal sap rot is bound to occur in comparatively short periods of time.

TIMBER FOR CREOSOTED BLOCK PAVING

BY HARRY G. DAVIS, MANAGER PAVING DEPARTMENT CHICAGO CREOSOTING COMPANY, CHICAGO, ILL.

In selecting a wood for paving purposes three things should be taken into consideration. These are:

First—The adaptability of the wood to the purpose designed.

Second—The availability of the wood selected.

Third—The commercial conditions surrounding the wood selected.

By "adaptability" is meant both the probable service that will be given by the blocks manufactured therefrom and the natural characteristics of the wood with respect to the manufacture of the blocks.

A pavement, be it wood block, brick, stone, asphalt or tar, is laid for two purposes—namely, to facilitate traffic and to increase sanitation. The only feature worthy of consideration from the standpoint of this paper is that relating to traffic, and more particularly with reference to the effect of traffic upon the pavement. As this is true, it is necessary to select a wood which is sufficiently strong in texture to withstand the effects of the traffic and give a long life to the pavement.

Engineers, as a rule, are prone to be entirely too strict in their requirements. For instance, engineers of this country have been making long-leaf yellow pine the standard of perfection in a paving block. This wood was used in probably 75 per cent of the creosoted block pavements laid prior to 1911, when they decided that a short-leaf pine might be used if of close growth. The change was a wise one, inasmuch as short-leaf pine, while not so strong a wood as the long-leaf, is sufficiently strong for a paving block.

It is not necessary in selecting a wood for paving purposes to require one of the greatest possible strength but simply to call for a timber of sufficient strength to withstand the stress to which it will be subjected under traffic. Following this principle you will find that there are several commercial woods available for paving purposes, any of which are sufficiently strong for the purpose, and elimination must come through the more technical features of wood preservation, such as the adaptability of the wood to treatment and its power to withstand decay after treatment.

Experience has proved that in the Central West we have at least four woods which, when tested by every possible requirement, are suitable for paving purposes. These woods are Southern yellow pine, tamarack, hemlock and maple. One street paved in Chicago with black gum is not considered a sufficiently conclusive experiment to warrant the formation of a definite opinion.

For the past ten years the city of Chicago has confined its wood-block pavements almost entirely to yellow pine; in fact, all the streets laid prior to 1912 were yellow pine with two exceptions. These were about 1500 yd. of Southern black gum and about 8000 yd. of street car right-of-way paved with tamarack. In the past year we have laid a test intersection with maple and about 2 miles of tamarack blocks. The yellow pine has given excellent satisfaction on some of the heaviest traffic streets in the country. We have one street in the Loop district in Chicago paved six

years ago with yellow pine, and certainly no one can say there has been the slightest failure due to any defect in the timber.

About five years ago the Chicago Railways Company purchased some tamarack blocks which were used in paving the right-of-way on Dearborn Street between Van Buren and South Water Streets. Although the construction of this pavement is open to considerable criticism, especially the treatment around the tie rods, yet the pavement is in excellent condition to-day and shows just as good results as have been obtained from yellow pine blocks.

A little more than a year ago our company furnished enough hard maple blocks to pave the intersection of Madison Street with Fifth Avenue, one of the spots with the heaviest travel in the city of Chicago. It is estimated that the daily vehicle traffic on Madison Street is 8000, while that of Fifth Avenue is over 5000. Pounded by traffic from four directions, these blocks do not show the slightest sign of wear. In fact, so satisfactory was the result that the Chicago Railways Company purchased its entire supply for 1912, specifying maple.

With reference to hemlock, attention is called to the results shown by this wood in the test pavement in Minneapolis laid under the supervision of the United States government. In a seven-year test hemlock showed only 1/16 in. more wear than the strictly long-leaf yellow pine. In compensation for this, it is understood that the relative quality of yellow pine used in this test was better than that of any other wood placed in the pavement.

Certainly these instances should prove that so far as the strength of the four woods mentioned is concerned, the engineer should have little or no hesitation in making his specification open to all. There is no doubt that hard maple is the strongest of the four, followed next by the yellow pine, and then by tamarack and hemlock. But each is sufficiently strong for paving purposes.

NORTHWESTERN CEDARMEN AT DULUTH

The seventeenth annual meeting of the Northwestern Cedarmen's Association was held in Duluth, Minn., on Jan. 7 and 8. T. B. Bradley, of Duluth, the president, occupied the chair. In his annual address he commented on the organization of the Cedarmen's Exchange for Interinsurance and also referred to an order of the Interstate Commerce Commission in the matter of the investigation of alleged irregularities and discrepancies in the weighing of freight by carriers. Mr. Bradley contended that the carriers do not give proper consideration to claims for overweight. He also referred to the practice of the railroads in making an allowance of only 500 lb. a day for the stakes and equipment of open cars. He believed the weight allowance should be 1200 lb.

Secretary H. H. McKinney, of Minneapolis, in his annual report, said it was probable that about the same amount of stock would be put in this season as a year ago. The association had twenty-two calls for inspection during 1912, thirteen of which were for poles. Mr. McKinney suggested that steps be taken at the present session of the Legislature of Minnesota to secure the enactment of a law giving the State Railroad & Warehouse Commission the same authority over the weighing of lumber and forest products as it has now over grain, hay and coal. The Northwestern Cedarmen's Association now has thirty-two members.

The Wednesday morning session was given over to a discussion of the proposed change of name of the association from the Northwestern Cedarmen's Association to the Northern White Cedar Association. On motion of Mr. Clark a special committee of three will be appointed to report on this subject at the next annual meeting. Another special committee will consider changes in the constitution in reference to time of meetings.

Officers for 1913 were elected as follows: President, W. C. Moss, Minneapolis; vice-president, J. W. Benham, Chicago; treasurer, W. B. Thomas, Manistique, Mich.; secretary, H. H. McKinney, Minneapolis; directors, E. L. Clark, Minneapolis; H. W. Reade, Escanaba, Mich.; M. K. Bissell, Escanaba, Mich.

SUB-COMMITTEES ON MODEL PUBLIC UTILITY BILL

An account of the work of the Department on Regulation of Interstate and Municipal Utilities of the National Civic Federation was published in the *ELECTRIC RAILWAY JOURNAL* for Dec. 14, 1912. The following is a list of the sub-committees to which have been referred different parts of the bill. A report on the work of this department will be made at the annual convention of the National Civic Federation at New York, Jan. 28 and 29.

RATES

Halford Erickson, Railroad Commission of Wisconsin (chairman); Charles R. Crane, Chicago; F. A. Delano, president Wabash Railroad, Chicago; Alexander C. Humphreys, president Stevens Institute, Hoboken, N. J.; F. K. Lane, Interstate Commerce Commission, Washington, D. C.; J. C. Lincoln, manager traffic bureau, Merchants' Association, New York; Theodore N. Vail, president American Telephone & Telegraph Company, New York.

CONTROL OF SERVICE

W. D. Kerr, National Civic Federation (chairman); H. C. Abell, American Light & Traction Company, New York; Union N. Bethell, vice-president New York Telephone & Telegraph Company; M. S. Decker, Public Service Commission, Second District, Albany; B. A. Eckhart, Chicago, Ill.; Charles L. Edgar, president Edison Electric Illuminating Company, Boston; D. O. Ives, manager transportation department, Chamber of Commerce, Boston, Mass.; W. D. Pence, Railroad Commission, Madison, Wis.; Robert R. Prentiss, chairman State Corporation Commission, Richmond, Va.; R. N. Searle, vice-president Rochester Railway & Light Company, Rochester, N. Y.; Alfred H. Smith, vice-president and general manager New York Central & Hudson River Railroad, New York; Charles A. Stone, Stone & Webster, Boston; William R. Wheeler, traffic manager, Chamber of Commerce, San Francisco, Cal.; W. J. Huddle, consulting engineer, Madison, Wis.

ACCOUNTS AND REPORTS

E. M. Bassett, formerly Public Service Commissioner, First District, New York (chairman); J. E. Allison, Public Service Commission, St. Louis, Mo.; Edward G. Connette, president International Railway Company, Buffalo, N. Y.; W. M. Daniels, Board of Public Utility Commissioners, New Jersey; C. N. Duffy, vice-president Milwaukee (Wis.) Electric Railway & Light Company; B. S. Garvey, general auditor Chicago Telephone Company; Edwin Gruhl, North American Company, New York; Adna F. Weber, chief statistician Public Service Commission, First District, New York; R. H. Whitten, Public Service Commission, First District, New York.

CONTROL OF CAPITALIZATION

M. R. Maltbie, Public Service Commission, First District, New York (chairman); W. J. Clark, General Electric Company, New York; George B. Cortelyou, president Consolidated Gas Company, New York; B. H. Meyer, Interstate Commerce Commission, Washington, D. C.; James Speyer, New York; Timothy S. Williams, president Brooklyn Rapid Transit Company.

FRANCHISES

Blewett Lee, Illinois Central Railroad, Chicago (chairman); Alfred L. Baker, attorney, Chicago; H. M. Byllesby, Chicago; John H. Carlisle, Watertown, N. Y.; Samuel Insull, president Commonwealth Edison Company, Chicago; John H. Roemer, Wisconsin Railroad Commission, Madison, Wis.; Mason B. Starring, president United Railways Investment Company,

New York; John H. Wigmore, dean law school, Northwestern University, Chicago; Thomas N. McCarter, president Public Service Corporation, Newark, N. J.; Josiah T. Newcomb, New York; Leo S. Rowe, professor University of Pennsylvania, Philadelphia.

WAYS AND MEANS

F. Q. Brown, New York (chairman); William Barbour, president Linen Thread Company, New York; T. C. du Pont, Wilmington, Del.; John H. Gray, Minneapolis; V. Everitt Macy, New York; Emerson McMillin, New York; Josiah T. Newcomb, New York; Albert Shaw, New York; Isaac N. Seligman, New York; F. C. Walcott, New York; J. G. White, New York; Arthur Williams, New York; T. S. Williams, Brooklyn.

SAFETY OF OPERATION

Arthur Williams, New York Edison Company (chairman); W. G. Lee, Cleveland, Ohio; William B. McKinley, president Illinois Traction System, Peoria, Ill.; W. S. Stone, Brotherhood of Locomotive Engineers, Cleveland, Ohio; Daniel Willard, president Baltimore & Ohio Railroad; W. R. Willcox, Public Service Commission, First District, New York.

FORM

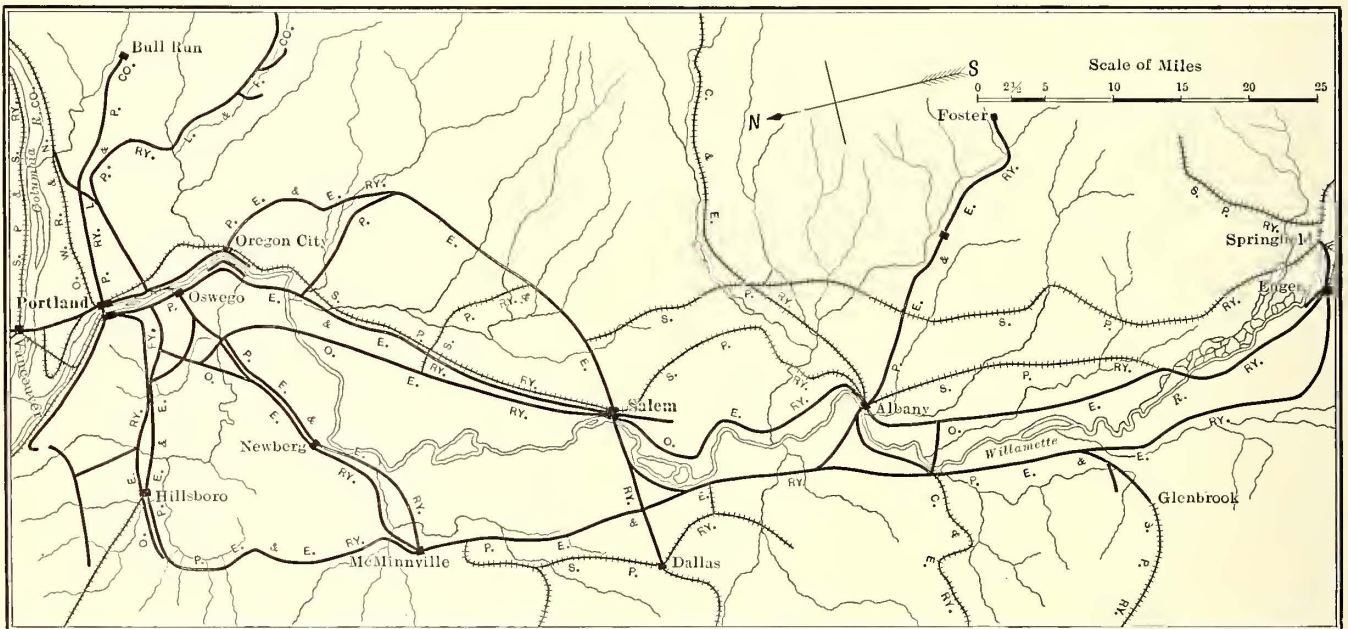
John H. Gray, director of investigation, New York (chairman); W. S. Allen, American Telephone & Telegraph Com-

mitted these figures, based on allowances for equal pole diameters: Modulus of rupture, pounds per square inch, Michigan white cedar, 3400; Idaho red cedar, 6670. Breaking load, pounds per square inch, Michigan white cedar, 8450; Idaho red cedar, 18,510.

The following officers were unanimously elected for the ensuing year: President, H. C. Culver, Sandpoint, Iowa; vice-president, M. P. Flannery, Spokane, Wash., and secretary-treasurer, R. L. Bayne, Spokane, Wash. W. M. Leavitt and E. A. Lindsley, with the president as member ex officio, were appointed as a committee to draft a constitution and by-laws for the association, the dues of which have been raised to \$25 a year.

EXTENSIVE ELECTRIC RAILWAY CONSTRUCTION IN OREGON

In Oregon more miles of electric railway lines are being constructed now than in any other part of the country. This is due to the activities of two important groups of railroad interests, the Hill interests, as represented by the Great Northern Railway, and the Harriman interests, represented by the Southern Pacific Company. Both are spending large sums of money in electric



Map Showing Electric Railways Being Built in the Willamette Valley, Oregon

pany, New York; E. W. Bemis, Chicago; Charles P. McCarthy, Legislative Reference Library, Madison, Wis.; Edgar J. Rich, Boston, Mass.

WESTERN RED CEDAR ASSOCIATION

At the annual meeting of the Idaho Cedarmen's Association, held Jan. 14 at Spokane, Wash., the name of the organization was changed to that of the Western Red Cedar Association to include the larger geographical distribution of the present membership, practically all of which was represented at the meeting. A feature of the session was the report received from J. B. Knapp, United States assistant district forester, Portland, Ore., covering comparison tests of Michigan white-cedar and Idaho red-cedar poles, 25 ft. in length, with 7-in. tops. The Idaho poles examined were declared very much superior by the forester, the Eastern poles containing varying amounts of center rot and a good many knots. For comparisons of strength, obtained with a 200,000-lb. Olsen testing machine, he sub-

mitted these figures, based on allowances for equal pole diameters: Modulus of rupture, pounds per square inch, Michigan white cedar, 3400; Idaho red cedar, 6670. Breaking load, pounds per square inch, Michigan white cedar, 8450; Idaho red cedar, 18,510.

railway construction in the fertile Willamette River Valley, which extends south from Portland, and that region promises soon to possess not only excellent railroad facilities but to take rank among the most important interurban electric railway systems in the United States. The Hill interests were the first to enter the field so far as electric railways are concerned, and in 1910, in combination with the Northern Pacific Railway, they purchased all of the outstanding common stock of the Oregon Electric Railway, a 50-mile electric line which had been built from Portland south into the Willamette Valley. A short account of this line was published in the ELECTRIC RAILWAY JOURNAL for March 20, 1909, page 494. Since that time the line has been greatly extended, and during the past year the company has built 78 miles of track, while important extensions are proposed during the coming year. An idea of the character of construction may be obtained from the statement that during 1912 the bridges constructed for this line included one of 1200 ft. in length over the Santiam River, including seven spans of 125 ft.

each, one over the Willamette River 820 ft. long in three spans of 200 ft. and two girders of 110 ft., and one over the Calapooia River with a span of 150 ft.

Catenary construction is used with 1200 volts direct current on the trolley wire. Freight terminals have been provided at a number of cities along the route, and a freight cut-off has been built at North Portland. During the last year the company has purchased two sleeping cars from the Barney & Smith Car Company to operate between Portland and Eugene.

In its power transmission system the company is planning to use hydraulic power near the headwaters of the MacKenzie River at the outlet of Clear Lake. A concrete dam will be constructed at this point which will divert the water through a tunnel 1000 ft. in length with a finished area of 86 sq. ft. and a descent of approximately $7\frac{1}{2}$ ft. per mile. At the power station this water will have a head of 907 ft. At present 30,000 hp will be developed, but the storage facilities will permit of 60,000 hp over such periods as are necessary to care for normal loads. The power will be transmitted at 60,000 volts.

The track and roadway is being built according to steam railroad standards with a maximum grade of four-tenths of 1 per cent and three degrees of maximum curvature with long tangents. One tangent is 24 miles in length.

PORTLAND, EUGENE & EASTERN RAILWAY

The Portland, Eugene & Eastern Railway is the inter-urban electric railway being built by the Southern Pacific interests which already have a steam railroad line through the Willamette Valley. The Portland, Eugene & Eastern Railway lies to the east and also to the west of the Oregon Electric Railway between Portland and Salem and to the west of the Oregon Electric Railway between Salem and Eugene.

The new railway commenced the construction in 1909 of 100 miles of track and has completed what is known as the West Side Loop, connecting Hillsboro, McMinville, Newberg and Oswego. In 1912 a beginning was made on the second unit of 240 miles, covering the territory south of Salem as far as Eugene, and it was decided to incorporate in the general scheme the existing city electric lines in Salem, Eugene and Corvallis. Important bridges have been built and others are projected, and it is believed that 340 miles of track will be in full electric operation about the close of 1913. The freight will be handled by electric freight locomotives. The total outlay involved in this proposed development is about \$12,000,000.

The overhead catenary construction will be used, but a pantograph will be employed, as on the Southern Pacific lines at Oakland, instead of the wheel trolley.

RESULT OF MIDI LOCOMOTIVE COMPETITION

As noted in the *ELECTRIC RAILWAY JOURNAL* for Jan. 4, 1913, the French Southern Railway (Midi Railway) has been experimenting during the past year with individual single-phase locomotives as furnished by six manufacturers for its trail line between Perpignan and Villefranche. It is now announced that three of these six locomotives have been found acceptable, namely, one from the French Thomson-Houston Company, with mechanical equipment furnished by the Schweizerischen Lokomotivfabrik, Winterthur, Switzerland; one from the French Westinghouse Company and one from the Jeumont Company (Ateliers de Constructions Électriques du Nord et de l'Est). The traction equipment of the Thomson-Houston and Westinghouse locomotives comprises two 600-hp motors, and that of the Jeumont locomotive three 400-hp motors. All of these ratings are on the hour basis. Each locomotive was specified to develop a tractive effort of 27,500 lb. at starting; also to draw a train of 280 metric tons at 24.8 m.p.h. or a train of 100 metric tons at 37.2 m.p.h.

CHICAGO SURFACE RAILWAY OFFICIALS ADVOCATE PROPOSED TRACTION MERGER

Urging the local transportation committee of the City Council of Chicago to consider favorably the proposed merger of all the traction interests in that city, official representatives of the two principal surface street railway systems in Chicago appeared before the committee on Jan. 21 and made speeches that were of considerable interest. The first speaker was Leonard A. Busby, president Chicago City Railway Company, who made a frank appeal for approval of the proposed merger, in response to the committee's request for his views on the subject. He remarked first that the plan under consideration included the unification of all the surface and elevated railway lines in Chicago, universal transfers with 5-cent fare, a downtown subway for the elevated railway lines and the removal of the Union Loop after the subway was in operation, rapid transit from one division of the city to another, construction of a comprehensive subway system at some later date, and finally the amortization of the investment by the application thereto of the city of Chicago's share of the profits of operation, so that eventually the city may own the entire system.

Mr. Busby gave an interesting review of the operation of the 1907 ordinances relating to surface street railway service in Chicago. These ordinances have now been in effect nearly six years. At the time they were adopted they represented perhaps the most advanced step in the contractual relations of municipalities and street railway companies. Since then they have been the basis of settlements in several other cities. In the six-year period the companies have spent more than \$85,000,000 in cash in the rehabilitation of their systems. Practically the entire equipment has been replaced, 80 per cent of the track has been rehabilitated and there are now eighteen through routes from one part of the city to another. At the time the ordinances were adopted the greatest area served by a single 5-cent fare was 48 sq. miles; now it is 134 sq. miles. At the earlier date the longest ride for a nickel, including possible transfers, was 13 miles; now it is 27 miles. In 1907 the actual cash return to the Chicago City Railway Company for each passenger ride was 3.2 cents; now it is 2.84 cents. During the six years ended Feb. 1, 1913, more than \$10,000,000 will have been paid into the city treasury of Chicago by the street railway companies as the city's 55 per cent of the net divisible receipts.

The speaker expressed his belief that the surface street railway transportation given in Chicago was the best in the country. He said that the 1907 settlement ordinances were very fair to the city, but perhaps they were too burdensome on the companies; nevertheless, he did not criticize them. The results obtained have far surpassed what was reasonably anticipated at the time the ordinances were adopted. Notwithstanding this fact there have been persistent criticisms of the street railway conditions in Chicago: there has been serious complaint of downtown service during rush hours. On the South Side lines of the Chicago City Railway Company about 1000 cars are used during the rush hours, whereas 570 are sufficient during the remainder of the day. On some of the downtown loops cars are run during the rush period on sixteen-second headway. The flow of transportation is clogged and congested by the necessity of making these downtown loops with their numerous crossings. This looping arrangement downtown is due to the separate ownership of the two great surface street-railway systems in Chicago. Much the same situation exists in relation to the elevated railways, with their downtown Union Loop.

The solution proposed by Mr. Busby is unified operation, which would remove the "transportation eddy" in the downtown business district of the city. Practical street railway

men agree that this unified operation would add 30 per cent to the physical operating capacity of the surface lines of Chicago. The remedy is the merger of the properties. Mr. Busby pointed out what the saving of time in transportation means to the people of the city. The results to be obtained are of the highest importance. The speaker discussed the situation in other cities. In New York, for instance, there is no universal fare between elevated, surface and subway lines, such as is proposed in Chicago. In fact, the liberal arrangement proposed for Chicago does not exist in any other city. Mr. Busby urged the committee to look on the merger from the point of view of the results to be obtained. The question of the valuation of the elevated railway properties is of minor importance.

At this point Mr. Busby took up the committee's suggestions for improved service. In relation to the universal transfer and 5-cent-fare proposition, he said that there was no question that the companies would adopt it, provided it could be worked out from the nickel. As to the elevated railway valuation, he thought a compromise might be had. He said that the difference between the city and the elevated railway companies is comparatively slight in view of the fact that in any event by far the greater part of the valuation of the combined companies will be made up of the surface companies' valuation, which is now fixed at about \$135,000,000. Speaking for his own company, Mr. Busby said that he would welcome the proposal that a representative of the city be a director of the combined companies.

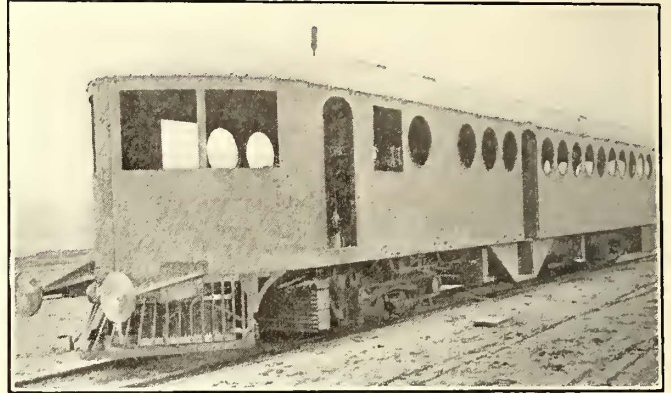
W. W. Gurley, general counsel for the Chicago Railways Company, agreed with what Mr. Busby had said. Speaking for the "association" which owns the Chicago elevated railway companies, he said that prior to the purchase it had canvassed the value of these railways very carefully. It was necessary to raise nearly \$47,000,000, and to do this the promoters of the "association" had to give their obligations to return \$50,000,000 in three years' time. The present owners ask to be reimbursed for the money that they actually put in and for the obligations they have actually incurred. It is for the city to decide whether it will do this. Mr. Gurley remarked, however, that there cannot be a successful merger of the traction interests in Chicago unless the elevated lines are taken in. He declared that his company was content with the valuation placed on the elevated railway companies by the present owners and would be willing to go into the merger on that basis.

There was some discussion by the aldermen, and a resolution offered by Aldermen Long was finally adopted. This resolution recites that there is a difference of nearly \$30,000,000 between the companies' valuation of the real estate of the elevated railways and the city's valuation (the figures in round numbers are respectively \$46,000,000 and \$16,000,000). The effect of the resolution is to refer to a sub-committee this question of real-estate valuation to recommend, perhaps, some plan of possible adjustment. The sub-committee consists of Aldermen Block, Richert, Lipps, Captain and Long.

In the heart of the city of Cleveland lies a compact area in which there is a heavy demand for direct-current energy combined with a market for steam heating during the winter months. The Cleveland Electric Illuminating Company maintains a generating station in this district and uses the exhaust steam from the turbines for heating. In it is a 3750-kw geared turbo-generator, the largest direct-current unit of the kind yet constructed. The operating speed of the turbine is 1800 r.p.m., and the reduction ratio of the gear is 1 to 10. The large gear of this speed-reducing mechanism is 100 in. in diameter and has 259 teeth. The pinion has twenty-six teeth, and the ratio of 26 to 259 gives the "hunting-tooth" feature which has been recognized as desirable in the design of toothed gearing. The speed of this gear at the pitch line is approximately 54 miles an hour.

NARROW-GAGE GASOLINE CARS FOR AUSTRALIA

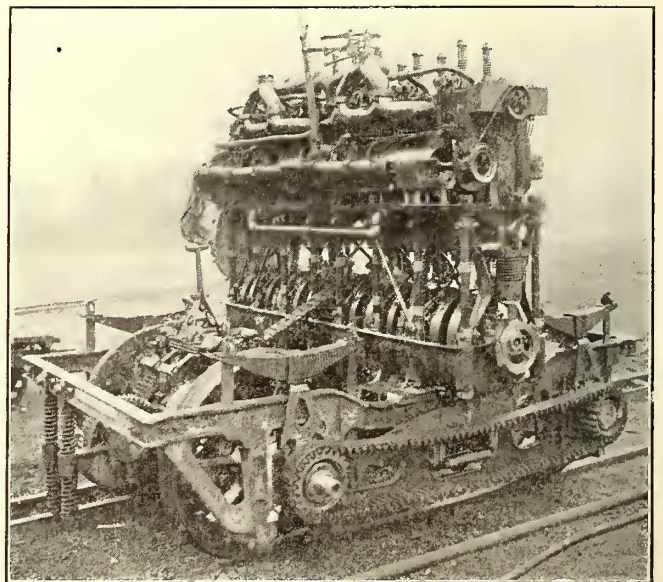
The McKee Motor Car Company, Omaha, Neb., recently completed and shipped five 200-hp all-steel 55-ft. gasoline motor cars from its works to the Queensland Government Railways in Australia. These lines are 3-ft. 6-in. gage. Complete dismantling of the cars followed their construction, the cars being shipped knocked down. The



Narrow-Gage Gasoline Car—General View

manufacturers will send an expert to superintend the re-erection of the cars in the railway company's shops at Ipswich. This gasoline rolling stock conforms to the McKee standard design and construction with the exception of some special features which are necessary to meet the requirements of the Queensland Railways. These exceptions include the fact that the position of the operating levers is reversed for left-side control, and the side type of buffing gear with draw hook and screw couplings displaces the M. C. B. couplers.

The depressed center entrance is constructed so as to provide accommodations for handling passengers at both elevated and roadside platforms with equal facility. The motor-truck wheelbase is limited to 6 ft. and this, in combination with the specially designed front body and truck



Narrow-Gage Gasoline Car—Motor Truck and Engine

bolsters, makes the car suitable for operation on the sharpest curves encountered over city railways.

Each motor-truck side frame is one integral steel casting, bolted and wedged against the shirk or bedplate, the side frames in combination making an unusually light as well as remarkably strong and durable entire cast-steel truck frame. Artificial illumination is provided by the

Stone electric system. The seating capacity of each car is sixty-nine passengers, of whom fifty-five are accommodated in the main compartment and fourteen in the smoker.

On the power units the trucks are equipped with four cast-steel center, steel-tired wheels, 36 in. in diameter, having 6-in. by 10-in. journals and set on a wheelbase of 6 ft. The side frames and bolster are made of cast steel throughout. The gasoline engines are of 200-hp rated capacity and have six cylinders with 10-in. bore and 12-in. stroke. The engines are air-starting and reversible.

The transmission has a mechanical efficiency of 96 per cent. It has Morse silent chain drives and gives two speeds, direct and geared, through a multiple disk clutch.

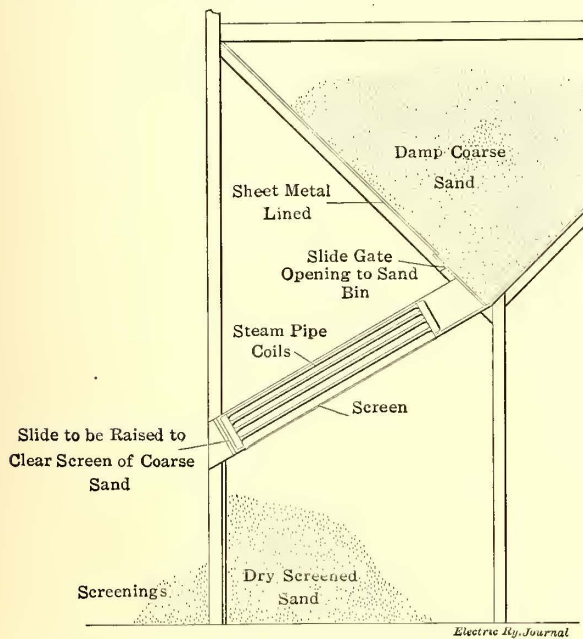
The principal dimensions of the car bodies are as follows:

Length over end-sills.....	59 ft.
Length over buffers.....	62 ft. 5 1/4 in.
Width over sheathing.....	8 ft. 9 in.
Height rail to roof.....	11 ft. 8 1/2 in.
Length passenger compartment.....	31 ft. 7 3/4 in.
Length smoking compartment.....	8 ft. 9 in.
Height inside floor to ceiling.....	7 ft. 8 1/4 in.
Distance between center-plates.....	34 ft.
Total wheel base.....	40 ft.
Weight.....	60,000 lb.

These are the first narrow-gage gasoline motor cars ever turned out of the McKean works.

A NOVEL SAND-DRYING PLANT

The operating department of the Lincoln (Neb.) Traction Company has built a novel sand-drying plant which is applicable to large or small railways. A wooden bin has been constructed in one of the carhouses to hold one car of sand. The sand is thrown into this bin by hand from cars alongside. The sides are sloped at an angle of 45 deg. to hoppers at one side of the bottom. These hoppers, when opened, allow the sand to flow onto the dryer beds, which slope at 30 deg. from the horizontal. Each dryer bed is a 6-ft. square screen with 12-in. side boards. Nine four-pipe coils with branch tees are set on the dryer bed. These coils are arranged in parallel rows so that the sand may flow or be raked between them as it comes from the storage bin



Section of Sand-Drying Plant, Lincoln, Neb.

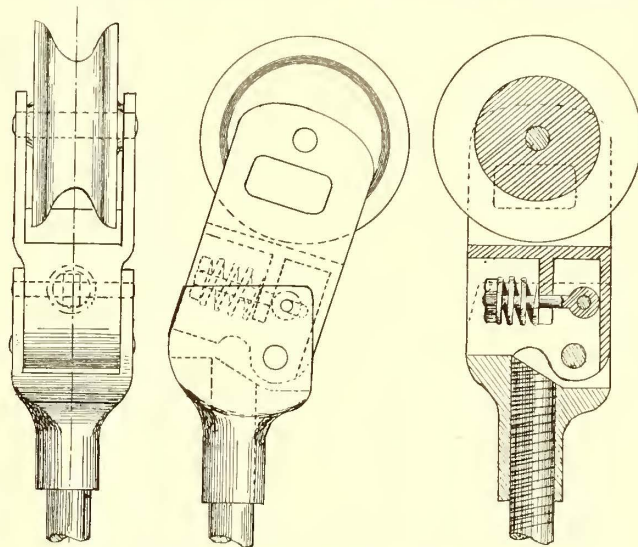
overhead. When the steam is turned on, the drying sand falls to dry-sand bins underneath the screen, and the coarse material rolls to the foot of the sloped dryer bed, where it is deposited in another bin after all the fine sand has passed through the screen.

Another novel feature in connection with the car sand-drying plant is the method of distributing it for use on the

cars. A supply of car sand is available at several points on the property, and in order to reduce the cost of handling to a minimum it is shoveled into old cement sacks at the dryer and delivered to the supply points. After the sacks have been emptied directly into the sand boxes on the cars they are returned to the dryer for refilling.

HARP WITH SPRING AND KNUCKLE JOINT FOR RETAINING TROLLEY WHEEL

The accompanying illustrations disclose the construction of a new type of harp, aptly termed the "Neveroff" and made by the Special Electric Company, Chester, Pa., in which a spiral spring is used to force the trolley wheel against the wire before the pole has had time to recover



Views of Harp with Spring and Knuckle Joint

from the downward movement caused by striking some obstruction. A detailed description follows:

From the bifurcated end of the harp there is pivoted a forked member which supports the trolley wheel. As shown, a pivot pin passes through the ears, the latter being cut away at the bottom to allow them to adjust themselves to the end portions of the support. The ears are provided with elongated slots, as shown in the side elevation, to receive the transverse pin. The spiral spring is interposed between a plate and the end of the bolt which passes through an aperture in the plate. The right-hand view shows the harp in its normal position with respect to the trolley wire. Should the wheel meet with an obstruction it will be kept in place by the release action of the spiral spring in the harp and by the tension spring at the base of the pole. As this occurs, the harp assumes the position shown in the middle view, thus keeping the wheel in direct contact and alignment with the wire. It does not permit the trolley wheel to slide or to "bite" the wire, and it has other meritorious features. This harp may be used with any standard trolley pole. The spiral spring in the harp should be adjusted so that the springs at the base of the pole will force the harp downward until it is seated on its stop, when the trolley wheel is in contact with the trolley wire. The harp will then be parallel with the pole and the spring in the harp will be compressed.

A test of the "Neveroff" harp was recently made on the lines of the Southern Pennsylvania Traction Company, Chester. The car on which it was installed traveled 8000 miles, and the trolley wheel, according to the report of the master mechanic of the road, who carefully watched the performance of the harp, never left the wire. The annoyance of short curves and complicated overhead construction are believed to be effectually overcome by the use of this device.

Messages of the Governors

Extracts from the Messages of the Governors Are Presented, Supplementing Those Published Previously

In the *ELECTRIC RAILWAY JOURNAL* of Jan. 11, 1913, extracts were published from the messages of the Governors of New York, Massachusetts, Pennsylvania, Rhode Island, Oklahoma, Maine and South Dakota, covering the subjects of public service corporations, minimum wages and workmen's compensation measures. Similar extracts from messages since presented by the Governors of New Jersey, Minnesota, California, Michigan, Wisconsin, Ohio, Indiana, Missouri, Colorado, Iowa, Montana and Kansas are appended:

GOVERNOR WILSON OF NEW JERSEY

"The corporation laws of the State notoriously stand in need of alteration. They are manifestly inconsistent with the policy of the federal government and with the interests of the people in the all-important matter of monopoly. It is our duty and our present opportunity to amend the statutes of the State in this matter not only, but also in such a way as to provide some responsible official supervision of the whole process of incorporation and provide, in addition, salutary checks upon unwarranted and fictitious increases of capital and the issuance of securities not based upon actual bona fide valuation.

"The people of the State are at present, moreover, at the mercy of investment companies of every kind. Investment companies should be put under inspection and regulation by the State, and no one should be allowed to sell securities in New Jersey without public license issued from the department exercising the rights of inspection and regulation.

"The Board of Public Utility Commissioners should be empowered to order the abolition of grade crossings in such ways and at such a rate as will adjust its orders to each particular case and set of circumstances. The act conferring the power can and should make of that power a legal duty imposed upon the commission, the discretion of the commissioners to exist only in respect of their right to guide, direct and adjust the processes of elimination in a thoroughly practical fashion."

GOVERNOR EBERHART OF MINNESOTA

"Minnesota has long realized the importance of State control of public utilities. In my opinion, public utilities must be either owned or controlled by the people. Where the control can be vested in a fair, impartial and competent authority, removed as far as possible from political influence, it is far superior to ownership. It is essential that the regulating authority should be independent of local conditions, more permanent as to tenure than the constantly changing city administration, and composed of experts with sufficient authority and funds to enforce rules and regulations fearlessly and impartially. I sincerely trust that this Legislature will enact into law the measure that will bring the greatest benefits to the people at large throughout the State.

"In the development of new territory it is important that favorable opportunities be given for the profitable investment of capital, and most of our States have been quite liberal in the granting of such returns. The indiscriminate issuing and sale of stocks and bonds is, however, of no advantage to a financially sound enterprise, but has rather the opposite effect in creating suspicion and distrust. A law should be enacted which will effectively prevent the issuing and sale of stocks and bonds which have little or no value.

"Representing on this occasion organized as well as unorganized employees and employers, I am asking at your hands a fair and adequate workmen's compensation act. I fully realize the difficulty of enacting a satisfactory com-

penation law, but we have the experience of a number of foreign countries as well as several States to guide us, and with the agreement between employees and employers as to the main provisions of the bill itself, reported to the special committee of this Legislature, the desired legislation should be passed at this session."

GOVERNOR JOHNSON OF CALIFORNIA

"In January, 1911, the Railroad Commission consisted of three elective members. In that year the well-known Stetson-Eshleman railroad bill was passed by the Legislature, giving to the Railroad Commission powers as extensive as the constitution would permit. At the election of October, 1911, the people passed two constitutional amendments relating to the Railroad Commission, by which the commission was enlarged to five and made appointive instead of elective, and the most plenary powers were conferred upon it. At the extra session of the Legislature of 1911 the public utilities bill was passed. During the thirty-two years of the existence of the Railroad Commission prior to 1911, approximately 100 complaints were presented to that commission, and in less than two years approximately 2000 complaints have been presented to the new commission. In the very brief period that has elapsed the people probably already fully understand not only the value of the commission to them, but its absolute necessity.

"I strongly urge upon you, if the industrial accident law is to continue to be a part of the policy of the State of California, that you take the necessary means for providing for a State insurance fund."

GOVERNOR FERRIS OF MICHIGAN

"I recommend the enlargement of the powers of the Railroad Commission to cover all public-utility corporations of the State. Furthermore, I recommend that the commission be authorized to make physical valuation of all such properties as it may deem advisable, that the rates fixed may return reasonable dividends on actual cash investment. It is hardly fair to expect the people of Michigan or any other State to have any adequate knowledge concerning the real value of the stock of foreign corporations. I suggest the enactment of a law similar to the Kansas law, whereby our people will be protected from State frauds. In other words, prohibit the sale of stocks and bonds of any company until said company has been first investigated and approved by the railroad commission."

GOVERNOR McGOVERN OF WISCONSIN

"A number of States have made provision for compensating employees for specific injuries to workmen by requiring payment for definite time on the basis of a percentage of the wage received when the injury occurred. Our law fixes the amount to be paid on the basis of actual loss of wages only. This is not always just, and I recommend an amendment which will provide for the adoption in such cases of the rule now followed in other States. At a certain date fixed by law all employers in Wisconsin should be deemed to be within the scope and operation of the workmen's compensation act unless prior to this time they shall have notified the commission in writing to the effect that they do not wish to be so.

"So far as hydraulic energy is required for public purposes, the State should reserve the right to compel the maximum development of the water powers for which franchises are granted. In all authorizations to build dams it should also require, in cases where the energy may be used either within the State or outside its borders, that its own citizens shall have the preference."

GOVERNOR COX OF OHIO

"Conditions not only justify but demand a drastic anti-lobby law. Any person interesting himself in legislation will not, if his motive and cause be just, object to registering his name, residence and the matters he is espousing with the Secretary of State or some other authority designated by your body. There ought to be no temporizing with this situation. Lobbying without registration should be an offense punishable by imprisonment.

"The State regulation of public utilities has been of such benefit to every interest concerned that every possible legislative facility should be extended to this administrative branch of the government. The existing law gives to the commission the right to make a physical valuation. This should be made mandatory. The utility and tax commissions have made considerable headway in working out the detail of valuation. But their labors in this particular have been confined almost, if not entirely, to cases which came to their notice by requests for increased capitalization or complaints with respect to taxation values. There can be no permanent or logical base for the successful operation of these departments without a physical valuation of utilities.

"One development of the railroad and utilities law, which has been very unfair to the State, should be corrected. Under present practice the commission establishes or revises a rate. The utilities company, if it desires, makes objection and receives a hearing. The commission then either amends or retains the rate previously fixed, whereupon the corporation in many instances goes into court, asks for and receives an injunction. The delays of the law are well known and the issue remains unsettled for a year or more. The law should be so changed that the court cannot issue an injunction in these rate matters without an investigation. This is the practice elsewhere and should be adopted in Ohio."

GOVERNOR RALSTON OF INDIANA

"Numerous and serious questions frequently arise between public utilities companies and their patrons or customers, involving the public in many instances to a greater or less extent. Out of this condition has grown a demand in different sections of the State for a public-utilities commission, and I recommend the creation of the same. The many properties and the vast amount of capital that would come under the jurisdiction of a utilities commission indicate the ability and care required in drafting a utilities law fair to both the public and those who have their money invested in such properties. It is important that the law should contain a provision against watered stock and overbonding and against abuses in granting franchises, and it should require a system of uniform accounting. I hope the Legislature will make a zealous effort to enact a satisfactory law on this subject. There should be a law against the issuance and sale of watered securities, unless on the face thereof the amount of percentage of water therein is accurately stated.

"We should have in this State a workingman's compensation law. Whether such a law can be made compulsory under the Indiana constitution is a question. If a law on this subject is enacted containing a compulsory provision and it otherwise meets my approval, I shall let the Supreme Court say whether it is constitutional."

GOVERNOR MAJOR OF MISSOURI

"This Legislature should create a tax commission to study the questions of taxation and report its labors to the next Legislature, to the end that we may revise and improve our revenue system.

"A public service commission is one of the necessities of the hour. The creation of such a commission is a progressive step which, in view of past experiences, every State must take. I would recommend that the salaries of the commissioners be fixed at a reasonable amount,

commensurate with the services required of them and their employees and sufficient to justify able and competent men serving.

"The practical success of a workingmen's compensation act depends upon its simplicity, definiteness, reasonableness and compatibility with our state and federal constitutions. Such a law must be fair and just to the employer and the employee. Committees appointed by the last Legislature have investigated the subject and no doubt are now ready to report a proper law upon this subject."

GOVERNOR AMMONS OF COLORADO

"I hope the General Assembly will enact a measure along the line of the Kansas 'blue-sky' law, effective enough to eliminate from this State bad promotion schemes of all kinds. The most effective way to secure sufficient money at low rates of interest to take care of our industrial growth is to make our securities first class in every respect.

"Two plans are suggested for the control of public utilities. The Railroad Commission proposes amendments to the law under which it is operating to make the act more effective. It is urged that some important advance has been made on account of recent court decisions, and that the surest way to save this advantage is to retain the present law and make it stronger by amendment. The commission, however, suggests no plan for including other public utilities. On the other hand, bills have been prepared which, I understand, include the very provisions of the railway law already adjudicated and which also comprehend the entire field of public utilities. It seems to me useless to have two commissions. I am advised that all the advantage gained through the action of the courts under the old law can be protected in the new.

"The employees' compensation commission appointed by the Eighteenth General Assembly, I am told, has not completed its investigations, and it should be continued, either to report at the next session of the General Assembly or to initiate a law covering the subject."

GOVERNOR CLARKE OF IOWA

"I sincerely hope that a workman's compensation act will be passed at this session. The commission authorized by the last General Assembly, after a thorough investigation and study of the subject, has reported a bill for consideration at this session.

"Kansas was wise ahead of her sister states in providing in substance that when stocks and bonds are offered for sale the banking department must be satisfied that they are a reasonably good investment and a permit secured before they can be offered to the public. I commend this wise law as a basis for similar legislation in Iowa."

GOVERNOR STEWART OF MONTANA

"The business of the public-service corporations which operate in Montana should be regulated. The present Board of Railroad Commissioners can do this work and thereby obviate the necessity for and the expense of a new commission. A law should be passed defining the liability of employers and regulating the compensation of employees for accidents received in the course of employment. A law should be passed providing for the supervision of all investment companies and promotion enterprises in the State. A 'blue-sky' law of fair intent will not interfere with legitimate business."

GOVERNOR HODGES OF KANSAS

"I would urge that all laws passed by you be drafted in clear, simple language, so definite that they can be readily understood. It is a travesty on justice that laws are drafted in such an ambiguous manner that they require interpretation by expert lawyers to determine their meaning.

"I am sincerely gratified to report to you that our utilities law is a great success and that it needs only slight amendment, if any. In the hands of broad-gaged men it will continue to be an instrument of the highest value for the development and upbuilding of the State."

News of Electric Railways

Increase in Operating and Maintenance Funds Asked in Cleveland

On Jan. 18, 1913, the directors of the Cleveland (Ohio) Railway authorized the sale of \$3,600,000 of additional capital stock. This stock is to be sold at par to stockholders of record of Feb. 5 pro rata, and the proceeds are to be used to take up the \$3,000,000 of bonds due on March 1 and to pay for extensions, betterments and improvements proposed by the City Council.

The directors authorized J. J. Stanley, president of the company, to ask the City Council for an increase in the operating and maintenance funds, in order to avoid the deficits that are piling up. The operating report for December shows an ordinance surplus of \$37,511, with deficits of \$40,788 in the maintenance fund and \$27,166 in the operating fund, with the result that there is an actual deficit of \$30,433 for the month. This was due, as explained, to scrapping twenty-five old cars, the reproduction cost of which was charged against maintenance. It seems that there yet remains \$87,500 to be charged off as the reproduction cost of the Canal Street power house which was abandoned. This will bring the total deficit in the maintenance fund up to \$392,315. The deficit in the operating fund totals \$203,542. Against this there is a surplus of \$484,282 in the interest fund. The fare cannot be raised until this fund falls below \$300,000.

Mayor Baker has announced that operation of the West Sixth Street and the West Ninth Street lines must be resumed in order to accommodate the thousands of women and girls employed in the garment factories and wholesale houses in that section. Both employers and employees have been insisting upon this ever since operation on the "court house" loop was begun. Councilman Bernstein has introduced a resolution in Council calling for the extension of the Woodland and Scovill lines to the Union Station. Mayor Baker is reported to have said that he had not decided which lines should be routed in that way. Mr. Witt declares that he will not allow the Euclid Avenue and Payne Avenue service to the station to be restored.

Mr. Witt announced on Jan. 17 that cars would be taken from the Euclid, Scovill and Lorain lines and placed on the Superior and St. Clair Avenue lines. About thirty-nine round trips would thus be taken from these lines and the Euclid Avenue service would be reduced between 500 and 600 car miles.

The West Side Improvement Association is opposing the step taken by the city to allow interurban freight cars to be hauled over the city lines at certain hours of the night. The association declares that a referendum vote must be taken on the ordinance. The Chamber of Commerce has endeavored to work out a satisfactory adjustment of the matter with the West Side people, as this plan will be of great benefit to the wholesale houses and manufacturers.

Mr. Witt's office has furnished the public schools with 75,000 blotters, bearing the following rules of safety in the streets, to be distributed among the school children:

- "Look out for the cars.
- "Look out for autos.
- "Look out for horses.
- "Don't play on the streets where there are car tracks.
- "Don't cross car tracks without looking both ways.
- "Don't cross the street if you see a car.
- "Don't get on or off a car while it is moving.
- "Don't lean out of car windows.
- "Don't face to rear in stepping off cars.
- "Don't touch or allow any one to touch any wire.
- "Don't let your schoolmates get into any danger."

Tom Sidlow, secretary to the commissioner, has been addressing the children of the public schools on the subject of danger. Large placards bearing the warning "Always look out for cars before crossing street" have been put up in the various school buildings. The "Help Across" Club, composed of older boys who look out for the youngsters and help them across the streets where there are tracks, has been approved by the commission and its members will likely be furnished with blotters, also.

Report of Massachusetts Railroad Commission

The forty-fourth annual report of the Massachusetts Railroad Commission has been submitted to the 1913 Legislature. It contains the usual separated statistical data of steam railroads and electric railways, and a general discussion of transportation conditions in the State, with special reference to the New York, New Haven & Hartford and Grand Trunk situation. Returns for the year ending June 30, 1912, were received from sixty-five street railways. By reason of a consolidation there were sixty-four existing companies at the end of the year. The net increase in street railway mileage was 30.73 miles of single track. The Massachusetts companies now own 2947.3 miles of single track. There was an increase of 44.24 miles of track operated during the year. The surplus was \$11,405,060, or 12.8 per cent of the capital. The aggregate capital stock of all of the companies was \$89,118,975, an increase of \$2,479,800 over 1911.

The companies declared \$4,916,370 in dividends. Thirty-seven of the sixty-five companies paid dividends ranging from 1 per cent to 11 per cent, and twenty-eight companies declared or paid no dividends. The dividend rate averaged 5.52 per cent on the capital stock. The funded debt on June 30 was \$77,706,700, an increase of \$6,198,000 in the year, and the total unfunded debt was \$26,834,394, an increase of \$4,614,175. The total capital investment was \$185,720,897, an increase of \$13,584,732 over 1911. The average cost of the street railways of the State was \$68,503 per mile of main track, and the capital investment per mile of track constructed was \$67,679.

The total income of the companies for the year was \$38,414,857, and the total expenditure, including dividends declared, was \$38,355,427, making a net surplus of \$59,430. The total operating revenue increased from \$35,036,997 to \$36,080,237 in the year. Operating expenses increased from \$22,895,804 to \$24,363,903. The revenue from the transportation of mails and merchandise increased from \$337,463 to \$385,383. The net operating revenue was \$11,716,334, a decrease of \$424,859. The total number of passengers carried was 701,798,274, a gain of 248,698, and the car mileage increased from 123,659,082 to 125,078,724. The gross earnings per mile of track increased from \$12,877 to \$13,148 and the operating expenses from \$8,415 to \$8,878. The gross earnings per car mile were \$0.288 against \$0.283 in 1911 and operating expenses \$0.195 compared with \$0.185 in 1911. The average gross earnings per passenger were 5.14 cents, operating expenses being 3.47 cents and net earnings 1.67 cents, the net of the previous year being 1.78 cents. On June 30, 1912, the companies had 23,290 employees and 8004 cars compared with 21,972 employees and 7821 cars a year ago.

There were 7843 accidents, compared with 6963 in 1911. Twenty-seven passengers were killed, compared with 15 in 1911, and 5701 injured, the preceding year showing 5101 injured. Twenty-one employees were killed and 428 injured, the 1911 figures being 24 and 340 respectively.

The board has continued during the year its study of fenders and wheelguards. For the purpose of making a special study of accidents caused by persons coming in contact with either the fender or wheelguard the board provided street railway companies with blank forms for reporting such accidents. In 1912 on all the street railway lines 426 persons came in contact with fenders or wheelguards, of whom forty-six were fatally injured, while forty-four received serious and 336 minor injuries. Lifting jacks have been installed upon cars of the different companies and conductors and motormen instructed in their use. In twenty-one of the fender and wheelguard accident cases the use of jacks was required. During the year it was suggested to the board that the issuance of free passes to persons not within the prohibition of the statutes constitutes a discrimination in passenger rates, of which the board might take cognizance under its general powers. The board is of the opinion that any action would constitute a declaration of policy and as such would be within the province of the Legislature rather than of the board.

Hearings on Subway Contracts in New York

During the week ended Jan. 18, 1913, the Public Service Commission for the First District of New York held public hearings, as required by law, on the terms and conditions of the proposed contracts with the Interborough Rapid Transit Company and the New York Municipal Railway Corporation (Brooklyn Rapid Transit) covering the construction and operation of the new subway lines and elevated railroad extensions in the dual system. These contracts were as follows:

1. With the Interborough Rapid Transit Company for the operation of extensions of the existing subway in Manhattan, the Bronx and Brooklyn, the cost of construction to be borne jointly by the city of New York and the company, each contributing \$58,000,000. The cost of equipment, estimated at \$22,000,000, to be borne by the company.

2. With the Interborough Rapid Transit Company for the construction, at its own expense, of extensions of the existing elevated railroads in Manhattan and the Bronx, to cost about \$16,000,000; also the operation thereof by the company.

3. With the Manhattan Railway for the third-tracking of the elevated railroads in Manhattan and the Bronx leased to and operated by the Interborough Rapid Transit Company, to cost about \$11,000,000; also for the operation of the same by the Interborough company.

4. With the New York Municipal Railway Corporation for the construction by the city and the company jointly of the new Broadway subway in Manhattan, two new tunnels to Brooklyn and extensions of the Centre Street loop subway and the Fourth Avenue subway, the company to contribute \$14,500,000 and the city about \$100,000,000 toward the cost of construction, all to be equipped and operated by the company in conjunction with its existing elevated railroad system in Brooklyn. It is estimated that the new equipment will cost \$26,000,000.

5. With the New York Municipal Railway Corporation for the construction, at its own expense, of certain extensions to its elevated railroads to Jamaica and other points and the operation thereof in connection with the rest of the new system. The cost of such extensions is estimated at \$8,000,000.

6. With the New York Municipal Railway Corporation for the construction, at its own expense, of additional tracks on existing elevated railroads and for the operation thereof in connection with existing lines. The cost of such additional tracks is estimated at \$6,500,000; also for the reconstruction of existing elevated lines at its own expense at an estimated cost of \$10,000,000.

At the hearing on Jan. 18, 1913, in regard to the proposed construction by the Brooklyn Rapid Transit Company of the projected Franklin Avenue, Jamaica Avenue and Liberty Avenue elevated lines considerable opposition developed on the part of the residents of the districts which would be affected by the construction of these lines. At the hearing on Jan. 20, 1913, President Mitchel of the Board of Aldermen, objected to the terms of the proposed contracts, mentioning such details as the preferential payments, the rates at which the companies are raising the money and the recapture clauses.

Reorganization of a Chicago Information Bureau

The bureau organized by a number of public utility companies and accident insurance companies to supply information concerning jurors, witnesses and claimants in suits, which has been in existence in Chicago for about five years, has been reorganized and Sidney Ossoski, the general claim agent of the Chicago (Ill.) Railways, has been made chairman of the advisory board, with complete control of the operation of the bureau. Besides Mr. Ossoski, the advisory board is composed of L. L. Austin, general claim agent of the Chicago Elevated Railways; H. M. Weber, claim agent of the Chicago Telephone Company; William Beye, general claim agent of the Illinois Steel Company, and H. D. Wagner, claim investigator for the Employers' Liability Assurance Corporation. The reorganized bureau has taken up quarters at Suite 1552, Otis Building, Chicago, and intends to expand, and will advertise in Chicago and

other cities with a view to increasing the number of subscribers.

In laying his plans before the advisory board, Mr. Ossoski mentioned the following:

First—It is the intention to furnish more and better service and a more prompt and efficient system of reports to all inquiries of subscribers.

Second—The new office will be properly equipped with modern filing cabinets and other equipment necessary to increase and felicitate the efficiency of the bureau.

Third—It is the intention to prepare and maintain a street index in connection with the regular index now in use. This street index will tell in what part of the city the majority of the claims and suits arise. It will show out of what houses or certain streets the chronic claims and suits arise. It will give a check on repeaters in cases where the claimant or plaintiff changes his name or her name. This street index will be invaluable in examining jurors, plaintiffs, claimants and witnesses, and, by providing proper telephone service, information on jurors or witnesses will be furnished on short notice. With the great number of cases coming in from the larger corporations, the street index will be of utmost value, and the bureau will accordingly be of just as much benefit to a client whose business is small as it will be to the big corporations.

Fourth—An investigation department in connection with the bureau will be installed. Investigations will be made for other cities and outside individuals on request, and these will be paid for at standard rates.

Fifth—It is proposed to make the bureau more effective by drawing into it outside subscribers. It is possible that a lower rate will be charged to out-of-town subscribers, as they will in many cases want investigations made and want the bureau to do the work.

In calling attention to the co-operation of subscribers necessary in making the bureau a success, the members are urged to make reports of all claims and suits and send in special reports of all chronic claimants and plaintiffs. It is also desired that special reports of all suits or claims that develop in investigation of cases of which the bureau has no record be made and forwarded to the bureau office.

Another Traction Plebiscite in Brooklyn

The Brooklyn (N. Y.) Rapid Transit Company on Jan. 18, 1913, gave out an analysis of the vote taken on Jan. 17 on the question of the company's proposal to create a Sound to Ocean rapid transit line as laid out in the proposed form of certificate now before the Public Service Commission of the First District of New York. This analysis covers the vote as reported at the office of the company up to 9 p. m. on Jan. 17 from the various depots. It is a preliminary count, subject to verification by a later canvass which the company is requesting the Public Service Commission either to conduct or to supervise, as the commission may see fit. The result, as shown by these figures, is that the proposition was indorsed by a majority of more than twenty to one on the entire system, and was ratified on every operating line, surface and elevated, in the system. In a statement which it issued the company said:

"An examination of the figures for the crosstown depot shows that in the Greenpoint section, where prolonged agitation has been conducted against this line, the vote was quite as heavy as on any other part of the system. The lines operated from the Ridgewood depot include among others the Greene and Gates Avenues line, which runs through the area where the agitation against the proposed route has been acute, yet the vote on the Greene and Gates Avenues line was nearly 10 to 1, being 3730 in favor and 395 opposed. The company submits this as showing in some measure what the real sentiment of the traveling public of Brooklyn is on its proposal to create a Sound to Ocean line by the only practical means of getting such line, namely, by building an elevated structure from the Brighton Beach line at Fulton Street through the Williamsburg section, Greenpoint and Long Island City, to connect with the Astoria and Corona lines at the Queensboro Plaza."

Advertisements setting forth the proposal of the company were published in Brooklyn newspapers Jan. 14, 15, 16 and 17, 1913, and reprints of advertisements were distributed in surface and elevated cars on Jan. 15, 16 and 17,

to the number of 125,000 each day. Ballots were distributed by conductors on surface lines and by conductors and guards on elevated lines. Ballots were collected by conductors and inspectors on surface lines, and conductors, collectors, guards and ticket agents on elevated lines. All ballots marked but not signed were excluded. This count did not attempt to eliminate duplications or verify addresses. The ballots signed are being preserved at depots and terminals to await further canvass for final count.

Los Angeles Railway Corporation Development Plans

W. E. Dunn, vice-president of the Los Angeles Railway Corporation, Los Angeles, Cal., has addressed a letter in part as follows to the Public Utility Commission of Los Angeles in reply to the letter from the commission published in the *ELECTRIC RAILWAY JOURNAL* of Jan. 4, 1913, recommending the addition of cars for use in the city:

"This company is making a careful investigation of the side-entrance car with a view to determining its utility in actual operation, and is almost daily making changes in the present car suggested by experience and intended to bring it to the highest possible state of efficiency. As soon as the car is finally complete we shall adopt it as a standard, and will order new cars of that type. The number of new cars to be ordered during the year 1913 will be in excess of the suggestion made by you, namely, seventy-five.

"The subject of the use of trailers during rush hours is receiving careful attention by us, and we are getting data from other cities. It is positively to the advantage of the company to use trailers, if they can be properly handled and moved through the streets with the rapidity with which we are able to move single cars. If, on the other hand, it should be found that trailers delay to any appreciable extent the moving of cars, it would increase the congestion rather than help it out.

"We believe that the moving of heavy interurban traffic to San Pedro Street will materially relieve congestion on downtown streets, and particularly on Main Street, First Street and Seventh Street. Accomplishing this, we will be enabled to distribute traffic to the great benefit of Spring Street and Broadway as well. If it is determined that trailers can be used to the advantage of the public, we will, in addition to the cars above named, order a reasonable number of trailers for use in the rush hours.

"The examination now being conducted will, I believe, convince you that the equipment we now have, as well as the equipment to be ordered, is more in quantity than the earnings of the company will justify, other improvements considered; but we shall, as we have in the past, try to keep at the head of the procession."

The letter of Paul Shoup, president of the Pacific Electric Railway, in this connection was published in the *ELECTRIC RAILWAY JOURNAL* of Jan. 11, 1913, page 79.

Interurban Terminal Question in Cincinnati

A controversy has arisen between the administration at Cincinnati and the Association for the Improvement of the Canal, of which George R. Balch is president, over Plan No. 4 of Bion J. Arnold's report, which relates specifically to the proposed interurban terminal. It seems that Mr. Arnold's plan provides for the entrance of several of the interurban lines over a route built on canal land which has been leased from the State by the city. He proposes to depress the tracks, so that they would pass under all streets. The Association for the Improvement of the Canal, through whose activities the canal property was turned over to the city, objects to having the tracks built in an open ditch and asserts that the bill enacted by the Legislature providing for the lease to the city specifies that the land shall be used for boulevard purposes, but that there will be no objection to a subway under it. President Balch says that the association and the city are pledged to use the canal land as specified and that a concerted opposition will be made if there is any attempt to have the conditions modified or to put any other construction on the contract.

Mayor Hunt issued a public statement on Jan. 17 in

which he said that he and Mr. Balch agreed upon practically all points. He said that the tracks will be depressed north of Liberty Avenue, where no injury to property will result by having cars operated in an open cut. Because of the wording of the law on which the lease is based, he said he thought it best to have an amendment passed, but that he is not sure that this will be necessary.

Mayor Hunt holds that if the cost of building the terminals can be brought below \$6,478,940 by competitive bidding, it might be best to award a franchise to a private corporation, but if not then the city should build and own them. He has been advised that the revenue from the property would be sufficient to retire the necessary bond issue within a few years and that the undertaking will be of more benefit than the Cincinnati Southern Railroad, which the city owns, because it will aid in solving the housing problem.

Annual Report of New York Railways Association

The sixteenth annual report of the New York Railways Association, composed of employees of the New York (N. Y.) Railways, for the year ended Sept. 19, 1912, has been issued in pamphlet form. During the year the membership was increased from 4284 to 4636. The total receipts increased, while the total expenses decreased, as compared with the returns for the previous year. The total book value of the investments of the association as shown in the report is \$54,461, as compared with \$48,221 on Sept. 19, 1911, and the cash on hand in the treasury on Sept. 19, 1912, was \$8,550, as compared with \$6,441 on Sept. 19, 1911. The cash and investments of the association as of Sept. 19, 1912, amounted to \$63,012, as compared with \$54,662 on Sept. 19, 1911, an increase of more than 15 per cent. These figures do not include the amount received by the association from the operation of the lunch rooms and placed to the credit of the lunch room fund. On Sept. 19, 1911, this fund amounted to \$1,915. At the close of the last fiscal year of the association the fund amounted to \$5,238. The statement of receipts and disbursements for the year as contained in the report follows:

Cash on hand Sept. 19, 1911.....		\$6,441
Receipts:		
Dues	\$28,171	
Initiation fees	3,110	
Entertainments	6,658	
Pool room	2,560	
Interest on investments and deposits.....	1,816	
Miscellaneous	442	42,757
Investments		8,044
Total receipts		\$50,801
Total		57,242
Disbursements:		
Sick benefits	\$17,606	
Death claims	9,314	
Medical fees	4,978	
Entertainments	1,021	
Pool room	1,249	
Printing and stationery	1,088	
Library	17	
Miscellaneous	69	\$35,342
Investments		13,350
Total disbursements		\$48,692
Cash on hand Sept. 19, 1912.....		8,550
Total		\$57,242
Investments and cash:		
Bonds, book value	\$54,461	
Cash on hand	8,551	
Total investments and cash.....		\$63,012

The following interesting statements in regard to the loan fund of the association and to the pensions for employees are made by Frank Hedley, chairman of the board of trustees of the association:

"The profits from the operation of the lunch rooms have enabled your trustees to set aside such an amount as is necessary to enable the association to make loans to its members without interest. The plan provides for the payment of the loans in small instalments. It is the object of the association to assist in this way those of its members who may find themselves temporarily in need of money to meet obligations which could not readily have been foreseen and which may arise as a result of illness or

other causes beyond their control. Association members are thus spared the necessity of borrowing money at exorbitant rates of interest from 'loan sharks.' During the past year the association has loaned about \$4,500. Applications for loans should be made to the secretary.

"I desire to call your attention to the fact that the board of directors of the New York Railways has authorized a continuance of the pension system which has heretofore been carried on by the Metropolitan Street Railway, under which the members of this association are entitled to pensions upon retirement from active service. In other words, the New York Railways proposes to supplement the work of the association and make provision toward the support of the association members when the latter have arrived at the age of retirement and have completed a term of service which entitles them to withdraw from active participation in the operation of the company."

National Association of Corporation Schools

The National Association of Corporation Schools, which has been in process of formation for the past year, was finally organized in New York City on Jan. 25, 1913. The object of the society is to render available to its members authoritative information on instruction methods in corporation schools, so that new schools may be successful from the start by avoiding the pitfalls into which others have fallen, and to assist existing schools in increasing their efficiency. Active membership has been limited to corporations, and in order that the object set forth may not be subverted the control is invested entirely in the active members, thus admitting only so much of theory and of extraneous activities as the corporations themselves feel will be beneficial and will return dividends on their investment in time and membership fees.

Accredited delegates representing about fifty large corporations having schools attended the meeting, which was closed by a dinner at Delmonico's on the evening of Jan. 25. Among the organizations represented were the Pennsylvania Railroad, American Locomotive Company, Public Service Railway of New Jersey, American Electric Railway Association, New York Edison Company, the Doherty companies, Yale & Towne Manufacturing Company, National Cash Register Company, Westinghouse Air Brake Company, Consolidated Gas Company, New York; Dodge Manufacturing Company, Mishawaka, Ind.; General Electric Company, Schenectady, and Commonwealth Edison Company, Chicago. The American Electric Railway Association was represented by Prof. H. H. Norris, of Cornell University, chairman of its education committee.

New Illinois Road Placed in Operation.—The Kankakee & Urbana Traction Company, Kankakee, Ill., placed its line between Urbana and Rantoul in operation on Jan. 16, 1913. The company has arranged to rent power from the Illinois Traction System.

Exhibit of Illinois Traction System at Peoria Show.—The Illinois Traction System, Peoria, Ill., was an exhibitor at the Peoria Electrical Show held from Jan. 18 to 25, 1913. In addition to a booth where various forms of literature and posters were on display, several signals similar to the type used on this road were installed in the exhibition hall. These were electrically connected and arranged so that the blades would periodically pass from the danger to the clear position, or the reverse.

Additional Guard Rails on Chicago Elevated Structure.—As a result of derailments on curves on the elevated loop structure in Chicago which occurred on Jan. 8 and 16, the management of the Chicago Elevated Railways contemplates installing additional guard rails and protective girders at the danger points. It will be necessary to obtain a permit from the city before these additional protective features can be installed on the structure, but the plans are well under way and will be submitted to the city for approval in the near future.

Decision in United States Commerce Court Impeachment Case.—On Jan. 13, 1913, Robert W. Archbald, judge of the United States Commerce Court, was dismissed from his position by the action of the Senate in impeachment

proceedings. Judge Archbald was convicted upon five counts in thirteen articles of impeachment, each of the articles describing a separate offense. All of the charges except one of those upon which he was convicted related to conduct since his appointment to the position of judge of the Commerce Court, a verdict of acquittal being given upon the charges relating to conduct before he became a member of that court, a majority of the Senate holding that actions prior to his appointment should not be made a subject of condemnation.

Additional Municipal Lines Suggested in San Francisco.—A resolution has been adopted by the Board of Supervisors of San Francisco, Cal., granting fifty-two days' extension of time from Jan. 7 to the W. L. Holman Company, within which to complete its contract for furnishing the remaining cars for the Geary Street Municipal Railway. Mayor Rolph has suggested to the public utilities committee the desirability of giving close study to the project of constructing a belt road to run along the Embarcadero and connect with the Geary Street line at the foot of Market Street. Chairman Vogelsang, on behalf of the utilities committee, said that the matter would receive prompt and proper attention, as well as the propositions to construct municipally owned railroads on Van Ness Avenue and on Stockton Street.

Consolidation of West Penn Plants.—The West Penn Traction & Water Power Company, Pittsburgh, Pa., has consolidated several of the electric light plants which were purchased some time ago so as to form a part of the West Penn system. This merger means the elimination of seven central station plants, power for which is now being supplied primarily from the steam power station of the West Penn Company at Connellsville, Pa., which has a capacity of 42,000 hp. Power will eventually be supplied by the hydroelectric development of the West Penn Traction & Water Power Company on the Big Sandy and the Cheat Rivers in West Virginia. Construction work is now under way on these plants, the first of which, with an originally installed capacity of 50,000 hp, will be in operation about Jan. 1, 1914.

Special Message to Council of Rochester.—Mayor Edger-ton of Rochester, N. Y., sent a special message, in part as follows, to the City Council recently in regard to the service of the New York State Railways, Rochester Lines: "As a result of the recent appeal to the Public Service Commission the congestion on Main Street has been relieved, but, according to complaints received from citizens, the overcrowding of street cars is due to inadequate equipment. The Public Service Commission, Second District, has temporarily discontinued its investigations, but the public, in the meantime, continues to suffer. I would suggest that the Common Council direct its law and railroad committee to investigate these conditions, to the end that the company may be compelled to provide adequate service, and that the committees report their findings back to your honorable body."

Conference of Governors of New England States on Railroad Affairs.—At the conclusion of a conference on Jan. 17, 1913, between Governor Baldwin of Connecticut and Governor Foss of Massachusetts, held at the office of Governor Baldwin, in Hartford, Governor Foss is reported to have made the following statement in regard to a plan to call all the governors of the New England States together to consider such railroad matters as it is felt concern all of New England: "As a result of my conference with Governor Baldwin there is nothing that can be called a definite decision on matters pertaining to the general railroad situation in New England. We discussed the controversy from every angle. This afternoon's meeting was the first of a series which I am endeavoring to inaugurate between the governors of all the New England States. I offered no tentative solution to-day and neither did Governor Baldwin. The New Haven-Grand Trunk deal was touched upon with regard to demands to be made by coming generations. I expect to see Governor Pothier of Rhode Island soon. Then the other governors of New England will be invited to conferences."

San Francisco Railway Development Discussed.—At the regular weekly meeting of the San Francisco Development League, held on Jan. 14, 1913, an address was delivered by

J. R. Bibbins, resident engineer for Bion J. Arnold, Chicago, on the growth and development of San Francisco and its transportation facilities. The burden of the talk was the absolute necessity for quick action by San Francisco in making due preparation for the growth that is to come by building extensions to its transit lines and by working out a system of finance by means of which the present unsatisfactory relation between the city and its transit systems may be improved. The absolute inadequacy of the city's purchasing power for the acquisition or construction of utilities was emphasized, and results from other cities were drawn upon to illustrate the immediate response of underlying property values to improved transit facilities. Mr. Bibbins also showed that municipal boundaries as they exist have practically no bearing upon the broad movements of population; rather it is its rapid transit facilities and the geography of the district which alone control these movements. This results in the creation of a metropolitan district, and points to the great advantage of organizing a metropolitan district control for conserving the proper development of utilities and industries.

Service on the Excelsior Springs Line of the Kansas City, Clay County & St. Joseph Railway.—J. R. Harrigan, general manager of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., announced that regular service over the Excelsior Springs division of the company would be begun on Jan. 21, 1913. Cars will leave Kansas City and Excelsior Springs at 6 a. m. and make regular trips throughout the day at intervals of an hour and a half. This service, however, is temporary and within a short time trips will be made in each direction every hour. The last car will leave Kansas City at 11 p. m. and will be known as a theater special. The running time to Excelsior Springs will be one hour and ten minutes. The station in Excelsior Springs is near the Wabash depot and the business section. The first stop out of Kansas City will be at Avondale, and for the present at least the company will make no effort to handle traffic to North Kansas City, leaving that for the line across the bridge recently placed in service by the development company. Cars will leave Kansas City from the company's waiting rooms, Thirteenth and Walnut Streets, running north on Walnut Street to Third Street, east to Cherry Street, thence across the bridge. Entering Kansas City the cars will turn south from Third Street on Grand Avenue to Thirteenth Street, thence west to Walnut Street. As the cars will run over the Metropolitan Street Railway in Kansas City, a 5-cent fare will be charged within the city. The fare will be 65 cents for one way or \$1.15 for the round trip to Excelsior Springs. Tickets will be sold at the Kansas City office, Thirteenth and Walnut Streets; Liberty and Excelsior Springs. At other points cash fares will be accepted.

LEGISLATION AFFECTING ELECTRIC RAILWAYS

INDIANA

A summary of the principal bills which have been introduced in the Legislature of Indiana follows: A bill to prohibit the use of intoxicating liquor on the cars of interurban and steam railroads except in dining buffet cars. House bill providing for the revision of the highway laws and authorizing boards of county commissioners to grant interurban railways rights-of-way on public highways. Senate bill to require publicity of acts by county commissioners, town councils and boards of public works having power to grant franchises in public highways, the cost of the publicity to be borne by the applicant for the grant. House bill to require railroads to construct and maintain convenient crossings over their rights-of-way and to provide and keep up on all private lands such bars and gates as the owners may elect. Senate bill to authorize the Railroad Commission of Indiana to order the separation of grade crossings, the cost to be prorated between the railroads and the county in which the separation is made. House bill to abolish the collection on steam and interurban lines of cash fares in excess of the regular ticket fares. House bill to limit passenger fares on steam railroads and interurban electric railways to 2 cents a mile for adults and 1 cent a mile for children between the ages of five and twelve years, and prescribing charges for fractions of a mile and fixing the minimum fare which shall be charged.

A meeting of representatives of the electric railways, electric light companies, water works, telephone companies and other public service interests was held in the Traction Terminal Building, Indianapolis, on Jan. 17 to consider the bill introduced by Senator Shively to supplant the Railroad Commission of Indiana with a public utilities commission of five members.

MINNESOTA

A number of bills have been introduced in the Legislature in accordance with the recommendations of the Governor to that body. An employers' liability bill, providing that contributory negligence on the part of a fellow employee is not a defence, and fixing the amounts in which an employer is liable, has been introduced into the House. A bill has also been introduced into the same body to compel electric railway companies in cities of more than 50,000 to station flagmen at all grade crossings with steam railroads. Three "blue sky" bills have been introduced into the House. A "blue sky" bill has also been introduced into the Senate. A bill introduced into the Senate would create a board of public utility commissioners.

NEW YORK

A bill to provide for workmen's compensation within the limitations prescribed by the Court of Appeals in its decision holding unconstitutional the law urged by the Wainwright commission has been introduced in the Legislature. The bill provides that every employer and employee shall be considered as within the provisions of the act unless the State insurance department receives notice of an intention to reject its provisions. Employers who decide to come within the act are required either to insure their liability for compensation with stock or mutual insurance companies or to give satisfactory proof to the insurance department that they are able to meet their obligations.

OHIO

A complete revision of the public utilities law of Ohio is anticipated by those who are acquainted with the ideas of Governor Cox. He would remove the restrictions of the old law respecting qualifications of the members of the commission and would departmentize the commission. It is believed the Governor will ask that the law be changed so that appeals from the decisions of the commission can be taken direct to the Supreme Court, such appeals to have precedence over all other cases. Judge J. Adams, dean of the law department of the Ohio State University; William H. Page, author of "Corporations" and "Wills" and professor in the State University law school, and Charles C. Marshall, special counsel in Attorney-General Hogan's office, have been retained by the Governor to draft a bill to cover the situation. They will have the advice of Commissioner Oliver H. Hughes. Representative Kilpatrick, of Trumbull County, has introduced a bill providing that toilet rooms shall be installed on all interurban cars operated for a distance of more than 10 miles out of a terminal city.

PROGRAM OF ASSOCIATION MEETING

Illinois Electric Railway Association

On account of the unavoidable absence of a number of the members of the Illinois Electric Railway Association, it was decided to postpone the annual meeting from Jan. 17 until Jan. 31. The meeting will be held at the Hotel La Salle, Chicago, and the opening session will begin at 10 a. m. In view of the amount of work to be done at this meeting, the program committee thought it would be for the best interest of the association to omit the presentation of papers and confine the meeting entirely to the business program, which is as follows:

- Review of year's work, by President E. C. Faber.
- Report of executive committee, by H. E. Chubbuck.
- Report of membership committee, by F. E. Johnson.
- Final report of the traffic committee of an interchangeable coupon ticket, by G. W. Quackenbush.
- Report of the signal committee, by J. Leisenring.
- Unfinished business.
- Appointment of nominating committees.
- Election of officers.
- Appointment of committees for ensuing year.

Financial and Corporate

Stock and Money Markets

Jan. 22, 1913.

The net gain in the general level of prices of the securities traded in on the New York Stock Exchange was higher to-day than on the previous day. It is expected that the action of the market during the next few days will indicate whether the improvement is permanent. Money was easy to-day despite further gold exports. Rates in the money market to-day were: Call, 2@3 per cent; sixty days, 3¼@3½ per cent; ninety days, 3¾@4 per cent; five and six months, 4@4½ per cent.

In the Philadelphia market there was a sharp demand at the opening for Philadelphia Electric, but trading became extremely dull following the noon hour.

Trading on the Chicago market to-day was narrow and dull. The feature was the sale of 420 Chicago Railways series 2's. The bond sales were confined largely to the issues of the local railways.

The Boston market to-day was dull but firm. The demand, although not large, was effectual in advancing prices. The local investment bond market is inclined to drag.

The Baltimore market to-day was narrow, but the volume of transactions was fair. The bond sales to-day totaled more than \$80,000.

Quotations of traction and manufacturing securities as compared with last week follow:

	Jan. 15	Jan. 22
American Brake Shoe & Foundry (common).....	92	92
American Brake Shoe & Foundry (preferred).....	131½	131
American Cities Company (common).....	47½	47½
American Cities Company (preferred).....	78½	77
American Light & Traction Company (common).....	410	405
American Light & Traction Company (preferred).....	106½	108
American Railways Company.....	40½	40½
Aurora, Elgin & Chicago Railroad (common).....	43¾	44¾
Aurora, Elgin & Chicago Railroad (preferred).....	87	86¾
Boston Elevated Railway.....	112¼	113¼
Boston Suburban Electric Companies (common).....	5	7½
Boston Suburban Electric Companies (preferred).....	67	65
Boston & Worcester Electric Companies (common).....	7	7
Boston & Worcester Electric Companies (preferred).....	40	40
Brooklyn Rapid Transit Company.....	89½	89½
Capital Traction Company, Washington.....	121½	122
Chicago City Railway.....	150	150
Chicago Elevated Railways (common).....	30	30
Chicago Elevated Railways (preferred).....	89	90
Chicago Railways, pteptg., ctf. 1.....	91½	94
Chicago Railways, pteptg., ctf. 2.....	24½	24½
Chicago Railways, pteptg., ctf. 3.....	8	8
Chicago Railways, pteptg., ctf. 4.....	3½	2½
Cincinnati Street Railway.....	*122½	118
Cleveland Southwestern & Columbus Ry. (common).....	*51½	*51½
Cleveland Southwestern & Columbus Ry. (preferred).....	*33	*33
Cleveland Railway.....	*103½	104
Columbus Railway & Light Company.....	60	55
Columbus Railway (common).....	80	81¾
Columbus Railway (preferred).....	81	83¾
Denver & Northwestern Railway.....	118	118
Detroit United Railway.....	76	75
General Electric Company.....	182	182½
Georgia Railway & Electric Company (common).....	122½	123½
Georgia Railway & Electric Company (preferred).....	82½	83
Interborough Metropolitan Company (common).....	17½	17¾
Interborough Metropolitan Company (preferred).....	60¼	61
International Traction Company (common).....	*38	*38
International Traction Company (preferred).....	*99	*99
Kansas City Railway & Light Company (common).....	18¼	18
Kansas City Railway & Light Company (preferred).....	40	40
Lake Shore Electric Railway (common).....	9	*9
Lake Shore Electric Railway (1st preferred).....	91	*91
Lake Shore Electric Railway (2d preferred).....	25½	*25½
Manhattan Railway.....	130	131¼
Massachusetts Electric Companies (common).....	16½	17
Massachusetts Electric Companies (preferred).....	75	75
Milwaukee Electric Railway & Light Co. (preferred).....	100	*100
Norfolk Railway & Light Company.....	25	*25
North American Company.....	80½	80
Northern Ohio Light & Traction Company (common).....	80	80
Northern Ohio Light & Traction Company (preferred).....	100	100
Philadelphia Company, Pittsburgh (common).....	49¾	50
Philadelphia Company, Pittsburgh (preferred).....	44½	44
Philadelphia Rapid Transit Company.....	27½	27
Portland Railway, Light & Power Company.....	68½	68½
Public Service Corporation.....	117	116
Third Avenue Railway, New York.....	37¾	38¾
Toledo Railway & Light Company.....	23¼	1½
Twin City Rapid Transit Co., Minneapolis (common).....	105¾	106¾
Union Traction Company of Indiana (common).....	4½	*4½
Union Traction Company of Indiana (1st preferred).....	81	*81
Union Traction Company of Indiana (2d preferred).....	34	*34
United Rys. & Electric Company (Baltimore).....	24	23½
United Rys. Inv. Company (common).....	32	33
United Rys. Inv. Company (preferred).....	60¼	60
Virginia Railway & Power Company (common).....	51	51
Virginia Railway & Power Company (preferred).....	90	89
Washington Ry. & Electric Company (common).....	85½	85½
Washington Ry. & Electric Company (preferred).....	87½	90½
West End Street Railway, Boston (common).....	80½	80½
West End Street Railway, Boston (preferred).....	97	97½
Westinghouse Elec. & Mfg. Company.....	73¾	74¾
Westinghouse Elec. & Mfg. Company (1st preferred).....	115	117½

*Last sale.

ANNUAL REPORTS

York Railways

The following statement of earnings of the York (Pa.) Railways, Edison Electric Light Company, York Steam Heating Company and the York Suburban Land Company for the year ended Nov. 30, 1912, was presented at the annual meeting of the stockholders of the companies held on Jan. 13, 1913:

	1912	1911
Gross earnings	\$710,471	\$681,185
Operating expenses.....	\$366,519	\$360,594
Allowances for depreciation	15,589	14,637
	<hr/>	<hr/>
Net earnings	\$328,361	\$305,953
Miscellaneous income	4,229	4,448
	<hr/>	<hr/>
Total income	\$332,591	\$310,401
Fixed charges and taxes	252,327	244,074
	<hr/>	<hr/>
Net income.....	\$80,263	\$66,327
Dividends	64,000	16,000
	<hr/>	<hr/>
Surplus	\$16,263	\$50,327

SURPLUS ACCOUNT

Balance Dec. 1, 1911.....	\$44,625
Net profit year ended Nov. 30, 1912.....	80,263
	<hr/>
	\$124,888
Less dividends, January and July, 1912.....	64,000
	<hr/>
Surplus, Nov. 30, 1912.....	\$60,888

Gordon Campbell, president of the company, said in part: "Although general conditions have affected the gross earnings, there is nevertheless a substantial increase, and with a relatively small increase in operating expense, a gain is effected in net income amounting to \$13,936. This improvement is largely due to the advantage gained from the installation in the previous year of steam reserve power. This plant has proved highly satisfactory and very efficient in operation. Providing as it does ample protection against interruptions, it has resulted in greatly improved relations with both the public and the York Haven Water & Power Company. Some increase in the expenditure for maintenance has been made, the aim being to maintain the property in excellent condition.

"During the year new double track was laid and paved on East Market Street from Sherman Street to Lehman Street and on West Market Street between Hartley Street and West Street. This track was constructed of 90-lb. girder rail and in the most substantial manner.

"Since 1907 the West College Avenue line has been closed on account of the condition of the County Bridge, which was condemned as unsafe and closed to traffic during the long controversy which ensued involving your company's rights upon the bridge. In 1911 the county repaired and reconstructed the bridge, but continued to contest the company's right to cross. This controversy has been brought to a happy conclusion by a decision of the court sustaining the company's position, and the track on the bridge has been relaid, service being opened to the public on Dec. 1. The line is showing satisfactory returns from its operation.

"Among other improvements are the construction of a new line car, the addition of a wheel lathe in the repair shop and the substitution of electric heaters for car stoves, thus increasing the effective capacity of the city cars.

"In the power house a 100-kw motor generator set was installed for use as a battery booster, and improvements were made in the switchboard to permit of practically instantaneous operation of the storage battery as a reserve for lighting, to be used in emergency as a supplement to the steam power. A number of minor extensions of the lighting company's lines have been made.

"A franchise was obtained by the York Steam Heating Company for extending its mains on South George Street from Mason Alley to College Avenue, and extensions of the steam mains were laid on South George Street from Mason Alley to Princess Street, and on North George Street from Clark Alley to Philadelphia Street.

"The expenditures charged to cost of property during the year amount to \$62,360.

"In view of the unsatisfactory bond market at this time, the issue of \$350,000 of one-two year 6 per cent collateral

trust notes which matured on Jan. 1, 1913, was renewed for one year.

"The work of the year is shown in the increased earnings. In the meanwhile the property has been well maintained and shows further improvement in general condition."

Third Avenue Railway

The Third Avenue Railway, New York, N. Y., has issued its first annual report for the calendar year 1912. It contains a consolidated income account for the eleven months ended Nov. 30, 1912, showing a surplus over charges, including depreciation of \$355,000, of \$1,209,429. F. W. Whitridge, president of the company, states, however, that, estimating December earnings at \$110,000, the net earnings for the year ended Dec. 31, 1912, were about \$1,319,000, after paying interest upon all the subsidiary securities and upon the 4 per cent refunding bonds and setting aside the \$400,000 depreciation fund. Following is the consolidated statement of income for the eleven months ended Nov. 30, 1912:

Operating revenue:	
Transportation	\$8,424,189
Advertising	80,067
Rents	139,894
Sale of power	108,085
Total operating revenue.....	\$8,752,235
Operating expenses:	
Maintenance of way and structures.....	\$788,039
Maintenance of equipment.....	565,658
Power supply	681,329
Operation of cars	2,251,793
Injuries to persons and property.....	448,610
General and miscellaneous expenses.....	624,494
Total operating expenses.....	\$5,359,923
Net operating revenue	\$3,392,312
Taxes	618,339
Operating income	\$2,773,973
Interest revenue	35,799
Gross income	\$2,809,772
Total deductions	1,600,343
Net income	\$1,209,429

Mr. Whitridge says in part:

"Estimating the earnings for December at \$110,000, the net earnings for the year are approximately \$1,319,000, after paying interest upon all the subsidiary securities and upon the 4 per cent refunding bonds and setting aside the depreciation fund. Ordinarily this would have been more than sufficient to pay the interest upon the 5 per cent adjustment bonds, but this has not been a normal year. Large expenditures were necessary for the completion of the reorganization. The cash on hand amounts to \$2,556,756, of which \$1,131,104 is allocated to tracks under the reorganization plan; \$35,239, together with 453 4 per cent refunding bonds of the Third Avenue Railway, is in the depreciation fund; \$1,024,270 is in the interest and tax account hereafter mentioned, and \$358,719 is in the current account. The unpaid bills for paving reduce the amount of free cash on hand, but there remains sufficient to pay an instalment of interest on the adjustment bonds on April 1, the next interest date, amounting to 1¼ per cent, which I recommend be paid on that day.

"Pending the decision of the litigation in respect to the franchise taxes for the last three years, I have paid to the Comptroller of the city of New York such amounts as we considered should be paid under any circumstances, and have also paid in to the account entitled 'interest and taxes account' the remainder of the amount claimed by the State authorities. This amounts to upward of \$275,000 and is deposited with the Central Trust Company at interest.

"Large expenditures are still necessary upon the property, and for the purpose of informing ourselves and the security holders as fully as possible about them, I have had a careful budget prepared of all the expenditures which can be foreseen during the next one or two years. A considerable part of the expenditure upon the track and paving would be charged, under any circumstances, to operating expenses, and a large part of the balance, together with nearly the whole of the expenditures called for by the other departments, is properly chargeable to capital.

Such expenditures could probably be met by the issue of additional 4 per cent refunding bonds. The company has, however, sufficient funds on hand to meet all these expenditures for the current year as well as to pay \$350,000 on account of the purchase of the New York City Interborough Railway and upward of \$100,000 which will be necessary to expend upon the Mid-Crosstown Railway, Inc., in case the owners of that property should conclude to accept our offer to purchase it. It may probably be desirable to apply to the Public Service Commission for consent to issue 4 per cent refunding bonds for part of these capital expenditures. It will not be necessary to market such bonds, and it should be our policy, so far as possible, not to increase our fixed charges.

"Finally, I think it may be said, notwithstanding the large expenditures shown in this budget, and which will probably hereafter be shown in similar budgets, that the outlook for the owners of Third Avenue securities is encouraging.

"All of the companies show a steady increase in gross receipts, except the Dry Dock, East Broadway & Battery Railroad, which is affected by the partial suspension of the Desbrosses Street ferry, and the Westchester Street Railroad, which is affected by the beginning of operations on the New York, Westchester & Boston Railway. In this latter case I think the decrease is only temporary, as more people will be brought into the territory. The increased gross receipts for the year including these roads are, in round numbers, \$520,000, and while a part of this is due to our having assumed the possession of the subsidiary companies and of the New York City Interborough Railway, the increase upon the Union Railway and the three Manhattan companies alone is \$368,000, an amount far in excess of the estimates originally made.

"During the year a contract for the purchase of the New York City Interborough Railway was approved by the Third Avenue Railway, and a note for \$1,350,000 was given to the Central Trust Company for the money necessary to purchase the securities offered for sale and partly to complete the road it was entitled to build under its franchises. Since that time the Third Avenue Railway has purchased additional securities of this road at a cost of \$220,375, for cash. The purchase of these securities, which include all the bonds and about four-fifths of the stock, has been approved by the Public Service Commission.

"As receiver of the Third Avenue Railway, I have for the last two or three years been operating the Twenty-eighth and Twenty-ninth Streets Crosstown Railroad (since reorganized as the Mid-Crosstown Railway, Inc.), and I proposed to purchase that property at a cost of \$500,000. That proposition was not approved by the Public Service Commission, and I am bound to say that the receipts of the line since I took it have been disappointing and that the Public Service Commission was justified in refusing to allow the purchase to be completed. Since the decision by the commission another offer has been made to purchase the property, free of debt, for \$250,000."

The budget for expenditures referred to by Mr. Whitridge calls for an outlay of \$232,388 by the Third Avenue Railway, \$148,200 by the Union Railway, \$55,074 by the Westchester Electric Railroad, \$18,850 by the New York City Interborough Railway, making a total of \$454,513. For maintenance and construction of all lines the sum is \$1,142,140, making a grand total of \$1,596,653.

Value of Chicago Elevated Railways Discussed in Merger Proceedings

It appears that the local transportation committee of the Chicago City Council has arrived at an arrangement agreeable both to the city and the Chicago Elevated Railways in regard to the value for the elevated railways in the general merger of all transportation lines in Chicago. W. G. Beale, counsel for the Chicago Elevated Railways, submitted figures representing the cost to the association of the three elevated railway properties as of July 1, 1911, Jan. 1, 1912, and Jan. 1, 1913. These figures are shown in the accompanying table.

The committee questioned the cost of obtaining \$28,500,000 upon association notes and the cost of obtaining \$16,-

000,000 through preferred shares. In both instances the committee considered the brokerage charge excessive and contended that the charge in connection with the \$16,000,000 of preferred shares should be eliminated from the cost of the property to the city. Mr. Beale advised the committee that the seemingly excessive brokerage charge was due largely to the previous failures of attempts to organize the elevated roads into a single company. Finally, H. A. Blair consummated a merger of the operating departments of the three companies in July, 1911. The new organization had not been incorporated, but merely represented an association of various financial interests and stockholders. In order to bring about the merger and underwrite the floating debt, it was necessary to pay a large brokerage fee. Mr. Beale stated that at the time the operating agreement between the companies was arranged the Stone & Webster Engineering Corporation reported a fair value of the property as \$90,000,000. The members of the committee continued to press the representatives of the elevated railways association to eliminate the two brokerage items from the valuation, but the representatives of the companies refused to comply with this condition.

Mr. Beale said that the association intended to assume control, but that the adjustment for unified operation would require a number of years. Although the Oak Park line is in the hands of receivers, the association at public sale assumed a portion of the floating debt. The court had authorized receivers' certificates, but the association had been unable to obtain money on the certificates at this time to improve the property.

In concluding the explanation of the company's position, Mr. Beale advised the committee that if the general merger of all transportation lines was not brought about quickly, a complete merger between the elevated lines would be undertaken by the association in the near future. This would require further reorganization and many physical changes in the existing property, and entail an expense in excess of \$1,000,000. As to the items representing organization and miscellaneous costs, Mr. Beale said legal expenses had been included as well as loss of interest on funds on hand. This latter item probably made up the larger proportion of the total amount shown.

At the conclusion of the discussion of the various items shown in the table of costs of acquiring the property, the committee appeared to be of the general opinion that progress had been made. In view of this it instructed the original valuation committee, which represented the city, and was composed of members of the Harbor and Subway Commission, to complete its valuation of the elevated lines. It will be recalled that the original valuation made by this commission did not contain intangible values or values representing the loss of interest during construction, expense of organization, cost of obtaining frontage and numerous miscellaneous items which would add materially to the total. Following the issuance of these instructions, J. J. Reynolds, of the original valuation commission, raised the question as to whether the committee was satisfied with the value of real estate in which there was so great a difference between the figures of the company and those of the city. This should be decided in order to give them some basis upon which to compile the complete valuation. The chairman of the committee said that he did not believe that it was generally agreed that the real estate value was correct, but that the values made originally would serve as some basis for arriving at complete figures.

The corporation counsel was also instructed to draft a skeleton ordinance embodying eleven suggestions printed in the Dec. 21, 1912, issue of the ELECTRIC RAILWAY JOURNAL, page 1242. The purpose of this skeleton ordinance was to start the general discussion of the various clauses to be included in the general merger ordinance. At a meeting of the local transportation committee held Jan. 13 these suggestions were taken up clause by clause and discussed with a view to advising the corporation counsel of all the points each clause should include. One of the questions raised in this discussion was that of additions to capital account. It was the opinion of the chairman of the committee that the 10 per cent profit on construction work done by the company should be eliminated from capital account. He also questioned the amounts that should be charged under the renewals-in-part clause in the old ordi-

nance. Many items now being added to capital account under the 1907 ordinance were properly chargeable to operation. At the conclusion of this session it was suggested that the representatives of the two surface railways be requested to offer their opinions as to the fairness of the valuation set on the elevated railways by the holding association. Upon resolution the suggestion was adopted.

COST OF ACQUISITIONS

(Disregarding betterments made by companies after July 1, 1911.)

	As of July 1, 1911	As of Jan. 1, 1912	As of Jan. 1, 1913
Required for purchase of stocks of Metropolitan, South Side and Northwestern companies	\$21,201,745	\$21,201,745	\$21,201,745
Cost of obtaining \$28,500,000 upon association notes (\$30,000,000)	1,500,000	1,500,000	1,500,000
Cost of obtaining \$16,000,000 through association preferred shares	4,000,000	4,000,000	4,000,000
Provided for Northwestern company (paid Sept. 1, 1911)	20,000,000	20,000,000	20,000,000
Paid toward acquisition of Oak Park road	1,665,577	1,665,577	1,680,970
Organization and miscellaneous	198,122	345,472	507,241
	<hr/>	<hr/>	<hr/>
	\$46,899,868	\$48,712,795	\$48,889,958
Add funded debt of all four companies existing July 1, 1911, excluding Northwestern bonds due Sept. 1, 1911. (See accompanying schedule)	32,285,750	32,285,750	32,285,750
	<hr/>	<hr/>	<hr/>
	\$79,185,618	\$80,998,545	\$81,175,708
MEMORANDUM. — Balance of the original amount of \$44,500,000 realized by the association from its notes and preferred shares	3,100,132	1,287,205	1,110,042
	<hr/>	<hr/>	<hr/>
	\$82,285,750	\$82,285,750	\$82,285,750

SCHEDULE OF FUNDED DEBT

Northwestern Company first mortgage 4's, due Sept. 1, 1911	\$18,000,000
Northwestern Company equipment notes 6's	184,000
Union Elevated Company 5 per cent bonds, due 1945	4,472,000
South Side Company 4½ per cent bonds, due 1924	8,000,000
Metropolitan Company first mortgage 4 per cent bonds, due 1938	10,000,000
Metropolitan Company extension 4's, due 1938	4,433,000
Metropolitan Company gold notes, 5 per cent	150,000
Union Consolidated Company 5 per cent bonds, due 1936	407,000
Oak Park Company first mortgage 5 per cent bonds, due 1928	4,432,000
Oak Park Company 5 per cent equipment notes	40,000
Oak Park Company 6 per cent equipment notes	157,000
Oak Park Company real estate mortgages	10,750
Funded debt July 1, 1911	\$50,285,750
Deduct Northwestern bonds due Sept. 1, 1911	18,000,000
Funded debt as of July 1, 1911, excluding Northwestern bonds	\$32,285,750

Chicago (Ill.) Railways.—A dividend of \$6 has been declared on the participation certificates, Series I, of the Chicago Railways. This, with the 6 per cent paid on Oct. 31, 1912, makes a total of 12 per cent paid during the fiscal year to the end of Jan. 31. The previous distributions were \$8 on Sept. 1, 1909, and an initial payment of \$4 on Nov. 15, 1908. The present distribution leaves the distributions, which are 8 per cent cumulative, 16 per cent in arrears.

Cities Service Company, New York, N. Y.—A monthly dividend of five-twelfths of 1 per cent has been declared on the common stock of the Cities Service Company, payable on Feb. 1, 1913, to holders of record of Jan. 15, 1913, placing the stock on a 5 per cent yearly basis. The regular monthly payment of one-half of 1 per cent on the preferred stock will be made at the same time.

Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio.—The Cleveland, Painesville & Eastern Railroad has been authorized by the Public Service Commission of Ohio to issue its forty-year 5 per cent refunding and extension bonds of a par value of \$62,000 at not less than 80, the proceeds to be used to reimburse the income account for expenditures made therefrom in payment for improvements.

Commonwealth Power, Railway & Light Company, Grand Rapids, Mich.—The Commonwealth Power, Railway & Light Company has declared an initial dividend of 1 per cent on the \$12,000,000 of common stock of the company, payable on May 1, 1913, to holders of record of April 10, 1913.

Dayton, Covington & Piqua Traction Company, West Milton, Ohio.—The Public Service Commission of Ohio has authorized the Dayton, Piqua & Covington Traction Company to issue \$40,000 of its first mortgage 5 per cent gold bonds at 90, the proceeds to be used to pay and discharge prior liens aggregating \$7,100 and to discharge certain items of floating debt.

El Paso (Tex.) Electric Company.—The directors of the El Paso Electric Company have voted to offer \$250,000 of the unissued common stock for subscription pro rata at par to both common and preferred stockholders of record at the close of business on Feb. 1, 1913.

Louisville (Ky.) Railway.—The annual report of the Louisville Railway for 1912 was made public following the recent meeting of the directors of the company. The increase in gross revenue of the company was almost \$100,000 during 1912. Operating expenses increased only \$47,212, leaving the increase in operating revenue \$52,682. An increase of \$81,710 in charges and taxes, as compared with 1911, left the net revenue from operation of the company's city lines \$29,028 less than in 1911, but this was largely compensated for in an increase of \$24,835 in "other income," derived from the operation of the interurban lines of the Louisville & Interurban Railroad. Practically all of the \$670,650 paid in dividends during the year by the company went to the Louisville Traction Company, the holding corporation. The report for 1912 follows: Gross revenue, \$3,130,492; operating expense, \$1,700,037; operating revenue, \$1,340,455; charges and tax, \$786,127; net revenue, \$554,328; other income, \$234,885; net income, \$789,213; dividends, \$670,650; surplus, \$118,563.

Mount Vernon (Ohio) Electric Railway.—The Public Service Commission of Ohio has authorized the Mount Vernon Electric Company to sell its street railway in Mount Vernon to the Mount Vernon Electric Railway, which is to pay \$50,000 for the property, payable \$40,000 in 6 per cent bonds and \$10,000 in the paid-up capital stock of the Mount Vernon Electric Railway.

New York, New Haven & Hartford Railroad, New Haven, Conn.—Morton F. Plant, New London, Conn., and Lawrence Minot, Boston, Mass., have been elected directors of the New York, New Haven & Hartford Railroad to succeed Augustus May, Bridgeport, Conn., and George MacCulloch Miller, New York, N. Y.

Omaha & Council Bluffs Street Railway, Omaha, Neb.—John A. Monroe, C. W. Hamilton and Frank B. Johnson, all of Omaha, have been elected directors of the Omaha & Council Bluffs Street Railway to succeed E. A. Cudahy, Chicago, and Randall K. Morgan, New York, resigned, and W. V. Morse, deceased.

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.—Application has been made to the Public Service Commission of the Second District of New York for its consent to the consolidation of the Rochester, Syracuse & Eastern Railroad, the Syracuse, Lake Shore & Northern Railroad, and the Auburn & Northern Electric Railroad as the Empire United Railways, Inc., with a capital of \$11,600,000. The companies are controlled and operated by the so-called Beebe Syndicate. The directors of the new corporation are Hendrick S. Holden, James M. Gilbert, William K. Pierce, Edward Joy, Willis A. Holden, Charles M. Warner, Charles A. Lux, B. L. Smith, William Nottingham, Albert E. Nettleton and Clifford D. Beebe, Syracuse; Fidelio K. Hiscock, North Yakima, Wash.; Edwin D. Metcalf, Auburn; Ferdinand W. Roebling, Jr., Trenton, N. J., and Cadwell B. Benson, of Minetto, N. Y.

Third Avenue Railway, New York, N. Y.—The Third Avenue Railway has applied to the Public Service Commission of the First District of New York for permission to purchase all of the \$200,000 of stock and the \$2,200,000 of bonds of the Belt Line Railway Corporation for \$2,450,000. It intends to finance the purchase temporarily by borrowing on short-term notes, with the stocks and bonds of the Belt Line Railway Corporation as security. The Belt Line Railway Corporation is the successor to the Central Park, North & East River Railroad. In its petition to the commission the Third Avenue Railway sets forth that the lines of the Belt Line Railway Corporation can be operated more profitably and economically in conjunction with the lines of the Third Avenue Railway than they could independently and that the purchase of the property by the Third Avenue Railway would prevent any disturbance of the transfer compromise arranged between the surface railways in the borough of Manhattan and the Public Service Commission recently.

Toledo Railways & Light Company, Toledo, Ohio.—At the annual meeting of the stockholders of the Toledo Rail-

ways & Light Company Albion E. Lang, former president, resigned as a director. Mr. Lang is now a resident of Vermont. Conrad Weil, of Hodge & Weil, Toledo, was elected to succeed Mr. Lang. All other directors were re-elected. The board met and adjourned to Jan. 30 without electing officers or transacting other business. The report of the president will be read at the adjourned meeting. The delay was occasioned by the fact that the reorganization plan has not yet been completed.

Wilkes-Barre (Pa.) Railway.—The Wilkes-Barre Railway has filed with the Secretary of State at Harrisburg notice of the increase in the stock of the company from \$300,000 to \$900,000.

Yarmouth Light & Power Company, Ltd., Yarmouth, N. S.—The Yarmouth Light & Power Company, Ltd., was incorporated recently to take over the property of the Yarmouth Electric Company and the Yarmouth Street Railway, Ltd. The directors of the company are: Willard M. Kelley, president; Edgar K. Spinney, vice-president; John T. Murphy, W. H. Covert, Blake G. Burrill and C. C. Richards. John T. Murphy, Halifax, is managing director.

Dividends Declared

Brazilian Traction, Light & Power Company, Montreal, Que., quarterly, 1½ per cent.

Chicago (Ill.) Railways, 6 per cent, participation certificates, series I.

Columbus (Ohio) Railway, quarterly, 1¼ per cent, preferred.

Grand Rapids (Mich.) Railway, quarterly, 1¼ per cent, preferred.

Jacksonville (Fla.) Traction Company, quarterly, one-half of 1 per cent, preferred; quarterly, 1¼ per cent, common.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., quarterly, 1½ per cent, preferred.

Philadelphia Company, Pittsburgh, Pa., 2½ per cent, preferred.

Railways Company General, Philadelphia, Pa., quarterly, 1 per cent.

Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, quarterly, 1¼ per cent, preferred.

West Penn Railways, Pittsburgh, Pa., quarterly, 1¼ per cent, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, MAINE.

Period.	Gross Earnings.	Operating Expenses.	Net Earnings.	Fixed Charges.	Net Surplus.
1m., Nov., '12	\$47,844	*\$31,211	\$16,633	\$14,400	\$2,233
1 " " '11	44,655	*29,683	14,972	14,429	543
5 " " '12	300,894	*168,343	132,551	72,000	60,551
5 " " '11	294,515	*163,334	131,181	72,258	58,923

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO.

1m., Nov., '12	\$239,141	*\$145,324	\$93,817	\$43,388	\$50,429
1 " " '11	214,563	*125,204	89,359	43,730	45,629
11 " " '12	2,736,156	*1,551,988	1,184,168	481,563	702,605
11 " " '11	2,454,651	*1,359,562	1,095,089	487,120	607,969

PHILADELPHIA RAPID TRANSIT COMPANY.

1m., Dec., '12	\$2,065,830	\$1,221,530	\$844,300	\$763,640	\$81,660
1 " " '11	1,964,272	1,168,293	795,978	741,502	54,476
6 " " '12	11,926,124	7,086,774	4,839,350	4,560,921	278,429
6 " " '11	11,344,408	6,858,487	4,485,920	4,430,323	55,597

PORTLAND (MAINE) RAILROAD.

1m., Nov., '12	\$76,071	*\$57,798	\$18,273	\$10,254	\$8,019
1 " " '11	72,068	*53,951	18,117	9,636	8,481
5 " " '12	473,222	*292,043	181,179	51,682	129,497
5 " " '11	470,615	*301,219	169,396	47,774	121,622

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m., Nov., '12	\$570,863	*\$288,933	\$281,930	\$151,765	\$130,165
1 " " '11	541,934	*250,134	291,800	130,807	160,993
11 " " '12	6,055,452	*3,050,229	3,005,223	1,639,588	1,395,635
11 " " '11	5,780,306	*2,813,164	2,967,142	1,377,530	1,589,612

ST. JOSEPH RAILWAY, LIGHT, HEAT & POWER COMPANY, ST. JOSEPH, MO.

1m., Nov., '12	\$100,787	*\$54,495	\$46,292	\$19,710	\$26,582
1 " " '11	94,577	*60,322	34,255	19,381	14,874
11 " " '12	1,068,965	*611,650	457,315	216,350	240,965
11 " " '11	997,884	*625,361	372,523	211,900	160,623

UNION RAILWAY, GAS & ELECTRIC COMPANY, ROCKFORD, ILL.

1m., Nov., '12	\$386,772	*\$221,275	\$165,497	\$91,555	\$73,932
1 " " '11	290,240	*162,432	127,808	63,751	64,057
11 " " '12	3,553,966	*2,084,578	1,469,388	870,799	598,589
11 " " '11	2,864,796	*1,646,145	1,218,651	680,000	538,651

*Includes taxes.

Traffic and Transportation

Relation of Interurban Freight Service to the High Cost of Living

Edward C. Spring, manager of the Philadelphia division of the Lehigh Valley Transit Company, Allentown, Pa., read a paper, "The Relation of Interurban Trolley Freight Service to the High Cost of Living," before the City Club of Philadelphia on Jan. 18, 1913. Mr. Spring reviewed at considerable length the history of the development of electric railway freight service in the Middle West and pointed out how methods which had been found of value there could be modified and applied successfully by the lines in the East. The following brief abstract has been made of the paper which he presented on the subject:

"The subject of the high cost of living is demanding the attention and study of every wage earner and provider. The most potent factor which presents itself is the closer relationship between producer and consumer and the agency which will bring these two into closer relationship. No other improvement of modern times has done more to develop communities, build up municipalities and revolutionize social life among the masses of this country than the electric railway system. Hitherto the handling of freight by electric railway has received much less attention in the East than has been given to the same subject in the Middle West, and quite naturally the managers of the lines in the East look to the interurban lines in the Middle West for help in solving freight and express service problems.

"The state agricultural institutes have told the farmer how to prepare the ground and till the soil and plant to produce the best results, but the farmer has been told very little about how to find a market for his product after it has been developed. My work with the company that I now represent is to familiarize the farmers with the relation which the electric railways bear to them.

"The community in and about Philadelphia is splendidly served as far as the farmer is concerned by the up-to-date service of the companies which have recently established a fast express service at freight rates between Allentown and Philadelphia. The company with which I am connected has established a brokerage department in connection with its express and freight service whereby the farmer can secure a market for his commodity without going to the city. The company does not charge for this service, and it is one which so far as I know has never before been attempted by an electric railway in the East.

"Philadelphia, situated as it is in the heart of a wonderful development and occupying as it does the position of the third largest city in the United States, cannot help realize and take advantage of the possibilities of the productive agricultural sections within close touch of the city. I believe that city markets should be established at various sections of the city with tracks running directly to them and a freight terminal as near the center of the metropolitan district as conditions will permit, so that farm products could be delivered direct to these markets. Owing to the wide gage of the city tracks, however, the city of Philadelphia cannot allow direct communication with the outlying electric railways. These matters should have the attention of the engineers in laying out the future transportation plans of the city.

"The company which I represent is probably doing more to-day than any other electric railway to develop express traffic from the farms, and traversing as it does the highly productive counties of Montgomery, Bucks and Lehigh for a distance of 58 miles to the north of Philadelphia, it is in a position to serve the city to great advantage. So rapidly has the recently established business of transporting farm products developed that the company has ordered several new cars to handle the traffic. The development of the field of transporting farm products by the electric railways, so far as the sections in and around Philadelphia are concerned, has only just begun. The volume of business which will be developed by the electric railways and the advantages which will accrue to the city of Philadelphia cannot be estimated. The recent advent of one of the largest old-line express companies on the Lehigh Valley

Transit Company's line is an added feature to the progressive and up-to-date methods that are being instituted for the benefit of the Philadelphia markets.

"The key to the success of any interurban electric railway service is its terminal facilities in the large cities. A system of electric railway freight terminals must be established to bring the producer and the consumer into close touch and eliminate the middleman. A fair adjustment of rates on the part of the city line with the interurban roads must be made so that the through rates for transportation between the farming districts and the city will be attractive to the farmer. At present the city lines receive the same percentage of the through rate for a haul of 5 or 6 miles that the interurban lines receive for 30 or 40 miles. It seems to me that these two factors, namely, terminal facilities and rates charged by the city lines, are the most important and are of vital interest to Philadelphia in the development of electric railway freight service."

Increase in Wages on Third Avenue System

F. W. Whitridge, president of the companies included in the Third Avenue Railway System, New York, N. Y., addressed a communication as follows to the trainmen on Jan. 17, 1913, in regard to a proposed revision in the wages of the men:

"The first year of the corporate existence of the new Third Avenue Railway closed on Dec. 31, 1912. It has been a prosperous year for the company; the receipts on all the lines of the system except two have increased, and I realize that a part of that increase is due to the care and general conduct of those who run the cars. I think it just that this recognition by the companies should take the form of an increase in wages, so that the men may realize that when the company prospers they shall participate in its prosperity. I propose that the wages hereafter to be paid shall be:

"Third Avenue Railway, Forty-second Street, Manhattanville & St. Nicholas Avenue Railway and the Dry Dock, East Broadway & Battery Railroad:

	Conductors, per Hour, Cents.	Motormen, per Hour, Cents.
First year	24	25
Second year	25	26
Third and fourth year.....	26	27
Fifth year	27	28½

"On storage battery lines the rate will be:

	Cents per Hour.
Conductors	22
Motormen	25

"Union Railway, including the New York City Interborough Railway and the Southern Boulevard Railroad:

	Cents per Hour.
Conductors and motormen, first year.....	24
Conductors and motormen, second year.....	27

"Westchester Electric Railroad, including the New York, Westchester & Connecticut Traction Company:

	Cents per Hour.
Conductors and motormen, first year.....	24
Conductors and motormen, second year.....	27

"Yonkers Railroad:

	Cents per Hour.
Conductors and motormen, first year.....	24
Conductors and motormen, second year.....	27

"This will take effect upon all the lines of the company on March 1, except in the case of the Yonkers Railroad, where the men have not been at work for a couple of weeks and the company has suffered some loss because of their little vacation, for which it must in part be recouped, and the increase will therefore take effect in the case of the Yonkers men on June 1.

"The Third Avenue Benefit Association, as you know, has accumulated \$54,000, which is invested in New York city 4¼ per cent bonds, and every man is guaranteed by that fund an insurance of \$250. I have been for some time in negotiation with some of the large insurance companies, and I think that it will be possible to procure an insurance for each of the men of, say, \$1,000 at very moderate rates, which will cut out all agents' commissions and put the

insurance within the reach of all. I therefore inclose a post card upon which those of you who are members of the association may signify your preference."

The post card in regard to the matter of insurance says: "If a considerable number of the men desire to have additional insurance, I will report to them specifically what can be done. In the meantime no man is committed to anything."

Temporary Increase in Fare Between Trenton and Princeton Approved

On the application of the receivers of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., the Board of Public Utility Commissioners of New Jersey has issued an order authorizing an increase in the fare of the company between Trenton and Princeton, N. J., from 10 cents to 15 cents, effective from Feb. 5, 1913, for a period of one year. The rate of fare which is to be supplanted temporarily has been in force since 1902, in accordance with provisions of the ordinances granted to the company by the borough and the township of Princeton. The provision of these ordinances in regard to the matter of fares was recently repealed. The order of the board to the company follows:

"The Board of Public Utility Commissioners hereby orders and directs that the companies to this application shall for a period of twelve months beginning Feb. 5, 1913, establish and make charges as follows:

"1. The rate of fare for a continuous trip between Trenton and Princeton, in either direction, shall be 15 cents.

"2. There shall be three fare zones between these two places, instead of two zones, as hitherto. The rate of fare for traversing any one of these three zones, or any part thereof, shall be 5 cents. The first zone shall extend from Warren Street, Trenton, to Eggert's Crossing, a distance of 4.1 miles. The second zone shall extend from Eggert's Crossing to Rosedale Road, a distance of 4.51 miles. The third zone shall extend from Rosedale Road to the Witherspoon terminus at Princeton, a distance of 3.95 miles.

"3. An overlap shall be established between Eldridge Park and Lawrenceville, in either direction, and within this overlap only one fare of 5 cents per passenger shall be collected of passengers traveling between the two stations in question.

"4. The companies to this application shall sell bunches of tickets or block tickets, not less than twelve tickets in a bunch or block, at the aggregate price of \$1, each of said tickets to be good for passage between Lawrenceville and either Trenton or Princeton in either direction."

Campaign Against Smokers in Philadelphia

The Philadelphia (Pa.) Rapid Transit Company has in the interest of the public health begun a campaign against smokers. The company has caused the following notice in the form of a placard 13 in. high by 21 in. wide to be placed in its cars:

"Passengers are earnestly requested to co-operate by abating the smoking and spitting nuisance in the cars of this company.

"Conductors will be required on and after Feb. 1, 1913, to remove passengers who persist in smoking, spitting or carrying partly consumed cigars or cigarettes, either lighted or unlighted, into the cars at any time."

Cards 2½ in. high by 4¼ in. wide which read as follows have been prepared by the company to be handed by the conductors to passengers who violate this rule after Feb. 1, 1913:

"IN THE INTEREST OF PUBLIC HEALTH

"Smoking, spitting or the carrying of partly consumed cigars or cigarettes, either lighted or unlighted, is not permitted on any part of closed cars at any time.

"Passengers are earnestly requested to co-operate by observing this necessary rule; conductors are required to remove from the car such passengers as persist in violating this rule of the company.

"The police department has instructed its officers to assist in removing from the car such passengers as persist in violating this reasonable rule of the company."

Near-Side Car in Vancouver.—The British Columbia Electric Railway, Vancouver, B. C., has placed a near-side car in operation in Vancouver. The company has also equipped the rear platforms of a number of its cars with wire gates of the folding type, designed especially to prevent accidents.

Petition for Increase in Service and Reduction in Fare in Manchester, N. H.—A petition has been filed with the Public Service Commission of New Hampshire for more frequent service over the Manchester Street Railway between Manchester and Goffstown and for a reduction in fare on all the lines of the company in Manchester from 5 cents to 4 cents.

Service Order in Atlanta.—The State Railroad Commission has issued an order directing the Georgia Railway & Power Company, Atlanta, Ga., to operate a ten-minute schedule during rush hours on the company's Ponce de Leon line, and a fifteen-minute schedule during the remainder of the day. The commission has also ordered that the last outbound car on the Ponce de Leon line of the company shall leave the center of the city no later than midnight.

Accidents in Greater New York in December.—Accidents on the railroads and street railroads of Greater New York reported to the Public Service Commission for the First District for December, 1912, aggregated 5732. This was an increase of 394 over December, 1911. The number of serious accidents, however, was about the same, being 165 against 167 for December, 1911. The number of persons killed in December, 1912, was nineteen, against twenty-four in the same month of 1911.

Fare Order by New York Commission.—The Public Service Commission of the Second District of New York has made an order providing that the rates of fare to be charged by the New York, Westchester & Boston Railway from its terminus in the city of New York to its station in White Plains shall be 30 cents, and that the maximum rate for sixty-trip commutation monthly ticket shall be \$7. The present rate provides for a fare of 35 cents single trip and monthly commutation ticket \$8. This fixes the fare at the same rate as between Port Chester and New York and the rate now ordered was agreed to by the company as a proper one.

Question of Fare Over Illinois Central Railroad at Chicago.—As a result of an opinion rendered by Corporation Counsel Sexton to the Chicago City Council, the local transportation committee of that body has called a special meeting to take up the question of rates of fare on the Illinois Central Railroad. The company recently raised its rate of fare on one-way and round-trip tickets to 2 cents per mile. There was no increase in the commutation rates, but citizens who use the Illinois Central Railroad to reach the downtown district and real estate dealers in the territory affected have protested against the change. The opinion rendered by corporation counsel was to the effect that the City Council has the power to regulate railroad fares between points inside the city limits.

Skip-Stop Idea Received with Favor in Portland.—C. J. Franklin, general superintendent of the railway department of the Portland Railway, Light & Power Company, Portland, Ore., is reported to have said that the plan of stopping cars on the Mount Tabor and Sunnyside lines on alternate blocks has proved so successful that the company will in all probability adopt the plan on the Rose City Park line in the near future. Mr. Franklin is quoted as follows: "There seems less confusion than we feared, and I have heard a great deal of favorable comment. One thing that seems to please passengers is the reduced jolting of the cars now that they have opportunity to get under headway before the brakes are applied again for another stop. It not only makes smoother riding, but also saves time. Of that there is no question."

Electric Express Company to Be Dissolved.—J. T. Harmer, president of the New England Investment & Security Company, Springfield, Mass., president of the Springfield Street Railway, vice-president of the Worcester Consolidated Street Railway and president of the Electric Express Company, issued the following bulletin recently: "Commencing on Jan. 1, 1913, the express business will be carried

on directly by the electric railway companies instead of through the Electric Express Company. Application will be made later to the State to dissolve the Electric Express Company." C. V. Wood, vice-president and general manager of the Electric Express Company, will continue to superintend the express and freight business on all three railways. There will be no changes in the agents or other employees of the companies.

Rate Hearing Before the I. C. C.—Special Examiner J. Edgar Smith of the Interstate Commerce Commission on Jan. 10 presided over a hearing on the complaint of S. J. T. Price and others against the Washington & Old Dominion Railroad, Washington, D. C., which a few months ago took over a branch of the Southern Railway and relieved it of the necessity of running suburban passenger trains into the Washington terminal. When the lines of the Southern Railway were taken over the electric railway rates from the nearby points in Virginia were increased, and the commutation tickets were sold in such a manner as to lead to the charge by the suburbanites that the aim of the company is really to defeat the jurisdiction of the commission and keep under that of the Virginia Corporation Commission, which has allowed the increased local rates to go into effect. F. E. Wright, president of the company, introduced exhibits tending to indicate that the rates are just and reasonable considering the services performed and the increased necessities of the property.

Briefs Filed in Louisville-Indianapolis Case.—The brief of the Louisville Board of Trade, Louisville, Ky., and other shippers of that city to the Interstate Commerce Commission praying that through routings be established along the electric railways between Louisville, Indianapolis and other northern Indiana points, was recently filed with the commission by Louis B. Wehle, attorney for the shippers. The commission instituted an investigation into interurban freight conditions in the territory affected a short time ago. In answer briefs have been filed by the defendants with the commission. The answer of the Indianapolis, Columbus & Southern Traction Company with respect to the inexpediency of enforcing through freight routings sets forth three principal facts as follows: First—The defendant line is not built to handle freight except packages at express rates. Second—It would be impossible for the line to take care of its passenger business should it operate through freight connections. Third—The freight business now handled is and must of necessity be done at a loss. The Louisville & Northern Railway & Lighting Company states that through freight business to Indianapolis would have to be done at a loss upon the additional investment required for such service. The Louisville & Southern Indiana Traction Company avers that the bridge over which it operates in entering Louisville is too congested under present conditions to admit of freight traffic.

Fares Between Seattle and Tacoma Up for Settlement Again.—John A. Shackelford, Tacoma, Wash., and J. B. Howe, Seattle, Wash., counsel for the Stone & Webster interests in the Pacific Northwest, have notified the Public Service Commission of Washington that it is proposed to appeal for redress from the rates which the Puget Sound Electric Railway was compelled to establish between Seattle and Tacoma after the Supreme Court of Washington had upheld the decision of the commission fixing the rates. The commission and the court estimated that the company would receive a 7 per cent annual return on the value of its property from the rates ordered by the commission to be established by the company. In a statement which it issued at the time the Supreme Court rendered its decision upholding the rates as fixed by the commission, the company said: "The Puget Sound Electric Railway will give the rates ordered a fair trial, and if the trial proves that the estimates of the commission and the court were wrong and the company is injured thereby, it will look with confidence to the commission of its own motion to change its order, as it has the power to do, and thereby right the wrong which it has unintentionally inflicted. If, however, in such case the commission offers no relief, then the company will seek the protection of the courts to prevent the confiscation of its property and believes that in so doing it will be sustained not only in the courts but also in the opinion of all fair-minded persons."

Personal Mention

Mr. W. H. MacAllister, comptroller of the Cincinnati (Ohio) Traction Company, has been elected vice-president of the Cincinnati Car Company.

Mr. W. G. Ross, formerly managing director of the Montreal (Que.) Street Railway, has been appointed chairman of the Montreal Harbor Commission.

Mr. George A. Hearn, electrical engineer of the San Francisco, Napa & Calistoga Railway, Napa, Cal., has been promoted to the position of superintendent of power and equipment of the company.

Mr. F. A. Healy, secretary and treasurer of the Ohio Electric Company, Cincinnati, Ohio, was recently elected first vice-president of the Cincinnati Transportation Club to succeed the late Eugene W. Dahl.

Mr. Norman Read has been appointed electrical engineer and superintendent of motive power of the Denver (Col.) City Tramway in charge of all power plants and substations of the company and other matters pertaining to electrical operations.

Mr. Roger W. Toll has been appointed chief engineer of the Denver (Col.) City Tramway in charge of all matters pertaining to civil engineering, track and roadway construction and maintenance, bridges, viaducts, subways, buildings and quarry.

Mr. George H. Lyne has been appointed superintendent of transportation of the Jackson Light & Traction Company, Jackson, Miss., to succeed Mr. A. T. Miller, resigned. Mr. Lyne was formerly superintendent of the Henderson (Ky.) Traction Company.

Mr. James Graham, formerly with the Canadian General Electric Company, Halifax, N. S., is resident general manager of the Yarmouth Light & Power Company, Ltd., Yarmouth, N. S. which has taken over the property of the Yarmouth Electric Company and the Yarmouth Street Railway, Ltd.

Mr. N. I. Garrison, for eight years auditor of the Fort Smith Light & Traction Company, Fort Smith, Ark., has accepted the position of auditor of the Western States Gas & Electric Company, with headquarters at Stockton, Cal. Mr. Garrison was tendered a banquet on Jan. 14, 1913, by the employees of the company.

Mr. John Evans has tendered his resignation as chief engineer of the Denver (Col.) City Tramway. Mr. Evans finds that it is necessary for him to give practically all of his attention to other interests, but will in the future give the Denver City Tramway the benefit of his services as consulting engineer when the occasion demands.

Mr. W. N. Smith, who last year was consulting engineer of the Washington & Old Dominion Railroad, Washington, D. C., and electrified that line and previously was electrical engineer of Westinghouse, Church, Kerr & Company, has just become connected with the construction department of the Edison Electric Illuminating Company, Boston, Mass.

Mr. Charles F. Conn, who for the last nine years has been vice-president, secretary and general manager of the Lackawanna & Wyoming Valley Railroad, Scranton, Pa., has been elected president and general manager of the American Cement Company, which will be reorganized under the name of the Portland Cement Company, with headquarters in Philadelphia, Pa.

Mr. C. H. Robertson, who has been appointed general manager of the Central California Traction Company, Stockton, Cal., was formerly general superintendent and purchasing agent of the East Shore & Suburban Railway, Richmond, Cal., for seven years. Previous to that he was connected with the mechanical department of the United Railroads, San Francisco, Cal., for twelve years.

Mr. J. F. Calderwood, vice-president and general manager of the Brooklyn (N. Y.) Rapid Transit Company, and Mr. W. S. Menden, engineer of rapid transit developments of that company, were retained to report to the readjustment managers concerning the railroad property of the Hudson & Manhattan Railroad, the plan for the readjustment of the debt of which was referred to in the ELECTRIC RAILWAY JOURNAL of Jan. 18, 1913.

Mr. A. L. Lott has resigned as superintendent of electric line of the Omaha & Council Bluffs Street Railway, Omaha, Neb., effective on Feb. 1, 1913, to become connected with the Kawneer Manufacturing Company, Niles, Mich., which manufactures drawn-metal window fronts and metal molding. Mr. Lott has been connected with the Omaha & Council Bluffs Street Railway for more than five years. He has been superintendent of electric line of the company for the last three years.

Mr. Sidney Ossoski, general claim agent of the Chicago (Ill.) Railways, has been made chairman of the advisory board of the bureau organized about five years ago in Chicago by a number of public utility companies and accident insurance companies to supply information concerning jurors, witnesses and claimants in suits. He will have complete control of the operation of the bureau, which intends to expand and advertise in Chicago and other cities with a view to increasing the number of subscribers.

Mr. W. Kesley Schoepf, president of the Cincinnati Traction Company, has been elected president of the Cincinnati Car Company to succeed Mr. Harry C. Ebert. Mr. Ebert will continue with the company as sales manager. It is explained that Mr. Ebert, although having the title of president, gave his entire attention to the sales department, and his duties required him to be absent from Cincinnati for extended periods. The recent expansion of the Cincinnati Car Company's business and the acquisition of the Armor steel foundry made a resident president necessary and for this reason Mr. Schoepf was elected to the position. On Jan. 14, 1913, Mr. Ebert was married to Miss Estelle A. Alter. Mr. and Mrs. Ebert are now on a trip in the East.

Mr. J. P. E. Clark, general manager of the Binghamton (N. Y.) Street Railway, who has been connected with the company for twenty years, has been relieved of the management of the affairs of the company for a period of one year with full pay, during which time the property will be under the direction of Mr. G. Tracy Rogers, president of the company. Mr. Clark has been ill for some time and during the last few months has been confined to his room. Mr. Clark's physicians say that he is on the road to recovery provided he can be free from business for a time, and the directors of the company have granted him the extended leave of absence so that he can undergo treatment abroad. Mr. Clark has been re-elected a director of the company.

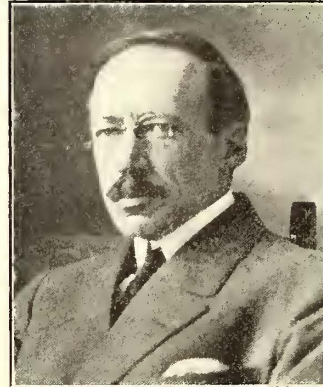
Mr. P. D. Kline, who resigned recently as general superintendent of construction of the Falkenau Electrical Construction Company, Chicago, Ill., has accepted the position of general superintendent of the Ogden Rapid Transit Company, effective on Feb. 1, 1913, with offices in Ogden, Utah. Mr. Kline has had charge of the field engineering and construction in connection with installations of power stations, electric railways and general contracting carried out by the Falkenau Electrical Construction Company and the H. A. Strauss Company since January, 1905. Previous to that time he was connected with the contracting department of the Allis-Chalmers Company for two years and as superintendent of transportation of the Sheboygan Light, Power & Railway Company, Sheboygan, Wis., for four years.

Mr. Oscar T. Crosby, whose resignation as president of the Wilmington & Philadelphia Traction Company, Wilmington, Del., was mentioned in the last issue of this paper, is expecting to make an exploration trip into the unknown regions of Borneo and New Guinea, after certain personal business affairs in this country are settled. The regions which he expects to visit are among the few on the globe which have not yet been charted, and in this expedition Mr. Crosby hopes to repeat some of the original exploration work which he conducted in 1900 in Abyssinia and the Soudan and in 1903 in Turkestan and Tibet. It is to be hoped that he will also summarize his experience on this new trip in a book of travels as he did in the very interesting volume which gives an account of his experiences during the Tibet expedition.

Mr. E. L. Lewis, whose appointment as superintendent of the Los Angeles (Cal.) Railway Corporation to succeed Mr. John J. Akin, resigned, was noted in the *ELECTRIC RAILWAY JOURNAL* of Dec. 14, 1912, was born in Osceola, Mo., in 1859. He entered the service of the Geary Street Railway, San Francisco, Cal., in 1887, as an engineer of the

company's steam extension, which was operated from Central Avenue over Point Lobos Avenue and First Avenue to Golden Gate Park. He next became a conductor on the Geary Street Company's cable line and continued in this capacity until August, 1888. Mr. Lewis next entered the service of the Los Angeles (Cal.) Cable Railway as a conductor. In a few months he was appointed to the position of receiving clerk in charge of the money turned in by conductors at the end of each trip. He continued as receiving clerk until August, 1890, when he was made chief clerk to Mr. John J. Akin, the superintendent. In May, 1902, Mr. Lewis was advanced to the position of assistant superintendent. He continued as assistant superintendent until Jan. 1, 1913, when he was appointed superintendent of the company to succeed Mr. Akin.

Mr. William H. Winslow, the new president of the Wisconsin Electrical Association, is a representative type of the progressive electric-service operator in a city of less



William H. Winslow

than 50,000 population. He is vice-president and general manager of the Superior Water, Light & Power Company, Superior, Wis. Born in Chicago in 1867, he went to Superior in 1889, becoming cashier of his present company, which was formed at that time. Thereafter he was promoted to be, successively, secretary, manager, general manager and vice-president. Mr. Winslow was president of the Wisconsin Gas Association in 1911 and is a member of the important rate research committee of the National

Electric Light Association. He is also a member of the Illuminating Engineering Society and the American Water-Works Association.

OBITUARY

Charles Edward Troxell, claim agent in litigation cases of the Chicago (Ill.) City Railway, died on Jan. 16, 1913, at the age of thirty-one years. He had been in ill health for some time, but the direct cause of his death is said to have been over-exercise. Mr. Troxell entered the service of the Chicago City Railway in 1902 as a claim adjuster. Just previous to his taking up this work and following his leaving college he studied law in the offices of Mr. Clarence Darrow. Through promotions he was made claim agent in charge of cases in litigation.

W. H. Lanius, president of the Hanover & McSherrystown Street Railway, Hanover, Pa., died at his home in York, Pa., Jan. 21, 1913. He was seventy years old. Mr. Lanius was very well known in business and railway circles in Pennsylvania. He was at one time president and a director of the York Street Railway, which is now part of the system of the York Railways. He was one of the projectors of the extension of the Western Maryland Railroad to York and was instrumental in the development of the northwestern portion of that city.

James W. Johnson, district manager in Chicago for the General Electric Company, died of pneumonia, after a short illness, on Jan. 14, 1913, at his home in that city. Mr. Johnson was born in Waverly, N. Y., on Dec. 3, 1862. He began his business career with the Bell Telephone Company in 1878, and remained with that company and its successor, the Chicago Telephone Company, until 1885. For two years thereafter he was managing partner of the firm of Johnson, Holland & Company. In 1887 Mr. Johnson became manager of the Northwestern Electric Accumulator Company, and a year later he entered the Chicago office of the Thomson-Houston Electric Company as a salesman. With the exception of a period of about three years when he was connected with the United States Fire & Police Telegraph Company, Mr. Johnson served the Chicago office of the Thomson-Houston Electric Company and its successor, the General Electric Company, Schenectady, until his death.

Construction News

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

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

RECENT INCORPORATIONS

***Mobile & Baldwin County Railroad, Mobile, Ala.**—Application for a charter has been made by this company in Alabama to build an interurban railway between Mobile, Bay Minette and Pensacola. Capital stock, \$50,000. Incorporators: W. P. Miller, M. H. Miller, John P. Lowell and J. R. Cross.

***Palatka-Hastings Interurban Railway, Palatka, Fla.**—Application for a charter has been made by this company in Florida to build a 10-mile railway between Palatka and Hastings. The motive power will be gasoline. Capital stock, \$250,000. Officers: C. A. Dupont, president; Howell A. Davis, vice-president; F. J. H. Von Angelken, secretary; T. R. Byrd, treasurer.

***Alton & Eastern Railway, Alton, Ill.**—Incorporated in Illinois to build an electric railway in Madison County. Capital stock, \$2,500. Incorporators: L. C. Haynes, A. J. Purinton, T. W. Gregory, O. C. Macy and R. C. Hardy.

***Gettysburg & Hanover Traction Company, Gettysburg, Pa.**—Incorporated in Pennsylvania with a capitalization of \$5,000.

Charleston-Isle of Palms Traction Company, Charleston, S. C.—Chartered in South Carolina to take over the Seashore division of the Charleston Consolidated Railway & Lighting Company between Mount Pleasant and the Isle of Palms, including all wharf property and ferryboats, together with the power house on Sullivan's Island, and to build a 35-mile line to connect McClellanville, Awensdaw and Mount Pleasant. Capital stock, \$1,000,000. Headquarters, New Charleston Building, Charleston. Officers: James Sottile, president, and W. W. Fuller, general superintendent and chief engineer, both of Charleston. [E. R. J., Jan. 4, '13.]

***San Antonio & Austin Interurban Railway, San Antonio, Tex.**—Incorporated in Texas to build an 80-mile interurban railway between Austin and San Antonio, via New Braunfels and San Marcos. Capital stock, \$25,000. Directors: Vories P. Brown, W. B. Tuttle, Jesse D. Oppenheimer, Sam C. Bell, San Antonio; H. G. Henne, New Braunfels; C. L. Hopkins, San Marcos, and A. J. Eilers, Austin.

FRANCHISES

Birmingham, Ala.—The Kelly Company has received a thirty-year franchise from the Council over certain streets in Birmingham. [E. R. J., Jan. 4, '13.]

Phoenix, Ariz.—The Salt River Valley Electric Railway has asked the Board of Supervisors for a franchise for right-of-way over county roads between Phoenix and Mesa, via Tempe.

Huntington Park, Cal.—Victor G. Kleinberger has received a franchise from the Board of Trustees for a single-track or double-track electric railway in Huntington Park. [E. R. J., Nov. 30, '12.]

***Los Angeles, Cal.**—The City Council has ordered prepared for sale three electric railway franchises in Los Angeles.

Los Angeles, Cal.—The Pacific Electric Railway has received a franchise from the City Council in Los Angeles for a line on San Pedro Street from Aliso Street to Ninth Street with an alternative of building on Los Angeles Street between the two points in case the city needs San Pedro Street for its municipal railway. Work on this line will be begun at once. The company will ask the Supervisors for a permit to construct a trestle across the entrance of Alamitos Bay for an extension of its line between Long Beach and Bay City.

Oakland, Cal.—The San Francisco-Oakland Terminal Railways has received an extension of its franchise for

three years in which to begin the construction of its line in Oakland.

San Francisco, Cal.—The United Railroads has received a franchise from the Board of Supervisors to extend its line from Polk Street and Bay Street, in San Francisco, along Bay Street to the Fort Mason reservation, connecting with tracks to be laid there.

Milford, Conn.—The Connecticut Company has asked the Council for a franchise to double-track some of its line in Milford.

Palatka, Fla.—The Palatka-Hastings Interurban Railway, the incorporation of which is noted elsewhere in this department, has asked the county commissioners for franchises through Putnam and St. Johns Counties in Florida.

Greenville, Ill.—The Springfield & Central Illinois Traction Company, Springfield, has received a franchise from the Board of Supervisors to use the highways of the county for its interurban line.

Stonington, Ill.—The Decatur, Sullivan & Mattoon Transit Company, which is leased to the Springfield & Central Illinois Traction Company, has asked the Board of Trustees for a franchise in Stonington, John G. Thode, Mattoon, secretary. [E. R. J., Dec. 28, '12.]

Clinton, Ia.—It is stated that the Clinton Street Railway and the Clinton Gas Company will ask for a twenty-five-year combination franchise from the City Council. The extension of the franchise will carry with it, it is said, permission to build a line to the southwestern part of Clinton and one on Hickory Street.

Newark, N. J.—The Public Service Railway, Newark, has received a fifty-year franchise, on consent of the Essex County Board of Freeholders, for a double-track line on the bridge from the foot of Central Avenue, East Newark, over the Passaic River to Carlisle Place, Newark.

Medford, Ore.—W. H. Barnum, representing the Rogue River Valley Railway, has asked the City Council for a franchise to build an electric railway in Medford either as a separate system or as a part of a system operated in Medford.

Pittsburgh, Pa.—The Pittsburgh Railways has received a twenty-five-year franchise from the City Council along Corliss Street in Pittsburgh.

St. Elmo, Tenn.—The Chattanooga Railway & Light Company has received a franchise from the Council in St. Elmo.

Argenta, Tex.—J. W. Carpenter, Corsicana, president of the Corsicana Transit Company, has received a fifty-year franchise from the Council over certain streets in Argenta. He also received permission to build a power station and construct terminals in Argenta. This is part of a plan to build a line between Argenta and Corsicana.

Ogden, Utah.—The Ogden Rapid Transit Company has filed an official acceptance of the franchise granted by the County Commissioners for a right-of-way for the Huntsville extension through Ogden Canyon.

Kelso, Wash.—The Washington-Oregon Corporation, Vancouver, has received a franchise from the Cowlitz County Commissioners over the county roads from Kelso to Castle Rock on the west side of the Cowlitz River.

***Port Townsend, Wash.**—W. B. Webb and associates have asked the Council for a fifty-year franchise to build an electric railway in Port Townsend.

Seattle, Wash.—E. M. Mills, representing bondholders and creditors of the Seattle, Renton & Southern Street Railway, has applied to the Council for three franchises for extensions to its present railway in Rainier Valley. Application was made to the city utilities and franchise committee, and the city utilities committee unanimously voted to indefinitely postpone the measure.

Seattle, Wash.—The City Council of Seattle proposes to issue additional bonds to the amount of \$600,000 for extensions of the municipal line in Seattle. H. R. Dimock, Seattle, city engineer. [E. R. J., Nov. 2, '12.]

Newell, W. Va.—The Newell Street Railway has asked the Council for a twenty-five-year franchise to double-track and extend some of its lines in Newell.

TRACK AND ROADWAY

Tidewater Power Company, Birmingham, Ala.—This company, in which J. W. Dewberry and others are interested, proposes to construct an independent railroad from Birmingham to the Warrior River, about 25 miles, to connect there with a steamboat line.

Visalia Electric Railroad, Exeter, Cal.—An extension of this company's line east of Orosi to Fresno will soon be built.

Fresno, Hanford & Summit Lake Interurban Railway, Fresno, Cal.—This company has awarded a contract to the Maywell Railroad Supply Company, San Francisco, for the construction of its line. Work will be begun about Feb. 15.

Pacific Electric Railway, Los Angeles, Cal.—The Board of Public Works has awarded a contract for the construction of the line on St. Pedro Street between Aliso Street and Ninth Street, Los Angeles, to this company. Work will be begun at once.

San Diego (Cal.) Electric Railway.—This company has been asked to consider plans for a double-track line through the city park to the northeastern section of San Diego.

***San Francisco, Cal.**—Preliminary surveys have been made and construction will soon be begun on an electric railway in San Francisco from the present terminus of the Sunnyside Avenue line in a westerly course connecting with Sloat Boulevard and Corbett Avenue and having a western extension through St. Francis Wood that will terminate at the western portal of the proposed Twin Peaks tunnel. It is not yet decided whether this line will be undertaken by private capital or whether it will be built by the United Railroads of San Francisco.

Geary Street Municipal Railway, San Francisco, Cal.—The Board of Public Works has taken initial steps toward having contracts awarded for the extension of this line from both of the present terminals in San Francisco. It is expected that the contracts will be let by Feb. 15, and that the railway will be in operation from the ferry to the beach by April 1.

Ocean Shore Railroad, San Francisco, Cal.—Preliminary steps are being taken by this company to build a line between Tunitas and Smith Cove, a distance of 28 miles.

Southern Pacific Company, San Francisco, Cal.—Surveys have been completed by this company from Searles Lake, a distance of 25 miles.

United Railroads, San Francisco, Cal.—This company has asked the War Department for permission to extend its line into the Presidio.

Tidewater & Southern Railroad, Stockton, Cal.—Surveys will be begun at once by this company for the extension from Modesto to Fresno. Construction will be begun as soon as the surveys are completed. It is reported that the new line will eventually be extended to Southern California.

Florida Interurban Railway & Tunnel Company, Jacksonville, Fla.—Preliminary arrangements have been completed by this company and construction will soon be begun on its line between St. Augustine and Jacksonville. Right-of-way has been secured and franchises have been obtained from South Jacksonville and Pablo Beach. M. W. Bates, Jacksonville, president. [E. R. J., Nov. 23, '12.]

Georgia Railway & Electric Company, Atlanta, Ga.—Right-of-way is being obtained by this company for a proposed extension from Snapping Shoals to Jackson.

Fairburn & Atlanta Railway & Electric Company, Fairburn, Ga.—Plans are being made by this company to electrify its 18-mile gasoline motor line between Fairburn and Atlanta. Power will be obtained from the Georgia Railway & Power Company.

Northwestern Elevated Railroad, Chicago, Ill.—The suit in which the village of Wilmette enjoined the operation of this company in the village will be heard before Judge Gibbons of the Circuit Court in about two weeks. The village has questioned the right of the elevated railway company to operate its cars over the tracks of the Chicago, Milwaukee & St. Paul Railroad which have been leased for this purpose. Following the successful termination of this

suit, the railway company will request a permit to build a terminal station, as was mentioned in the *ELECTRIC RAILWAY JOURNAL* April 13, 1912.

***Warren, Ill.**—It is reported that southern Illinois capitalists are contemplating an electric railway paralleling the Illinois Central Railway from Warren to Freeport. C. F. Taylor, Warren, is interested.

Evansville & Southern Indiana Traction Company, Indianapolis, Ind.—The Indiana Railroad Commission has granted this company and steam railroads serving Princeton an extension of time in constructing a \$25,000 interlocking switch crossing in Princeton.

Waterloo, Cedar Falls & Northern Railways, Waterloo, Ia.—This company has opened its extension between Waterloo and La Porte City to regular service and is now grading and building the bridges between La Porte City and Urbana, Ia. It is the intention to push the construction as fast as possible into Cedar Rapids, which when complete will add 60 miles to this company's lines.

Kentucky Southwestern Electric Railway, Light & Power Company, Paducah, Ky.—At a recent meeting of the stockholders of this company a bond issue of \$1,500,000 was authorized to build the first division of the line from Paducah to Murray. The entire route extends from Paducah to Henderson and from Paducah to Hickman. At Henderson the line will cross the Ohio River and enter Evansville, Ind.

Gardner, Westminster & Fitchburg Street Railway, Gardner, Mass.—Plans are being considered by this company for an extension from West Boylston to the company's line in Westminster.

Nevada, Lebanon & Eastern Railroad, Nevada, Mo.—This company plans to build an electric railway between Nevada, Lebanon, Stockton, Bolivar and Buffalo. Officers: W. A. Thompson, 399 Garfield Avenue, Kansas City, president; S. A. Wight, Nevada, vice-president, and W. I. Differderfer, Lebanon, secretary and treasurer. [E. R. J., Oct. 12, '12.]

United Traction Company, Albany, N. Y.—Announcement has been made by this company that it will extend its Arbor Hill line along Livingston Avenue to North Lake Avenue, Third Street and Watervliet Avenue in Albany, thus opening a way to West Albany.

Binghamton (N. Y.) Railway.—Plans are under way by this company to extend a branch line from Main Street in Lestershire to the new Endicott, Johnson & Company shoe factory and to the entrance to Johnson Park.

***Rome, Boonville & Old Forge Electric Railway, Rome, N. Y.**—The survey of this line from Rome to Old Forge is now completed to Dunn Brook, the town line of Boonville. At a meeting recently held at Westernville it was decided to change the line passing through Westernville to the east side of the Black River Canal, taking the old survey made by the New York Central over twenty-five years ago. The change begins at the east side of the Delta dam and follows the Berme bank for 5 miles to the canal bridge north of Westernville.

Charlotte, N. C.—The material for a new line in Charlotte that is to be extended from the Heath corner in Piedmont to the Mecklenburg Country Club has arrived. Surveys have been made and construction will be begun at once. The contract with Tucker & Laxton has been signed by the Chatham company after the necessary arrangements had been perfected with the Charlotte Electric Railway for the operation of this line.

Newbern-Ghent Street Railway, Newbern, N. C.—Plans are being made by this company to extend its lines in Newbern.

Mount McKay & Kakabeka Falls Railway, Fort William, Ont.—It is reported that this company plans to spend \$140,000 on extensions in Fort William in the near future.

Portland, Eugene & Eastern Electric Railway, Portland, Ore.—This company will extend its line to Molalla.

Pittsburgh (Pa.) Railways.—In order to make time and facilitate interurban traffic, portions of the Charleroi and Washington interurban divisions of this company are being double-tracked. It is proposed to install a second track from Castle Shannon to the Mount Washington tunnel. The Charleroi division is double-tracked from Castle Shan-

non to Finleyville, and part of the plan now is to double-track the entire distance, after considerable grading has been done. At some points numerous trestles will have to be widened. The Beechview line is said to be included in the double-tracking program, and the improvement is expected to be started early in the spring. Preparations are being made by this company to let contracts for the construction of an extension of its Charleroi line from the present terminus at Roscoe to California.

Westmoreland County Railroad, Pittsburgh, Pa.—The extension of this company's line from Derry to Ridgeview Park and possibly to Blairsville will be built during this year.

Warren (Pa.) Street Railway.—Announcement is made by this company that it will extend its lines 9 miles to Youngstown in the spring.

Greenville, Spartanburg & Anderson Railway, Greenville, S. C.—This company has been asked to consider plans for an extension from the main line near Greer to Woodruff, via Reidville, and from Woodruff to Cross Anchor and thence to Union.

Brownsville Street & Interurban Railway, Brownsville, Tex.—It is reported that this company has placed in operation 3 miles of its line in Brownsville. S. L. Dwerman, Brownsville, president. [E. R. J., March 23, '12.]

El Paso (Tex.) Electric Railway.—Extensive improvements will soon be made by this company, among which will be the extension of several of its lines.

Galveston (Tex.) Electric Company.—Plans are being made by this company to extend its lines into the southeastern section of Galveston.

Whatcom County Railway & Light Company, Bellingham, Wash.—An extension of the North Street line in Bellingham from the present terminus to Bennet and Marietta is being asked of this company.

Ohio Valley Electric Railway, Huntington, W. Va.—This company is reported surveying for a contemplated extension from Ashland to Russell, Ky., about 4 miles.

Morgantown & Wheeling Railway, Wheeling, W. Va.—This company proposes to build a line from Cassville to Wheeling, which will complete its route from Morgantown to Wheeling, 73 miles. L. S. Brock, president. [E. R. J., Sept. 28, '12.]

SHOPS AND BUILDINGS

British Columbia Electric Railway, Vancouver, B. C.—Plans are being made by this company to build a new carhouse in Vancouver. The cost is estimated to be \$175,000.

Northern Electric Railway, Chico, Cal.—Plans are under way by this company for the construction of a new depot in Durham.

Florida Interurban Railway & Tunnel Company, Jacksonville, Fla.—This company has purchased property in North City upon which it will build its terminal station. M. W. Bates, Jacksonville, president. [E. R. J., Nov. 23, '12.]

Augusta-Aiken Railway & Electric Company, Augusta, Ga.—This company has opened its new office at 810 Broad Street in Augusta.

Cedar Rapids & Iowa City Railway & Light Company, Cedar Rapids, Ia.—Plans are being considered by this company to build new passenger stations in Iowa City, North Liberty and Mount Vernon. The structures will all be of brick construction and one story high. W. G. Dows, general manager.

Union Traction Company, Independence, Kan.—This company has awarded a contract to C. M. Wilson for the construction of a new freight depot on East Eighth Street in Coffeyville. The structure will be 45 ft. x 200 ft. and of brick construction.

Berkshire Street Railway, Pittsfield, Mass.—This company is building a new carhouse on the McGraw property south of Great Barrington.

Mesaba Electric Railway, Duluth, Minn.—Work has been begun by this company on its new depot adjoining the substation in Mesaba.

Public Service Railway, Newark, N. J.—In connection with the recent purchases of property in Park Place and vicinity, Newark, upon which a terminal is to be erected, tentative plans have been outlined by the Public Service Railway for a system of short subways leading into the terminal, and also an elevated spur over a private right-of-way. The proposed terminal will be situated between Proctor's Theater and the American Insurance Company Building. It will have provisions for taking care of passengers alighting from subway, surface or elevated cars.

Corvallis & Eastern Railway, Portland, Ore.—Among improvements by this company during the year will be a new 35-ft. x 200-ft. carhouse, a 24-ft. x 100-ft. store room and a 20-ft. x 30-ft. addition to its machine shop in Albany.

Montreal (Que.) Tramways.—Alterations to cost \$7,440 will be made by this company at its carhouse in Montreal.

El Paso (Tex.) Electric Company.—This company has awarded the contract for the construction of an addition to its carhouse in El Paso to the Stone & Webster Engineering Corporation, Boston. It will be 140 ft. x 75 ft.

Galveston-Houston Electric Railway, Houston, Tex.—Plans are being made by this company to purchase property at the southeast corner of Mechanic Street and Twenty-fifth Street, in Galveston, upon which it will build a terminal depot. Plans call for a structure two stories high and of brick and concrete construction.

POWER HOUSES AND SUBSTATIONS

Pacific Electric Railway, Los Angeles, Cal.—It is reported that this company is considering plans to build a new substation east of the Sixth and Main Street passenger station in Los Angeles.

Tri-City Railway & Light Company, Davenport, Ia.—This company has purchased from the Westinghouse Electric & Manufacturing Company a 12,500-kw Westinghouse-Parsons horizontal turbo-generator. The generator is wound for two-phase, 4800-volt, 60-cycle current. The unit was purchased complete with Westinghouse-Le Blanc surface condenser and necessary auxiliary equipment, which includes a 400-gal. per minute turbine-driven boiler-feed pump. It will be added to the present capacity of this company's station, which now is 20,000 kw, to take over a portion of the load, leaving a number of smaller units as reserve capacity. No provision was made in the existing station to install a unit of this size, so that it will be necessary to build an addition to the plant.

Lake Shore Electric Railway, Cleveland, Ohio.—It is reported that practically the entire output of the new hydroelectric plant on the Sandusky River, just south of Fremont, will be sold to this company. The surplus will be sold to manufacturing plants and others who use electric power.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—Plans are being made by this company to build a new substation at St. Catharines with a capacity of 1000 hp and a new substation at Niagara-on-the-Lake with a capacity of 500 hp.

Corvallis & Eastern Railway, Portland, Ore.—During the year this company plans to install in its power house a new boiler, additional motors, etc. D. M. McLaughlin will have charge of the work.

Portland, Eugene & Eastern Railway, Portland, Ore.—Plans are reported to be in progress by this company for the construction of a new passenger station in Albany.

Portland Railway, Light & Power Company, Portland, Ore.—The building purchased by this company with the Mount Hood Railway will not be moved from its present location in East Vancouver, as was at first stated, but instead a new structure will be constructed at the foot of Washington Street in the near future. The building will be 180 ft. x 200 ft. It is to contain a power plant, freight depot and waiting room, besides a landing for a ferry.

Nashville Railway & Light Company, Nashville, Tenn.—A new substation is being erected by this company to handle power being brought to it from the Caney Fork station of the Tennessee Railway, Light & Power Company.

El Paso (Tex.) Electric Railway.—A 1200-volt motor-generator set will be installed at the El Paso power plant of this company in the near future.

Manufactures and Supplies

ROLLING STOCK

Los Angeles (Cal.) Railway Corporation expects to purchase seventy-five cars during 1913.

Binghamton (N. Y.) Street Railway has decided to expend \$40,000 in the purchase of new rolling stock.

Michigan United Traction Company, Jackson, Mich., has ordered from the St. Louis Car Company six 61-ft. steel interurban passenger motor coaches, four 56-ft. steel passenger trailer coaches and four 50-ft. steel baggage cars.

Salt Lake & Ogden Railway, Salt Lake City, Utah, has ordered from the Niles Car Company eight 56-ft. high-speed interurban motor cars. The cars will have Baldwin trucks, General Electric motors, and Westinghouse straight and automatic air brake equipment. The Salt Lake & Ogden Railway has ordered from the General Electric Company a 40-ton locomotive which will be equipped with Baldwin trucks and Westinghouse E. T. straight and automatic air brake equipment.

TRADE NOTES

Cleveland Trolley Wheel Company, Cleveland, Ohio, has increased its capital stock from \$50,000 to \$75,000.

North American Railway Specialty Company, Chicago, Ill., has changed its name to Littlefield, Fry & McGough, Inc.

Ross W. Harris, Madison, Wis., electrical engineer and traction expert, has removed his office to 435 Washington Block, Madison, Wis.

American Engineering Company, Philadelphia, Pa., builder of the Taylor stoker, has opened an office at 412 Traction Building, Cincinnati, Ohio.

Pressed Steel Car Company, Pittsburgh, Pa., has elected J. B. Rider a director to fill a vacancy. Mr. Rider has been general manager of the company for some time.

Chicago Interlocking Railway Rail & Joint Truss Company, Chicago, Ill., has been incorporated with a capital stock of \$150,000 to do a general manufacturing and equipment business. The incorporators are: William C. McDowell, A. Umenhofer and Otto Trenlish.

H. R. Wilson Machinery Company, St. Louis, Mo., has been organized by Harold R. Wilson, who was formerly connected with Arthur S. Partridge, St. Louis, to conduct a general second-hand electric and steam machinery business, with headquarters in the New Bank of Commerce Building.

William Bayley Company, New York, N. Y., announces that F. B. Hawkins, who was formerly connected with the Vulcan Rail & Construction Company, agent for the Bailey-Springfield steel sash, has been appointed manager of Eastern sales for the William Bayley Company. The sash will now be sold directly by the manufacturers.

H. M. Bylesby & Company, Chicago, Ill., announce that the fourth annual convention of H. M. Bylesby & Company and affiliated companies, set for Jan. 23 and 24, 1913, has been postponed until June on account of certain important activities which prevent the attendance of some of the officials of the company and the managers of some of the local properties.

Standard Heat & Ventilation Company, New York, N. Y., announces that it now owns the right of the Ward Equipment Company and the Safety Car Heating & Lighting Company relating to car heating and ventilating, and will manufacture and sell the devices in these special lines heretofore furnished by these companies. The Safety Car Heating & Lighting Company will also act as its agent.

Cincinnati Car Company, Cincinnati, Ohio, announces several changes in its personnel. W. Kesley Schoepf, president of the Cincinnati Traction Company, has been elected president of the Cincinnati Car Company to succeed Harry C. Ebert, who will give his entire attention to the sales department as sales manager. W. H. McAllister, comptroller of the Cincinnati Traction Company, has been elected vice-president of the Cincinnati Car Company.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has appointed C. E. Allen assistant manager of the detail and supply department. Mr. Allen

has been connected with the Westinghouse Electric & Manufacturing Company since 1909, when he entered the employ of the company as head of the transformer division of the detail and supply department. Previous to that time he was connected with the General Electric Company in its engineering and commercial departments.

F. O. Grayson, president and general manager of the Grayson Railway Supply Company, St. Louis, Mo., has arranged to represent the Houston Car Wheel & Machine Company, Houston, Tex., and take charge of its sales, effective Feb. 1, in connection with his present business. The Houston Car Wheel & Machine Company is a new concern. The plant of the company will be in charge of George Doering, formerly foreman of the St. Louis Car Wheel Company. Mr. Grayson, who was formerly general sales agent of the St. Louis Car Wheel Company, will no longer represent that company.

Sanford Riley Stoker Company, Ltd., Worcester, Mass., has been organized recently to manufacture and sell a new type of stoker known as the Riley self-dumping underfeed stoker. The company is said to have strong business connections. The officers are as follows: President, R. Sanford Riley, formerly president of the American Ship Windlass Company, builder of the Taylor stoker; treasurer, Aldus C. Higgins, secretary and counsel of the Norton Company; secretary, George N. Jopson, works manager of the Norton Company. Among the other stockholders may be mentioned C. L. Allen, treasurer and general manager of the Norton Company, and Fred H. Daniels, of the American Steel & Wire Company.

Western Electric Company, New York, N. Y., reports that the Oregon Electric Railway has adopted the telephone for dispatching its trains. The apparatus will be supplied by the Western Electric Company. There will be two circuits, one from Portland to Forest Grove, approximately 40 miles, and the other from Portland to Eugene, approximately 125 miles. Two train dispatchers are to be located at Portland. The apparatus to be used includes two complete dispatchers' equipments comprising key cabinets and forty-five calling keys in all, besides the telephone sets and thirty-five way-station equipments, consisting of No. 102-B selector sets, containing the well-known standard No. 50 type selector, and the new "folding gate" type telephone bracket, known as the No. 147, equipped with Western Electric desk stands. Foot switches, vacuum and cut-out arresters and switch panels are also being furnished. Trains will be equipped with No. 1330-E portable telephone sets for use in communicating with headquarters from points between way stations. Each portable set will be furnished with line poles and plugs. The latter are to be used in connection with fifty No. 186 type jacks which will be installed at sidings along the right-of-way.

American Brake Shoe & Foundry Company, Mahwah, N. J., in its report for the fiscal year ended Sept. 30, 1912, as presented by Otis H. Cutler, the president, refers in part as follows to the progress of the business of the company: "Operations at the new Chicago plant were begun early in 1912, and while a number of minor difficulties have been encountered with the new labor-saving and mechanical devices, each month has shown a lower cost per ton of good castings, and within a short time it is expected that the figures of economy predicted will be satisfactorily demonstrated. In addition to a satisfactorily maintained and growing brakeshoe output, the company has made material progress during the year in developing an increased tonnage of miscellaneous gray iron castings, in the production of which the foundry experience and organization acquired in the manufacture of our special product have proved of much value. Active efforts will be continued to increase this tonnage and the business along these lines. The business of the Edgar Allen American Manganese Steel Company has developed in a very satisfactory manner during the year. The benefit of substantial plant improvements heretofore made at the Chicago Heights and New Castle works is becoming apparent, and they are now producing a finer quality of material with a higher percentage of good castings than ever before. The monthly output is about 1000 tons, and a still further increase may be expected if conditions at large continue good."