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PROPOSED CHARGE FOR BAGGAGE

At the annual meeting of the Central Electric Railway Association, Mr. Laney, traffic manager Cleveland, Southwestern & Columbus Railway, called attention to the discrimination in fares involved when passengers are allowed to carry 150 lb. of baggage free if they desire. This practice has been followed on the electric roads largely because of its use on steam railroads, but it is illogical because it probably costs the railway company as much, if not more, to carry a trunk as to carry a passenger, yet it gets full fare for the one and nothing for the other. As is well known, the steam railroads abroad make a charge for baggage, and we believe that there is no reform which is more logical in the transportation business than this. Of course, a change in the steam railroad practice in the matter would help enormously. But, while it may not come for a long time, the tendency of the steam railroads, with the authority of the Interstate Commerce Commission, is to increase their passenger fares, and a charge for baggage by them would seem to be the natural sequence of this condition, especially if this particular change has been approved in principle by the Interstate Commerce Commission as stated by Mr. Laney.

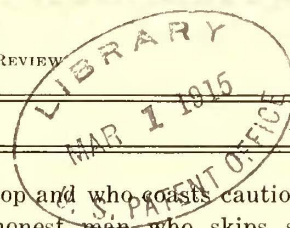
METERS AND MEN

Without questioning the worth of car meters for furthering the correct and economical use of energy, a word of caution is due with regard to the use of meter records for comparisons of individual motormen in city service. The stumbling block in all such comparisons lies in the fact that the number of slowdowns and stops for a trip over a given route may vary extremely even for runs which are made during the same hour of successive week days. For example, on a dozen lines tested by one city company, variations of two to three stops per mile were common, and in one instance the stops, because of exceptional conditions, ranged from five to thirteen for almost similar loads. Therefore, it was no surprise that the energy used, as registered by car meters, showed from 120 to 180 watt-hours per ton-mile. Now it is evident that while interurban motormen can be safely checked on a ton-mile basis for like schedules and grades of equipment, motormen in most city services cannot, since the number of slowdowns and stops is beyond their control. The law of averages can be applied, and has been applied, where meters are in use, but this demands a detail study of conditions on the different lines in order to allow for all classes of equipment schedule and weather. Yet such a survey is a necessity if the company does not want to make the error of punishing the honest man

who obeys all signals to stop and who coasts cautiously, while rewarding the dishonest man who skips stops and coasts recklessly. We repeat, therefore, that while meters should be of much value to a railway system as a whole, they should be used very conservatively as a gage for comparing the motormen until somebody invents a simple means for registering the number of stops included in each run and reading.

RELATION OF THEORY AND PRACTICE

In the debate on the subject of starting resistances for railway motors which has been going on in our columns for a few weeks past, one of the writers defends the use of analytical methods as far as they are applicable. This gives us the occasion for expressing an idea or two along the same line by way of explaining our attitude toward articles like those under discussion. In the first place calculation should be employed in place of "cut and try," whenever possible, because in general it is cheaper. This is obvious, but the rub comes in defining "whenever possible." No one who wants to design a cubical or cylindrical measure just large enough to contain a cubic foot or a bushel would apply the cut-and-try method. If the formula does not immediately come to mind recourse may be had to a hand book or text-book on mensuration. A simple sketch will help out the memory. The same principle should apply, whether the problem is one most easily solved by arithmetic or calculus. Again, an enormous amount of time is spent in most schools and colleges on mathematics, the whole purpose being to give the student facility in making calculations. For some reason, however, in the desire to be practical most students, after leaving school or college, fail to use their calculating ability and often resort to wasteful methods of accomplishing results. They "shy" at a technical article because it contains a little algebra or geometry. The same thing is true in the use of the so-called "higher mathematics," which is only a more highly-developed calculating device. The state of affairs described is partly due to the way in which mathematics has been taught, but nothing is to be gained for the present generation by criticizing the faults of early training. The thing to do is to overcome the results of those faults by practice in reading and interpreting equations. This can be done, if necessary, by putting them into the form of graphs. Further, the practical man should acquire a respect for theory, if he hasn't it already, for there can be no progress without it. Neither can there be any conflict between theory and practice. If there seems to be such, one or the other is false.



THE COMITY OF BUSINESS

That electric railway department heads are less mindful of the amenities of business life than men in other lines of business we will not admit. Nevertheless, incidents like the following tend to give, to those affected, the impression that in cases where friction has developed between a railway company and a manufacturer the former is not always as considerate as it might be.

The general manager of an electric interurban railway is reported to have requested a manufacturer some time ago to ship him certain material guaranteed to produce certain results within a year. The year elapsed, when, in answer to an inquiry from the manufacturer, the reply was that the material had not produced the guaranteed results, and, therefore, that payment was not in order. The salesman, however, refused to be convinced and personally visited the line, where, to his amazement, he discovered his material stored away and absolutely untouched since its arrival. The failure of another interurban railway to pay for goods shipped under contract blackened the reputation of traction managers in general in the same manufacturer's opinion and caused him in future dealings with electric railways to refuse the guarantee privileges previously offered. The dread of incurring heavy litigation expenses in enforcing payment made him unwilling to risk the guarantee chance except with steam roads, which in his words, were "either more honest as a class, or if dishonest, could afford to be dishonest only on a large scale."

Somewhat different in detail but involving the same general principle is the case where a city railway is said to have requested detailed prints of a repair-shop device from another manufacturer and to have told him later that the device was unsuited to the conditions existing in its shops. Subsequent investigation on his part showed the device to be in use there, having been manufactured in the company's shops without the permission of the owner of the original drawings.

In the minds of the manufacturers concerned in these three cases each represented deliberate, dishonest action on the part of the railway company concerned. We would be unwilling to agree to this without hearing the railways' side of the story, although we admit that if the allegations are true, each exhibits a careless disregard of business courtesy, if nothing worse. Where a company requests a service from a manufacturer or accepts a service from him, such as goods on consignment for trial, it is in duty bound within a reasonable time to report to him upon the general performance of these goods, irrespective of whether it desires to order any for regular use or not. As to the first case, the most charitable excuse which can be made for the statement that the material had proved unsatisfactory, although it had never been tested, is poor management.

This business obligation on the part of the railway company, however, does not relieve the manufacturer from a corresponding obligation, namely, to show proper diligence in following up the performance of his ma-

terial when on trial. There is a legal maxim and a sound one that everyone should make reasonable efforts to protect himself if he expects consideration from others. This applies not only to business transactions where material is under test, as in the first and second examples mentioned, but also to the third case, where the manufacturer submitted detailed prints of a repair shop device. In this case the device may have been independently invented by one of the engineers of the company and, unless it had previously been patented by the manufacturer, he would have little legal redress. If it had been patented his duty was to bring suit promptly and press the suit to a conclusion, not only for his own benefit but for the benefit of other inventors.

The technical newspaper occupies a sort of "neutral" position between the manufacturing and operating sides of the field in which it circulates, and, like neutral countries during a war, it is often the recipient of complaints from one belligerent that the other is violating the rules of international law or else the more subtle regulations of the Hague tribunal. Like the neutral country the newspaper has the duty of pointing out the causes of friction. We do so in this case not primarily to show reprehensible practice on the part of the buyers or lax methods on the part of the seller but to assist to a better understanding between both. Where a case of seeming injustice occurs, the best way is for the person who considers himself injured to state his position clearly to the other but to lay no great stress on any supposed "rights" except those which can be enforced at law. On the other hand the buyer who recognizes only legal "rights" and ignores the reciprocal values of comity and fair dealing is a pretty poor buyer.

THE MODERN SINGLE-TRUCK CAR

Mr. Leonhauser's intensely practical article on "Reducing Maintenance Costs," published in our Equipment Department last week, suggests three different ways for attaining that end: First, better handling of the car equipment; second, co-operation with other departments, and, third, the use of single-truck cars. As the author himself has ably expatiated on the first two ways it is necessary to elaborate here only his comparison of the double-truck versus the single-truck car.

As an experienced maintenance man, Mr. Leonhauser advocates the single-truck car unreservedly for city service. His main reasons are not only its lower first cost (\$64.30 as against \$123.80 per seat, according to a comparison of some recent cars) but also because of the simplified maintenance which fewer parts assure. Since neither this lower first cost nor lower maintenance charge are disputed by any one, it is pertinent to ask: Why is the double-truck car? In the past the answer has been three-fold: Fewer physical limitations in negotiating curves; superior riding quality and, most important, greater capacity or less platform cost.

We believe, however, that the development of the radial axle truck has greatly cut down the superiority of the double-truck car along the three lines noted. With

the new truck the play of the axles is enough to take care of long cars on short curves, better-placed springs assure good riding at moderate city speeds, say 15 m.p.h., while the long wheelbase permits a carbody of appreciably larger capacity. The practicability of the radial axle single-truck car is clearly shown by the installation of the Third Avenue Railway System, New York. Since 1914 that company has been operating fifty such cars, each 35 ft. over all and seating forty-five passengers, chiefly in cross seats. Furthermore, these cars are of modern low-floor design, and they have produced excellent results in reduction of accidents and other operating costs.

While Mr. Loenhauer's figures are not based on the use of radial axle trucks, a car of the Third Avenue type should prove more economical for the car equipment department than any double-truck car of equivalent capacity. It is therefore incumbent upon the operating department to prove that the capacity of the biggest available double-truck car still exceeds that of the biggest single-truck car by so much that the platform savings of the first will offset the general savings of the second.

GRADE CROSSING ACCIDENTS

Many investigations have been made to determine the extent to which it is possible to influence the public to exercise care in crossing railway tracks. These indicate an appalling degree of heedlessness which can be reduced by systematic effort. It cannot be inferred, however, that every person who crosses a track without looking either way is unaware of the condition of the track, otherwise there would be many more deaths than there are. It must be remembered that the eyes are wide angle lenses and can take in a great deal without moving. They can be turned in their sockets through another wide angle without movement of the head. The ears, too, are invaluable aids to safety.

An interurban car, travelling at say 35 m.p.h. consumes about a second in passing a given point. If we assume that two cars pass the point in an hour there would be one chance in 1800 that a perfectly heedless person would run into a moving car. It happens also that, at ordinary walking speed, about one second is required to cross a single track, hence there is the same chance that a car would run into the individual. Obviously, the number of accidents, great as it is, is not great enough to indicate 100 per cent heedlessness in any considerable number of individuals. The fact is that there is some heedlessness in every person which is but crudely indicated by the lack of tangible precautions taken to insure safety.

The last report of the committee on grade crossings and trespassing on railroads of the Association of Railroad Commissioners directs attention to "that class (of our population) which seem to have little regard for law or custom and are a law unto themselves"; to the "increased use of motorcycles and automobiles in cities and villages by those having little regard for safety devices installed for their protection," and to the "driv-

ing of this same class of vehicles over grade crossings in the country where no protection has been installed and in many instances where the view of approaching trains is such that it would be a challenge to one's sanity to suggest that warning signals of any kind are necessary." All of which goes to emphasize the fact that, try as we may, we cannot make a grade crossing fool-proof. The eye, the ear, the sense of touch if necessary, and above all the common sense must be appealed to if crossing accidents are to be cut down.

THE RE-EXAMINATION

The ever-advancing standards in the car and signal equipment of high-speed interurban railways demand a parallel improvement in the trainmen. It is natural enough to make the new men show their fitness to handle the latest control and to respond to the indications of modern block signal systems but the manager is less inclined to set the same stringent standards for the veterans. The latter are willing enough to go to the school-room for lessons in the operation of new car equipment, but they fear to submit to an examination for heart action and color perception. In fact, the feeling against recurring physical examinations is so strong that it has often led to threats of a strike. Yet the management can do its duty to the riding public only by insisting that it is just as necessary to check men against deterioration as it is to check material. If an accident occurred the company would probably be penalized more severely for retaining a color-blind motorman than for using a defective axle, since the former often may be detected more readily than the latter. As no humane and sensible management would willingly dismiss a man who had proved able and worthy in the past it should be prepared to handle the delicate question of re-examinations along these lines: First, see that the re-examination is absolutely fair; second, place the retired man in a position of less responsibility but without decreasing the rate of pay.

The need of the first requirement is illustrated by a case where a motorman of seven years' unblemished service on a high speed line was rejected by the company physician because of a weak heart. Although pronounced sound later by a leading heart specialist, the discharged motorman could get no redress because the company permits no appeal from its doctor's decisions. There was more than a surmise in this case that the opinion of the company physician could have been revised with the aid of a \$10 bill. As to the second requirement, it is clear that if the company had selected its men carefully in the past the number of deteriorated men would be much less and too few to affect the cost of less responsible labor appreciably. In any event the company is under a moral obligation to keep its faithful men at work and, if possible, at the old rates.

With these two just practices in force the management will find the older men far more willing to submit to physical examination from year to year, while the sense of fairness shown by the company will have a happy effect throughout the entire organization.

Signaling on the Illinois Traction System

A Description of the New Installations Made by the Company During the Past Year, Including Three Special Cases Where Complicated Track Arrangements Required the Use of Intermediate Signals Instead of Preliminaries, as Well as Individual Treatment in Locating the Signals

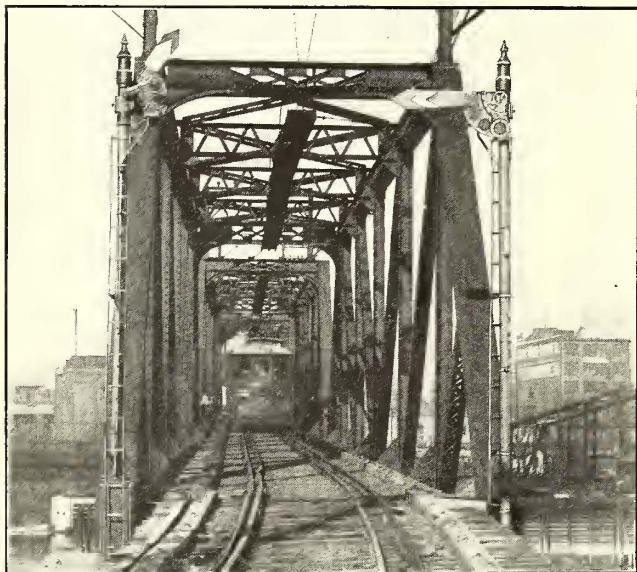
BY JOHN LEISENRING, SIGNAL ENGINEER ILLINOIS TRACTION SYSTEM

The Illinois Traction System has recently completed and put into service a new section of signaled territory covering a distance of 36.5 miles between Springfield and St. Louis. This completes this entire division of 99 miles, continuous signal protection being provided except for a 12-mile stretch between Staunton and Edwardsville, for which material is now on order. This installation follows the standard arrangement of signals that is generally used on the Illinois Traction System, a description of which was given in the *ELECTRIC RAILWAY JOURNAL* of May 16, 1914.

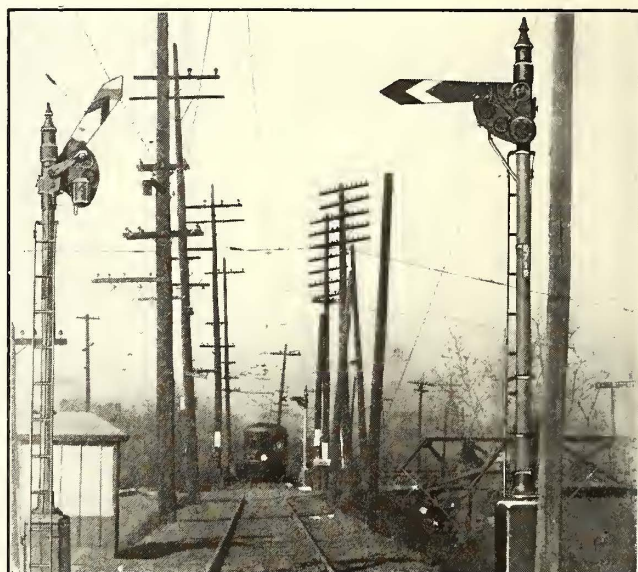
In addition to the above section, there have been installed three other sections in which marked departures from the customary arrangement have been necessary

way being changed to twenty minutes in the off-peak hours.

The bridge, including approaches, is approximately 1600 ft. long and is made up of four through-truss spans, four through-girder spans, six deck-girder spans and one double-leaf, lift span, 141 ft. long, that extends over the river channel. As an added complication to the use of track circuits, there is a 50-ft. section of track, near the Peoria end of the bridge, in which the rails are attached directly to longitudinal steel girders, no cross-ties being used. The purpose of this is to allow coal to be dumped during the night from hopper-bottom coal cars into a pit below the bridge superstructure. From this the coal is conveyed into the



ILLINOIS TRACTION SIGNALS—SIGNALS AT SOUTH END OF PEORIA BRIDGE



ILLINOIS TRACTION SIGNALS—SIGNALS AT EAST PEORIA WHERE CITY AND INTERURBAN TRACKS CONNECT

on account of local conditions. In these three cases the conditions differed enough, one from the other, to make each one a study in itself, and in none of them could the standard arrangement have been applied.

PROTECTING PEORIA BRIDGE

Of the three, perhaps the most interesting one was that made near Peoria, where it was desired to protect operation on a single track bridge over the Illinois River. This bridge extends from Peoria to East Peoria and is used jointly by the cars of the Illinois Traction System and the Peoria City Railway. Fifty regular interurban trains cross this bridge in twenty-four hours, the majority of these movements being made between 5 a. m. and 12.30 a. m. In addition to the passenger trains, all freight and power-house coal entering Peoria over the system must use this bridge, and as a classification yard is located on the East Peoria side of the river a large number of switching movements also are necessary. The city service operates on a ten-minute schedule during the morning and evening, this head-

power house as needed. It was out of the question to insulate one rail from the other across this section, and the length was sufficient to allow a car to come wholly within its limits. Therefore, special arrangements of circuits had to be used so that the signals would not clear while a car was standing on the dead section.

The diagram on page 409 shows a general layout of the tracks adjacent to the bridge, and from this it will be noticed that the double-end siding of Farm Creek, the entrance to the classification and carload delivery yard, and the turn-outs at the point where the city cars diverge, are all within signaled territory and had to be protected. The new section of signals shown in the diagram immediately adjoins a section that had been previously signaled, signal 1713 being part of the installation from East Peoria to Mackinaw Junction that was made about three years ago.

In order that following movements could be made with as little delay as possible, it was decided to divide the section into two blocks for following movements, but to maintain a single block for opposing movements, as it

was impossible to use the Farm Creek Siding for meeting or passing trains, because this siding is intended for freight service only. It was also decided that no permissive movements should be allowed and that the signaled section must be self-contained and must not overlap or extend into the territory beyond signal 1713. This, of course, made it impossible to have a preliminary section at the south end of the block without leaving an unprotected piece of track between signals 1713 and 1710. It was also impossible to install a preliminary at the Peoria end, on account of the numerous switches and paved streets. Therefore, it seemed practically necessary to adopt the scheme of using auxiliary home signals instead of a preliminary section.

All signals installed in the new section are of the semaphore type except those used to control the movement of the city cars on the main track. With the arrangement as installed the operation is as follows: A south-bound train, passing signal 1723, will set signals 1720, 1712, 1710, 1710-A and 1710-B in stop position. If an opposing train passes either semaphore signal 1710 or the light signals 1710-A or 1710-B at the same instant that the south-bound train passes signal 1723, signal 1712 will stop the north-bound train and the south-bound movement can continue as far as signal 1721. Orders are in effect that any train which finds signal 1712 against it, after passing signal 1710 at proceed, must back up at once beyond signal 1710, so that the opposing train may proceed without delay at signal 1721. When the south-bound train passes signal 1712, signal 1723 will clear and a second train may follow into the section.

A north-bound train passing any one of the signals 1710, 1710-A or 1710-B sets signals 1723 and 1721, as well as the signals behind it. All three signals at Farm Creek clear after this train passes signal 1720. The switch indicators at Farm Creek Siding have been controlled only to the point marked "1" on the diagram, and to signals 1710, 1710-A and 1710-B, as it was considered to be desirable to reduce the control section to the minimum safe distance. This decision was made because of the cutting down of the time available for switching work on account of the frequent service.

In the illustration on page 408 is shown the double signal location at the south end of the bridge. These signals are mounted on the bridge pier considerably below the track level. The wires leaving the trunking and attached to the bridge structure would normally be carried over the bridge in trunking laid next to the wooden guard rail, but on account of redecking work these had to be temporarily removed. The right-hand illustration shows signals 1710, 1713 and 1712, also the turnouts used on the Peoria cars.

This installation cost approximately \$6,000. It re-



ILLINOIS TRACTION SIGNALS—VIEW OF SIGNALS AT TORRENCE SIDING ON THE DECATUR BELT LINE

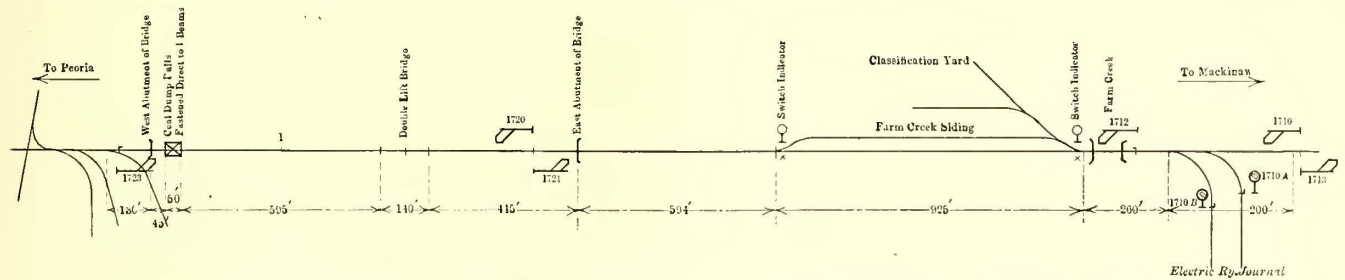
places an installation of trolley-contact signals which did not give complete satisfaction under the peculiar conditions involved.

LIGHT SIGNALS WITH SELF-CONTAINED BLOCKS

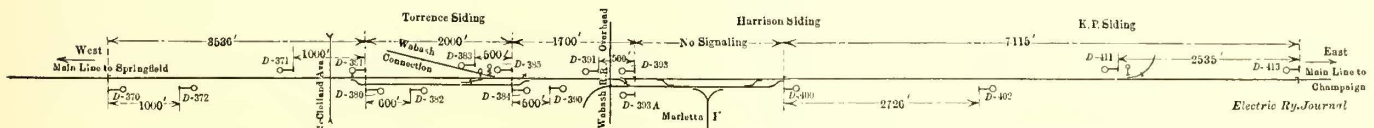
The two other special installations that were made last year are of the light signals only, one being on the freight belt-line around the city of Decatur and the other protecting a single-track bridge on a suburban line that runs south from Danville to Ridge Farm.

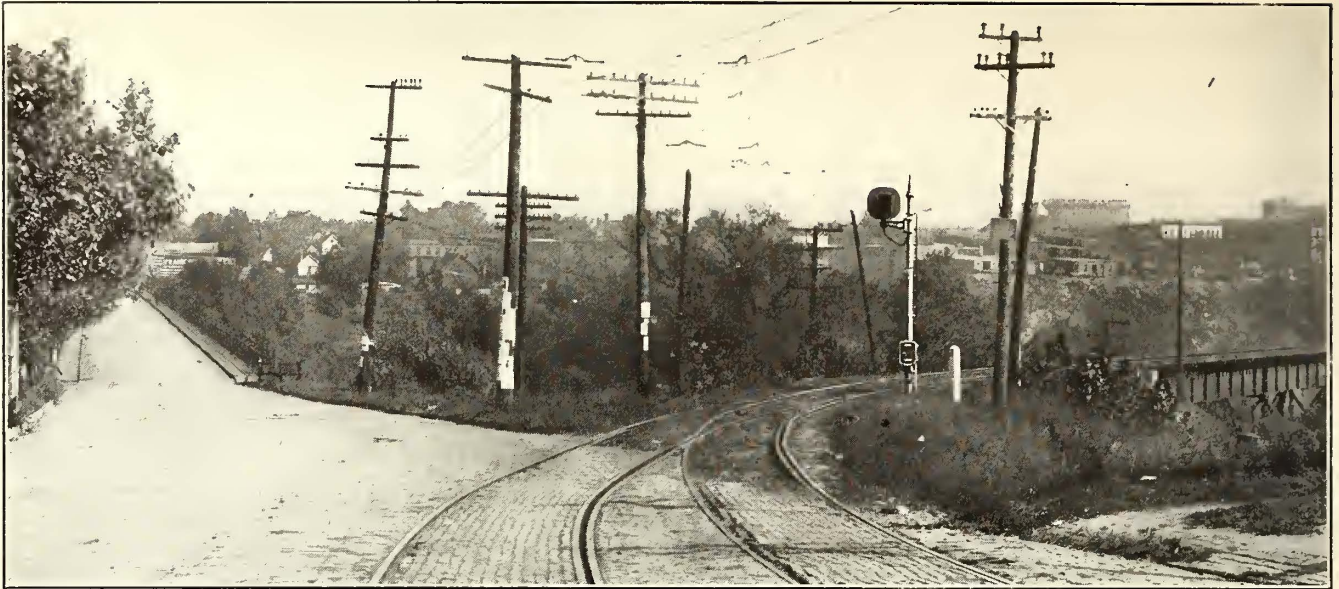
The general layout of the Decatur Belt installation is shown in the accompanying diagram. There are seventeen signals of the Union Switch & Signal Company's light type with 5 3/4-in. lenses, and these protect four blocks which vary in length from 1700 ft. to 7100 ft. Each block has a single-track circuit, and auxiliary signals in advance of those at the ends of the blocks are used. This scheme was adopted partly because it eliminated the necessity for a preliminary section, which was not considered desirable under the conditions encountered, and partly because it could be installed at much less expense than the standard arrangement used on the main line.

The traffic controlled by these signals is of the most widely different class imaginable, a light single-track city car being one extreme and the heavy interurban freight trains being the other. The freight trains often exceed twenty cars, of which a part, at least, are of 100,000-lb. capacity. Trains are quite infrequent when



ILLINOIS TRACTION SIGNALS—LAYOUT OF NEW SIGNAL SECTION AT PEORIA BRIDGE





ILLINOIS TRACTION SIGNALS—APPROACH TO BRIDGE OVER VERMILION RIVER AT DANVILLE

compared with the number at Peoria, the city cars operating in each direction from Marietta wye every half hour. The freight service varies according to traffic requirements and is confined to the early morning and after-dark hours.

The operations in all blocks are similar. When a train enters a block, as at signal D-380, the opposing signals D-383 and D-385 display stop indications. Signal D-382 continues to give a proceed indication until the train passes it, when the indication changes to "stop." This is accomplished by the use of center-fed track circuits with proper voltage adjustment and proper location of the auxiliary signals in relation to the transformer and relay locations. The intermediate or auxiliary-home signals are used to indicate to a motorman that no opposing train has entered the block at the same instant as his own train, which is possible because there are no preliminary sections. If such a thing does happen, both trains will receive stop indications at the auxiliary-home signals which in the block in question are D-382 and D-383.

All turn-outs at which high signals are not installed are protected by switch indicators that are controlled in each direction to the ends of the block in which the siding is located. The connection to the Wabash Railroad that is shown in the diagram is one over which all carload shipments are received from and delivered to that railroad.

It should be noticed from the general layout that several of the track circuits are very short—so short, in fact, that in the design considerable doubt existed as to the possibility of working out the center-fed track circuits satisfactorily. Consequently, thorough tests were made, and special relays were used where necessary, the galvanometer type being installed in Sections B and D and the vane type in Sections A and C. Section C is the shortest circuit ever worked on the center-fed principle, but it has given perfect satisfaction in every way.

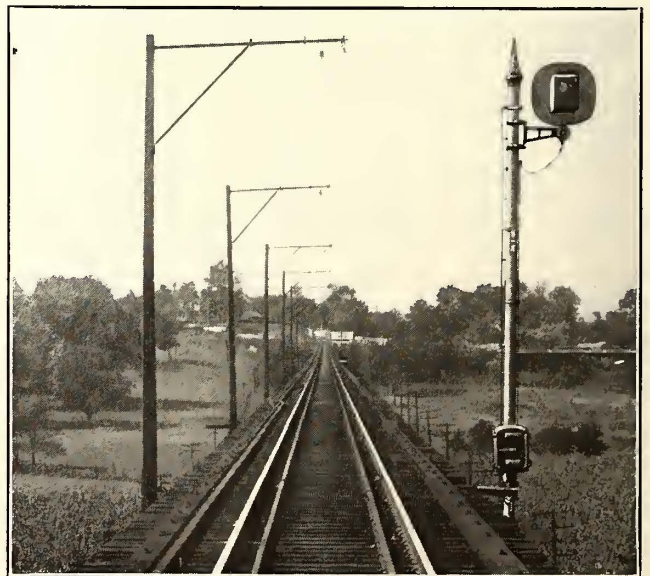
On page 409 is a view looking east in Section B, signals D-380 and D-381 being seen in the foreground and signals D-382 and D-384 in the distance. The signal transmission line is just above the trolley span wires. This is a 2300-volt, twenty-five-cycle, single-phase circuit having one source of supply at the Decatur power house and another at the Harrison substation. In both of these plants, step-up transformers are used for stepping up the 370-volt current supplied for the rotaries to 2300 volts. The low-tension, signal-control wires are

carried on the alley arm opposite the d.c. feeder wire.

At Danville there is installed one block of the same arrangement of signals as described above. They protect a single-track bridge over a deep valley and the Vermillion River. Double track approaches lead to the bridge on both sides, and at one end of the bridge track circuits are carried for a considerable distance through the paved street. The bridge itself is 1700 ft. long, the section of track circuit in pavement 380 ft. long, and the entire block, from end to end, 2160 ft.

The end of the block in pavement is shown in one of the accompanying illustrations. The signal that appears in the middle distance is the auxiliary-home signal, as the block section extends several hundred feet back of the camera. The signal transmission line for this block is carried on a line of poles extending along the right-of-way beside the bridge, while the low-tension control wires are run in trunking laid alongside of the wooden guard rail on the bridge floor.

All of the installations described above were made during the summer of 1914, the company doing all the work with its own forces, the material having been purchased from the Union Switch & Signal Company.



ILLINOIS TRACTION SIGNALS—INTERMEDIATE SIGNALS ON DANVILLE BRIDGE

Annual Convention of C. E. R. A.

Letter from Governor of Indiana, and Addresses by Chairman of Public Service Commission, Mayor of Indianapolis, and Prominent Representatives of American Association Part of First Day's Proceedings—Paper on Baggage and Report on Standard Charges for Repairs on Foreign Equipment Also Presented

The spirit of helpfulness expressed in Governor Ralston's letter to the members of the Central Electric Railway Association assembled in its annual meeting at the Hotel Severin, Indianapolis, Ind., Feb. 25 and 26, was unquestionably the most pleasing part of the regular program. The encouragement also gained from the address of Chairman Thomas Duncan of the Public Service Commission of Indiana was significant of a change in public sentiment toward electric railways which should aid their future welfare.

The Governor stated that it was his intention to recommend to the legislature that it empower the Public Service Commission of Indiana to authorize an increase in passenger fares in the state to 2½ cents per mile. Chairman Duncan of the commission expressed himself as in sympathy with the proposed recommendations of the Governor. This same spirit of good will toward the electric railways of Indianapolis was expressed by Joseph E. Bell, mayor of Indianapolis.

More than 120 members of the association attended the meeting which was opened on Thursday morning, with President Schneider in the chair, with address of welcome by Mayor Bell of Indianapolis.

The mayor stated that it was a most regrettable condition when the railway managers must stand on guard each time the state legislature was in session, to prevent the confiscation of their property. He expressed himself as in hearty accord with the interests of the men who take care of the pay rolls. The open spirit of hostility on the part of the public through its regulative bodies toward the transportation companies has produced the great army of unemployed, in the opinion of the mayor. A few weeks or months of cessation of this hostility will solve the unemployment problem. In closing Mayor Bell stated that he believed it his duty to guard the business interests, and in so doing he hoped to see new electric railways constructed. He said they had done much for the state and were invaluable to Indianapolis.

STANDARD REPAIR CHARGES FOR FOREIGN EQUIPMENT

In the business session which followed, President Schneider announced that the first order of business was the report of the standards committee. R. N. Hemming, chairman of the committee, reported that this committee had under consideration the question of uniform charges for repairs to foreign equipment. At the last committee meeting S. W. Greenland, Fort Wayne & Northern Indiana Traction Company, had submitted a tentative form of report and emphasized the necessity of further and more detailed consideration of this subject. It was the consensus of opinion of the committee that the report should cover the conditions in a definite and comprehensive manner, not only as regards the subject specifically but as regards responsibility in case of damage to equipment. The committee recommended that the subject should be continued, and to this suggestion the association voted to give its approval.

CHARGE FOR BAGGAGE

President Schneider then announced that the next subject on the program would be the paper by Charles

J. Laney, traffic manager Cleveland, Southwestern & Columbus Railway, entitled "Is Handling of Free Baggage a Traffic Error." This paper is published in abstract on another page of this issue.

The discussion of Mr. Laney's paper was opened by F. D. Norviel, general passenger and freight agent Union Traction Company of Indiana. Mr. Norviel took issue with the author regarding traffic errors of the past. He stated that low fares were necessary to create the business. Since then traffic had developed to a point where the character of service permitted an increase in rates without decreasing the business. Mr. Norviel doubted the advisability of charging for all baggage handled until the steam roads had set the example. If a baggage rate was applied at this time he felt quite certain that it would result in a loss of long haul business.

J. F. Starkey, general passenger agent Lake Shore Electric Railway, concurred in the suggestion made in Mr. Laney's paper. He believed that the traveling salesmen did not use the electric road because it was cheaper but because they could make more calls in a given time. Mr. Starkey also stated that he did not believe electric roads, so far as their passenger traffic was concerned, should consider the steam roads as serious competitors. It was the service that got and held the business.

F. I. Hardy, superintendent of transportation Chicago, South Bend & Northern Indiana Railway, recalled a case where a steam road had reduced rates and increased its service to meet electric railway competition, but it could not obtain any more business than at the old rate. Mr. Hardy also stated that he had found that the method of collecting 25 cents for each piece of baggage checked returned about the same revenue as that of carrying 150 lb. of baggage free and charging for excess baggage. He believed that it would be better policy to await similar action by the steam roads before charging a uniform rate for baggage.

R. A. Crume, general manager Dayton & Troy Electric Railway, believed that while a uniform charge for baggage might result in the loss of some business, it would enable his company to utilize to better advantage the 20 per cent of its car floor space which was now devoted to the transportation of baggage. Although his road charges more fare than its steam road competitors, it has never felt the competition. It was Mr. Crume's opinion that there would not be an appreciable loss in business if a uniform charge for all checked baggage was applied by electric roads.

ADDRESSES BY COMMISSIONER DUNCAN AND REPRESENTATIVES OF AMERICAN ASSOCIATION

President Schneider then announced that C. Loomis Allen, president American Electric Railway Association and president Newport News & Hampton Railway, Gas & Electric Company, had expected to be present at the meeting and deliver an address but was detained by illness. Mr. Allen has just undergone an operation on his throat. In his absence, Matthew C. Brush, second vice-president Boston Elevated Railway and president American Electric Railway Transportation & Traffic Association read a paper for him.

At the Thursday afternoon session, a letter addressed to the association from Governor Ralston was read by Charles L. Henry, Indianapolis & Cincinnati Traction Company. This was followed by an address by Thomas Duncan, chairman of the Public Service Commission of Indiana.

Continuing the regular program, C. C. Peirce, Boston, vice-president American Electric Railway Manufacturers' Association, addressed the meeting. He was followed by E. B. Burritt, secretary of the American Electric Railway Association. Mr. Burritt emphasized the good that could come from closer relations between the local associations and the parent association. At the conclusion of Mr. Burritt's address a vote of thanks was tendered the eastern representatives of the American Associations who had addressed the association. A congratulatory telegram was sent to C. Loomis Allen for having successfully passed through his operation and the association wished him "God Speed" toward complete recovery.

FRIDAY'S SESSION

At the session on Friday the report of A. L. Neereamer, secretary and treasurer of the association, was presented. An abstract of this report is published on page 413. A full report of the session on Friday and the trip taken in the afternoon to the plant of the Prest-O-Lite Company and to the Speedway will be published next week.

CENTRAL ELECTRIC RAILWAY TRAFFIC ASSOCIATION

The meeting of the Central Electric Railway Traffic Association as usual preceded the meeting of the Central Electric Railway Association, being held on Feb. 24. The report of A. L. Neereamer, chairman of this association, will appear in next week's issue.

IS THE HANDLING OF FREE BAGGAGE A TRAFFIC ERROR?

BY CHARLES J. LANEY, TRAFFIC MANAGER, CLEVELAND, SOUTHWESTERN & COLUMBUS RAILWAY

There is quite a difference of opinion among railway men whether there should not be a charge for handling baggage.

In discussing the recent 5 per cent freight rate increase, the Interstate Commerce Commission remarked that the railroads had overlooked a valuable earning power of its passenger departments in its handling of baggage. We are now in a general business depression and the 5 per cent rate increase does not as a whole materially affect our member companies. No interurban has yet a freight earning power as great as its passenger, and a depression in the passenger earnings disturbs the whole organization. Therefore, we must analyze the situation and find the errors of the traffic conditions.

We devote about 20 per cent of our trains to the transportation of baggage, most of which is carried free under our tariffs. We go to more trouble and expense to accommodate a passenger with a piece of free baggage, from whom we collect \$1 in fare, than we do for two passengers without baggage traveling the same distance and from whom we collect \$2 in fare. In the words of the railroad commissions, is that not a discrimination?

As an answer to this, you will say that we must carry free baggage in order to compete with the steam roads. Service has been the factor in making the interurban roads popular in our country to-day, and by this service traveling men have been able to visit two and three towns a day instead of one by the steam road way. Do you think that now that this service has been estab-

lished this reasonable charge for baggage would tend to drive it back to the steam roads? I do not. We are operating at a loss when we carry a passenger and 150 lb. of baggage free at one fare, and why should we not change such conditions? If a reasonable charge was made for all baggage and the baggage was handled in a manner satisfactory to our patrons, such a service would have a tendency to increase the traffic and thereby create a profit, rather than the present method of carrying baggage free because some one else does it.

Being in the traffic end of the business, I realize that we are apt to hesitate in making any recommendations that would have a tendency to disturb the custom of our department or to eliminate one of our talking points, that of giving something for nothing. But we must be more progressive. We must present to the public a fair return for their investment in our service and, at the same time, not lose sight of the fact that our companies expect a fair return for their investments.

Some states make it compulsory for railroads to handle baggage free. This is a demoralizing condition. Any state that makes it compulsory for railroads to handle 150 lb. of baggage free for any distance on a 2 cent per mile maximum rate of fare is unreasonable in its demands on the railroads and discriminatory among its people.

The Interstate Commerce Commission is quoted as saying, during a recent hearing, that not a single railroad was able to present the actual cost of handling baggage. Such is the case with the interurbans. I have had letters from several of the large electric lines in reply to my inquiry for certain baggage data, but not one of these roads was able to give me the number of its baggage-carrying passengers or the average weight of baggage per passenger. But we all know this: We are handling more baggage every year. We are devoting 20 per cent of the space in our trains to baggage, which could be used at a profit if charging for baggage, or this space could be used for passengers. We are compelled to establish baggage agents and erect baggage rooms in most of our towns and also to pay misrepresented claims for baggage. We have to issue free baggage checks and establish a system of baggage records with no financial returns. When you figure up the cost, you will find that the baggage-carrying passengers do not represent a profit.

For an average month our road handled 2000 pieces of free baggage, and we only check free where the fare is 25 cents or more. If we count one piece of baggage per passenger, this is about 5 per cent of the total passengers carried on a fare of 25 cents or more; not a very large ratio, but a very strong argument in favor of charging for baggage. If we charged for baggage and should lose 50 per cent of the baggage carrying passengers, the 50 per cent that did pay would offset the other. But we should not lose 50 per cent by reason of such charge. I am safe in saying that 5 per cent would be a large allowance.

Now a word about baggage claims. When a piece of baggage is lost or stolen while in our possession it is wonderful how valuable the contents of a trunk are. Then, delay claims are continually coming to us, although we do not agree to transport a passenger and his baggage on the same train, nor do we agree to get his baggage to destination at a certain time.

The class of persons who are most strenuously fighting the proposed advance in passenger fares are the traveling men. These men get the benefit of less than 2 cents per mile on account of their free baggage and travel on mileage books, and 90 per cent of their transportation is not paid by them personally, yet they are a mighty factor in influencing our legislation. The saving to the traveller over the charge made by the

express companies is not great, perhaps 25 cents, for which he has the bother of checking. Would it not be better for us to equalize this charge and get a revenue for all baggage handled?

We must get away from the notion that the only way to get business is to cut the rate and revenue. We have been guilty as electric lines in the past in making ourselves believe that we can transport passengers cheaper than the steam roads. We have created business that did not exist and cannot be maintained by the steam roads, yet we have been contented to adopt their methods in handling baggage and force ourselves to believe it is remunerative. If we continue to do this, when depression in business comes, we must cut our service, the only stock we have in trade, to make both ends meet. This would invite public criticism, which always results in more drastic legislation against us. Let us realize before it is too late that the handling of free baggage is a traffic error.

ANNUAL REPORT OF SECRETARY-TREASURER OF CENTRAL ELECTRIC RAILWAY ASSOCIATION

By A. L. NEEREAMER

During the year ending Dec. 31, 1914, the association held three meetings as follows: Feb. 26 and 27, Cleveland, Ohio; June 25 and 26, Toledo, Ohio; Nov. 19 and 20, Fort Wayne, Ind. All of these meetings were very well attended, showing increased interest in the association.

The interurban membership of this association, as shown in the last annual report, was fifty-eight lines, covering 3859 miles. The membership on Dec. 31, 1914, covers sixty-six interurban lines aggregating 4166 miles, with two city lines. This is an increase of eight interurban lines, two city lines and 307 miles of interurban mileage. During the year 1913 we had 121 supply members and for the year just ended 125, an increase of four.

RECEIPTS AND DISBURSEMENTS, JAN. 1 TO DEC. 31, 1914	
Cash on hand Jan. 1, 1914.....	\$1,871.99
Interurban lines.....	4,064.45
City lines.....	158.33
Supply men.....	1,000.00
Sale of buttons.....	16.00
Stationery and printing.....	1,908.18
Central Electric Ry. Accts. Assn.....	26.00
Supply men's special fund.....	174.40
Miscellaneous.....	5.35
Interest.....	57.37
Payroll.....	\$3,287.30
Traveling expenses.....	202.35
Stationery and printing.....	1,827.33
Postage.....	175.00
Telephone and telegraph.....	70.15
Office incidentals.....	10.50
Taxes and insurance.....	6.65
Freight and express.....	52.18
Office fixtures.....	14.00
Office rent.....	504.00
Legal expense.....	20.90
C. E. R. A. A.....	309.75
Checking account.....	729.88
Saving account.....	1,895.36
Supply men's special fund.....	176.72
	\$9,282.07
	\$9,282.07

You will note from this report that there is a deposit of \$2741.54, of which \$1895.36 is invested in the Fletcher Savings & Trust Company drawing 3 per cent interest, and \$176.72 belongs to the supply men department. This sum was placed in the hands of your treasurer as trustee.

Your attention is called to the following statement of accounts receivable and payable:

ACCOUNTS RECEIVABLE AND PAYABLE DEC. 31, 1914	
Cash on deposit.....	\$2,801.96
Due from members.....	116.30
Accounts payable.....	\$0,000.00
Supply men's special fund.....	176.72
Cash on deposit.....	2,741.54
	\$2,918.26
	\$2,918.26

During the past year every effort was made by your secretary, with the assistance of the officers of the association, to increase the membership, and the results given in the first part of this report show that this effort met with some success.

There are still in the territory, especially in Ohio, Illinois and Michigan, a number of lines that should affiliate with this association, and your secretary is of the opinion that if a concerted effort was made and the benefits of the association placed before these lines, that part of them at least would be glad to join in our work.

No printed report of the standards adopted was distributed this year for the reason that the reports already issued needed revision and being brought up to date. This is now in the hands of the standardization committee, being edited, and when this work is completed it will be issued in loose leaf form.

In closing, your secretary desires to extend to the officers, committees and members of your association his thanks and hearty appreciation for the valuable assistance and support given him during the past year.

Engineering Features of Proposed Cincinnati Rapid Transit Line

The printed report on the proposed rapid transit railway and interurban railway terminal for the city of Cincinnati by F. B. Edwards and Ward Baldwin, transmitted to Mayor Spiegel by F. N. Kruge, chief engineer of the city, has just been published. An outline of the plan was published on page 108 of the ELECTRIC RAILWAY JOURNAL for Jan. 9, 1915. A letter discussing the report from George F. Swain on the plan is also included. The report occupies some ninety-six pages and contains drawings of the elevated structure, subways, stations, track, cars, etc., proposed, as well as detailed estimates of cost, charts of current consumption for typical runs, schedules, etc.

The car suggested is similar in general design to the latest type of car on the Boston Elevated Railway as well as the kind recently adopted by the New York Municipal Railway Corporation. It contains three side doors and is 70 ft. long by 10 ft. wide. There are no vestibules. A standard gage of track is recommended. Certain of the interurban railways entering Cincinnati are equipped with a gage of 5 ft. 2½ in. The report considers the relative cost of laying an additional rail in the proposed belt line to care for these cars and also the cost of changing these interurban lines to standard gage. The figures are respectively \$150,000 and \$112,000, so that the change of the interurban lines to standard gage is recommended. In this conclusion Professor Swain coincides.

An American consular officer in Norway reports to the Bureau of Foreign and Domestic Commerce, Department of Commerce, at Washington, that a firm in his district is inviting bids for the construction of an electric mountain railway. When these plans and specifications arrive they may be examined at the Bureau of Foreign and Domestic Commerce.

A dispatch from Berlin announces that the management of the municipal street railway system there has forbidden the knitting of stockings by passengers while sitting in the cars. Conductors have been furnished with copies of the solemn "ukase" which requires them to ask women engaged in this occupation to stop it or "kindly step outside." The reason given by the street car management is that there is considerable danger of passengers falling into the needles.

The Cost of Bus Operation

Figures Based on Actual Results Are Published Both for Auto Buses and Jitneys, as Well as Estimates of Cost Made by Representatives of Projected Bus Companies

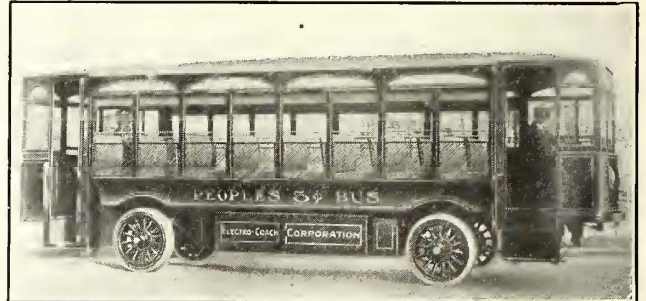
The fact that the jitney bus has succeeded in operating at all with a 5-cent fare has, apparently, obscured one of the points that is vital to its ultimate success, namely, its real cost of operation. The idea has gone forth broadcast that the auto bus (if not the small jitney) can compete directly with the street car and that, in consequence, it will eventually displace the latter in urban transportation. This viewpoint was voiced by the Hon. A. W. Lafferty of Oregon in Congress on Feb. 10 in part as follows:

"Mr. Speaker, recently a young man in Oakland, Cal., owning an old automobile, and being without money or patronage, conceived the idea of competing with the electric street cars. This was a new idea to the young man and was born of his necessity, but it was not in fact new. For over ten years more passengers have been carried through the streets of London by the buses than have been carried by the trolley lines. The service is just as regular and just as cheap. And what

What every city should do is to own its own transportation facilities. These facilities constitute a monopoly, and if the cities owned them they could make a splendid profit, employ men at fair wages, and furnish every part of each city with good service. The latest and best vehicles could be adopted as fast as their practicability were established."

COST OF AUTO BUS OPERATION

In view of the remarkable amount of misinformation contained in the congressman's remarks it is interesting to consider the actual cost of motor bus operation as set forth in the *Commercial Vehicle*, the representative paper of the motor truck industry. In December, 1914, there was published a list of nineteen companies using auto trucks in passenger service of which seven operated in cities, six on suburban runs, and six in interurban service. The average bus capacity was twenty passengers, and the average daily mileage 91,



JITNEY BUS—VIEWS OF SEMI-CONVERTIBLE STORAGE-BATTERY BUS PROPOSED FOR NEW YORK

happened in London when it was demonstrated that the motor bus was going to become more popular than the trolley car? The capitalists, owning surface trolley lines, promptly unloaded them on the city and got the city council to grant to them exclusive franchises to operate the motor-bus lines as a private corporation.

"It is amusing to watch the newspaper representatives of the capitalists in our Western cities fight the 'jitney bus.' They say the electric car line 'has helped to build up our beautiful city and is entitled to our patronage.' One Portland paper even claims that the street car company was responsible for paving a street to a suburb. Just at the present, when the jitney bus is owned by Tom, Dick and Harry, it is a bad thing and ought to be frowned on, according to these newspapers. But you just wait till the jitney bus grows to formidable proportions and becomes a dangerous competitor of the trolley lines, and then you will see these same newspapers favoring 'regulation' of the jitney bus. And in order to regulate it to the satisfaction of the money power these papers will favor granting an exclusive franchise to one big corporation to handle all the motor bus business of the city. They will say that we should have the latest and largest and most improved motor buses and that the interests of the service demand that the matter be placed in the hands of one company with 'sufficient capital' to handle the situation.

"When that time comes, these same corporation-controlled newspapers will favor unloading the surface lines onto the city and at such prices as to let the capitalists out at a big profit from a losing proposition.

or 33,200 miles per year. The average costs in cents per bus mile for the charges mentioned were as follows:

Tires	6.74 cents per bus mile
Gasoline at 18 cents per gal.	4.0 cents per bus mile
Oil and grease	0.64 cents per bus mile
Repairs	1.92 cents per bus mile
Wages of chauffeur	3.36 cents per bus mile

A figure of \$25 per bus per year for insurance was also given, but this was admitted to be low as a number of the companies did not insure, the proper figure being between \$60 and \$90. No housing or garage charges were included, these ranging from \$100 per bus per year in country towns to \$600 in the largest cities. The average truck was estimated to have cost \$3000 and to weigh 7500 lb., and at the time to which the figures applied the average truck had an age of about two years. This comparatively short period of service would tend to reduce the repair cost, as given, below that which might be expected as a normal average, but opposed to this is the fact that nearly every one of the nineteen companies in question operated only a small fleet of buses.

As the expenses shown above constitute only part of the true operating cost estimated additional charges are appended:

Assuming a life of five years and a depreciation of 20 per cent, or \$600, a housing charge of \$300, an insurance charge of \$70 and an interest charge of 6 per cent, or \$180, there is an overhead charge of \$1150 on each bus or 3.46 cents per mile. Also, assuming taxes, general expenses and damages to constitute the same per-

centage of operating expenses that they do in electric railway service, there should be added respective charges per bus mile of 2.2 cents, 1.2 cents and 1.3 cents. Summarizing all of these costs would give the following operating expense for a twenty-passenger bus:

Tires	6.74 cents per bus mile
Gasoline	4.0 cents per bus mile
Oil and grease	0.64 cents per bus mile
Repairs	1.92 cents per bus mile
Wages of chauffeurs	3.36 cents per bus mile
Int. dep'n, housing and insurance	3.46 cents per bus mile
Taxes	2.2 cents per bus mile
General	1.2 cents per bus mile
Damages	1.3 cents per bus mile
	24.82 cents per bus mile

On a seat-mile basis this involves a cost of 1.24 cents. According to estimates of those interested in bus operation the costs vary through a wide range.

AUTO BUS SERVICE AS A SUPPLEMENT TO SURFACE RAILWAYS

H. B. Weaver, vice-president, Manhattan & Queens Traction Corporation, and engineer for the New York Motor Bus Company, who has, as a consulting engineer, devoted a great deal of attention to auto bus operation, considers that the gasoline-driven vehicle cannot compete directly with the electric railway. It can, however, be used to advantage as a supplement to the street car by operating not on outlying lines but by giving a high grade parallel service at a higher fare. Mr. Weaver's opinions are in part as follows:

"The great problem of the auto bus is not the earning capacity or the abundance of traffic, but rather the operating cost, and it is well to consider in connection with this problem that the small, cheap jitney automobile carrying only about six passengers must operate at one-seventh the cost of a forty-two-seat auto bus in order to equal the passenger-seat cost, which after all is the real basis of computation.

"On the electric railway, the maintenance of rolling stock amounts to 11 per cent of the total cost of operation, exclusive of amortization. In the case of the bus line, the maintenance of rolling stock amounts to 30 per cent of the total cost of operation exclusive of amortization, and this 30 per cent does not include the item of tires which is, in itself, about one-quarter of the cost of maintenance. I have been informed by two of the managers of unsuccessful bus lines, that their buses were in the repair shops in one instance for two-thirds and the other instance for three-fourths of the time. This state of affairs was plainly due to inefficient management as well as to improperly designed vehicles, but it is a striking instance of the cause of failures in an industry which, if properly handled, can be successful.

"I receive innumerable inquiries as to the cost of motor bus operation. There seems to be some vague impression, even in the railroad world, that not only can buses be bought to suit any purpose as readily as one would buy a row boat but that the cost of operation of these vehicles is a definite and predetermined amount. Let us remember that the car mile operating costs of various successful surface lines show variance as high as 100 per cent. Such is true with regard to motor buses.

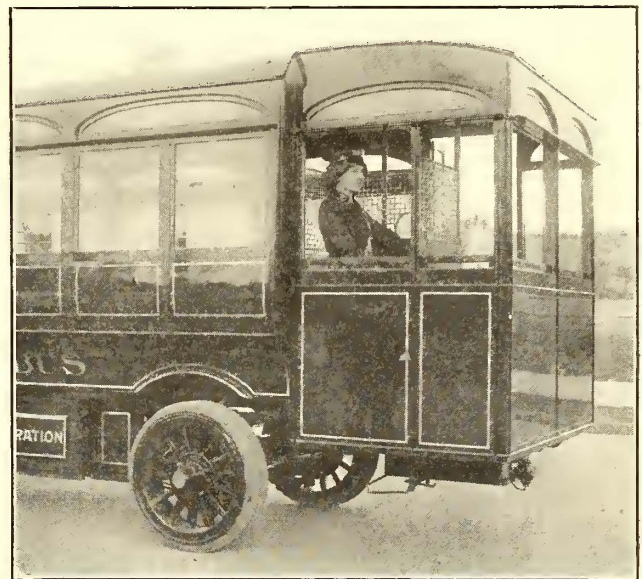
"However, the following figures show the estimated cost of operation on a particular route of twenty vehicles of the double-deck type, each having a seating capacity of forty-two. These costs were compiled as a result of actual chassis tests over a considerable period of time and after the cost of garage rental, gasoline and other items had been definitely determined. The estimated daily mileage is 85, the schedule speed be-

tween 10 m.p.h. and 13 m.p.h., the stops per mile, 5, and the weight of bus without passengers 10,400 lb.

Platform time	4.00 cents per bus mile
Starters and inspectors	0.50 cents per bus mile
General	1.00 cents per bus mile
Lighting and heating of vehicles	0.20 cents per bus mile
Service	0.10 cents per bus mile
Dead mileage and layovers	0.33 cents per bus mile
Gasoline	4.00 cents per bus mile
Tires	3.00 cents per bus mile
Car cleaning, oiling and car moving	0.55 cents per bus mile
Repairs to bodies, motors, etc.	3.00 cents per bus mile
Garage rent	0.33 cents per bus mile
Depreciation and obsolescence	3.50 cents per bus mile
Accidents	2.00 cents per bus mile
Taxes	2.00 cents per bus mile
Total	24.51 cents per bus mile

"The cost of tires is a variable factor depending largely on street surface conditions. As an illustration of the uncertainty of this item, I may say that the cost of tires is 2 1/4 cents per bus mile in the case of one of the largest bus lines in the country. In another instance it is nearly 7 cents per bus mile.

"It will be noted that the cost of operation shown above is approximately 0.6 cent per passenger seat mile, and I may say that the assumed conditions for bus operation are quite ideal. The proposed service is large enough to afford an economical operation and not



JITNEY BUS—VIEW SHOWING PROPOSED PREPAYMENT BUS WITH LADY CONDUCTOR

too large to be cumbersome. Traffic conditions are such as to permit of a very high schedule speed, consequently reducing many of the costs and increasing the annual earnings of the vehicles.

"In general, the auto bus has several advantages over street cars. It is apparent, however, that the cost of operation per passenger seat mile, or passenger space mile of the bus, is so much greater than the same cost of surface car operation that the bus cannot hope to compete with the surface lines at the present time.

"However, one important factor must be seriously considered; namely, that the bus is in its infancy and that its efficiency is growing every day. In one large operation in this country the bus-mile cost of operation has been reduced 20 per cent in three years' time. In the City of London the cost of operation per bus mile was reduced in 1909 over the previous year 3.5 cents; in 1910, 1.1 cents; in 1911, 1.76 cents, and in 1912, 1.6 cents, making a total reduction of 8 cents per bus mile in the operating costs during four years.

"This is the situation as I see it. Four years ago the auto bus possessed a limited utility due to its

excessive operating cost. During this time the art has progressed to such a degree that to-day its field of utility has become tremendously increased. This fact has been brought to the attention of the general public, strange to say, by the sporadic growth of the jitney companies or independent jitney operators. The jitneys have not yet proved their own value, but they have shown the practicability of motor buses.

"How shall the street railways deal with this problem? I wonder if street railway managers have ever attempted to figure the cost to them of the rush-hour with its over-crowded traffic, which many are prone to consider as their principal source of net profits. If we will be honest with ourselves for a moment, is it not apparent that these over-crowded periods, these unhealthy, dangerous and disagreeable conditions which have existed on almost all transportation lines at certain periods, have been the direct cause of the vicious legislation, unfair regulation, exorbitant taxes and fines initiated by the states, municipalities and courts, which have been imposed upon street surface lines. These conditions have produced a disgruntled, unhappy, bitter citizenry who have been in a mood to look with favor upon anything which "soaked" the cause of their discomfort in the shape of railroad companies. Is not this a prime reason for the jitney's success?"

"The motor bus cannot compete with street surface lines in their entirety. It can afford a much better service in many ways, but only on the principle of a guaranteed seat to every passenger at a higher rate of fare than that prevailing on surface lines. There are already many instances in the country where a higher rate of fare is charged in the rush hour than in the non-rush hour. Many of us believe that this is a reasonable solution of the problem. A simpler solution is to operate two types of vehicles, a first class and a second class. The second class would be of large dimensions and would carry a greater number of people with a reasonable number of standing passengers, though free from overcrowding. The first class would furnish a guaranteed seat, and a higher speed, and of course, would have a higher rate of fare.

"There exists in every city a large proportion of the population which will be more than glad, in fact delighted, at the opportunity to ride under such conditions at a slightly increased cost. The motor bus, therefore, should take a position between the street car and the taxicab, and nearer to the street car. In this form it would actually benefit the railways. This is exemplified in New York where my study of the situation shows that there are thousands of cases of women riding to the shopping section under the pleasant conditions which buses provide, although they would not stir out of doors were they forced to use a street car or pay the exorbitant price of a taxicab.

"Aside from this, of course, traffic congestion of the street cars would be relieved to such an extent that I believe a greater harmony would exist between the people and the companies, and, furthermore, that in a few years the rolling stock equipment of a line could be better balanced. In other words, the great surplus of cars needed for the rush service over the normal service could be reduced. Or, to put it in another way, the annual mileage per car would be greatly increased. This would be obtained at no loss to the company because it would be obtained through an increased investment in another type of rolling stock from which a higher rate of fare could be obtained.

"It may be said that still the jitney exists. But we must not lose sight of the fact that after the first novelty has worn off no one would think of riding in an improvised small touring car, crowded in on a longitudinal seat under the most intimate relations with

a few passengers, unprotected from the weather, severely jounced about, and disturbed by the boarding or alighting of every other passenger. Obviously one would prefer to ride in a modern, well designed, comfortable street car, provided that street car was not overcrowded.

"The street cars need not fear the operation of auto-buses at this time. Their comparatively high operating cost limits their utility as 5-cent vehicles. What the street railway companies should do is to augment their service, even paralleling their own lines with bus lines at an increased fare, or if they do not desire to undertake this service or cannot because of unpopularity obtain reasonable franchise privileges, they should aid rather than obstruct responsible independent companies in the establishment of such lines properly regulated and at a rate of fare in excess of 5 cents.

"The weak point of bus operation is the high operating cost. The crux of the high operating cost deals not with the cost of power as is apparently generally assumed, but with the cost of maintenance, amortization and length of time out of service. There are, on the other hand, certain financial characteristics of motor-bus operation more attractive to the public than street railway operation, and there are many physical characteristics in which the bus excels the street car.

"The comparatively high seat-mile cost of the motor bus should no longer be considered as a prohibition to its use, but rather as a limitation to its utility. This limitation should be first appreciated. The advantages should be carefully appraised and the operation of a proper number of these vehicles at a reasonable fare in conjunction with the street surface lines may well be encouraged."

ELECTRIC STORAGE-BATTERY BUS COSTS

Mr. Weaver's novel conception of a supplementary bus service for electric railways is, of course, based upon the axiom that the bus is more costly to operate than the street car, but this view is combatted by the Peoples 5-Cent Bus Corporation which is endeavoring at the present time to establish a line of 5-cent storage battery buses in New York City. These buses are intended to compete directly with any of the existing means for surface transportation. The estimated costs of operation are shown in the following table, based on a yearly mileage of 30,000, a schedule speed of 8 m.p.h., a maximum of 18 m.p.h. and 10 stops per mile:

Tires	3.0	cents per bus mile
Power	2.25	cents per bus mile
Repairs to body and gear	0.75	cents per bus mile
Repairs to battery	1.5	cents per bus mile
Housing, washing, etc.	1.0	cents per bus mile
Platform wages	8.0	cents per bus mile
Interest	1.0	cents per bus mile
Depreciation	1.8	cents per bus mile
General and administrative	1.0	cents per bus mile
Supplies, licenses, insurance and taxes ..	1.5	cents per bus mile
Damage claims
Total	21.8	cents per bus mile

These estimated figures apply to buses of the unusual type shown in the accompanying illustrations, two of which are being operated about New York City at the present time as a popular demonstration of what the company proposes to do. The bus seats 36 passengers, and weighs 11,000 lb. including the battery. A 2½-hp motor is geared to each of the four wheels. The proposed schedule will require an acceleration of 1.5 m.p.h. p.s. and the 10 hp of motors is expected to provide this.

The cost of tires as shown in the table has been guaranteed by a manufacturer, the low figure being said to be due to the nature of the drive. Power is figured at 1.5 kw-hr per bus mile and at 1.5 cents per kw-hr. The repair cost for the battery is guaranteed by the maker.

The obviously doubtful points in the estimate are the

items of depreciation, insurance and taxes, and damage claims. Depreciation is based on a ten-year life for all parts of the bus except the gearing (which is given only five years) notwithstanding the fact that the racking strains of travel over city streets causes rapid deterioration, one large bus company that is actually in operation charging off 33 per cent annually for this purpose.

The item covering supplies, licenses, insurance and taxes provides only \$450 per annum per bus, although the taxes alone, if equivalent to the average imposed upon electric railways, would be considerably in excess of this figure. Also the neglect of damage claims is open to question, as at least one bus-operating company has to set aside 3 cents per bus mile for this purpose, and because damages amount to more than 1 cent per car mile for the average electric railway according to census figures.

COST OF JITNEY BUS OPERATION

As the foregoing figures apply only to auto buses of the largest type it is interesting to consider the actual cost of jitney bus operation as outlined by a prominent automobile dealer of St. Louis, where the jitney has thrived owing to the refusal of the authorities to bring it under regulation. The automobile dealer estimates the tire expense to be \$15 for each of the four wheels for 3000 miles, or a little less than \$2 a day, the gasoline 20 gallons at 10 cents, or \$2 a day and the driver's wages \$2 a day, making the total expense of \$6 a day. On the assumption that the income is \$10 a day, the net receipts would be \$4 a day, or \$120 a month. Of this \$60 per month is allowed for a sinking fund to provide against accidents, repairs and depreciation, and a net profit of \$60 a month is left as a revenue for the owner of the car.

Aside from such minor items as the low price allowed for gasoline, the low wages for the driver and the unreasonably high receipts, this statement constitutes an excellent argument why no one should enter the jitney-bus business. Assuming an average trip of 2 miles, and also the extremely high average of three passengers per trip, it would be necessary for the jitney to make about 50,000 miles in a year if it is to have gross receipts of \$10 per day. This mileage is about that which is obtained by the average private car in twelve years. It does not make the allowance of \$60 per month for repairs, depreciation and accident look sufficiently large within about 100 per cent. In fact, one accident would wipe out the profit for a year.

The average cost of operating in jitney service a Ford car capable of seating five passengers was stated by representatives of one of the largest distributors in the country to be approximately as follows:

Tires	0.8 cent
Gasoline	1.0 cent
Oil and grease	0.2 cent
Repairs	0.8 cent
Depreciation	0.6 cent
Total	3.4 cents

On a seat-mile basis this would amount to 0.8 cent as the machine offers four revenue seats. If camp stools were put in for two more passengers the cost would be 0.6 cent. This figure, of course, does not take into consideration any such charges as taxes, housing, insurance and accident claims. If, as is indicated by actual records in Seattle, the car makes 100 miles per day and earns \$6, there remains only \$2.40 per day to pay these charges and to reimburse the driver.

The lack of real profit in the jitney bus is brought out also by the following remarks of M. C. Booth, organizer of the first jitney-bus company in Portland, Ore. The statement was made before the Portland

Realty Board and covered actual figures based upon the speaker's experience:

Interest on investment at 6 per cent	\$33 per year
Depreciation on car	150 per year
Current repairs	438 per year
Tires	350 per year
Gasoline and oil	430 per year
Personal liability insurance	200 per year
License	5 per year
Overhead charge	52 per year
Incidentals	36 per year
Total	\$1694 per year

"Gross receipts," said Mr. Booth, "would be \$2190 per year at \$6 per day, and deducting \$1694 for operating expenses leaves \$495 from which must be subtracted \$250 to cover fines, damage to other people's property and to the car in case of accident, as well as attorney's fees for services in the police court, leaving a balance of \$245 for the operator's labor for the year.

"The reason why so many have engaged in this business is because they cannot find anything else to do."

RECEIPTS MUCH OVERESTIMATED

It is probable that the major part of the jitney craze has been due to the fact that receipts have been greatly overestimated, although the lack of appreciation of real operating cost also has undoubtedly been a material factor in inducing owners of cars to enter the business. As an example of the misconception of the real situation it might be said that in St. Louis the daily earnings of a jitney-bus driver have been reported in general at about \$10. This fact has been given wide publicity in the daily papers.

However, on Feb. 20 the manager of the jitney-bus association stated with considerable pride that 4000 passengers had been carried on the day before. This number at 5 cents each would bring total receipts of \$200 for the day. Reference to the daily papers shows that there were twenty-two motor cars in operation and two motor buses each with a carrying capacity of thirty. Assuming that the motor buses, with their large capacity, brought in a proper proportion of the receipts, or say \$30 each, there would be left \$140 to be divided among twenty-two cars. This indicates average receipts for each motor car of \$6.40 a day. In addition, it is quite possible that the figure of 4000 passengers was somewhat exaggerated.

In Kansas City the same peculiar discrepancy between reported receipts and actual possible receipts may be noted. A newspaper report of Feb. 10 states that 35,000 passengers were carried on Feb. 9, bringing in a total of \$1750. Two hundred jitneys were registered as belonging to the jitney operators' association, and the unregistered drivers were estimated at nearly a hundred more. Assuming that the actual number of jitney operators was 250, the receipts per car came to less than \$7. Even neglecting the unregistered drivers the receipts divided among the two hundred registered cars amounted only to \$8.75 each.

In Peoria, Illinois, one of the jitney operators estimated that his average day included 25 trips with an average of five passengers a trip, making \$6.25 income for the day. This driver had a seven-passenger touring car and he estimated the expense of operating it at about \$1 per day, thus making, as he expressed it, "an easy profit of \$5 per day for the chauffeur." The length of this driver's route is not known, but if it was more than one mile, his alleged expenses of \$1 included only gasoline and did not give any consideration to wear on tires, repairs, depreciation and the like. With such misapprehension of the real facts in the case, it is not difficult to see why numerous owners of cars have been induced to take up the jitney bus as a means of livelihood.

ANNUAL CONVENTION
SAN FRANCISCO
OCTOBER 4 TO 8, 1915

American Association News

ANNUAL CONVENTION
SAN FRANCISCO
OCTOBER 4 TO 8, 1915

Reports of Meetings of New Motor Vehicle and Way Matters Committees, of Company Section Activities and of Joint Line Construction Committee Meeting

COMMITTEE ON MOTOR VEHICLES

President Allen has appointed a special committee to consider the subject of motor vehicles, consisting of B. I. Budd, president Chicago Elevated Railways, chairman; H. G. Bradlee, president Stone & Webster Management Association, Boston, Mass.; W. A. House, president United Railways & Electric Company, Baltimore, Md., and C. L. S. Tingley, vice-president American Railways Company, Philadelphia, Pa.

The committee met on Feb. 23 and went over a mass of data which had been collected and adjourned to meet on March 16, at which time a report will probably be completed.

JOINT COMMITTEE ON TRANSPORTATION-ENGINEERING

A meeting of the above committee was held in Cleveland on Feb. 12. As the name indicates, this committee comprises members of the Engineering Association and the Transportation & Traffic Association, all of whom, as follows, were present at the meeting: Engineering: R. N. Hemming, co-chairman, Anderson, Ind.; W. E. Rolston, Michigan City, Ind.; R. D. Beatty, Cleveland, Ohio; Transportation & Traffic: P. N. Jones, co-chairman, Pittsburgh, Pa.; J. B. Stewart, Jr., Youngstown, Ohio, and C. N. Wilcoxon, Michigan City, Ind.

After general discussion the committee decided to draw up data sheets covering details of matters pertinent to transportation and engineering. In this the entire membership of the committee will co-operate in order to cover the assignments of the executive committee. These assignments will be found on page 1302 of the issue of the *ELECTRIC RAILWAY JOURNAL* for Dec. 12, 1914. The committee also hopes to make some inter-urban train tests with ball-bearings. The next meeting of the committee will be held late in April or early in May.

COMMITTEE ON WAY MATTERS

A meeting of the committee on way matters of the Engineering Association was held at the association headquarters in New York, Feb. 19 and 20. The following members attended: C. S. Kimball, Washington, D. C., chairman; H. F. Merker, East St. Louis, Ill.; E. H. Berry, Cincinnati, Ohio; E. P. Roundey, Syracuse, N. Y.; W. F. Graves, Montreal, Quebec; R. C. Cram, Brooklyn, N. Y.; C. W. Gennet, Jr., Chicago, Ill.; E. M. Haas, Chicago, Ill., and L. A. Mitchell, Anderson, Ind. The work of the various sub-committees for this year was considered by the committee as a whole. A sub-committee to consider further the proper foundations for track in paved streets was appointed and included Messrs. Cram, Haas, Berry and Mitchell. It will consider changes in the four designs of track foundations submitted at the 1914 convention, as well as endeavor to obtain the approval of the American Society of Municipal Improvements of the types finally adopted. The sub-committee considering pavements for use in connection with girder and high tee rails includes Messrs. Graves, Berry and Mitchell. Its work will be devoted principally to securing traffic counts in connection with the various types of pavements. The sub-committee considering specifications with definitions for sundry track materials includes Messrs. Gennet, Haas

and Roundey. Standard specifications for special work will be considered by a sub-committee composed of Messrs. Roundey, Merker, Kimball and Graves, who will issue a request to engineers of special-work manufacturers for suggestions relating to specifications for the several types of special work now in use. Specifications will be prepared for the materials used in the various types of special work now generally used. The sub-committee considering the revision of the recommended designs of 7-in. and 9-in. joint plates with special reference to sizes of bolt holes and fits, includes Messrs. Merker, Gennet and Cram. The discussion of this subject was devoted to the advantages and disadvantages of the drive-fit as against the loose-fit bolts. In the review of all existing standards and recommendations originating with the committee on way matters, several sub-committees were appointed to consider the revision of some of the existing standards and recommendations.

MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY SECTION

The January and February meetings of this section were joint ones with the local company section of the N. E. L. A. The January meeting, held on Jan. 22, was a social affair attended by 700 persons, including members of the Wisconsin Gas and Electrical Associations which were in convention at the time. The feature of the evening was a musical skit planned and written by the local men, in which Secretary Abendroth appeared as the star performer. President W. W. Cook was also in the cast so could not read his preliminary address which was read for him by vice-president V. M. Dentz. The play was followed by a dance with a grand march led by the presidents of the two local company sections.

DENVER TRAMWAY SECTION

The regular February meeting of this section was held at the club rooms of the north division of the railway on Feb. 18. The subject was "Snow Work and Equipment," a continuation of the topic of discussion begun at the last meeting as described in the issue of the *ELECTRIC RAILWAY JOURNAL* for Feb. 6, page 293. As before, the discussion was opened by W. H. McAloney, superintendent rolling stock, whose remarks were followed by a lively discussion on snow fighting methods and the equipment necessary therefor. Members of the section rendered musical selections and a section photograph was taken. The attendance at the meeting was 150.

PUBLIC SERVICE COMPANY SECTION

At the last meeting of the section, described briefly on page 380 of the issue of the *ELECTRIC RAILWAY JOURNAL* for Feb. 20, President P. F. Maguire announced that the present membership is 289, and that it has increased 13 per cent since the course in public service economics, described on page 337 of the issue for Feb. 13, was inaugurated. H. C. Donecker, for the program committee, announced that coming meetings will be addressed by Oscar T. Crosby, Warrenton, Va.; George J. Roberts, vice-president Public Service Railway; F. W. Doolittle, director of the fare research bureau of the association; J. S. Doyle, superintendent of car equipment Interborough Rapid Transit Company; R. E. Danforth, general manager Public Service

Railway; P. S. Young, treasurer Public Service Railway, and other prominent specialists in the electric railway work.

In addition to the more formal part of Mr. Donecker's lecture of Feb. 18, he pointed out how the company section plan is designed to benefit both the men and their employers, impelling the former to defend the latter. His impression is that the employees of public utilities do not stand together as they should, being passive or negative in the defence of the policy of the companies employing them. Electric railway employees should realize that the electric railway is only one of several utilities, and co-operation with other utilities is very desirable. Further, co-operation among the departments of one company is necessary. A company must help itself inside if outside help is desired. In order to please the public generally it is necessary to maintain good service and good dividends. The co-operation of all employees is necessary in both of these directions for permanent success.

WASHINGTON RAILWAY & ELECTRIC COMPANY SECTION

The feature of the meeting of this section held on Jan. 25 was the awarding of prizes for papers on "The Duties of a Trainman to the Traveling Public" prepared by starters, conductors, motormen and depot clerks. Thirty-six papers were submitted in the contest. The three prizes of \$10, \$5 and \$2.50 respectively were awarded to Montgomery Davis, starter eastern division; James T. Trout, conductor southern division, and W. M. Rice, conductor eastern division, by H. C. Eddy, engineer District of Columbia Public Utilities Commission, and J. R. Putnam. After the prizes had been awarded brief addresses were given by T. T. Wong, director of the Chinese Government Bureau of Education, and Mr. Eddy. The serious part of the meeting was relieved by motion pictures, vocal music and refreshments. The attendance at the meeting was 48.

The meeting of Feb. 23 was held in conjunction with a meeting of the employees of the Potomac Electric Power Company and Wm. L. Clarke, assistant secretary of the companies, presided. The program was of a non-technical character, comprising musical numbers, motion pictures and an address on "Real Aristocracy." A buffet luncheon was served after adjournment.

ASSOCIATION OF TECHNICAL SOCIETY SECRETARIES

A meeting of the above association, in which the American Association is officially represented by Secretary Burrill, is being held to-day in New York. The purpose of this association, as outlined on pages 917, 991 and 1061 of the last volume of this paper, is to provide for occasional meetings of the secretaries of national societies to consider overlapping interests, the avoidance of conflicts in convention dates and the methods of administration found most effective. In the absence of Secretary Burrill on account of the C. E. R. A. convention, he is being represented by H. H. Norris, associate editor, *ELECTRIC RAILWAY JOURNAL*.

COMMITTEE ON OVERHEAD AND UNDERGROUND LINE CONSTRUCTION

A meeting of this committee was held in New York on Wednesday, Feb. 24. The minutes will be available in time for the next issue of the *ELECTRIC RAILWAY JOURNAL*.

COMMUNICATIONS

Corrosion of Metals in Natural Soils

NATIONAL BUREAU OF STANDARDS

WASHINGTON, D. C., Feb. 20, 1915.

To the Editors:—

As a contribution to discussion of the article appearing in the issue of the *ELECTRIC RAILWAY JOURNAL* for Nov. 14, 1914, entitled "Corrosion of Metals in Natural Soils" by E. H. Scofield and L. A. Stenger, we submit the following comments:

We have read the article with much interest and regard it as a valuable experimental demonstration of self-corrosion of iron and lead in soils. The paper deals with a phenomenon long recognized but too often overlooked by engineers or not given sufficient consideration. In connection with our electrolysis investigation we have frequently had occasion to call attention to the fact that in certain cases corrosion is due to soil conditions and not to stray currents. Such cases often occur, and this fact renders it important that careful investigations be made to determine the cause of corrosion in any given case. Work of the kind done by Messrs. Scofield and Stenger is of great value and serves to emphasize the need for giving more attention to soil conditions and the physical properties of pipes than is generally done.

It is well to point out in this connection that although soil corrosion usually exists in greater or less degree and under certain conditions may in itself become very serious, such soil corrosion is in general accelerated by the presence of stray currents. This fact is shown in Technologic Paper No. 25 of the Bureau of Standards dealing with the subject of electrolytic corrosion of iron in soils, and some of the principal causes of this accelerated soil corrosion are there pointed out. Because of this tendency, whenever stray currents are being discharged from the pipes, not only will there be more or less electrolytic corrosion, but the soil corrosion proper will be greater than if such stray currents did not exist. Where soil conditions, therefore, are such as to give rise to considerable self-corrosion it is more important that stray currents be reduced to low values than where the tendency toward soil corrosion is small.

It would be interesting to know the chemical analyses of the soils used by Scofield and Stenger, since they were undoubtedly of an unusually corrosive character.

The corrosion due to the presence of two or more electrolytic soils is interesting, but it is probable that soil corrosion in practice is caused in this way only to a slight extent since natural diffusion of dissolved substances in the soil would soon eliminate potential differences due to this cause. Soil corrosion usually is probably due either to a direct chemical attack or to the galvanic action resulting from inhomogeneity of the surface of the metal, although unquestionably there are cases of serious corrosion due to the presence of different soils in contact with adjacent portions of the metal.

These experiments are in accord with a great deal of data previously published which show that it is impossible to establish beyond question that certain cases of corrosion have been caused by electrolysis unless electrical conditions favorable to such corrosion are actually found. On the other hand, it is important to bear in mind that the absence of such electrical conditions at any particular time is not sufficient indication that corrosion that has already taken place was not caused by electrolysis, since electrical conditions may have changed greatly since corrosion occurred. In a case where serious corrosion has been caused by stray currents and the cause of these stray currents has been re-

moved, the only certain way of determining whether the previous corrosion was caused by stray currents or by local influences is by making active corrosion tests in the same soil under the same average conditions of moisture and using the same kind of iron as that previously found corroded. In the absence of a test of this kind, it is not possible to fix with certainty the cause of corrosion.

It would be interesting to know whether the specimens shown in Figs. 1 and 7, which are stated to have been corroded by the action of the soil, have ever been exposed to conditions that might give rise to electrolysis corrosion.

E. P. ROSA, Chief Physicist, and
BURTON MCCOLLUM, Electrical Engineer.

STEVENS INSTITUTE OF TECHNOLOGY
HOBOKEN, N. J., Feb. 15, 1915.

To the Editors:—

I have read with interest the article entitled "Corrosion of Metals in Natural Soils," by E. H. Scofield and L. A. Stenger, published in the Nov. 14, 1914, issue of your valued journal.

The authors state that iron and lead in street soils corrode both in the form of "uniform rusting or oxidation," and in the form of "the more destructive pitting"; and that the uniform rusting is generally recognized as a "simple chemical action," while pitting "is usually attributed to electrolysis, and when found in localities where electric railways operate the damage is charged to the action of electrical current originating from the return circuits of such railways." I do not believe that this is a fair statement, as it has long been understood that pitting is caused by rapid localized corrosion which may result from what has been called "simple chemical action," as well as from electrolysis due to stray railway or other external currents. It is nevertheless the fact that the very rapid corrosion of underground pipes and cable sheaths resulting in pitting in a relatively short time is in most cases in practice caused by electrolysis from stray railway currents leaving the pipes or cable sheaths to flow to surrounding earth.

It has repeatedly been pointed out that the appearance of a corroded pipe or cable sheath alone does not suffice to determine whether or not the corrosion has been caused by electrolysis from stray electric current. I stated this in the discussion of a paper on electrolysis before the New England Association of Gas Engineers, Boston, Feb. 19, 1913, and I quote the following from this discussion published in the 1913-1914 *Proceedings* of this Association, pages 66 and 67:

"I believe that I can give a satisfactory answer, namely, that you cannot tell from the appearance of a corroded wrought-iron or steel pipe whether the corrosion and destruction was caused by electrolysis. In the case of cast-iron a graphitic material left as the result of the corrosion usually but not always indicates electrolysis. If corrosion from electrolysis is going on, it is perfectly possible, however, to make a suitable electrical test which will show conclusively whether or not stray electric current is leaving the pipe and is causing the corrosion. For this purpose we use an instrument known as an earth ammeter; we place this next to the pipe and connect it to a recording instrument, and obtain a 24-hr. record of the current flowing from the pipe to the surrounding soil. This record will not only show the presence of current but will also indicate whether it has railway characteristics. If such current is found leaving the pipe it is certain proof that it must produce a corresponding amount of electrolysis. A test of this kind, together with the corroded pipe, affords in my opinion the best possible evidence that

we can have of corrosion by electrolysis. The corroded pipe by itself without any connecting electrical measurements will not ordinarily serve as complete evidence."

Wherever a metal in earth is found to be corroded and electric current is found flowing from this metal to earth, this is conclusive evidence that the corrosion is in part due to electrolysis from this current. From a measurement of this current an estimate of the amount of corrosion produced by electrolysis due to this current in a given time can be formed by applying Faraday's law, and it can frequently be shown that the corrosion found is practically wholly accounted for by this electrolysis. Where this current can be shown to be stray current from an electric railway, this is therefore good evidence that this railway current is partly and sometimes practically wholly responsible for the corrosion found.

The article is summarized by the statement "The authors show that electrolytic corrosion can and does occur without stray railway currents, and that two sets of conditions may cause it. Experimental data are given to prove the contentions." The word "electrolytic" in the above quotation appears to me to be used in a sense which is likely to be misleading. What the authors have found is that corrosion and pitting of iron and lead in soil may take place without the presence of stray railway currents, and that the appearance of the corroded metal is the same as the appearance of metal corroded by electrolysis from stray railway currents. In my opinion the expression "electrolytic corrosion" should at least in engineering literature be confined to cases where the corrosion is caused by electrolysis from external electric currents and should not be used for cases where the corrosion is due to chemical action in soil.

ALBERT F. GANZ, Professor of Electrical Engineering.

NEW YORK, N. Y., Feb. 3, 1915.

To the Editors:—

The article by Scofield and Stenger on "Corrosion of Metals in Natural Soils," in your issue of Nov. 14th, was one of special interest. It seems, however, particularly unfortunate that both the article itself and your editorial comment should convey the impression that the main facts set forth are essentially new and that they call for revision of our ideas regarding the effects of stray currents.

Nothing could be farther from the truth, for, except possibly as to the methods of experiment, there is nothing in the article not well known to those who keep informed upon this subject. It has been known for a generation, at least, that iron pipes have a limited life in soil, depending upon the character of the pipes and the soil in which they are placed, and that they corroded by deep pitting, by scaling, by general graphitic degeneration and by general exfoliation, prior to the existence of electric railways. It has been known, since prior to 1884, that pipes containing free manganese were subject to rapid destruction by pitting similar to that found where electrolysis, due to stray currents, is active at the present time.

Pipe owners are also familiar with the fact that there are localities where lead service pipes are rapidly destroyed by purely natural soil corrosion, particularly when laid in a substratum of clay and the trench filled with the mixture of soils resulting from the excavation through the surface loam into the clay substratum.

All this has been known and is always considered by qualified engineers making electrolysis investigations.

It is probably true that when the dangers of electrolysis were first recognized, there were some engineers unfamiliar with the subject of corrosion who

thought that the very vigorous attacks, which they observed in the presence of stray current, were phenomena peculiar to stray-current corrosion. These erroneous views were, however, soon dissipated as experienced investigators gave attention to the subject, and there exists at the present time an extended literature giving results of carefully conducted tests, showing the relative rates of corrosion which may be expected in various soils and electrolytes in the presence of current leaving the pipes through a wide range of current densities, the tests with extraneous current being carefully checked against like tests in the absence of extraneous current.

Even as to the Twin Cities we find natural corrosion recognized by C. H. Stone and H. C. Forbes, writing in 1894 as follows:

"We have made careful inspections of pipes taken from a large number of cities, and in most cases we find as stated before that the specimens have the appearance of being acted upon by natural causes, the rate of decay simply being accelerated by the electric current. A few instances, however, have been brought to our attention where no natural decay whatever is apparent; this example, for instance, is one which was taken from the ground in the vicinity of the power station at Minneapolis." (N. E. W. W. Association, Vol. 9, page 26.)

In 1899 Hambuechen studied the comparative rates of corrosion of a large number of samples of iron and steel, using electrolytic corrosion for the purpose of obtaining accelerated tests. He says:

"By use of a suitable electrolyte the iron may be corroded as much by this means (electrolysis) in a few hours as it would be corroded in as many years by exposure to the weather, the resultant surfaces being practically the same in each case. By this method the character of the corrosion in different qualities of iron was studied and from the results obtained by these tests, it is noted that the effects produced by ordinary corrosion and by electrolytic corrosion are similar." (*The Electrochemist and Metallurgist*, Vol. 1, page 79.)

Probably the best exposition of the electrochemical features of stray current electrolysis is found in a classical series of papers which Haber began to publish some eight years ago. Almost in the beginning of his text, we find relative to this problem the following:

"Similar changes have already been observed for twenty-five years past occurring upon cast-iron pipes when electric street railways were not yet in existence, and one finds them also to-day often enough at places where no stray current can be demonstrated or even assumed to be present in case the pipes are located in ground of unfavorable properties." (*Zeitschrift für Electrochemie*, Vol. 12, page 50.)

Any one familiar with the controversial literature bearing upon the choice between iron and steel as material for pipes, knows that pitting is continually referred to as a measure for the rate of corrosion in exposures to the action of steam, acid waters, etc.

In so far, therefore, as the interesting paper of Messrs. Scofield and Stenger undertakes to prove that "pitting" is not necessarily an evidence of electrolysis, it is "love's labor lost," for no one conversant with the subject so contends. In so far as it conveys the impression that hereafter any new or different view of corrosion or electrolysis phenomena must be taken it is distinctly misleading, because both the fact of natural pitting, and its acceleration by stray current are well established and it has been clearly proved that the corrosion due to the current may be expected to occur at substantially the rate indicated by Faraday's law. Laboratory investigations indicate that only in excep-

tional instances will conditions exist modifying this rate.

While, therefore, it is true that absence of current is no proof of safety to a pipe, it is equally true that the presence of current flowing from the pipe to surrounding soil is a substantially certain indication that corrosion, in excess of natural corrosion, is taking place at a rate determined by the ordinary laws of electrolytic action. Whether the stray current which is found endangering a pipe or other underground structure comes from an electric railway is determined by ascertaining whether the current flowing from pipe to soil varies with the operation of the railway, or, in other words, whether the current-time curve of pipe current follows the load curve of the railway.

F. N. WATERMAN, Consulting Engineer.

The Jitney Situation

MOBILE LIGHT AND RAILROAD COMPANY

MOBILE, ALA., Feb. 15, 1915.

To the Editors:

I have been studying the jitney situation for several weeks and have visited Texas in order to ride on the jitneys and talk with the men operating the cars. I found they were not earning living wages and depreciation on the car, to say nothing of a reserve for injuries and damages. How long they can last is hard to say. The *San Francisco Chronicle* says there were 1400 jitneys in Los Angeles in October and November, 1914, and only 700 in February, 1915. Of this latter number few were engaged in the business last October and November, nearly all of the 1400 having dropped out and new ones to the extent of 700 taking their places.

Although this statement may be true, I believe we shall have jitneys for some time to come, and I think we may look for automobiles seating eight to sixteen passengers with exit and entrance at the front and near the driver. This is the class of jitney I fear more than the other when it comes to permanency. We shall also have the small jitney run by the son of the owner who will make eight or ten trips in the morning and ten or twenty trips in the evening, going to school between times.

Strict regulation and the requirement that the jitneys carry liability insurance to guarantee payment for injuries and damages caused by the negligence of the driver will do more to put them out of business than anything else, other than high operating expense.

It seems strange that so few data have been obtained showing the cost of operating a jitney. Mr. Phipps, engineer of the Public Service Commission of the State of Washington has made a report to the commission in which he placed the average receipts per car at \$6.69 per ten-hour day and says that the lowest priced car to operate cost \$4.36 per day, including 20 per cent depreciation. The balance, or amount of wages for driver, is \$2.33. He gives the average passengers per trip at 3.60. Mr. Phipps makes a mistake I think, in figuring depreciation at only 20 per cent per year, it would be nearer 50 per cent on a new car, and on a second-hand car, which is the kind usually in service, it is nearer 100 per cent. The manager of the Kansas City Association says it is 50 per cent, and he tries to make it appear bright for the car owner, in order to get more in the game. Inclosed is a list of questions showing desirable data if we are to obtain a comprehensive view of the jitney bus situation.

We have five jitneys in Mobile. We have only two now, but the operator says he expects to put on six more. Those in use are running over routes 2½ miles long, making three round trips per hour, or six single

trips, running the round trip of 5 miles in twenty minutes. Being a novelty, they are attracting passengers.

The jitneys run about fifteen hours per day, which makes 225 miles per day and, if this rate is maintained, 82,125 miles per year. This is as much as an ordinary pleasure vehicle will run in nine or ten years, so it is plain that the depreciation, even on a new car would be 100 per cent and on second-hand cars such as are used, it will be 100 per cent in a few months.

I believe the JOURNAL can do a great deal of good in furthering the campaign for regulation and especially the carrying of insurance, and also in the gathering of operating costs of jitneys where they are in operation, including cost per mile for gasoline (lower grade), tires, miscellaneous repairs, garage expense, fire insurance, depreciation, interest on the investment, licenses, taxes and accident insurance.

The guarantee of tire makers and of the automobile manufacturer as to consumption of gasoline and life of car would be interesting.

I inclose an advertisement which we have inserted in one of our daily papers calling the attention of the public and the jitney owners to the facts about the business.

The rapidity with which a passenger is taken to his destination and the frequency of headway are the chief attractions of the jitneys. I have always believed in the single truck cars and in putting on more cars when the traffic required it thereby reducing the headway, and I sometimes think we may have to come to small one-man cars in order to give rapid and frequent service.

J. H. WILSON, President.

[NOTE.—The following are the inclosures referred to in Mr. Wilson's letter.—EDS.]

ADVERTISEMENT OF COMPANY

TEAR UP THE STREET CAR TRACKS

The *Mobile Register* says the tearing up of the street railroad tracks in Des Moines is urged. Suppose that was really done here in Mobile, who would be affected?

First, the fifty-one stockholders, mostly Mobilians. Second, bondholders in Mobile would lose \$2,000,000. Among the bondholders are widows, orphans, estates, charitable institutions, benefit associations, persons of small means whose savings are so invested, small merchants, school teachers, professional men, capitalists and banks.

Third, several hundred employes who receive good wages, who would give way to boys at 10 to 15 cents per hour.

Fourth, all persons now paying 5 and 10 cent fares. Fifth, all school children and persons using transfers. School tickets and transfers would not be practical where there were so many jitney owners.

Sixth, the state, county and city would lose heavily in revenue. Seventh, property owners who would hereafter have to pave the entire street.

Eighth, persons injured could collect no damage claims, jitney owners not being financially responsible.

Why would the citizens suffer? Because the street cars now charge only 5 cents anywhere in the city and to Crichton, Toulminville and Prichard and only 10 cents to Spring Hill and Whistler, but with the doing away of street cars the jitneys would make no rate lower than 10 cents and 15 or 20 cents to Crichton, Toulminville or Prichard and 40 cents or more to Spring Hill or Whistler. Some streets, like Michigan Ave., Cedar, Franklin, etc., would have no service.

What would the sixty jitneys necessary to supply the profitable service pay the city, state and county? Why, just \$1,500 as against \$50,000 now paid by the street car company. Yes, *by all means* tear up the tracks.

QUESTIONS ON JITNEY BUS TRAFFIC

The following questions are intended to cover five-passenger and seven-passenger cars and the different sizes of buses used.

Name of company? Name of city? State? Population of city? Jitney cars began to operate? Number owned and operated by owner? Number operated by firms or companies? Number in jitney association? Length of one-way trip? Time of one-way trip? Hours operated per day? Fare? Revenue per car hour? Revenue per car mile? Operating cost per mile? Gasoline? Oil? Tires? Repairs and supplies? Garage expense? Chauffeur's wages? Superintendency? Taxes and licenses? Depreciation? Fire insurance? Liability insurance? Total?

When owner runs car (no charge for chauffeur or superintendent) net earnings for owner? State and county licenses per car? City license per car? Chauffeur's license? Percentage of gross receipts paid? Intangible or franchise tax? Paving tax? Ad-valorem tax per car? Excess number carried above seating capacity? Are passengers carried on running board? Are tickets sold? If so, give price. Are school tickets sold? If so, give price. Are children's tickets sold? If so, give price. Are transfers issued? Are policemen and firemen carried free? Are Sisters

of Charity carried free? Are waiting rooms provided? Are white and black passengers separated? Are separate cars run for the whites and blacks?

Do jitneys run in bad weather? Is interior of jitney lighted? Are jitneys classed as common carriers? Is a franchise required? Are jitneys regulated by city ordinance? If so, please send copy of ordinance. Do jitneys follow specified routes? Are routes specified by ordinance? Do jitneys operate only in paved streets? What rate of wages per hour is paid to chauffeur?

The following questions are of a general nature. If an association directs the operation of jitneys, what are its functions? Does the association provide terminals, schedules, starters and other facilities? What are the charges of the association?

Are jitneys permitted to parallel street railway lines of same streets? Are jitneys confined by ordinance or other regulations to streets other than those occupied by street railway lines? Do ordinances require all other vehicles, including automobiles, to stop when approaching street cars taking on or discharging passengers? Are jitneys required to draw up to curb to take on or discharge passengers?

Are jitney owners required by statute or ordinance to carry liability insurance against the public? If so, what are the maximum amount covered by policy for any one person, the maximum for any one accident, and the date? What other important points are covered by policy? Do you know if application for such insurance has been made by an individual or by a company and same refused? What are the reasons for such refusal?

Have any serious accidents been caused by jitney buses? What were the causes of some of these accidents which indicate to you excessive public liability due to improper operating methods, or by condition of streets and street traffic? Have persons injured in such accidents been compensated therefor without suit? Will you give specific instances? In case of verdict have any been able to collect the award? Please give specific instances. What is the general attitude of persons injured by jitneys toward the owners thereof?

Do jitneys make public subscriptions? Do jitneys operate to city parks, and to the ball park? Have you curtailed street car service? Have you decreased number of conductors and motormen, wages of conductors and motormen, number of men in shops, wages in shops, office force, wages of office force, number of heads of departments, salaries of heads of departments and salaries of general officers?

Have you attempted to meet competition by increased car service? Do you operate single or double-truck cars on lines that have competition with jitneys? How many seats per 100 passengers on your cars per entire day and how many seats per 100 passengers during rush hours? Have you considered the operation of smaller cars on more frequent headway?

Are you considering the operation of any one-man operated cars? What is the average fare per revenue passenger, per revenue and transferred passengers, and per revenue transferred and free passenger? Could you abandon the giving of transfers? If buses parallel any of your lines do they confine their activities to your short-haul traffic? How many lines do you operate? How many lines are operated that do not pay cost of operation, taxes and fixed charges?

By what per cent of gross income have jitneys cut into your receipts? What per cent of short-haul passengers do you estimate are now carried by jitneys? Do you contemplate abandoning any lines? Do you contemplate going ahead with improvements and extensions, while the jitney business is affecting you? If you have abandoned improvements or extensions, state estimated cost of abandoned work? Have the operation of jitneys affected the value of your stock and bonds?

Do you think the operation of jitneys will be permanent? If so, what kind of five and seven-passenger cars, or busses? If your employes are organized, has their organization undertaken to combat the jitneys? If so, how? Please give your views on the general subject.

Report on Manila Electric Lines

Results of operation of the Manila Electric Railway, including suburban lines, for the first ten months of 1914 show a decrease in net earnings of approximately 23.4 per cent, as compared with the same months in the previous year. The actual decrease in receipts was \$48,882, or approximately 7 per cent; the increase in actual cash expenditures for operation amounted to \$36,607, or approximately 11 per cent; the outlay for maintenance of track and roadway, overhead trolley system, etc., increased for the period \$4,239, or approximately 10 per cent; the maintenance of cars, shop machinery and tools increased \$9,185.91, or approximately 21.3 per cent; the net earnings from operation decreased \$85,490, or approximately 23.4 per cent. During the period mentioned the company spent \$39,571.90 in improvements over and above those mentioned.

The number of passengers carried during the first eleven months of 1914 was 24,867,641, and for the same period in 1913 it was 25,680,546, a decrease for 1914 of 812,905. During 1914 the company erected four public waiting stations along its line costing about \$1,000, and added to its equipment six modern, center-entrance, steel cars of latest design and construction, costing \$33,000, and rebuilt twenty of its old cars at a cost of \$20,000.

Equipment and Its Maintenance

Short Descriptions of Labor, Mechanical and Electrical
Practices in Every Department of Electric Railroading

(Contributions from the Men in the Field Are Solicited and Will be Paid for at Special Rates.)

Chemical Department of the Illinois Traction System

BY N. R. BEAGLE, CHIEF CHEMIST ILLINOIS TRACTION
SYSTEM

The idea of establishing a chemical laboratory for the Illinois Traction System took definite form during the latter part of 1912, when a chemist was engaged, whose first duty was to design and equip a laboratory where all kinds of chemical testing might be conducted. This laboratory was to be available at all times for testing purposes, to the Illinois Traction System, the Chicago, Ottawa & Peoria Railway and all properties of the Western Railways & Light Company, which are different branches of properties constituting the McKinley System.

The entire McKinley System comprises about 600 miles of interurban railway in Illinois, with shops and power houses, also some twenty-five local utility properties in cities varying in size from 25,000 to 250,000 inhabitants, situated in Illinois, Iowa, Missouri and Kansas. Some of them furnish street railway, gas, electric lighting and steam heating service to the cities in which they are located, while others supply only one or more of these branches of service mentioned. Also from some of these properties, transmission lines furnish power and lighting service to scores of the smaller towns and villages in the surrounding territories.

At the outset, the work to be undertaken was mainly to include those problems of the power houses in which chemistry plays a part, that is to say, the selection of fuels and the provision for efficient combustion through flue gas analyses. The problems with which this department is continually confronted, however, cover a much wider field, involving not only chemical but physical problems as well. With this in mind, the chemical department was made a branch of the operating engineering department under the supervision of R. F. Carley, chief operating engineer. The headquarters were located in Peoria in temporary offices, a permanent location having been designed for it in the new terminal building which is now under construction in Peoria.

FUEL TESTING

There are about twenty-five city power plants in operation upon the system, also four large interurban power plants. These require an enormous tonnage of coal each year, and the laboratory work here has been to obtain all possible information concerning the fields and mines from which coal can be secured for these stations. The kinds of coals used are principally the lower grades, or screenings. At present some of this coal is being purchased on contract, namely, it is bought for the heat units contained and not because of the trade name it bears or the locality from which it comes. The quality of these screenings from a given locality very often is far inferior to what might be expected, especially when the mine run coal coming from this same district has the reputation of being high grade. The ultimate aim of this work is toward the discovery of that quality of coal which gives the best results when burned under the conditions exist-

ing at the various power plants. This fuel will then be purchased under contract for the heat units contained, or in other words, quantity buying of a definite product from a limited territory will be attempted, rather than the scattered buying of coal, the heat-producing value of which is unknown.

FEED WATER TESTING

Each of the generating stations require millions of gallons of boiler-feed water. At many of the plants this water contains a certain percentage of minerals in solution which are deposited in the form of scale in the boiler tubes and drums. It is estimated that a layer of scale 1/16 in. in thickness will cause a loss of at least 10 per cent in the amount of water evaporated by a given amount of coal in the furnace. There are innumerable boiler compounds on the market which are fed into the boilers along with the feed water to prevent the formation of scale. These compounds necessarily must be varied with each station and from day to day, hence it will be the duty of the chemical department to furnish the proper water softener. On the other hand, expensive boiler installations were designed not as water softeners, but as water evaporators, and to that end the problem leans toward the classification of all feed-water supplies. Later water softening systems will be installed to remove these scale-forming minerals. At present two water softening plants are in operation, with excellent results. If for any reason the installation of a water softening plant is not practicable, the chemist selects or supplies a compound which is most effective toward alleviating the scale trouble in the boilers.

LUBRICATION, ETC.

Lubrication problems form the principal study for the street railways and 600 miles of electric interurban lines. The chemist determines the proper lubricants for the best results and defines their correct use. The question of bearing metals and their proper use is also being studied. An analysis of paints to determine those which give the best service on street interurban and freight cars, and on the interurban bridges is also handled by this department. In this latter work the desirability of having standard paints for use throughout the whole system is being considered.

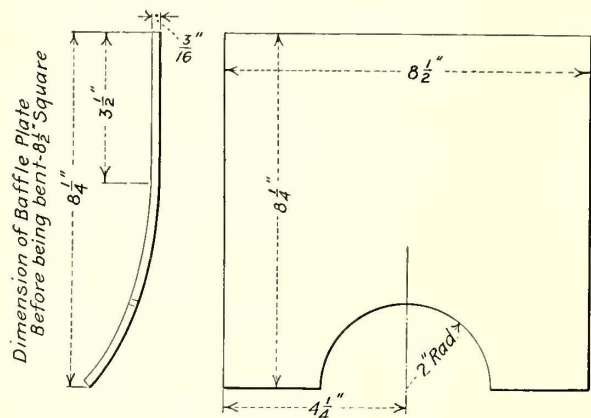
There are also about a dozen gas plants in operation on the Illinois Traction System, the problems of which include the testing of gas coals and the illuminating gas for purity, heating value and candlepower. Methods also are devised by which the largest possible amounts of the by-products are recovered. When these by-products are sold, tests are made to ascertain their percentage purity.

The foregoing are only a few of the problems which have come before the chemical department. Besides these, there are innumerable ways in which the department has been useful, not always in a strict chemical sense. Until recently the laboratory has been in charge of one man. Now an assistant has been added, which allows the chemist more time to devote to the investigation of special problems and to study conditions at the local properties where changes might mean added efficiency and saving.

Baffle Plate for Motor Axle Bearing Caps of GE-73 Motors

BY RALPH FOX, GENERAL FOREMAN OHIO ELECTRIC RAILWAY, COLUMBUS, OHIO

The mechanical department of the Ohio Electric Railway has made several attempts to devise an appliance that would serve as a baffle plate for the motor axle bearing caps of the GE-73 motors. Until recently



SKETCH SHOWING SHAPE AND DIMENSIONS OF BAFFLE PLATE FOR MOTOR AXLE BEARING CAPS

nothing had been found that proved satisfactory. A short time ago, however, we hit upon a scheme which can be quickly and easily applied. An iron plate 3/16 in. thick and 8 1/2 in. square with an indenture in one side, as shown in the accompanying sketch, is the only thing required aside from an electric welding outfit. The operation is very simple. With the welding outfit, cut two slots in the casting, one on each side of the opening to the oil chamber, as shown in the upper right-hand corner of the accompanying halftone. When this is done, slip the plate into these slots, as shown in

size and shape, for a few cents each. One man with a helper will complete about two bearing caps per hour.

This baffle plate serves the same purpose as the "filler" described on page 66 in the article on "Oil-Saving Filler for Motor Axle Cap" published in the Jan. 2, 1915, issue of the ELECTRIC RAILWAY JOURNAL. Our plan was worked out and many applications had been made before the article mentioned appeared.

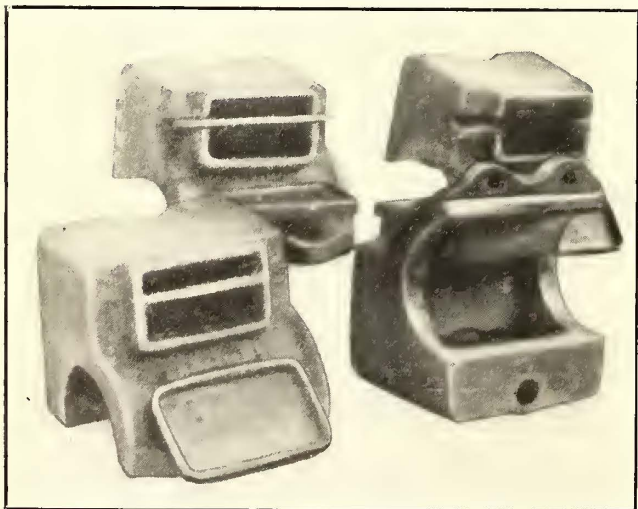
One of the most important results secured by this arrangement is that the jolting that the motor gets tends to bring the packing waste up against the axle instead of forcing it away from the axle, as is the case when no baffle plate is used with this style of bearing. Another important point in the construction shown is that there is left over the oil pocket an opening about 1 in. wide and the full length of the oil box through which an oil gage may be inserted. This opening also permits the oil cellar to be cleared without removing the baffle plate. We have tried gage pipes but find them unsatisfactory.

We have also found the present device an oil saver and good insurance against hot bearings. The GE-73 motor axle cap is much like that of the GE-66 motor.

Tail-Light or Classification Light Box

BY J. N. GRAHAM, MASTER MECHANIC ROCKFORD & INTER-URBAN RAILWAY, ROCKFORD, ILL.

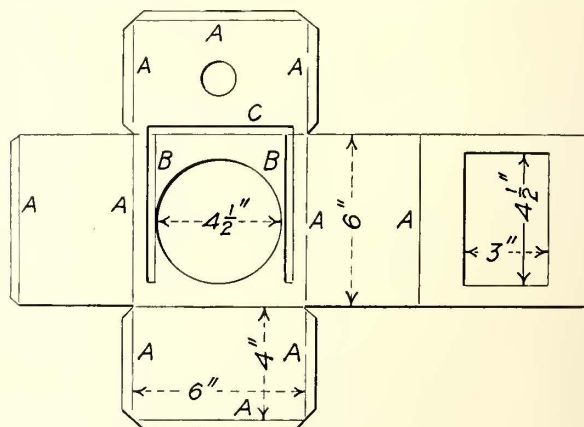
Many of the older interurban cars have sign panels that are too narrow to allow for electric markers and tail-lights. The Rockford & Interurban Railway has overcome this difficulty by using a small tin box of the design illustrated. The box is cut from a single piece of tin or galvanized iron. If cut according to the sketch no trouble will be experienced in making one. All of the lines marked A are bent at right angles, and this can be done in any machinist's vise. The small round hole is for the lamp socket, one of Federal type being the best. The large round hole is for the lens. We use an ordinary lens holder which is soldered to the outside of the box. White lenses are used, but we carry on the car pieces of red and green glass which, when needed, are dropped through the opening C into



BEARING CAPS WITH AND WITHOUT BAFFLE PLATE

the upper left-hand view. Again using the welding outfit, heat the top of the plate which projects above the casting and at the same time heat the casting until the plate and casting are welded together and the original shape of the bearing cap is obtained. The lower views in the halftone show the completed job.

When completed, this bearing cap is in every way equivalent, from the point of service, to the modern caps in which the baffle plates are integral with the remainder of the casting. The cost is very small. The plates can be secured from any boiler shop, cut to proper



SKETCH SHOWING CUTTING PATTERN FOR TAIL-LIGHT BOX

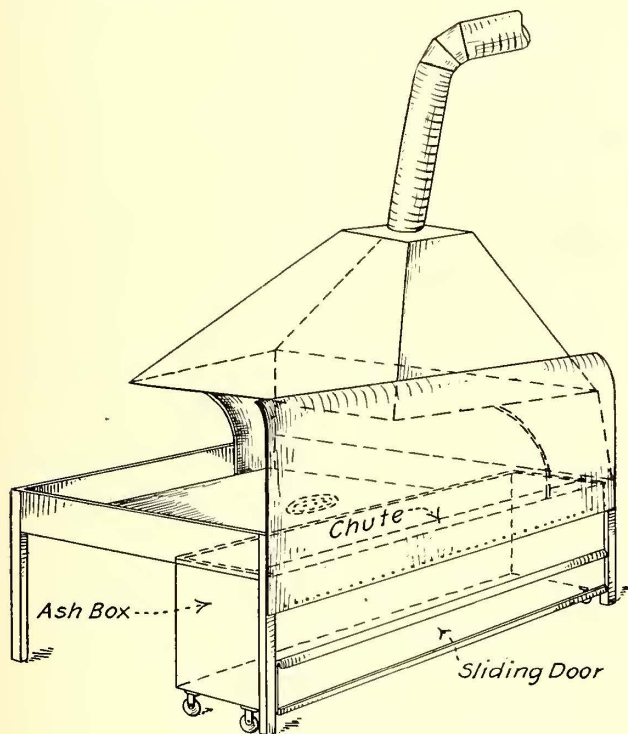
the slides B back of the white lens. In this way the boxes can be used on double-end cars for either tail-lights or classification lights. The rectangular hole 3 in. x 4 1/2 in. is for the door whereby access is obtained to the lamp when it needs change. Two U-shaped slides are provided to hold the door. The door is made of a piece of tin with a loop by which it can be handled. Each box is provided with two tin lugs, one at the top and one at the bottom, by which it is fastened to the inside of the corner posts of the cab close to the inside of the window.

Removable Ashpit for Blacksmith Forges

BY J. R. JENKINS, GENERAL SHOP FOREMAN THIRD AVENUE RAILWAY SYSTEM, NEW YORK

Various appliances such as blowers and fans have been installed in shops for the comfort of the employees, but with all these improvements one who enters many blacksmith shops cannot fail to notice that the room is filled with dust while the faces of the workmen are covered with grime. This condition is due principally to the fact that, while cleaning their fires to apply fresh coal, the attendants are invariably more occupied in turning out work than in paying much attention to the disposition of the refuse ashes. In so doing they are very likely to push the ashes off the forge onto the floor, thereby causing the dust to rise and settle on their hands and faces as well as on all parts of the tools and shop. Naturally, some ashes find their way to the lungs of the men.

Always alert for the health of its employees, the Third Avenue Railway System has tried to correct this evil by



REMOVABLE ASHPIT FOR BLACKSMITH FORGE

devising a forge attachment which consists of a box as long as the forge and arranged to fit immediately under the same. This box is made of sheet iron and is set on wheels to permit its removal and also its use under one forge while another is being cleaned. To the outer edge of this box is attached a galvanized iron hood. This hood tends to revert to the draft pipe above, all dust which rises as the fire is cleaned, while the ashes are pushed over to the chute and down into the box. A door, arranged to slide up and down, is attached on the outer side of the box for the purpose of removing the ashes when the box is filled.

This removable ashpit in no way interferes with the heating of long pieces of iron as it can be easily removed and replaced.

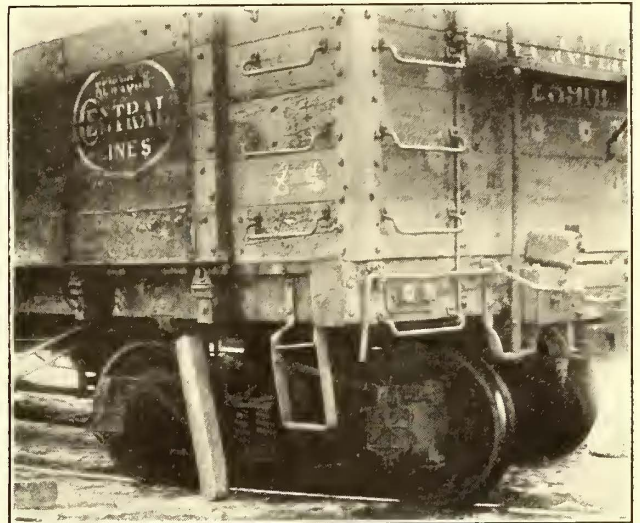
The Karachi (India) Tramway has received a franchise to extend its tramway lines. American firms desiring to secure details of the new work should write to the manager Karachi Electric Tramway, Karachi, Sind, Northwest India.

Restoring Loaded Freight Cars to Side Bearings in Rounding Short Curves

BY F. L. HINMAN, MASTER MECHANIC NEW YORK STATE RAILWAYS—SYRACUSE AND ONEIDA LINES

Occasions arise when it is found necessary to move steam railroad freight cars over electric railway tracks which were not originally intended to handle cars of this class. In such cases a great deal of trouble is often met in rounding the short radius curves used in street railway work, due to the turning of the freight car trucks to such an extent that the body bolster bearing is allowed to drop off from the truck side bearings.

A simple device for lifting the body back on to the side bearings, and one not known to many electric railway men, is by means of two hardwood props measur-



ONE OF TWO PROPS USED TO RESTORE A FREIGHT CAR TO THE TRUCK SIDE BEARINGS

ing about 4 in. x 6 in., and approximately 3 ft. 6 in. long, with the ends slightly rounded. The method of application is as follows:

When the truck starts to straighten about as it is leaving the curve, stop the car and place one prop on each side of the car with the top end as near to the bolster as possible and with the other end resting on a block, or on the ground if the latter is hard enough to support the weight of that end of the car.

The props should receive a slight inclination so that as the car is started forward they pivot at the lower end, thereby raising the car body sufficiently to allow the truck side bearings to swing back to their normal position without catching on the body bolster bearings.

A little practice with this device will render the operator very adept at restoring cars to the side bearings, thus saving a great deal of trouble in getting cars around short radius curves.

On Jan. 28 the tramway officials of Hull, England, received notice from the military authorities that the whole town must be in complete darkness all night. At first the tramway management was uncertain whether to conduct a service or not but finally decided to do so although it meant no car lights and no street lights and the house lights reduced to a minimum. Our English contemporary, which described this instance, says that fortunately the moon was shining so that the darkness was not absolute. The experience must have been trying although no accident occurred. On the following night the military authorities gave word that lighting could be resumed.

Two Ways of Laying Out a Compound Curve

BY S. STRIEZHEFF, WAY AND STRUCTURE DEPARTMENT
BROOKLYN RAPID TRANSIT SYSTEM

In the routine of his daily task a man gets accustomed to doing his work in a way more or less efficient and according to methods sanctioned by general usage. But occasionally he finds that others go about it in a way which is unusual enough to disturb him somewhat rudely.

The writer recently had occasion to lay out a compound curve for a single-track branch-off and in figur-

In Sketch 1 it is seen that the problem resolves itself into determining C and Z , the distances from the intersection of the tangents to the points of tangency.

The radii of the curves and the easement angles are chosen from experience. In this case 100 ft. was considered the proper value of the radius for one end of the curve on account of a piece of special work to be installed there. Similarly 75 ft. was chosen for the other end, 50 ft. for the intermediate curve and 10 deg. for each of the easement angles.

When C and Z are known they can be laid off from the intersection f , perpendiculars can be laid off from b and h , the intersecting point d can be determined by laying off ac and ge , giving the centers for the three arcs.

METHOD No. 1

In the construction shown in Sketch 1

$$C = A + B$$

A can be found from the right triangle abc , i. e.,

$$A = 75 \text{ ft.} \tan 10^\circ.$$

B is one side of triangle ecf of which angle cfe is known, $89^\circ 32'$ in this case, and side ce is easily found from triangle dce , thus:

$$dc = ac - ad$$

but $ac = 75 \text{ ft.} \div \cos 10^\circ,$

and $ad = 75 \text{ ft.} - 50 \text{ ft.} = 25 \text{ ft.}$

Similarly

$$de = ge - gd$$

but $ge = 100 \text{ ft.} \div \cos 10^\circ,$

and $gd = 100 \text{ ft.} - 50 \text{ ft.} = 50 \text{ ft.}$

The angle cde is $70^\circ 28'$, and the remaining side of the triangle is

$$ce = \sqrt{cd^2 + de^2 - 2cd \cdot de \cdot \cos 70^\circ 28'}$$

The other angles are:

$$\text{angle } dce = \frac{de}{ce} \cdot \sin 70^\circ 28'$$

$$\text{angle } dec = 180 - 70^\circ 28' - dce \text{ (just found)}$$

Having solved triangle dce , triangle ecf follows as a matter of course.

side ce is known

$$\text{angle } ecf = 180 - 80 - dce \text{ (just found)}$$

$$\text{angle } cef = 180 - 80 - dec \text{ (just found)}$$

$$\text{angle } cfe = 89^\circ 32'.$$

One side and three angles are known. Then

$$cf = B = ce \frac{\sin cef}{\sin 89^\circ 32'}$$

Then

$$C = A + B.$$

Z can be found in a similar manner.

Q. E. D.

METHOD No. 2

Referring to sketch No. 2, the distance D can be obtained from three right triangles, abc , cef and gch , and the parallelogram $cgif$ indicated by heavy lines, as follows:

Draw bc parallel to di . The right triangle abc is known because, as explained in method No. 1,

$$ac = 75 \text{ ft.} - 50 \text{ ft.} = 25 \text{ ft.}$$

As angle $bac = 10^\circ$, $bc = de = A = 25 \text{ ft.} \sin 10^\circ$ and $ab = 25 \text{ ft.} \cos 10^\circ$.

Draw cf parallel to hi . But angle $ecf = 90^\circ - 89^\circ 32' = 28'$, and $ce = bd = 75 \text{ ft.} - ab$ (just found).

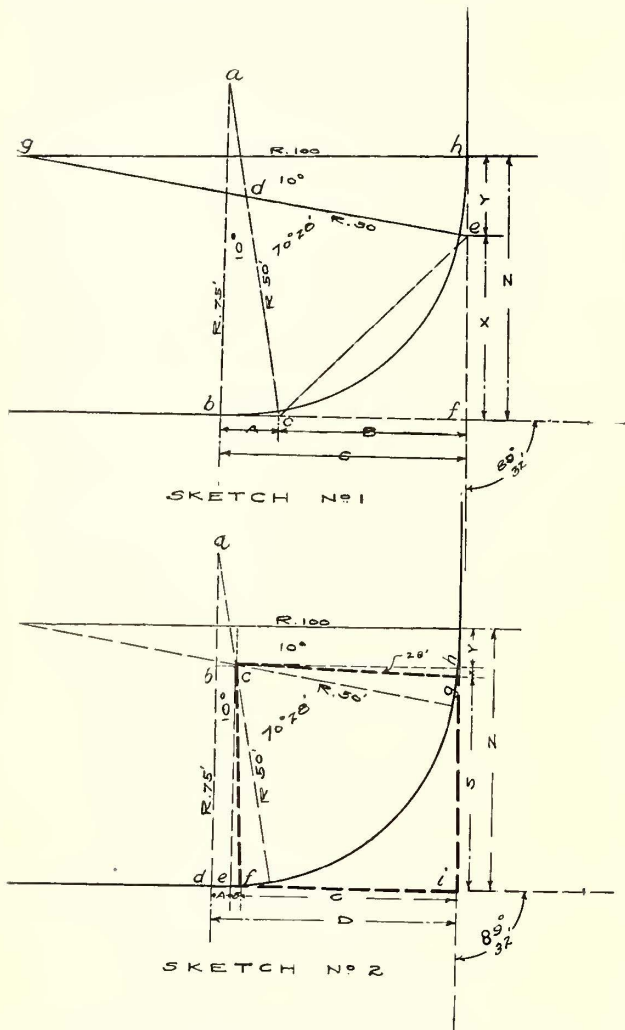
Hence

$$ef = B = ce \cdot \tan 28'.$$

To find $fi = C = cg$, we find cg from the right triangle gch . Thus $ch = 100 \text{ ft.} - (50 \text{ ft.} \cos 10^\circ)$, and $cg = ch \div \cos 28'$.

We thus have A , B and C , the sum of which is D . Similarly Z can be found as the sum of Y , X and S .

Q. E. D.



LONG AND SHORT WAYS OF LAYING OUT A COMPOUND CURVE

ing the tangents made use of the method shown in the accompanying Sketch 2—the so-called right-triangle method commonly used in this kind of work, which affords an easy self-check. He then asked a co-worker, who usually does different engineering work, to check his figures. This he did by the method shown in Sketch 1. This method, as may be seen from the sketch, was rather clumsy and involved a formula for two sides and included angle, and another for one side and angles at its ends. While the result obtained was the same, this instance shows the divergent means that may be used in track work calculations.

The trigonometrical problem before us is this:

Given two lines making a known angle with each other, to draw tangent to them a compound curve made up of arcs of circles of known radii and arc lengths.

Corrections of Volt-Meter Measurements of Direct Current

G. H. McKelway, distribution engineer Brooklyn Rapid Transit System, advises that a number of errors crept into the calculations in his article entitled "Volt-meter Measurements of Direct Current," as published on page 341 of the ELECTRIC RAILWAY JOURNAL for Feb. 13. The figures which require correction are as follows: 2 ft. of 5,000,000 circular mil wire should be 238 instead of 268 amp per millivolt; 4 ft. of 5,000,000 circular mil wire should be 119 instead of 134 amp per millivolt; 2 ft. of 2,500,000 circular mil wire should be 119 instead of 134 amp per millivolt, and 4 ft. of 2,500,000 circular mils copper wire should be 59.5 instead of 67 amp per millivolt.

In the table referring to length of wire the length under constant "10" relative to 5,000,000 circular mil wire should be 47 ft. 7 1/4 in. instead of 47 ft. 7 in.; the length of 2,000,000 circular mil wire for the same constant should be 19 ft. 0 1/2 in. instead of 19 ft. 9 1/2 in. The length of 1,000,000 circular mil wire under constant "1" should be 95 ft. 2 1/2 in. instead of 95 ft. 3 in.

Equipment Cost Data

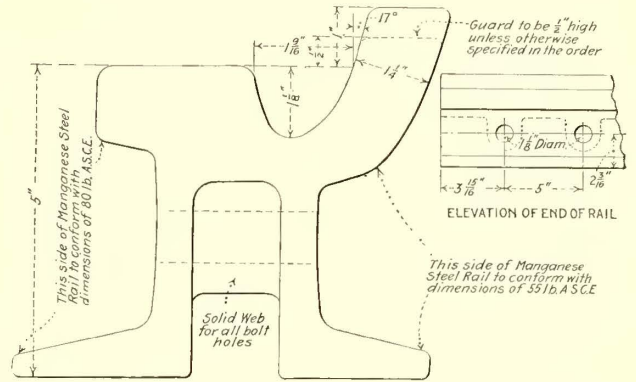
The following data are from the expenditures of the Worcester (Mass.) Consolidated Street Railway and are printed for the convenience of engineers making estimates. They are drawn from the exhibits filed by the company with the Massachusetts Public Service Commission.

	Total	Unit Cost
POWER BUILDINGS AND EQUIPMENT		
Erection of substation building and installation of two 1500-kw rotary converters, complete with transformers, lightning arresters, switchboard, etc., Madison Sq., Worcester..	\$103,582.05	\$34.52
Addition to brick and concrete building Millbury power station and installation of one 5000-kw turbo generator, four Edgemoor boilers, four stoker equipments, condenser, heater, feed pumps, etc.....	272,539.11	54.50
Four Vigilant Safety water columns and fixtures for Millbury power station.....	118.55	29.64
Thirty-eight Pyrene fire extinguishers for power and substations.....	207.22	5.45
Installation of 2.5-kw. engine and generator at Chariton City power station, for plant lighting	269.58	107.50
New ogee expansion ring for 200-hp Manning vertical boiler	510.00	510.00
One steam tube cleaner for Fremont Street power station	318.50	318.50
LINE AND WAY		
0.5 mile No. 0000 weatherproof feed wire....	492.45	984.90
One Duntley track drill.....	226.25	226.25
One rail bender	16.00	16.00
Eleven electric track switches, Worcester....	2,090.52	190.94
One 8-ft. x 10-ft. waiting station, West Boyleston	64.75	64.75
16-ft. x 50-ft. addition to Uxbridge car house lobby, heating	674.21	674.21
ROLLING STOCK		
Two double-truck snow plows complete with four GE-80 motors	9,370.62	4,685.31
Three 40-ft. gondola trailer cars, with air brakes, trucks, etc.....	2,971.48	990.49
Two 30-ft. Wason closed cars, each two Westinghouse 101-B four-motor equipments complete with air brakes	7,831.70	3,915.85
Five new 45-ft. express cars, 4 GE motors, each complete	29,066.42	5,813.28
ROLLING STOCK DETAILS		
Replacing thirty-two cast-iron 34-in. wheels with steel-tired wheels on four open cars..	1,174.00	36.70
Three sets Taylor trucks, complete for GE-67 motors	1,370.43	456.81
112 34-in. steel-tired wheels 4 1/4-in. rough bore, from National Car Wheel Company..	3,619.13	32.30
One four-motor GE-80 equipment, complete for supply car	2,197.98	2,197.98
Two GE-80 four-motor equipments.....	5,286.08	2,643.04
Fifteen sets Allis-Chalmers AAL motor-driven air compressors, complete with engineer's valves, gages, etc.....	3,238.95	216.00
Twenty-four Titan axle gears for GE-80 motors	715.20	29.80
Equipping 130 cars with Murphy sand boxes..	2,089.44	16.10
Equipping 250 cars with 15-ton jacks with compartments	3,611.03	14.50
Three Crouse-Hinds arc headlights.....	36.06	12.02
Six Neal electric headlights.....	33.60	5.60
Fifty Knutson trolley retrievers.....	682.82	13.65
Installation of motormen's seats in sixty-five cars	208.50	3.21

Installation of side guards on 102 single truck open cars	2,674.16	26.20
SHOP EQUIPMENT		
One 27-in. engine lathe for Market St. car-house	986.72	986.72
One Bay State compressed air vacuum cleaner and equipment	1,200.00	1,200.00

Manganese Double-Web Guard Rail

In Mr. Bernard's article on "Car Life of Plain Curves," published on page 383 of the ELECTRIC RAILWAY JOURNAL, reference was made to a manganese steel double-web section for inner rail employed for the renewal of the eastbound plain curve. The accompanying



MANGANESE STEEL DOUBLE-WEB GUARD RAIL, 80 LB. A.S.C.E. SECTION

sketch shows details of the rail mentioned. Mr. Bernard, who is assistant engineer way and structure department, Brooklyn Rapid Transit System, advises that this section has given satisfactory results in all shallow special work where solid manganese steel construction was used. It has proved quite an advance over the former practice of using a T-rail section with a bolted-on guard.

Steam-Electric Tunnel Crane

A combination wrecking crane built for either steam or electric operation has recently been received by the Michigan Central Railroad for use in and about the Detroit River tunnel. It is hoped, of course, that an accident may never occur in the tunnel itself, and in order that the crane need not be idle under normal every-day conditions, it is adapted for ordinary uses outside the tunnel as well as for special use underground. To this end, energy for operation may be taken from the third-rail or from a flexible cable carried on the crane, but if outside the limits of the electric zone and beyond the reach of the power cable the crane can be operated by steam from any outside sources, such as an accompanying locomotive. It is then available for regular wrecking duty, or for construction and yard work.

In general the construction is like the 120-ton capacity steam wrecking cranes which are standard on American railroads. The car body is 26 ft. long and 9 ft. 6 in. wide, and the weight of the crane is distributed over a wheelbase of 19 ft. 8 in. Telescopic outriggers are provided for adding stability during heavy lifting. Air and hand brakes are furnished with provision for both automatic and straight air. The complete air-brake system is under the control of the operator, with engineer's valve, electric air compressor, etc.

No boiler is furnished with the crane, but when desired steam is taken from an outside source through suitable piping. This is so arranged by means of a steam-tight slip joint at the center of revolution that the crane will slew more than 180 deg. in either direc-

tion beneath the pipe without interference. When the crane is operated by electricity this piping revolves with the crane.

For electric operation there is provided a motor wound for 600 volts d.c. and having a capacity varying from 200 hp for a short period, to 115 hp for one hour's continuous service. This motor will operate on fluctuations of line voltage ranging from 300 to 700 volts. The controller is of the street railway type with cast-grid resistors. Current is taken from the third rail shoes through a collector ring. It is delivered to a switchboard that is furnished with all necessary switches and instruments for operating the electric air compressor, cable reel, third-rail shoes, lights, etc.

An interesting feature is the automatic cable reel for paying out and reeling in the main power cable. This reel has capacity for 500 ft. of insulated power cable. It is operated by a motor and the automatic control is obtained by the action of the motor alone, without the use of any intermediate or external mechanical devices, such as friction clutches, etc. This motor has current on at all times the crane is in service and taking current through the cable, so that practically constant torque is exerted by the motor with consequent practically constant pull on the cable. Any change in the pull on the cable, such as would be produced by the crane moving forward or back, results automatically in the desired paying out or reeling in of the cable. The motor is capable of standing stalled continuously without danger to its parts from over-heating.

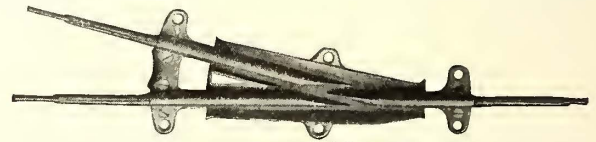
The motions of hoisting with either the main or auxiliary hoist, varying the boom radius and slewing, are independent of each other and, with loads up to the limit of its power, these motions can be performed simultaneously. With its maximum load of 120 tons the crane is capable of slewing at the rate of a complete revolution in one minute if deemed a safe speed. The boom may be raised or lowered under full load. There is provided a special drag or pulling line connection attached to the underside of the boom. When self-propelled by either steam or electricity the crane has a speed of about 4 m.p.h., but it may be safely hauled in regular trains over main line tracks at a speed of 60 m.p.h. This large crane was constructed by the Industrial Works of Bay City, Mich.

The maximum radius of the main block is 25 ft. and the minimum is 16 ft. Capacities of the crane are as presented at the top of the next column as follows:

	With outriggers in position.
Main hoist,	240,000 lb. at 17-ft. radius.
	160,000 lb. at 20-ft. radius.
	With end outriggers only
Main hoist,	140,000 lb. at 16-ft. radius.
Auxiliary hoist,	30,000 lb. at 25-ft. radius.
	Without outriggers
Main hoist at right angles,	44,000 lb. at 16-ft. radius.
	32,000 lb. at 20-ft. radius.
Auxiliary hoist,	24,000 lb. at 25-ft. radius.

Trolley Frogs for One Degree of Angle

An addition to trolley frogs designed in only one degree of angle regardless of the degree of track curvature, necessitating the carrying of only one right-hand and one left-hand style, is the Westinghouse type BR. This is a trolley frog without movable parts that can be used at points where high speeds are obtained, the design being such that the trolley wheel does not travel on its flanges. Therefore no bump, and consequent displacement, occurs when the bearing of the wheel is transferred from the groove to the flange. The type BR is asserted to be the only trolley frog that will pre-

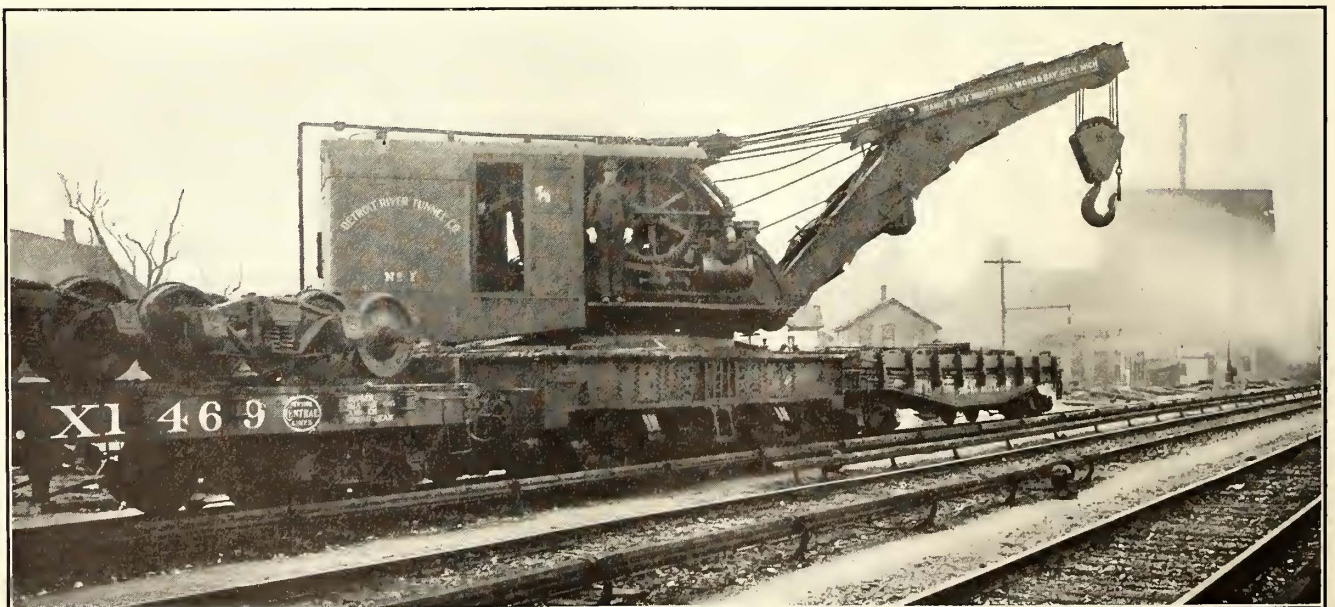


FROG DESIGNED FOR 15 DEG. ANGLE

vent a wheel from traveling on its flanges without using mechanical or electrical devices in connection with a movable tongue. The illustrations show this frog for a 15 deg. angle designed for city service, though the company is prepared to furnish this type of frog in either an 8 deg. or 10 deg. angle for high-speed inter-urban service.

The malleable iron frog has recently become popular on account of its long life as compared with the bronze frog, although a great many operating men prefer the latter on account of the longer life obtained from the trolley wheels. This argument does not apply to the present malleable iron frog, as the resistance to the passage of the trolley wheel is asserted to be less than with any design of bronze frog.

This type can be placed almost directly over the track switch point, preventing the side wear of the wire caused by the angular riding of the wheel before it enters the frog. When the frog is placed in its proper

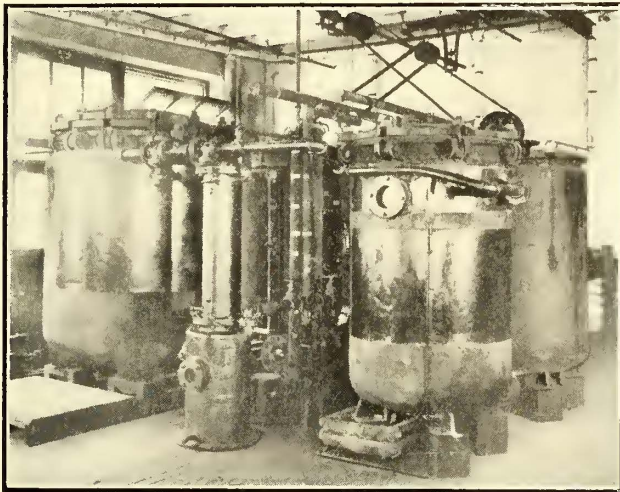


STEAM-ELECTRIC WRECKING AND CONSTRUCTION CRANE FOR MICHIGAN CENTRAL RAILROAD DETROIT RIVER TUNNEL

location the wheel will be in a position to engage the turnout runner before it commences to grind the side of the wire. Due to the over-lapping of the runners, as shown in the illustration, practically continuous contact of the tread of the wheel is afforded during the period of transition.

Hints on the Impregnation of Railway Motor Coils

The reinsulation of formed wire by impregnation, especially for field coils of traction motors, has become a regular feature of electric railway practice, for with proper workmanship a saving up to 25 per cent of the cost of a new coil is attainable. Many of the early attempts at impregnation were not successful, because both railways and manufacturers lacked experience and proper equipment. In recent years these drawbacks



QUADRUPLE TANK EQUIPMENT FOR VACUUM IMPREGNATION OF COILS

have been overcome by organizations which make the impregnation of field coils either their sole business or a logical part of their other electrical work. The Electric Operations Company, Brooklyn, N. Y., is a concern of this character, and the following explanation of its impregnating practice, as given by A. M. Leacock, manager of the electric railway department, should therefore be of value.

The company uses steam-jacketed tanks, one being the liquid (compound) tank and the other the vacuum tank. To the latter tank is connected a compressor for supplying compressed air or vacuum as desired. The two tanks are connected at the base with a valve intermediate. Coils to be treated are placed in the vacuum tank after they have been covered with one layer of tape. In this tank they are allowed to dry while the compound is liquefying in the liquid tank. After the highest possible vacuum has been maintained, say, for four consecutive hours, the intermediate valve is opened and compound is admitted to the interior of the vacuum tank until the coils are submerged. Then the compressor is reversed and air pressure at 80 lb. per square inch is applied for four hours more, after which the compound is drawn back into the liquid tank at low pressure, the valve is closed and the coils are allowed to drain for one hour.

The compound used on railway work should have a dropping point of at least 215 Fahr., and the heat should be sufficient to make it perfectly liquid. When the dropping point is assured as correct it is well to unwind a coil periodically to make certain that the penetration

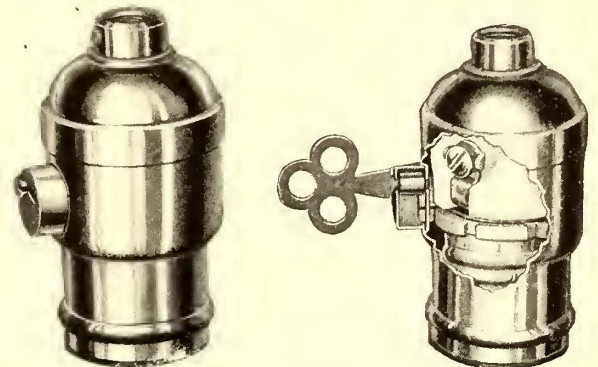
is perfect. A compound of high dropping point with insufficient heat is always followed by poor results in penetration, and a compound of low dropping point should be detected by the ordinary use of a test tube and thermometer. To have these two features exactly right is most essential.

In preparing old coils for impregnation it is wrong to assume that any coil reading O.K. in resistance may be successfully treated. Aside from the fact that the wires may be distorted from mechanical strain under vibration, the accumulation of decayed insulation forms a barrier against the compound under air pressure which prevents the impregnation of the interior of the coil. Most coils, possibly 90 per cent, require rewinding and reinsulation of the wire before treatment. Such rehabilitation demands much skill based on long experience in order that each turn may be replaced correctly and the coil made to assume the proper weight and resistance. When the coil is completed for service it should receive a final test for mechanical strength. This may be done by placing it under a pressure of approximately 2 tons with a resistance reading instrument in circuit. Any weaknesses of insulation or mechanical errors will thus be easily detected.

Locking Sockets and Receptacles to Prevent Lamp Thefts

The General Electric Company has recently marketed an improved design of locking sockets and receptacles of both the key and keyless types. These sockets and receptacles afford positive protection to lamps in cars and waiting rooms where losses of lamp bulbs often occur. They also prevent the theft of current.

The locking device on the sockets effectually prevents



LOCKING SOCKET AND RECEPTACLE; CONSTRUCTION OF THE LOCKING SOCKET

the removal of lamps by unauthorized persons. Lamps can be inserted and removed only by aid of the key, and the improved principle of the design also provides against breakage from tampering. When the key is removed, the screw shell of the socket swivels freely, thereby avoiding injury either to the lamp base or socket if a sudden attempt is made to twist and remove the lamp bulb without the key.

The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., reports that during the year 1914, 92.25 per cent of its trains were on time. Summarizing the averages of delays to train service and comparing them with the previous year, the following figures are of interest: Total number of trains operated, 1912; total number of minutes delayed, 4120. A comparison of the per cent of trains on time during 1913 and 1914 shows 89.9 per cent and 92.25 per cent respectively.

News of Electric Railways

NEW YORK COMMISSION INVESTIGATION

Commissioner Maltbie, on Commission Since Its Organization, Before Investigating Committee.

At the hearing on Feb. 24 before the legislative committee which is conducting the investigation into the Public Service Commissions of the First and the Second Districts of New York, Milo Roy Maltbie, a member of the First District Commission since it was formed in 1907, who had been the witness for several days, resented the attitude of the committee, dealt with his conferences with the Mayor and other city officials, referred to steam-roller tactics by the commission and said he shocked certain people by asking for a bill for gasoline used on the one private trip that he took in a commission automobile. Mr. Maltbie is quoted as saying:

"References have been made here to conferences I have had with the Mayor, Mr. McAneny and Mr. Polk. I have had such conferences and they have come about in this way: It has been necessary to confer with them in matters requiring the city's approval. I have done my best. When I have seen the steam roller of the commission start I have gone to the Mayor and to Mr. McAneny and asked them to help me prevent things from going through that ought not to go through. Together we have kept things from being approved that would have been detrimental to the city. It was the only way I had. I tell you when a man works as a minority of one and knows he does not hear of things until a week after they are under way he has to do the best he can. I haven't a word of apology to offer for my conferences with the Mayor, Mr. McAneny, Polk and others.

"This committee has set so high a standard that it cannot be lived up to. A new commission of five would delay the new subways while they are studying the many subjects involved just as the addition of each new commissioner has tended to do. If you have archangel standards you are bound to fail. If you get men whose hindsight is no better than their foresight they will be so far up in the clouds the city will not be able to see them.

"In regard to the trip that I made to Tuxedo in April, 1914, in the automobile I consider that under the circumstances I did what I ought to do. I paid for the gasoline, and I tell you when I went to the auditor and asked him for the bill some people were shocked over there. I have been on the commission seven or eight years and I think this is the only instance of a personal trip out of town in a commission car. I say there was nothing wrong in what I did. Everybody knows the cars are used by public officials to take them home. A man ought not to abide by just what the law requires, something he must do to escape from going to jail. It is a matter of conscience with a keen edge. A man ought to have one and live by it. Produce all the cards, and I declare here and now that the difference between the cards of any other public official in New York and mine will be so striking it will attract attention. I tell you they were shocked over there when I wanted to pay for my one pleasure trip. I am not going to repeat parrot-like what's been said here about the use of the cars. I have often called for a car to come to my home when all the commission's cars were in use, and I have paid for those cars out of my own pocket when I have gone on public business. I tell you that if the balance was struck I would get a dividend."

William M. Ivins was the other witness on Feb. 24. He expressed himself as theoretically in favor of one seven-men commission for the whole State, three of the members of which would be selected from up-state, three from New York City and one from any part of the State to act as chairman. It would be an economic waste to dispense with the present law, which had been in a large measure interpreted and determined. He favored careful amendment and consolidation of certain sections of the law. He sounded a warning concerning too great regulation and said that if the Board of Estimate of New York adopted the policy of its Bureau of Franchises, private capital would be driven away from public utilities and the city would be confronted with the necessity of adopting municipal ownership and provid-

ing for all utilities out of taxation. He attacked the provision of the law which made men connected with public utilities ineligible for appointment to the commission.

On Feb. 18 evidence in the shape of pictures of fused cables and of drilling holes was presented to bear out the assertion made on the previous day by William Hayward, counsel to the committee, that the real cause of the subway accident at Broadway and Fifty-first Street was the drilling by contractor's employees into a feed cable, in a cable duct, which was short-circuited by the contact of the steel-pointed drill with the charged wires. The members of the investigating committee and Colonel Hayward went into conference to determine whether or not it was best for the committee to carry its investigation into the relation of the man-hole accident to the accident at Fifty-third Street. It was finally decided that it would be outside of the scope of the committee's work. Meanwhile the Public Service Commission was conducting an inquiry into the causes of the accident simultaneously with the inquiry by the committee. Reference to the inquiry by the commission is made on page 432 of this issue.

Considerable time was spent on Feb. 18 in going over the details of the previous day's testimony. Commissioner Maltbie was called as the witness. He favored the extension of the jurisdiction of the commission for the First District to include all of Long Island and Westchester County. He had never found any difficulty in securing the co-operation of the commission for the second district whenever the interests of the commissions had overlapped. Five men had all they could do to cope with the work of the commission. The question as to whether or not the present salaries were sufficient was an academic one. He agreed with the other commissioners, all of whom had testified, that the commission for the first district should have jurisdiction over the telephones.

On Feb. 19 Mr. Maltbie asked permission to amend his testimony of the previous day in regard to the length of time needed to complete the plans and specifications for the dual system. He had previously thought it would take a year, but consultation with the commission engineers had led him to cut that time in half. Mr. Maltbie thought it would be advisable to give the city entire control over its own property. He said, however, that he had no objection to the Governor appointing a Public Service Commission since every member of the commission must be a resident of the city. He did not think the Board of Estimate should take over rapid transit work. He did not agree with Senator Foley, who suggested that the work of the commission should be undertaken by commissioners elected by the people. An ideal arrangement would be a consolidation of the present Municipal Department of Bridges and Docks and the transfer to it of the rapid transit work of the Public Service Commission. Latterly there had been frequent informal conferences at which Commissioners McCall, Wood and Williams had participated. A year ago stock and bond cases were under his jurisdiction. They were then taken from him and assigned to Commissioner Williams.

The precedents established by Mr. Maltbie in capitalization cases were: a dollar of property for a dollar of security except in the case of amortized bonds; no issue of security except for actual expenses checked by the commission's engineers; no approval of an issue of bonds unless it could be demonstrated that the interest could be earned; bonds refunded must represent property in existence; all expenditures to be checked by the commission's engineers to show whether or not they were capital expenditures. Since the transfer of supervision over capitalization from him to Mr. Williams four cases had arisen in which Mr. Maltbie had contested Mr. Williams' report. In one of them he had been sustained. In the others he had been overruled. Every commissioner was responsible, of course, for his action on the board, but the primary responsibility of each commissioner was for his own work. Division of responsibility destroyed responsibility. According to Mr. Maltbie, the Brooklyn Rapid Transit had been more evasive than defiant. The Interborough Rapid Transit Company

showed a persistent determination in disregarding orders.

Mr. Maltbie presented a table showing the number of cases heard and opinions written. During the last six months of 1914 there had been 220 hearings. He presided over 115, with the balance divided as follows: McCall, two; Williams, forty-two; Cram, forty-nine; Wood, thirty-two. The record of opinions in the year 1914 was Maltbie, twenty-eight; McCall, two; Williams, six; Cram, four; Wood, two; Eustis, seven. Colonel Hayward presented a table showing that from 1907 to 1914 inclusive, Mr. Maltbie had 204 out of 1,286. Mr. Maltbie replied that it was not the number of cases, but the hearings and opinions that counted.

Commissioner Williams objected on Feb. 20 to Mr. Maltbie's testimony in regard to secret conferences. The committee promised to afford him an opportunity to appear before it again, and this he said he would probably do after the testimony of Mr. Maltbie had been transcribed.

There is a great deal of speculation in regard to the outcome of the investigation. Rumor had it on Feb. 22 that so far as the commission for the first district was concerned Messrs. McCall, Cram, Wood and Williams would probably be replaced by Col. William Hayward, counsel for the legislative committee; Travis H. Whitney, now secretary to the commission; William R. Willcox, formerly chairman of the commission, and possibly Prof. Edwin R. A. Seligman of Columbia University. It was thought that Mr. Maltbie would be continued with the commission.

DETROIT MUNICIPAL OWNERSHIP PROPOSAL

Text of Proposition to Detroit United Railway Looking to Municipal Ownership in That City

The Detroit Street Railway Commission has proposed to the Detroit United Railway that it will submit to the electors at an early date a proposition to have the city assume the bonded indebtedness of the lines, amounting to \$24,900,000, and if approved by a three-fifths vote of the electors the city will take over the lines within the one-fare zone. The commission has given the company ten days in which to accept the proposition and states that if it is not accepted other means will be taken to secure municipal lines. The commission's proposition for the acquisition of the lines, as sent to J. C. Hutchins, president of the Detroit United Railway, is as follows:

"1. For all of your property, real, personal and mixed, including franchises and franchise rights, except cash, accounts receivable and securities, called, of the city of Detroit, as of this date, the city, to the extent of its power, will assume the payment of the mortgage debt of the Detroit United Railway not exceeding \$24,900,000.

"2. The title to the property to be absolutely free and clear on the date the transfer is effected from the Detroit United Railway to the city of Detroit, except the mortgage debt aforesaid.

"3. The board of street railway commissioners, in the name of the city of Detroit, to take possession of the property immediately upon the ratification of the proposition by the requisite number of electors of said city voting thereon at an election at which the proposition may be submitted, and shall be enabled to operate the same as a railway system for the accommodation of public travel.

"4. Your company to keep and maintain the property in its present physical efficiency until the date upon which the property passes from the possession of the Detroit United Railway to the possession of the city of Detroit.

"The board is moved to make this proposition in the belief that this method will afford an opportunity for the city of Detroit to acquire a street railway at the earliest possible date. Time is the essence of this proposition, and the board expects a reply within ten days from the date hereof. If your company fails within that time to indicate in writing its willingness to enter into a contract on the terms substantially as stated in the proposition herein outlined, then the city of Detroit will proceed to secure a street railway system by other ways and means."

The figure named by the commission is about \$3,000,000 in excess of the appraisal total compiled by Prof. E. W. Bemis for the city and about \$5,000,000 less than the amount asked by the company for its lines within the one-fare zone.

No official statement has been given out by the commis-

sion as to its plans for meeting the mortgage obligations which it proposes that the city shall assume, but unofficial information is to the effect that the commissioners believe the earnings of the lines will pay the interest on the bonds and provide a sufficient sinking fund to pay the mortgage which expires in 1932. The commission will not make any statement of its ideas until it has received an answer from the company on the proposition submitted to it.

MUNICIPAL OWNERSHIP IN SEATTLE

Communication from Mayor Gill Dealing with the Question of the Deficit of the Municipal Railways

With only \$127 left of the original \$9,000 appropriated from the general fund last March to the credit of the Seattle Municipal Railway, Division "A" and possibly Division "C" of the city-owned system may cease to be operated unless the Council takes immediate steps to finance the utilities. Approximately \$36,000 was provided in this year's tax levy for the operation of the two divisions. As the lines were expected to earn their own way it was figured that the revenues from the lines would be equal to the amount expended. As this does not seem possible, the Council is expected to make an appropriation from the general fund as a loan against the street railway fund to insure continued operation. This loan can be repaid through earnings of the roads above operating expenses if they attain a paying basis or absorbed in the tax levy of 1916 as a 1915 deficit. Mayor Gill recently served notice on the Council to the effect that after the remaining \$127 is exhausted an appropriation must be authorized by ordinance to operate the lines before additional indebtedness is incurred. Councilman Fitzgerald, chairman of the finance committee, and Councilman Erickson, chairman of the city utilities committee, say that a deficit ordinance is not necessary to appropriate money to operate the road. Five votes are required to pass a bill making a loan from the general fund. Writing to the Council, Mayor Gill said:

"On March 18, 1914, you appropriated \$9,000 from the general fund to the credit of the municipal street railway fund. I presume it was supposed that with this sum and the earnings of the street railway the lines could be operated without further city aid. To this sum the earnings of the lines and your appropriations from month to month have been added to keep up the operation of the lines, and such amounts have been charged against this fund. I am advised by the superintendent of public utilities that the balance of this fund on Feb. 1, 1915, was \$127. This shows that since beginning operation the lines have fallen behind the entire \$9,000. In May, 1914, I addressed a letter to the heads of each department of the city over which I have control, forbidding in the future the expenditures of any funds, without an appropriation by the Council covering the expenditures, and while that communication might not entirely cover this instance, I wish it to apply in this case as well as any other. If a deficit is to be created in order to keep these lines in operation, it can only be done when you have placed sufficient money in this fund to cover such deficit.

"Possibly this is not the proper time to discuss this matter, but the future operation of these lines, or at least of Division 'A,' until such time as it has been connected up with something is one that is entitled to very serious consideration, and I suggest that if it is your desire to continue operation, you immediately pass an ordinance placing money in the city railway fund. In case you do not make such appropriation I shall instruct Superintendent Valentine, of the municipal railways, to cease operation on Division "A" when it becomes apparent that the amount appropriated for the street railway fund has been exhausted. In the meantime I shall be glad to take up the matter of these lines with you at your convenience."

Mayor Gill said further:

"People bought homes in the Lake Burien District, served by Division 'C,' and made improvements with the expectation that the city would continue to operate a railway system there. It would not be fair to them, in case no money is directly available for the Lake Burien Railway fund, to close down the line. There is no such moral obligation, however, as regards the operation of Division 'A,' which line is a financial burden."

DES MOINES FRANCHISE MATTER

The Des Moines (Ia.) City Railway has been granted an extension of time until June 22 in which to negotiate a franchise with the city. The date first set by the State Supreme Court was March 22 and on account of the failure of the recent franchise election effort the company asked for an extension of time, which was granted by the court.

After the company had secured a petition for a franchise election and the City Council had fixed the date for the election the same was invalidated because of illegal election notices published by Mayor James R. Hanna. When the mistake was discovered it was too late to publish correct notices.

The City Council has been drafting a new franchise for submission to the company. This has been characterized by Emil G. Schmidt, president of the company, as less acceptable to the company than the first draft by Mayor Hanna. Mr. Schmidt is expected to return to Des Moines within a short time and a move toward a final settlement may then be made. The Greater Des Moines Committee and officers of the Harris Trust & Savings Bank, Chicago, have conferred recently regarding the settlement of the franchise question.

PORTLAND VALUATION FIGURES

The valuation of the entire property of the Portland Railway, Light & Power Company, Portland, Ore., as shown in the examination of W. J. Hegenah, who made an inventory of the holdings of the company, is placed at \$56,942,464, according to information given out by the Railroad Commission of Oregon. The estimate includes:

Roadway and tracks	\$8,694,866
Buildings, fixtures and grounds.....	4,357,145
Land	9,076,326
Rolling stock and float equipment.....	4,557,736
Hydraulic power works.....	6,046,033
Lighting equipment	222,311
Distribution system, underground.....	985,844
Distribution system, overhead.....	638,903
Telephone system	49,003
Equipment	4,987,100
Shop equipment	149,059
Construction equipment	150,015
Utility equipment	88,140
Furniture and fixtures	82,631
Miscellaneous equipment	40,003
Salem gas utility	238,866
Working capital	1,850,000
Water powers	4,767,750
Development cost	9,962,726

The reproduction cost new, including overhead, is placed at \$40,361,988; and working capital for the development of waterpower at \$16,580,476.

INDIANA LEGISLATURE

The following new bills have been introduced in the house: a bill amending the public utility law, providing that firemen in uniform may ride free on street cars; a bill providing a penalty of from \$5 to \$10, to which may be added ten days' imprisonment, for requiring stationary engineers to work more than fifty-six hours a week or more than eight hours a day unless to shorten the working hours of some other day; a bill requiring railroad and interurban railroads to cut weeds along the right-of-way; a bill providing that upon petition of ten freeholders boards of public works shall compel the fulfillment of franchise requirements as to extensions and improvements, and that on failure of the board to act the matter may be taken to court and the board of works and the corporation made joint defendants; a bill providing for a board of mediation and conciliation and for a board of arbitration in controversies between employers and employees.

House bill 346, requiring that street or interurban railroads place their tracks in the middle of the highways for a distance of 1 mile from the corporate limits of towns of 30,000 to 58,000 population, was killed in committee. House bill 110, providing a penalty for the destruction or interference with any fixed railroad signals or equipment, has passed the House.

The following new bills have been introduced in the Senate: a bill making it unlawful for any person to trespass upon the right-of-way of a railroad; a bill providing that any person, firm or corporation engaged in the business of transporting passengers for hire by automobile shall constitute a "public utility" and be subject to all the provisions of

the utility commission act, and that such person, firm or corporation shall not engage in or continue in such business except under a license granted pursuant to an ordinance which must be passed by the municipality wherein such utility is operating, fixing the terms and conditions and providing for a satisfactory bond, the public service commission to have the right, on petition, to review and modify the terms of any such ordinance ("jitney bus" bill).

The following bills have passed the Senate: S. B. 329, giving the Public Service Commission the power to order separation of grade crossings in cities of 20,000 population or less; S.B. 316 amending the public utility commission act by extending the time for the taking of indeterminate permits by public service corporations; S.B. 318, amending the public utility commission act by permitting railroads to give passes to employees where such employees are holding public office.

CLEVELAND PROPERTY HOLDINGS

Replying to a resolution introduced in the City Council at Cleveland, Ohio, on Feb. 8, to the effect that the Cleveland Railway sell all its surplus lands, J. J. Stanley, president of the company, a day or two later said the company has no surplus lands. All the real estate now owned by it was being used. Later the land used for a carhouse and yards at Superior Avenue and East 105th Street would be placed on the market, but at present the property was being used. The new station at the end of the Superior Avenue line has not yet been completed.

This resolution followed the decision of the street railway committee to give its approval to the purchase of a tract of land at Denison Avenue and West Seventy-third Street, where the company will build an operating station. The negotiations for this land, about eighteen acres, were closed late in the week. The purchase price is \$53,168. When the station has been completed at this point the Holmden Avenue carhouse will be abandoned and the land will probably be sold.

The arrangement proposed for West Madison Avenue, within the boundaries of Lakewood, is 3 cents within the boundaries of Lakewood and 5 cents from any point in Lakewood to any point within the city. It is argued that another step will bring the company to the zone system.

SUBWAY SHORT CIRCUITS

The Public Service Commission for the First District of New York continued during the week ended Feb. 20 its investigation into the subway accident of Jan. 6, when fire from a short circuit of the electric cables caused a serious interruption to traffic and the overcoming of many passengers by smoke, resulting in the death of one. A new phase was given the inquiry by testimony produced before the legislative investigating committee to the effect that workman employed by contractors for the new subway at Forty-second Street and Broadway had accidentally driven a drill into the subway cable duct early in the morning of Jan. 6, when the short circuit and fire occurred. The inference drawn was that this act was responsible for the short-circuit which followed. The workmen in question were employed by the Holbrook, Cabot & Rollins Corporation, which has the contract for the connection between the existing subway and the new Seventh Avenue subway at Times Square. The commission took the testimony of these workmen, who described the manner in which the cable duct was penetrated by the drill. Engineers for the commission also gave testimony, which tended to show that the accident as described by these workmen could not have occurred, for the reason that the cable at the point in question was found to be intact after the accident of Jan. 6.

Another short circuit occurred in one of the electric cables of the subway in the tunnel under the East River on Feb. 15. Power was shut off and traffic to Brooklyn interrupted for a half hour from 10:50 p. m. There was no fire, but some smoke resulted and penetrated into the tunnel. As a matter of precaution the company shut off the power. The accident occurred in the eastbound tube, and there were no trains in it at the time or if any were passing when the short circuit occurred, they reached the Brooklyn side without interference. The cause of the short circuit has not been learned.

BAY STATE ARBITRATION

Arbitration hearings in the Bay State Street Railway wages case during the week ended Feb. 20 were occupied largely by testimony regarding living conditions in the homes of employees, features of daily routine and details of car operation. On Feb. 17 an adjournment of one day took place as a result of falsification of testimony by Daniel W. Cahill, a motorman. Upon being recalled to the stand the witness admitted prevarication, and Chairman Pelletier of the arbitration board administered a severe rebuke, declaring that the witness should be discharged from the company and expelled from the union. Mr. Pelletier pointed out that false evidence submitted relative to the underclothing of the witness' children in material made from flour bags had abused the sympathies of the public and had nullified the value of the testimony by the witness, who also failed to give accurate evidence in other particulars. Another witness was caught falsifying a few days ago. A meeting of the union conference committee was held at Boston on Feb. 18 to consider the situation.

The arbitration hearings were resumed on Feb. 24. Counsel James M. Swift read a statement from the company to the effect that it had decided to reinstate Conductor Henry A. Swartz on the ground that his discharge had tended to frighten other employees from giving testimony before the board, and that in order to preserve to the utmost the spirit of fair play the company had concluded to forego its undoubted right of discharge. Swartz had been reprimanded by Chairman Pelletier for falsification of testimony at a preceding hearing and had subsequently been discharged, following the expression of opinion by the chairman that such an employee was unfit to remain a member of the company's organization and ought to be dropped from the union. Chairman Pelletier also presented a statement pointing out the absolute necessity of good faith and serious effort in such arbitrations to the successful solution of labor problems and stated that every man from the highest labor leader to the most insignificant employee appearing as a witness should strive to carry on the proceedings in good faith and with all the seriousness of a trial before the highest court. Charles F. Bancroft, superintendent of motive power and machinery, testified that most shop employees had received wage increases of 17 per cent since 1910.

LEGISLATION IN NEW YORK

The Senate of New York on Feb. 22 passed the workmen's compensation commission appropriation bill, with its amendment providing for direct settlement of compensation claims between employers or their insurance carriers and injured workmen. The measure reached the Assembly on Feb. 24. After a discussion of two hours in caucus it was voted unanimously by the Republicans to strike out everything in the bill except the enacting clause and the section containing the provision for the appropriation to carry the commission through the fiscal year.

Among the bills introduced into the Legislature recently are the following: an act to amend the transportation corporations law in relation to motor vehicles carrying passengers for hire in certain cities of the first class; an act to amend the railroad law in relation to duty to furnish refrigerated cars for the shipment of perishable property; to amend the railroad law in relation to crews for engines in yard and terminal service; to extend the time for the completion of the New York Connecting Railroad bridge over the East River; to extend the time of the Westchester Northern Railroad to begin and finish the construction of its road and put it in operation and extending the corporate existence and powers of the company; to extend the time of the New York, Westchester & Boston Railway to finish the construction of its road and put it all in operation and extending the corporate existence and powers of the company; to amend the penal law in relation to certain railroad employees, including telephone operators, signalmen and towermen; to amend the railroad law in relation to powers of electric light and power corporations.

At the request of the Public Service Commission for the First District, the Legislature has passed an act amending the civil service law so as to permit the continuance of

provisional appointments pending the establishment of eligible lists until July 1, 1915. The civil service law contemplates that provisional appointments, which are made in the absence of eligible lists, shall last for only two months, but the Public Service Commission has been compelled to make a number of such appointments in order to keep the rapid transit work going and on account of its failure to get eligible lists such appointments have lasted longer than the time mentioned. It is expected that eligible lists for various classes of employees will be provided in the near future, and the amendment will permit provisional appointees to serve until such lists are available.

PRESIDENT BANCROFT ON BOSTON TRANSPORTATION BILLS

Before the committee on metropolitan affairs of the Massachusetts Legislature on Feb. 19, William A. Bancroft, president of the Boston Elevated Railway, appeared in opposition to a group of about a dozen bills extending or altering the existing system of rapid transit. Several of the measures provided for the construction of a subway station at Arlington and Boylston Streets; others proposed the removal of the elevated structure in southern Washington Street and the construction of an equivalent subway, and the extension of the Dorchester tunnel to Codman Square from the terminus authorized at Andrew Square. General Bancroft discussed the growth of the system, its investment and earnings during the past eighteen years along lines which have been published in this journal and showed the need of the company's being given a financial breathing spell before undertaking any new rapid transit lines. He pointed out that probably no other city in the world had received so comprehensive a rapid transit development in the period from 1897 to 1915 as has Boston and said that the rapid transit lines in themselves were unprofitable, with the exception of the Tremont Street Subway and East Boston tunnel, which about "break even." The wages increase of two years ago was costing the company \$500,000 a year more than before and the public was not paying the proper cost of transportation. General Bancroft quoted numerous figures showing that a substantial service was already rendered the Arlington Street district and stated that the institution of a new station would be of doubtful value to the community, apart from costing the company \$46,000 a year to maintain, carry and operate with escalators. Closing, he urged that the rapid transit facilities authorized in 1911 and now under construction be completed and tested before further extensions of the system were added to the company's burdens. The hearing was closed.

EXTENSION OF SAN FRANCISCO MUNICIPAL RAILWAYS

The Church Street extension of the San Francisco (Cal.) Municipal Railway system has been approved after a fight between opposing factions that extended over many months and earned for the Church Street hill the name of "Battle Mountain." On Feb. 17 Mayor Rolph signed an order to start the construction of this branch according to the scheme known as plan No. 9 prepared by the city engineer. This plan provides for a deviation from Church Street through 2700 ft. of private right-of-way so as to avoid the heaviest grade, and is estimated to cost a total of about \$505,000 if the city builds its own tracks parallel to the United Railroads' tracks on the Market Street portion of the line. It is not yet decided whether to parallel the United Railroads' tracks or to arrange for joint use. Of the total cost \$305,000 is to cover all construction work exclusive of acquiring private right-of-way and making necessary excavation thereon. The total length of the branch from Van Ness Avenue to Thirtieth Street will be 13000-ft. (double track) of which 1135 ft. (double track) will have to be over United Railroads line regardless of whether their lines or new trackage is used on Market Street. The initial cost is to be lessened somewhat by the use of T-rail construction from Eighteenth to Twenty-second Streets. Of the original bond issue there is now available \$325,000 which was set aside for the building of the Church Street branch. This is to be supplemented by other funds.

FEDERAL TRADE COMMISSION APPOINTMENTS

President Wilson on Feb. 22 sent to the Senate the nominations of the five members of the new Federal Trade Commission, as follows: Joseph E. Davies of Wisconsin, now Commissioner of Corporations, whose bureau the new commission will absorb, to serve seven years; Edward N. Hurley, president of the Illinois Manufacturers Association, to serve six years; William J. Harris of Georgia, now director of the Census, to serve five years; William H. Parry of Washington, treasurer of the Seattle Chamber of Commerce, to serve four years; George Rublee, a lawyer of New Hampshire, to serve three years. Mr. Davies, Mr. Hurley, and Mr. Harris are Democrats; Mr. Rublee is a Progressive, and Mr. Parry, while nominally a Republican, is regarded as a Progressive. The law creating the Federal Trade Commission was enacted five months ago. It requires that not more than three members of the commission shall be of any one political party.

Utility Bill Hearings Concluded.—The judiciary committee of the Utah Senate concluded on Feb. 14 the hearings on the bill to establish a public utility commission in that State. The committee is expected to report before March 1.

Mayor Harrison Defeated at Primaries.—At the mayoral primaries held in Chicago, Ill., on Feb. 23, Mayor Harrison was overwhelmingly defeated by Robert M. Sweitzer, another Democratic aspirant. An admitted factor in his defeat was his failure to put into effect his promises to improve transportation conditions.

Case Against Directors Dismissed.—The February Grand Jury at New York has dismissed without finding indictments the cases against T. P. Shonts, August Belmont and other members of the board of the Interborough Rapid Transit Company in connection with the accident on the elevated railway on Dec. 9. The cases were carried to the Grand Jury following the finding of the coroner's jury.

Decision Against Seattle Purchase.—The proposition for the purchase of the Seattle, Renton & Southern Railway by the city of Seattle, Wash., will not go on the ballot to be voted upon at the general municipal election to be held on March 2, the question of purchase having been indefinitely postponed at a recent meeting of the City Council. Both the City Council and the receivers of the company declare that a favorable vote would bind neither the city nor the receivers, except in an advisory way.

The Lexington Dispute.—The Kentucky Traction & Terminal Company, Lexington, Ky., has declined to reinstate Robert Walker, the discharged motorman over whom the controversy with its men arose, and share the expense of the arbitration proceedings. The proposition was made by the union, which is said to be anxious to have the dispute settled. The complaint charges the company with discrimination, though the company insists Walker's accident record was sufficient to justify dismissal.

J. J. Sullivan on Advice Brokers.—Jeremiah J. Sullivan, president of the American Railways, Philadelphia, Pa., drew up on Feb. 22 a list of six "don'ts" for Secretary of State W. J. Bryan, to match the seven "don'ts" for bankers which Secretary Bryan advocated on Saturday night in a speech at a dinner in Washington of the American Institute of Banking. Mr. Sullivan said that everybody these days is offering advice and everybody seems to be a sort of an advice broker.

Utility Bills in Arkansas.—Bills are pending before the Legislature of Arkansas to extend the powers of the Railroad Commission to other public utilities and to abolish that commission and create a public service commission. At a recent hearing on the measures held before the judiciary committee of the Senate opposition to the bills was entered by the companies affected on the ground that both are detrimental to the best interests of the companies. The committee is expected to report by March 1.

New Franchise Desired in Henderson, Ky.—The Henderson (Ky.) Street Railway has asked the City Council for a new franchise, covering a period of twenty years from Oct. 16, 1916, when the present franchise will expire, and for which the company may be permitted to bid. It is set forth that the only way funds may be secured for repairs is

through a bond issue, which could not be floated unless a new franchise was granted. The Mayor has appointed a committee to draw up a franchise and submit it to the Council.

Hatters Want Government to Pay.—Before the House committee on appropriations on Feb. 20, Judge Alton B. Parker, Samuel Gompers, and Frank Morrison, representing organized labor, asked that the item of \$290,000 be placed in the general deficiency appropriation bill for the relief of the Danbury Hatters Union, which was held liable under a decision of the United States Supreme Court for heavy damages, caused by their violation of the Sherman anti-trust law. The committee postponed further consideration of the question.

Bills in Michigan.—A bill introduced in the Michigan Legislature to provide that motormen and conductors on street and electric railways shall not work in excess of ten hours in twelve is now before the committee on State affairs, which has heard representatives of the employees. A formal statement in reply to the claims of the union representatives is being prepared by the street railways for presentation to the committee. A bill has been introduced to provide for voluntary mediation and arbitration in labor disputes. It follows closely the voluntary arbitration act in force in Canada.

Access to Private Correspondence Denied to I. C. C.—The United States Supreme Court on Feb. 23 put strict limits upon the power of the Interstate Commerce Commission to search the private papers of railroads. The case arose in connection with the Louisville & Northern Railroad when the commission, in order to secure evidence regarding the alleged illegal use of passes, desired to examine the private correspondence and particularly the communications with counsel. The decision of the court holds that it was the expressed intention of the framers of the Interstate Commerce act to authorize examiners to call for only accounting records and memoranda.

Carhouse Destroyed.—The Westboro (Mass.) carhouse of the Boston & Worcester Street Railway was destroyed by fire on Feb. 18. The company lost ten modern double-truck cars valued at about \$90,000, the total loss being about \$140,000. According to E. P. Shaw, Jr., general manager, the fire started in a car heater and spread to adjacent rolling stock before the arrival of the Westboro fire department after a 3-mile run. A motorman who was in the building at the time succeeded in getting out a box car and a snow plow. The carhouse was a 300-ft. by 100-ft. brick building with an adjoining substation. The latter was saved and service on the Worcester-Westboro end of the line was well maintained.

Steel for Brooklyn Third Tracking.—The Public Service Commission for the First District of New York has approved plans and form of contract submitted by the New York Municipal Railway Corporation for the furnishing of structural steel to strengthen and widen the existing elevated structure to provide for a third-track on the Broadway line, Brooklyn, from a point near Myrtle Avenue to a point near Aberdeen Street. The company was directed to submit the contract to open competitive bidding. The contract calls for the delivery of the steel to begin sixty days from the date of the contract and to be completed within six months from that date. The company has already purchased the steel and let the contract for the third-track on the Broadway line from Havemeyer Street to Myrtle Avenue.

Legislative Trend in Maine.—Among the measures introduced in the Maine Legislature is one compelling electric cars to be equipped with fenders; fixing the hours of motormen and conductors as nine within eleven consecutive hours; compelling every electric car to come to a full stop at least once in every mile to allow the passenger to board or leave the car; authorizing the Norway & Paris Street Railway to purchase or lease the property of the Mechanic Falls Electric Light Company; extending the charter of the Rockland, South Thomaston & St. George Railway for two years. Edward Clark has asked for an extension of the charter of the Skowhegan & Fairfield Electric Railroad, it being the intention to complete the line from Skowhegan to connect with another system at Shawmut. The distance it is intended to build is about 10 miles.

Railway Number of Meco News.—The issue of *Meco News* for February, published by the Metropolitan Electric Company Section of Reading, Pa., of the National Electric Light Association and the Reading Transit & Light Company, is a special railway number, containing sixty-eight pages. The frontispiece is a likeness of Norman McD. Crawford, president of the companies. Among the features are an article "A Day in Court," by R. D. Billings, claim agent of the company; "Service Not First but Always," by S. E. Smith, general superintendent of railways; "Rail Joints and Bonds," by H. H. Kamm of the engineering department; "Retrospection," by Bessie Detweiler, in which the history of the constituent companies is traced briefly from the inception of railway work in Reading in April, 1873, by the Penn Street Passenger Railway; "Controllers," by William K. Loos, division superintendent.

Brooklyn Rapid Transit Insurance.—Rates on the \$22,600,000 of Brooklyn (N. Y.) Rapid Transit Company insurance have been reached. The rate on the buildings and contents is 44.4 cents and on the rolling stock of the company 22 cents. This is an average rate of 76.15 cents for three years, while the previous average rate was 34.7 cents for one year, or an average three-year rate of 86.75 cents. The Brooklyn Rapid Transit insurance has been carried on open binders by the insurance companies since early in December, awaiting the determination of a rate. Lloyds of London, it is believed, got the Brooklyn Rapid Transit insurance at the rate of 34.7 cents per annum, and through a special arrangement the rate was slightly shaded below this figure. The reason for giving the insurance to Lloyds of London was that the rate had been increased from 34.7 cents per annum to 63.2 cents per annum by the Fire Insurance Exchange. The latter has now, however, issued a rating as above, which is acceptable to the Brooklyn Rapid Transit Company.

National Electrical Week Plans.—At a meeting of the board of directors of the Society for Electrical Development, Inc., held in New York on Feb. 17, the principal matter under discussion was the plan for a national electrical week. The board unanimously approved the plans of the committee, and it was decided to go ahead with the plans for an electrical week. Many of those present were in favor of a week early in the spring of 1916, as it was felt that this would afford a good opportunity to reap a substantial benefit. The matter was referred to a committee to be appointed by the president. The general manager's and the treasurer's reports showed the society to be in a very satisfactory financial condition. A very small percentage of the membership had resigned while many members had paid their subscriptions for the first half of 1915, and new members were continually joining. The matter of employing a resident representative of the society on the Pacific Coast was referred to the president and the general manager of the society with power to act. James Smieton, Jr., who has been acting for the society as its secretary-treasurer for the past year, has been appointed to that office.

PROGRAM OF ASSOCIATION MEETING

New England Street Railway Club

The fifteenth annual meeting and dinner of the New England Street Railway Club will be held at the Copley-Plaza Hotel, Boston, Mass., on March 25. The annual meeting will be at 3 p. m., the reception at 6 p. m., and the dinner at 6:30 p. m. Following the dinner there will be speeches, music and entertainment. The change to the Copley-Plaza Hotel will make it possible to accommodate a larger number of people and the arrangement which will be followed there as to seating will permit freer movement among the tables and it is believed will facilitate the social side of the meeting. The tickets are \$4 each. The majority of the tables will seat ten persons. A limited number of tables each seating six persons has been provided and will be assigned to those especially requesting them in the order in which such applications are received. Members will be permitted to purchase as many tickets for guests as they may desire.

Financial and Corporate

CORPORATE CHANGES IN UTAH

Utah Securities Corporation Through Operating Subsidiary, the Utah Power & Light Company, Takes Over Properties in Salt Lake City and Ogden

Official announcement has been made by the Utah Securities Corporation that its subsidiary, the Utah Power & Light Company, has formally taken over the electric light and power and street-railway properties in Salt Lake City and the electric light and power and gas properties in Ogden, Utah, heretofore controlled by the Oregon Short Line Railroad and now owned by the Utah Light & Traction Company. The Utah Power & Light Company owns all the stock of the Utah Light & Traction Company, except directors shares. The process by which the Utah Light & Traction Company succeeded the former Utah Light & Railway Company was fully described in the *ELECTRIC RAILWAY JOURNAL* of Sept. 12, Sept. 26 and Oct. 10, 1914.

The Utah Power & Light Company, in addition to owning all the stock of the Utah Light & Traction Company, has leased for ninety-nine years from Jan. 1, 1915, the electric light and power and gas properties of that company, and, therefore, earnings of the Utah Power & Light Company from Jan. 1, 1915, will include income from these leased properties. The electric railway property of the Utah Light & Traction Company in Salt Lake City and vicinity will continue to be operated directly by it, and its surplus earnings will accrue to the Utah Power & Light Company through the stock ownership.

The gross earnings of the Utah Light & Traction Company for the year ended Dec. 31, 1914, were \$2,769,835, and the net earnings, after depreciation and taxes, \$868,190. The annual interest charge on all outstanding bonds is \$762,670. It is expected that the consolidation of the electric light and power systems of the Utah Light & Traction Company with those of the Utah Power & Light Company will effect material economies.

C. W. Whitley has been elected president of the Utah Light & Traction Company, with H. L. Beach manager and Joseph S. Wells secretary and treasurer. The board of directors, as chosen at a recent stockholders meeting, is made up as follows: C. W. Whitley, Joseph Scowcroft, D. C. Jackling, O. J. Salisbury, C. E. Groesbeck, Lawrence Greene, J. Frank Judge, E. O. Howard, R. C. Gemmell, S. A. Whitney, J. M. Bidwell and Joseph S. Wells.

In connection with the present outlook confronting the new arrangement of companies, C. E. Groesbeck, vice-president and general manager Utah Power & Light Company, says:

"My observations of business conditions throughout the territory we serve in three states, Utah, Idaho and Colorado, impress me that the ensuing year will develop a substantial, steady gain in practically all lines of business. Salt Lake and Ogden are two of the best and liveliest cities in the entire country, and 1915 should bring a large share of prosperity to both."

NORTHERN ELECTRIC RAILWAY FINANCES

The chairman of the bankers' committee of the Northern Electric Railway has mailed a second circular letter to security holders, urging them to sign the several agreements for the refinancing of the company, as noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 9. Four subsidiaries of the Northern Electric Railway on Feb. 16 filed a petition in the United States District Court asking to be included in the receivership. The purpose of the petition is to have the financial tangle worked out as one system, the management of all the concerns being the same. The corporations joining in the petition are the Northern Realty Company, Sacramento & Woodland Railway, Sacramento Terminal Company, and Northern Electric Railway, Marysville and Colusa branch. The reorganization plan of the company is said to be progressing smoothly, and the subsidiary receiverships would only save a multiplicity of proceedings that would defer a final complete settlement.

ANNUAL REPORTS

California Railway & Power Company

The statement of income, profit and loss of the California Railway & Power Company, San Francisco, Cal., for the period from Dec. 18, 1912, to June 30, 1914, follows:

Income:	
Dividends on stocks owned.....	\$605,000
Interest on notes and accounts receivable, etc.....	220,419
Interest on bank balances.....	4,482
Total	<u>\$829,901</u>
Expenses:	
Salaries	\$2,355
Taxes	7,741
Transfer agent's, registrar's fees, etc.....	2,301
Directors' fees and expenses.....	1,602
Legal	529
Stationery, printing and postage.....	488
Traveling	1,982
Organization—portion charged off	937
General	3,232
Total	<u>\$21,167</u>
Net income	<u>\$808,734</u>
Dividends:	
On prior preference stock.....	\$314,705
On preferred stock	378,092
Total	<u>\$692,797</u>
Profit and loss surplus, June 30, 1914.....	\$115,937

The foregoing statement is taken from the first annual report of the company since its incorporation on Dec. 18, 1912. This holding company controls the United Railroads of San Francisco, the Sierra & San Francisco Power Company, the Coast Valleys Gas & Electric Company and the San Francisco Electric Railway, and is itself controlled by the United Railways Investment Company. A comparison between the company's income for the twelve months ended June 30, 1914, and any subsequent similar period can be made by deducting from the figures given above the amounts for the period from Dec. 18, 1912, to June 30, 1913, as follows: Income, \$129,909; expenses, \$1,884; net income, \$128,025; dividends on prior preference stock, \$108,205, and surplus on June 30, 1913, \$19,819.

The statement of income, profit and loss of the United Railroads of San Francisco for the year ended June 30, 1914, follows:

Gross earnings:	
Passenger	\$8,450,725
Advertising	56,000
Total	<u>\$8,506,725</u>
Operating expenses and taxes:	
Maintenance of way and structure.....	\$624,097
Maintenance of equipment.....	454,222
Transportation expenses	3,042,640
General expenses	601,778
Total operating expenses	<u>\$4,722,737</u>
Taxes	503,800
Total operating expenses and taxes.....	<u>\$5,226,537</u>
Net earnings	<u>\$3,280,188</u>
Other income:	
Sinking fund earnings.....	\$116,851
Interest and discount	26,477
Interest bond investments	29,608
Rentals	3,232
Miscellaneous earnings	9,469
Total	<u>\$185,637</u>
Gross income	<u>\$3,465,825</u>
Current income charges.....	422,824
Net income before bond interest charges.....	<u>\$3,043,001</u>
Bond interest:	
United Railroads' bonds	\$954,160
Underlying bonds	690,550
Total	<u>\$1,644,710</u>
Net income	<u>\$1,398,291</u>
Surplus at beginning of period.....	462,139
Profit and loss credits	306,403
Total	<u>\$2,166,833</u>
Profit and loss charges.....	1,148,200
Profit and loss—surplus June 30, 1914.....	<u>\$1,018,633</u>

Jesse W. Lilienthal, president of the company, states that while the general dullness of trade and some competition on the part of the municipal lines in San Francisco temporarily affected the earnings of the United Railroads, it is expected that these will be materially stimulated by the

attendance at the Panama-Pacific Exposition and by the growth of the city following the completion of the Panama Canal. The operating ratio for the fiscal year was 55.52 per cent. The ratio of taxes to gross earnings was 5.92 per cent. The ratio of operating expenses and taxes to gross earnings was 61.44 per cent. The company now has 260.02 miles of electric track and 14.7 miles of cable track, or a total of 274.72 miles. It has 760 revenue cars and a total of 836 cars. During the last year the company purchased and put into operation sixty-five new cars and reconstructed twenty-five more. Every revenue car is thoroughly overhauled once every thirteen months. A statement of income, profit and loss of the United Railroads for the period of approximately nine years from Jan. 1, 1906, to June 30, 1914, was printed in the ELECTRIC RAILWAY JOURNAL of Sept. 5, 1914.

The Sierra & San Francisco Power Company showed an increase of 13.2 per cent in gross earnings for the year and an increase of 13.4 per cent in operating expenses and taxes, including depreciation, giving an increase of 13 per cent in net earnings. Bond interest and uncollectible accounts increased 4.3 per cent, so that the net income applicable to investment increased 29 per cent. The rate of growth of the company's business reflects largely the growth of the business outside of San Francisco, this having increased for the year 23.4 per cent as compared to an increase of 8.56 per cent within San Francisco. The gross earnings of the Coast Valleys Gas & Electric Company increased 16.8 per cent, while the operating expenses, including taxes and depreciation, increased 20.6 per cent. The net earnings, therefore, increased 11.1 per cent, which with increased deductions of 18.9 per cent made a decrease in net income of 2.3 per cent.

Detroit United Railway

The statement of income, profit and loss of the Detroit (Mich.) United Railway for the fiscal year ended Dec. 31, 1914, follows:

	1914	1913
Passenger earnings	\$11,464,626	\$11,952,286
Express earnings	717,129	708,473
Mail earnings	11,979	12,031
Special car earnings.....	46,270	51,038
Gross earnings from operation.....	<u>\$12,240,004</u>	<u>\$12,723,828</u>
Operating expenses	8,702,660	8,694,230
Net earnings from operation.....	<u>\$3,537,344</u>	<u>\$4,029,598</u>
Income from other sources.....	273,728	251,937
Gross income less operating expenses...	<u>\$3,811,072</u>	<u>\$4,281,535</u>
Deductions:		
Interest on funded and floating debt and taxes:		
Detroit United Railway.....	\$1,525,954	\$1,553,133
Rapid Railway System.....	178,648	168,098
Sandwich, Windsor & Amherstburg Railway	37,942	37,534
Detroit, Monroe & Toledo Short Line Railway	199,130	168,633
Detroit, Jackson & Chicago Railway.....	224,397	233,660
Total interest and taxes.....	<u>\$2,166,072</u>	<u>\$2,151,058</u>
Credited to depreciation reserve.....	294,000	500,000
Credited to contingent liability reserve..	50,000	100,000
Dividends	750,000	750,000
Total deductions	<u>\$3,260,072</u>	<u>\$3,501,058</u>
Net income to surplus.....	<u>\$551,000</u>	<u>\$780,477</u>

During the year the gross earnings from operation decreased \$483,824, or 3.9 per cent. This decrease was made up of a slight decrease in mail and special car earnings, an increase of \$8,656, or 1.2 per cent, in express earnings, and a decrease of \$487,630, or 4.08 per cent, in passenger earnings. The operating expenses increased \$8,430, or 0.09 per cent, but the income from other sources also increased, to the amount of \$21,791, or 8.6 per cent, so that the gross income decreased \$470,463, or 10.9 per cent. The interest charges and taxes increased \$15,014, or 0.69 per cent, but only \$294,000 and \$50,000 were credited to the depreciation and contingent liability reserves, respectively, as compared to \$500,000 and \$100,000 for the previous year. The total deductions, therefore, decreased \$240,986, or 6.8 per cent, and the net income to surplus decreased \$229,477.

The record of passengers carried during the year showed the following figures: Revenue passengers, 252,961,221; transfer passengers, 85,354,131; employees, 7,865,048; total

passengers carried, 346,180,400. This was slightly less than a 7 per cent increase, as compared to an increase of more than 16 per cent in 1913 over 1912. Within the one-fare zone the decrease in revenue from fares amounted to \$585,741, although within the same zone there was an increase of nearly 21,000,000 in the number of passengers carried. The receipts per revenue passenger were \$0.0453 and per passenger \$0.0331. The total car mileage was 44,882,720 car miles, the earnings per car mile \$0.2727, the expenses per car mile \$0.1939, and the net earnings per car mile \$0.0788.

The depreciation reserve on Dec. 31, 1914, was credited with \$2,703,627 as compared to \$2,483,627 at the beginning of the year. During the twelve months the company spent the following amounts on capital account: Detroit United Railway, \$917,597; Rapid Railway, \$87,071; Detroit, Monroe & Toledo Short Line Railway, \$48,926; Detroit, Jackson & Chicago Railway, \$3,982, and Sandwich, Windsor & Amherstburg Railway, \$110,577. The company also expended \$103,432 in connection with the State and city appraisals, of which amount \$61,000 was charged to the contingent liability reserve and the balance to the operation account. The balance in this reserve on Dec. 31, 1914, was \$589,000.

The total mileage of the company, including side and yard tracks, was on Dec. 31, 1914, 820.63 miles, 18 miles having been added during the last year. The company's rolling stock consists of 1403 closed passenger cars, 263 open passenger cars, 247 freight and construction cars, 36 line cars, 84 express cars, 16 miscellaneous cars, 2 locomotives, 3862 motors and 3057 trucks. There are eleven power houses with a combined capacity of 67,290 hp, two storage batteries with a combined capacity of 4500 amperes, and eighteen substations with a combined capacity of 18,900 kw.

CO-RECEIVERSHIP IN BIRMINGHAM

Independent Bondholders' Committee Through Court Decision Wins Fight for Appointment of Co-Receiver

S. H. Cunningham, chairman of the independent bondholders' committee for the first mortgage thirty-year 5 per cent bonds of the Birmingham, Ensley & Bessemer Railroad, Birmingham, Ala., has announced that the Federal Court for the Northern District of Alabama has entered a decree appointing Augustus Beners, a Birmingham attorney, as co-receiver for the company to act with I. W. Ross.

Mr. Cunningham, with certain stockholders, recently petitioned the court for the appointment of a co-receiver to bring suit for an accounting from Morris Brothers, Philadelphia, who promoted the railway, expecting such minority stockholders as might take part to bear the expense of such proceedings if necessary. The co-receiver, however, was empowered by the court to examine the facts and report as to the prosecution of this suit at the expense of the estate. If he should not so recommend, the court has intimated that the suit may be carried on for the benefit of the railway at the expense of the stockholders.

Mr. Cunningham states that the contemplated action will probably call on promoters for the return of bonds or funds in excess of \$500,000, together with such damages as have accrued to the railway through the failure of the promoters to complete the property. The independent bondholders' committee will offer every aid to the new receiver in investigating this claim, including the reports of its experts.

Foreclosure proceedings were recently instituted at the expense of the majority committee and the co-receivership is extended over the foreclosure suit. Previous references to the finances of this company were made in the *ELECTRIC RAILWAY JOURNAL* of Sept. 12 and 26, Oct. 3 and 24, Nov. 14, and Dec. 5 and 19, 1914.

Barcelona Traction, Light & Power Company, Barcelona, Spain.—As a result of the announcement that the Barcelona Traction, Light & Power Company would be unable to meet on Dec. 1 the half-yearly coupons on its £7,500,000 of 5 per cent first mortgage bonds, as noted in the *ELECTRIC RAILWAY JOURNAL* of Dec. 12, a committee has been formed in the interests of the bondholders to confer with the company in respect to a financial readjustment. At the time of deferring the interest, the directors stated that they had under consideration a plan for providing the company with

the necessary funds for continuing construction and for the adjustment of the maturing interest. The new committee is expected to arrange for a meeting of the bondholders, at which it is hoped the directors will be able to present proposals for the refinancing.

Cape Electric Tramways, Ltd., Cape Town, South Africa.—The report of the Cape Electric Tramways, Ltd., shows that during the year ended June 30, 1914, the company made a profit of £78,866, and after providing for debenture interest, redemption of debentures, and the balance from the previous year, there was a net credit balance of £32,617. From this amount the reserve fund was credited with £8,000, leaving a balance of £24,617. In Cape Town the tramways carried 16,576,992 passengers, earning £155,472, as compared to 14,779,709 passengers, earning £144,221, in 1913. In Port Elizabeth the result of the operations showed 4,309,154 passengers, earning £44,936, as compared to 4,155,711 passengers, earning £43,035, in 1913. The report states that the tramway receipts showed satisfactory advances, but on account of increased maintenance cost and taxes the net profits decreased. On account of serious financial and trading conditions brought about by the European war, the directors decided to recommend the declaration of a dividend of only 2½ per cent.

Columbus Railway & Light Company, Columbus, Ohio.—The directors of the Columbus Railway & Light Company have declared a dividend of 75 cents a share on the capital stock, payable Feb. 25. No dividend, however, will be paid to holders of stock who are in default of assessments due on Dec. 30, 1913, or on June 30, 1914, but the dividend instead will be applied on the assessments as of Feb. 25.

Dallas Electric Company, Dallas, Tex.—Perry, Coffin & Burr, New York, are offering at 97½ and interest, to yield more than 5.4 per cent, \$150,000 of first mortgage (closed) collateral trust 5 per cent bonds of the Dallas Electric Corporation, due on April 1, 1922. The Dallas Electric Company, which is the successor of the Dallas Electric Corporation, controls practically all the street railway, lighting and power business in Dallas.

Fairmount Park Transportation Company, Philadelphia, Pa.—Under the present plan of reorganization for the Fairmount Park Transportation Company, an assessment of \$3.50 per share is proposed to provide \$70,000 required to meet the floating debt of \$26,149, improvements to plant to cost \$7,000, interest and sinking fund payments on the first mortgage bonds of \$31,750 and about \$5,000 of organization expenses for the new company to be formed. The present capital stock will be reduced from \$2,000,000, of which \$1,750,000 is now outstanding, to \$500,000 in the new company. Of the new stock, \$100,000 will be 7 per cent preferred, cumulative after Jan. 1, 1916, and \$400,000 common, par value \$10. The first mortgage bonds will not be disturbed. Those who subscribe to the new company will receive one share of preferred stock and five shares of common stock, a total of \$60 par value, for each \$10 paid. At present holders of about 24,500 shares of stock, out of 40,000, have notified the committee that they would agree to the plan. The reorganization committee consists of P. E. Foerderer, C. J. Jones, A. C. Gibson, W. L. Chrisman and S. M. Clements, Jr. A preliminary reference to the reorganization of this company appeared in the *ELECTRIC RAILWAY JOURNAL* of Jan. 16.

Fresno (Cal.) Interurban Railway.—The Railroad Commission of California has denied the application of the Fresno Interurban Railway, noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 2, to issue twenty shares of capital stock to be sold at 80 and \$14,700 of ten-year 6 per cent bonds to be sold at 90 for the purpose of providing funds for the purchase of equipment and for the payment of certain engineering, administration, legal and contingent costs. It appears on examination that such items were properly taken care of in the original authorization of securities and that an additional issue is not necessary at present.

Humboldt Transit Company, Eureka, Cal.—The Railroad Commission of California has authorized the Humboldt Transit Company to issue and pledge \$18,000 of first mortgage 5 per cent sinking fund thirty-year gold bonds to the Pacific Coast Casualty Company as surety for a bond covering a stay of execution in a damage case. Previous ref-

erence to this application was made in the ELECTRIC RAILWAY JOURNAL of Jan. 30.

International Railway, Buffalo, N. Y.—Harris, Forbes & Company, New York; N. W. Harris & Company, Boston, and Harris Trust & Savings Bank, Chicago, are offering at 92½ and interest a block of \$600,000 of refunding and improvement 5 per cent gold bonds of the International Railway, dated Nov. 1, 1912, and due on Nov. 1, 1962. These bonds are coupon in type for \$1,000 denomination and registered for \$1,000 and multiple denominations, and are callable at 110 and interest on any interest date. Including the present block, there are now outstanding \$11,156,000 of an authorized issue of \$60,000,000, of which \$11,662,500 are reserved to retire divisional bonds. The bonds are secured by a direct mortgage on the entire property of the company, subject to the divisional bonds. The mortgage contains provision for a sinking fund whereby, commencing with 1912, annual sums will be set aside sufficient by July, 1949, to retire all except \$640,500 of the divisional bonds. The refunding and improvement bonds will then be secured by a first mortgage on the entire property of the company, except a small amount of suburban mileage covered by the \$640,500 of divisional bonds before mentioned. For the year ended Dec. 31, 1914, net earnings were more than twice the bond interest.

Middle West Utilities Company, Chicago, Ill.—The Illinois Trust & Savings Bank, Russell, Brewster & Company and others in Chicago and a syndicate formed by A. H. Bickmore and associates in New York are offering an issue of \$500,000 of 6 per cent ten-year collateral gold bonds of the Middle West Utilities Company, dated Jan. 1, 1915. The bonds are sold to yield 6.75 per cent. These bonds are secured by the pledge of mortgage bonds on property of subsidiary companies owned entirely or controlled by the Middle West Utilities Company. President Insull states that companies whose bonds are pledged for this issue show an average ratio of net earnings to bond interest of 1.6.

Montreal Tramways & Power Company, Montreal, Que.—It is announced that Potter, Choate & Prentice have purchased \$7,000,000 of two-year 6 per cent collateral trust gold notes, to be dated April 1, from the Montreal Tramways & Power Company. These notes are issued to refund \$1,350,000 of notes which came due on Jan. 1, and which were secured by bonds of the Canadian Light & Power Company, and also to refund \$5,000,000 of 6 per cent notes coming due on April 1, the additional amount of new notes being issued for various corporate purposes. It is reported that a large portion of the notes has already been placed privately, and that any offer of exchange to the old holders must be limited in amount. The notes will be callable in one year, April 1, 1916, at the option of the company at par and interest, on sixty days' notice.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The committee selected to prepare a new financial plan for the Oakland, Antioch & Eastern Railway consists of Osgood Hooker, A. Christeson, J. J. Mahony, Philip Bancroft, John Lawson, L. S. Bachman and Fred H. Beaver.

Pacific Gas & Electric Company, San Francisco, Cal.—The Railroad Commission of California has authorized the Pacific Gas & Electric Company to issue \$4,000,000 of 5 per cent one-year gold notes dated Dec. 15, 1914, these bonds being covered by a trust agreement to F. N. B. Close, trustee, and secured by collateral consisting of \$5,000,000 of convertible general lien bonds, series A, and \$5,000,000 of general and refunding mortgage gold bonds, series A. The application for these notes and the sale thereof were noted in the ELECTRIC RAILWAY JOURNAL of Jan. 16, Jan. 23 and Jan. 30.

Stockton Terminal & Eastern Railroad, Stockton, Cal.—The Stockton Terminal & Eastern Railroad, operating between Stockton and Bolleta, San Joaquin County, on Feb. 18, filed an application with the Railroad Commission of California requesting authority to issue \$319,500 of bonds to be used in completing its line to Jenny Lind, Calaveras County.

Stockton (Cal.) Electric Railroad.—The official headquarters of the Stockton Electric Railroad have been moved from Los Angeles to San Francisco.

Third Avenue Railway, New York, N. Y.—At a meeting of the directors of the Third Avenue Railway on Feb. 23,

Lyon F. Strauss and Edwin M. Burghart were elected directors to succeed F. L. Babcock and M. Furgeson, resigned. Mr. Strauss represents the committee of stockholders which recently investigated the affairs of the company and recommended a dividend payment, as noted in the ELECTRIC RAILWAY JOURNAL of Feb. 6. Mr. Burghart represents the George Ehret Estate. It is reported that the question of the dividend was not raised at the meeting of the directors, and that no dividend will be thought of for at least six months.

DIVIDENDS DECLARED

Northern Ohio Traction & Light Company, Akron, Ohio, quarterly, 1¼ per cent, common.

Terre Haute Traction & Light Company, Terre Haute, Ind., 3 per cent, preferred.

Washington Railway & Electric Company, Washington, D. C., quarterly, 1¼ per cent, preferred; quarterly, 1¼ per cent, common.

ELECTRIC RAILWAY MONTHLY EARNINGS

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, MAINE.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$65,509	*\$29,753	\$35,756	\$17,462	\$18,294
1 " " '13	65,645	*30,726	34,919	17,354	17,565
12 " " '14	777,752	*375,219	402,533	209,118	193,415
12 " " '13	764,085	*346,512	417,573	207,584	209,989

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$89,012	*\$66,141	\$22,871	\$29,337	\$6,466
1 " " '13	100,378	*60,774	39,604	26,114	13,490
12 " " '14	1,085,096	*699,723	385,373	339,409	45,964
12 " " '13	1,204,928	*717,625	487,303	298,082	189,221

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$1,341,385	*\$666,266	\$675,119	\$372,263	\$302,856
1 " " '13	1,349,191	*726,726	622,465	336,308	286,157
12 " " '14	14,006,484	*7,549,898	6,456,586	4,212,852	2,243,734
12 " " '13	13,669,321	*7,678,891	5,990,430	3,864,853	2,125,577

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, MAINE.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$203,510	*\$124,269	\$79,241	\$62,523	\$16,718
1 " " '13	205,547	*116,063	89,484	63,576	25,908
12 " " '14	2,513,620	*1,457,020	1,056,600	758,850	297,741
12 " " '13	2,354,797	*1,312,873	1,041,924	714,273	327,651

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$213,997	*\$108,860	\$105,137	\$71,748	\$33,389
1 " " '13	238,628	*142,954	95,674	46,652	49,022
12 " " '14	2,623,827	*1,616,214	1,007,613	701,949	305,664
12 " " '13	2,700,966	*1,604,403	1,096,563	589,134	507,429

GRAND RAPIDS (MICH.) RAILWAY.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$125,913	*\$64,732	\$61,181	\$12,162	\$49,019
1 " " '13	122,461	*72,321	50,140	12,421	37,719
12 " " '14	1,286,568	*829,637	456,931	161,778	295,153
12 " " '13	1,301,403	*803,607	497,796	166,633	331,163

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

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$50,073	*\$38,657	\$11,416	\$15,634	†\$4,218
1 " " '13	50,420	*37,118	13,302	15,338	†2,036
12 " " '14	676,922	*467,809	209,113	186,417	22,696
12 " " '13	675,554	*427,715	247,839	179,575	68,264

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$197,278	*\$109,647	\$87,631	\$31,079	\$56,552
1 " " '13	197,893	*110,183	87,710	39,928	47,782
12 " " '14	2,240,308	*1,352,324	887,984	499,671	388,313
12 " " '13	2,207,246	*1,339,019	868,227	464,235	403,992

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Jan., '15	\$1,998,396	\$1,173,758	\$824,637	\$812,414	\$12,224
1 " " '14	2,006,527	1,202,056	804,471	802,682	1,789
7 " " '15	13,943,518	8,072,479	5,871,040	5,660,369	210,671
7 " " '14	14,246,065	8,338,091	5,907,974	5,598,842	309,132

PORTLAND (MAINE) RAILROAD.

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$81,058	*\$53,318	\$27,740	\$21,332	\$6,408
1 " " '13	79,867	*51,057	28,810	23,498	5,312
12 " " '14	1,044,842	*647,241	397,601	250,604	146,997
12 " " '13	1,036,316	*689,476	346,840	180,881	165,959

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

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1m., Dec., '14	\$514,493	*\$255,483	\$259,010	\$182,974	\$76,036
1 " " '13	607,476	*275,872	331,604	175,483	156,121
12 " " '14	6,273,171	*3,263,883	3,009,288	2,172,678	836,610
12 " " '13	6,723,742	*3,298,310	3,425,432	2,008,602	1,416,830

*Includes taxes. †Deficit.

Traffic and Transportation

DECISION IN ROCHESTER FARE CASE

Three-Cent Fare in Rush Hours Denied by Public Service Commission

The Public Service Commission of the Second District of New York in an opinion by Commissioner Martin S. Decker holds that on the case as submitted it is bound by law to dismiss the complaint of the city of Rochester asking for a 3-cent fare during rush hours on the New York State Railways lines in the Rochester 5-cent fare zone. For this case both parties agreed to accept the tax valuation of \$10,791,124 as the amount on which the company is entitled to return in the Rochester 5-cent fare zone, and the commission finds that a fare reduction to 3 cents during rush hours would bring the company a return of only 4.55 per cent. This rate of return is held, in accordance with ruling cases in the courts, to be below the fair rate which the company is entitled to earn.

It was argued that increased business resulting from the 3-cent fare would reimburse the company for the cut from 5 cents. The commission finds that such an increase would have to amount to 20 per cent of the business of the last year. This increase would have to take place at the time of day when the system is already taxed to its capacity, and the opinion of Commissioner Decker says that it is "far beyond any increased net revenue which can upon any broad estimate be safely contemplated." The case is the first application that the commission has had for a 3-cent fare. The grounds of the complaint were that the reduction, which it was alleged the company could afford to make, would encourage the large working population of Rochester to establish homes away from the congested business centers.

The commission says that it must assume that the rate complained of is not unreasonable unless it shall appear that the company's revenue from Rochester traffic is so greatly in excess of a fair return that the reduction as demanded in the complaint would be fair and reasonable and is required in the public interest. It appears from the opinion of Commissioner Decker that the proposed reduction would reduce the company's revenue as for the year ended June 30, 1914, \$434,459, and that the company would have left a remainder of revenue, after paying operating expenses and taxes of \$491,660. Such remaining revenue applied to the valuation of \$10,791,124, which was accepted by agreement of the parties, would give the company a return of 4.55 per cent. This rate of return is held, in accordance with ruling cases, to be below the fair rate which the respondent company is entitled to earn.

The company claimed that certain large amounts should be deducted from its revenue from operation in the Rochester 5-cent fare zone for that year, which were first stated in the case to be \$1,033,658. The items so claimed to have been omitted by the company were: first, \$19,031, for rental of subway containing wires carrying current to its lines; second, accrued accident and damage liabilities for the year \$108,209; third, wages increased as the result of an arbitration award made while the hearings were in progress and which dates back to part of the year ended June 30, 1914, \$48,506. The commission allows the first and third items, and reduces the second item to \$40,000. The company also claimed a reduction for extraordinary renewals and replacements, the claim amounting in the maximum to \$218,194. The commission does not pass upon this item and excludes it in its determination. The total reduction from income on account of the above stated omitted expense item is \$107,537.

The commission also finds that if the increase of wages is excluded from consideration the net operating income would be \$974,626, and after deducting the reduction which would be caused by lowering the fare in the rush hours from 5 cents to 3 cents the amount remaining would be \$540,167, and that this sum would be 5 per cent upon the agreed valuation. It is found by the commission upon report of its electrical engineer that the company's expense for electric power in Rochester is not excessive as com-

pared with the price paid for street railway power in Buffalo or Syracuse.

The commission discusses the question whether there would be such an increase of net revenue from the operation of the reduced rate as would cause the net revenue to reach a fair return upon the agreed valuation. Assuming the increase of net revenue must be 2 per cent in order to reach a fair return upon the agreed valuation the commission holds that this would be equal to \$215,822, this being more than a 20 per cent increase on the entire net revenue for the year ended June 30, 1914, exclusive of any deductions for omitted items. The commission says that such 20 per cent increase in net revenue must come from an increase of persons riding due to the 3-cent fare during the busiest hours of the day when the present car capacity is most heavily taxed, and new travel to bring in such net revenue increase must be sufficient to pay for the operation of the required additional cars properly to accommodate all passengers during the rush hours. Of this Mr. Decker's opinion says:

"In all cases the effect of a reduced passenger rate upon traffic is largely speculative. In this case the reduced fare would not fill empty or partly empty operated cars, for it is within our general knowledge that Rochester cars during the rush hour periods, as in most of the large cities, are all fairly and we think fully required to meet present demands. We cannot assume from these considerations that the 3-cent fare as applied to rush hour travel would bring up the net revenue to any such extent as under the figures guiding us here must result in order to warrant the reduction sought upon this complaint. If the difference were small we might find that some increase of net revenue would result. This large deficit, amounting to as much as 20 per cent of the 1914 revenue from operation and 2 per cent of the agreed valuation, is far beyond any increased net revenue which can upon any broad estimate be safely contemplated as a probable result of the proposed decrease of fare."

Referring to the valuation of \$10,791,124 as having been agreed upon by the parties themselves for the purpose of the case the commission says:

"It follows that we have here, as covering valuation of property, an 'agreed case,' as by and between the parties, and therefore one, concerning that branch of the case, in which there is no room for further inquiry and no basis for stating objections concerning any part of such valuation, however pertinent and forceful in an open case involving valuations such objections might be."

The commission points out that, unlike most other carriers' rate cases, there were no preliminary considerations by which to determine whether the 5-cent rate of fare was in and of itself or as applied to the community in general unreasonable or unjust, and calls attention to the following facts: The rate complained of has not been advanced; the rate has been long in force; it applies throughout the whole city and takes in all line extensions which may be made from time to time throughout the city; the 5-cent rate itself is a maximum charge fixed by the Legislature; it is the common street car rate of fare throughout the entire State and all cities and other municipalities; there have not been shown to exist in Rochester any special or peculiar conditions affecting actual travel which do not obtain in other large cities such as Buffalo, Syracuse, Utica or Albany, certainly none that create any sharp distinctions.

The real question for determination in this case was whether the respondent's total revenue from its operations within the Rochester 5-cent fare zone was excessive to the extent that the proposed reduction in fare from 5 cents to 3 cents during the week day rush hours was fairly justified and required. For the reasons above stated the commission found that the reduction asked for in the complaint would reduce the company's return upon the agreed valuation below the rate of return which is justified in law, and therefore that the relief sought by the complainant could not be granted. In conclusion the commission said:

"If the valuation is not too high, and that is a matter which can not be discussed under the agreement to use the valuation, then the return of 4½ to 5 per cent is too low to permit the reduction demanded. There is no escape from that conclusion. In so holding we are controlled by the law,

with no room in any sense for the exercise of discretion. A 6 per cent return upon capital employed in the public service has been deemed to be a minimum fair return, and this after all other allowances necessary to the conduct of the business shall have been made. In many cases a considerably higher rate of return has been held to be required. There may arise here and there cases of over installation of property or over extension of lines where, the general rate being involved, peculiar conditions would justify the conclusion that a lower return than has been ordinarily allowed would be fair. But we have no such peculiar conditions in this case where a special rate is demanded and all of respondent's property and lines are fully required for the public service in Rochester. Since we find that the proposed reduction would reduce respondent's net revenue from operation on the basis of the traffic for the year ended June 30, 1914, to as low as 4½ or 5 per cent upon the valuation agreed upon by the parties herein it is idle to speculate upon what would be a fair return upon such valuation to the respondent."

ANOTHER COMPANY PUBLICATION

The *Southern Public Utilities Company Magazine* has been established by the Southern Public Utilities Company, Charlotte, N. C., "in the interests of the company and for the pleasure and profit of the employees and the public they serve." The first issue is dated Feb. 10. It contains twenty-eight pages and cover. The size is 6 by 9 in. Z. V. Taylor, president of the company, in announcing the publication said:

"For its own interests, and the pleasure and benefit of its officers and employees, the Southern Public Utilities Company has created a publicity department, the chief activity of which is the publication of this magazine, a copy of which goes to every officer and employee of the company. The publicity department has been created for the sole purpose of bringing the men in the various departments into closer relation with the management and with themselves, and in this way developing a higher degree of efficiency, the ultimate aim being to make every patron of the utilities operated by Southern Public Utilities Company a satisfied customer. In charge of this department, the company has placed Leake Carraway, a newspaper man of long years of training, competent and efficient, and for him the company asks the co-operation of every officer and employee, so that this department may at once begin performing its proper function. The purpose of the department and the magazine will be gone into more in detail by the editor."

Mr. Carraway said in part:

"This publication will be used to tell from time to time of especial achievements of individuals, departments, and branches, giving credit where credit is due. The management desires the employees to consider this magazine their own personal property, and suggestions concerning its contents will always be gladly received, the object being to print herein such matter as may be of value to them. The hearty co-operation of the men is asked by the editor, without which the publication will fail to perform its proper function. He invites personal letters and visits from the men at their convenience and pleasure, and believes that with their assistance the magazine may be made of great benefit and pleasure to them, and incidentally of value to the public through service rendered."

TRANSFER SUIT DECISION

Judge A. J. Murphy, of the Wayne Circuit Court, handed down an important and interesting opinion in a suit for damages against the Detroit (Mich.) United Railway over a transfer dispute when he held that it is not proper for a passenger so to conduct himself as to interrupt the continuity of street railway service. In directing a verdict for the defendant company, Judge Murphy laid down the principle that the inconvenience of the individual must be subordinated to the convenience of the public. He outlined that the passenger could have paid another fare or left the car, and it was his legal duty to do one or the other. Failing in either, and holding up the service in an altercation with the conductor to the inconvenience of the traveling public, the plaintiff was without redress, the judge decided.

INDIANAPOLIS TRAFFIC

Official Statement of Passenger Traffic and Interurban Statistics at the Indianapolis Traction Terminal

The following tables relating to the interurban passenger traffic handled through the traction terminal station at Indianapolis, just made public by E. B. Peck, vice-president of the Indianapolis Traction & Terminal Company, who has the direct management of the terminal stations and building, show an increase of nearly 500,000 passengers for the year 1914 as compared with 1913. The population of Indianapolis in 1900, when the first interurbans entered the city, was 169,164. It is now estimated as slightly in excess of 250,000, and a great deal of the growth of the city is attributed to the rapid development of the interurban systems. In considering the 7,012,763 passengers actually handled in and out of Indianapolis in 1914, each person is theoretically considered as making a round trip, and on this basis the actual number of visitors to Indianapolis during the year is estimated at 3,506,281.

DATES WHEN INTERURBAN LINES COMMENCED OPERATING INTO INDIANAPOLIS

Indianapolis, Columbus & Southern Traction Co.	Jan. 1, 1900
T. H. I. & E.—Eastern Division	June 17, 1900
Indiana Union Traction—Muncie Division	Jan. 1, 1901
T. H. I. & E.—Martinsville Division	Aug. 2, 1902
T. H. I. & E.—Brazil Division	Sept. 15, 1902
Indianapolis & Cincinnati—Shelbyville Division	Sept. 12, 1902
T. H. I. & E.—Northwestern Division	Oct. 9, 1903
Indiana Union Traction—Logansport Division	Dec. 3, 1903
Indianapolis & Cincinnati—Rushville Division	July, 1905
T. H. I. & E.—Danville Division	Sept. 1, 1906
Indianapolis, Crawfordsville & Western	July 4, 1907
Indianapolis, Newcastle & Toledo	June 29, 1910
Beech Grove Traction Company	March, 1911

The total number of passengers carried since 1900 was as follows: 1900, 377,761; 1901, 955,554; 1902, 1,523,411; 1903, 2,347,936; 1904, 3,274,654; 1905, 3,881,332; 1906, 4,469,982; 1907, 5,032,677; 1908, 4,979,371; 1909, 5,156,906; 1910, 5,736,272; 1911, 6,279,822; 1912, 6,431,714; 1913, 6,524,366; 1914, 7,012,763.

INDIANAPOLIS TRACTION & TERMINAL COMPANY, TOTAL NUMBER INTERURBAN AND SUBURBAN PASSENGERS ARRIVING AND DEPARTING—INDIANAPOLIS

Month	1914		1913	
	Passengers	Passengers	Passengers	Passengers
January	478,863	479,855	448,686	411,531
February	401,591	448,686	411,531	438,073
March	509,399	411,531	438,073	645,432
April	538,348	438,073	645,432	672,562
May	715,284	645,432	672,562	710,220
June	666,108	672,562	710,220	659,443
July	735,369	659,443	584,804	555,272
August	683,369	584,804	555,272	381,853
September	618,406	555,272	381,853	536,635
October	594,270	536,635		
November	527,556			
December	544,200			
Totals	7,012,763	6,524,366		
Average per day	19,213	17,875		

INDIANAPOLIS TRACTION & TERMINAL COMPANY, TOTAL NUMBER INTERURBAN AND SUBURBAN CARS ARRIVING AND DEPARTING—INDIANAPOLIS

Month	1914		1913	
	Passenger Cars	Freight Cars	Passenger Cars	Freight Cars
January	20,149	2,036	20,058	2,057
February	17,315	1,692	18,434	1,832
March	20,832	2,021	16,442	1,554
April	20,584	2,085	16,260	1,503
May	24,243	2,113	22,499	2,107
June	23,078	2,191	22,683	2,182
July	24,896	2,266	24,120	2,302
August	23,984	2,347	23,506	2,058
September	22,364	2,260	22,742	2,155
October	21,230	2,296	22,053	2,320
November	20,069	2,051	15,692	1,480
December	21,062	2,130	22,064	1,951
Totals	259,806	25,488	246,823	23,501
Average per day	712	70	676	65

†Flood March 25, 1913. ‡Interurban strike Aug. 25, 1913. *Indianapolis strike Oct. 31, 1913.

THROUGH LIMITED TRAINS ARE OPERATED BETWEEN INDIANAPOLIS AND

	Miles	Time	No. Trains Daily Each Way
Ft. Wayne, Ind.	136	4 hours 55 min.	10
Goshen, Ind.	160	5 hours 27 min.	2
Louisville, Ky.	117	4 hours	6
Terre Haute, Ind.	72	2 hours 25 min.	7
Marion, Ind.	72	2 hours 40 min.	2
Lafayette, Ind.	70	2 hours 10 min.	5
Richmond, Ind.	70	2 hours 35 min.	7
Muncie, Ind.	57	1 hour 50 min.	10
Connorsville, Ind.	58	1 hour 55 min.	4
Greensburg, Ind.	49	1 hour 45 min.	6

FARES IN LETHBRIDGE

The *Canadian Railway and Marine World* prints the following report made to the City Council of Lethbridge, Can., by Commissioner A. Reid, who recommended the raising of fares on the municipally operated street railway line:

"From Jan. 1 to Oct. 31, 1914, the number of street railway fares paid by regular tickets (six for 25 cents) was 396,737; number paid by limited tickets (8 for 25 cents) was 144,194, or nearly 31 per cent of that paid by regular tickets; number paid by cash was 289,907, or 73 per cent of that paid by regular tickets; number of fares paid by limited tickets was about 26 per cent of that paid by cash and regular tickets; returns from children's tickets amount to \$786.39; from limited tickets, \$4,506.08; from regular tickets, \$16,530.70, and from cash fares, \$14,495.34.

"If the number of passengers carried remained the same up to Oct. 31, 1914, and we had charged 5 cents instead of giving six tickets for 25 cents the revenue would have been increased \$3,300, and if six tickets for 25 cents had been given instead of eight for 25 cents the revenue would have been increased \$1,500, making a total of \$4,800.

"After a careful study of the above, and considering the small percentage of passengers using limited tickets, I would recommend the following changes, to go into effect on Dec. 1: That the use of the present limited tickets be discontinued, and the regular tickets (six for 25 cents) be substituted; these tickets to be good for the following hours: 6 to 8 a. m., 12 noon to 2 p. m., and 5 to 7 p. m. The regular fare to be 5 cents and 10 cents after midnight. Children's tickets (ten for 25 cents) to be continued. Two children to travel on one 5-cent fare, but not on one ticket. If children's tickets are used, each child must have a ticket, and the age limit be from five to fourteen years. Children under five to travel free.

"The present employees' tickets to be discontinued and books of blue tickets substituted (twenty-five for \$1). The carrying of policemen and firemen free to be discontinued, and these departments to purchase blue tickets as required."

Report on Subway Air.—Commissioner of Health Goldwater of New York proposes to report to the Public Service Commission of the First District the result of tests of air taken from the subway and examined under his supervision to determine the degree of germ saturation.

Street Flushing in Columbus.—The city officials of Columbus, Ohio, are negotiating with the Columbus Railway, Power & Light Company to flush the streets. Figures already secured indicate that the expense will be less than half what it has been with wagons. If the arrangements are completed the company will purchase a tank car with a capacity of 4000 gal.

Interurban Brings Farmer and Laborer Together.—J. F. Strickland, president of the Texas Traction Company, Dallas, Tex., announced recently that a "labor special" would be run between Dallas and Sherman to afford farmers in Dallas, Collin and Grayson Counties an opportunity to get into touch with prospective farm hands aboard the train recruited among the unemployed in Dallas.

Hearing on Trailers.—At the hearing before the District Electric Railway Commission on Feb. 16 representatives of the Washington Railway & Electric Company and the Capital Traction Company urged the commission to rescind the order against the operation of trailer cars except when separate conductors are used. They contended that a single conductor made for safety. The commission reserved decision.

Report on Montreal Traffic.—G. R. Macleod, railway engineer of the City Council of Montreal, Que., has made a special report on the tramway system. He states that additional and improved facilities are needed, both for the satisfactory handling of street railway traffic and general street traffic, particularly in the more central thoroughfares of the city. Mr. Macleod is against the operation of motor buses. He suggests the building of several subways.

Prepayment System in Suburban New York.—The Westchester Electric Railroad, operating in Mount Vernon and New Rochelle, N. Y., has equipped all its cars with fare boxes and hereafter will use the pay-as-you-enter system of fare collection. The company also plans to rebuild its

closed cars and install a prepayment vestibule with a door closing and step lifting mechanism similar to that recently developed by the Third Avenue Railway, New York, of which it is a subsidiary.

Seattle Fare Hearing.—The Public Service Commission of Washington has set March 1 as the date for hearing the case of the city of Seattle against the Puget Sound Traction, Light & Power Company relative to a complaint alleging that the company is charging more than a 5-cent fare within the city limits. It appears that there are some small stations where stops are made by interurban trains inside of what was formerly Georgetown, now South Seattle, where the fares are 6 and 8 cents.

Change in Fares on International Railway.—The International Railway, Buffalo, N. Y., has filed with the Public Service Commission of the Second District the following changes in local round trip fares effective on March 1: Between Buffalo and Lockport 60 cents, advance of 10 cents; between Buffalo and Niagara Falls 60 cents, reduction in unlimited fare 5 cents; fare of 50 cents for ticket limited to within ten days from date of sale is canceled; between Lockport and Niagara Falls 60 cents, an advance of 10 cents.

Through Service Discontinued.—On account of the withdrawal of the Dayton & Troy Electric Railway, the through service between Toledo and Dayton over the lines of the Toledo, Bowling Green & Southern Traction Company, the Western Ohio Railway and the Dayton & Troy Electric Railway by way of Lima will be discontinued on March 1. This service was established five years ago. The route is 162 miles in length. The Toledo, Bowling Green & Southern Traction Company and the Western Ohio Railway will continue the service over their lines, the terminals being Toledo and Piqua, 131 miles distant.

Fare Suit Dismissed.—The suit to compel the Portland Railway, Light & Power Company, Portland, Ore., to charge a 5-cent fare to all points on the Cazadero Line west of Lents Junction and to issue transfers between Lents Junction on the Mt. Scott line and Watson Station on the Cazadero Division has been dismissed by Circuit Judge Cavanaugh on demurrers filed by the company. The court held that the State law prohibiting a charge of more than 5 cents for any continuous ride within city limits had been repealed by implication by the public utility law and that the suit, brought by the District Attorney for the State, should have originated with the State Railroad Commission.

Change in Passenger Rates.—The Newark & Marion Railway, Newark, N. Y., has filed with the Public Service Commission of the Second District of New York, effective on March 17, the following changes in rates: Local cash fares advanced 5 cents between Newark and Mills, East Palmyra, Jagers, Manders, Rich and Marion; 10 cents between Newark and Mill street; 5 cents between Town Line and Manders, Mill Street, and Marion, and 5 cents between Fishers and Mill Street and Marion; reduction of 5 cents between Mills and Fishers. Ticket fares between Newark and Marion advanced 5 cents one way and 10 cents round-trip. Fare for weekly ticket, good for six round-trips between Newark and Marion within seven days including date of sale, advanced from \$1.50 to \$1.80.

Mr. Whitridge's Snow Pictures.—As a result of a notice posted by Frederick W. Whitridge, president of the Third Avenue Railway, New York, N. Y., in all the surface cars of the system, offering prizes of \$5 and \$10 for the best photographic evidence of the extent to which surface cars are delayed and blocked by wagons of all descriptions following snow falls the offices of the company have been swamped with offerings from competitors. From the photographs submitted it was not difficult, according to the *New York Sun* of Feb. 21, to select more than twenty to which the awards were allotted. Very few of the pictures needed explanation, although, of one, which showed a Third Avenue car shoving a loaded coal wagon up the hill on Amsterdam avenue, Mr. Whitridge remarked: "I venture to say that there is not a pound of coal goes up that hill that isn't pushed up by our surface cars." The *Sun* published five of the photographs.

Fares in Edmonton.—The item regarding fares in Edmonton published in the *ELECTRIC RAILWAY JOURNAL* of Feb. 6, page 311, was in error through a mistake made by

the Canadian correspondent of this paper in dating the item. According to J. H. Larmonth, superintendent of the Edmonton (Alta.) Radial Railway, there has been no change in the rate of fare at Edmonton since last May, when practically a straight 5-cent fare was adopted. The rates of fare in Edmonton now are for adults, good at all times of the day, 5 cents or five tickets for 25 cents; limited tickets, during the hours of 5:30 a.m. and 8 a.m., six tickets for 25 cents; children under fourteen years old, twelve tickets for 25 cents. The item as originally published referred presumably to changes at Lethbridge of which mention is made elsewhere in this issue.

Restoration of Through Service Ordered at Boston.—The Massachusetts Public Service Commission has ordered the Boston Elevated Railway to restore through service between Oak Square, Brighton and Central Square, Cambridge, via River Street, covering both normal and rush hours. In a petition to the board the Faneuil Improvement Association objected to the requirement of transferring at either of two points in the Brighton district in the inter-suburban trip between Central and Oak Squares, which is afforded by the River Street and the Western Avenue lines radial to the Cambridge subway from Central Square. In its finding the board holds that the company should maintain through service on one of these virtually parallel routes at all hours, but does not require a dual through service in view of the transfer facilities available upon a single fare.

Commission Approves Boston Transfer Facilities.—The Public Service Commission of the State of Massachusetts has approved the establishment of free transfer privileges by the Boston Elevated Railway in connection with the opening for service of the westerly section of the Dorchester tunnel. The Washington Street and Dorchester tunnels cross at different grades at Washington, Winter and Summer Streets and the transfer facilities in general provide for interchange between north and southbound, east and westbound surface and tunnel cars and trains. The board has ordered the establishment of free transfer privileges at Dewey Square, Boston, between southbound Atlantic Avenue and Washington Street-Dudley Street surface cars, and between northbound cars boarded on Washington Street between Dover and Boylston Streets and Powers Wharf-Atlantic Avenue cars.

Albany Traffic Figures.—C. F. Hewett, general manager of the United Traction Company, Albany, N. Y., has filed with the Public Service Commission of the Second District of New York the figures of the check which the company has made of the traffic during the last thirty days. In a letter accompanying the figures Mr. Hewett says: "From our first analysis of these checks we are inclined to the belief that we are giving very satisfactory service on all the lines checked, with the exception of a few trips in the morning and evening on the Delaware Avenue and West Albany lines, and it would seem that a readjustment of the spacing of the cars should be made to more suitably conform to the flow of traffic. Before we take this step, however, and after your electric railroad inspector has had an opportunity of examining these checks, we would like to have a conference with him in reference to these readjustments."

Tobacco Shipments.—In view of the fact that incoming freight business on the Louisville & Interurban Railroad has been light in the last few weeks, C. H. Wyatt, general freight agent of the company, has been active in securing tobacco traffic between Shelbyville, which is an important loose-leaf market 30 miles out, and Louisville, where the shipments are concentrated. The steam roads heretofore have enjoyed this business, but by going after it vigorously Mr. Wyatt has been able to secure shipments to make the return trips to Louisville pay. In the six weeks of this year the company has hauled about 1,200 hogsheads, using extra cars only when quick deliveries were imperative. The Louisville & Interurban Railroad has a potential advantage over the steam roads in that it is able to run its cars to the very doors of the tobacco warehouses, thus eliminating the expense of drayage. The largest steam cars hold about fifteen or sixteen hogsheads, while the regular freight cars of the Louisville & Interurban accommodate about thirteen or fourteen hogsheads.

Personal Mention

Mr. H. L. Beach, Chicago, has been appointed manager of the Utah Light & Traction Company, Salt Lake City, Utah, to succeed Mr. Joseph S. Wells.

Mr. Joseph S. Wells, formerly manager of the Utah Light & Traction Company, Salt Lake City, Utah, has been elected secretary, treasurer and a director of the company.

Mr. C. S. Banghart, who became connected with the Binghamton (N. Y.) Railway in August, 1914, as general manager, has in addition been elected vice-president and a director of the company.

Mr. Will Clapper has been appointed traffic manager of the Interurban Railway, Des Moines, Ia., to succeed Mr. C. T. Chapman, whose appointment to the Dan Patch Air Line is referred to elsewhere in this column.

Mr. H. C. Snyder has been appointed general manager of the Wahpeton-Breckenridge Street Railway, Breckenridge, Minn., to succeed Mr. H. C. Hartung, whose appointment to the Lewiston-Clarkston Transit Company is noted elsewhere in this column.

Mr. David Daly, manager of the Houston (Tex.) Electric Company, has been appointed second vice-president of the Southwestern Electrical & Gas Association, succeeding Mr. C. W. Kellogg, Jr., who recently left the Southwest to become manager of the Mississippi River Power Company at Keokuk, Ia.

Mr. C. W. Whitley, Salt Lake, has been elected president of the Utah Light & Traction Company, Salt Lake City, Utah, which controls the electric railway properties in Salt Lake City and has leased the electric light and power properties in Salt Lake and Ogden and its gas business in Ogden to the Utah Power & Light Company.

Mr. H. C. Hartung has resigned as general manager of the Wahpeton-Breckenridge Street Railway, Breckenridge, Minn., effective on March 1 to become general manager of the Lewiston-Clarkston Transit Company at Lewiston, Idaho. The construction work of the Lewiston-Clarkston Transit Company's line is expected to commence about March 15.

Mr. Leake Carraway, a newspaper man of long experience, has been appointed to the head of the publicity department of the Southern Public Utilities Company, Charlotte, N. C., with direct charge of the *Southern Public Utilities Company Magazine*, established by the company in its own interest and for the pleasure and profit of the employees and the public.

Mr. C. T. Chapman, traffic manager of the Interurban Railway, Des Moines, Ia., has been appointed to the same post with the Dan Patch Air Line, Minneapolis and St. Paul, and will take up his new duties on March 1. Mr. Chapman became connected with the Interurban Railway with Mr. James R. Harrigan when the latter took charge of the Des Moines City Railway in the spring of 1911.

Mr. C. J. Griffith, general manager and treasurer of the Little Rock Railway & Electric Company, Little Rock, Ark., has been elected president of the Chamber of Commerce of that city. The nominating committee of the chamber named Mr. Griffith as candidate with a board of seventeen members representing the blue ticket and Mr. W. S. Brandon with a board of seventeen representing the red ticket. A campaign was conducted for two weeks, the result of which was the election of the entire blue ticket. Some 800 business men are members of the Chamber of Commerce and Mr. Griffith and the blue ticket carried the election two to one.

Mr. H. M. Byllesby was guest of honor at a dinner given by the employees of H. M. Byllesby & Company, Chicago, Ill., on Feb. 16 at the Congress Hotel in that city. The occasion was Mr. Byllesby's fifty-sixth birthday. Mr. M. A. Morrison was toastmaster. Among the speakers were: Messrs. J. J. O'Brien, R. J. Graf, E. C. Braun, R. G. Hunt, W. R. Thompson, H. W. Fuller, W. H. Hodge, B. W. Lynch, W. H. Clarke, F. H. Lane and W. C. McKenna. Mr. Byllesby replied in a delightful talk filled with suggestions, advice, optimism and reminiscences of some of the prominent men who influenced his work and ambitions, such as

Mr. Thomas A. Edison and Mr. C. A. Coffin and the late William C. Whitney and the late George Westinghouse.

Mr. W. W. Magoon, general manager of the Ohio Valley Electric Railway, Huntington, W. Va., has resigned, effective on May 1. Mr. Magoon became connected with the street railway properties at Huntington in 1893 when he accepted the position of bookkeeper for the Consolidated Light & Railway Company, which built the first railway in that city. In September of the same year he was made superintendent, and in 1894 was elected secretary and general manager to succeed Mr. F. L. Doolittle. He continued in that position until 1904 when he resigned to become connected with Cole & Crane in Cincinnati, where he remained for three years. Returning to Huntington in 1907, he resumed the position of general manager of the Ohio Valley Electric Railway. Mr. Magoon expects to take a vacation, but his plans for the future have not been definitely decided. The Huntington *Advertiser*, in commenting editorially on Mr. Magoon's resignation, said that his retirement from the company "marks the close of a long and honorable service rendered to the Ohio Valley Electric Railway and its predecessors." Another local paper said editorially it was the sincere wish of those who had so long known him and been associated with him that Mr. Magoon would continue to enjoy the privileges of Huntington citizenship.

Mr. Richard McCulloch, who has been elected president of the United Railways, St. Louis, Mo., was born in St. Louis County on June 3, 1869. Mr. McCulloch was educated in the St. Louis public schools and Washington University, where he was graduated from the engineering department in 1891. He was later (1905) given the honorary degree of Master of Arts by Washington University. After spending one season in the service of the United States Geological Survey and one year in Mexico in the mining business, he became chief engineer of the National Railway, St. Louis, which at that time owned the railways in the north-western part of the city, which are now the Broadway, Lee, Cass, Natural Bridge, Wellston and Seventh Street lines. The Broadway and Wellston lines were cable roads, and the others were horse roads, which were converted to electric traction. Most of this work was done under the supervision of Mr. McCulloch. In 1899 Mr. McCulloch went abroad for two years. During this time he built and put in operation the electric railway system of Geneva, Switzerland, and also spent some time planning the construction of a network of interurban railways radiating from Lille, northern France, near the Belgian frontier. In 1901 Mr. McCulloch returned to America, where he became assistant general manager of the Chicago City Railway, which operated the lines on the South Side, comprising about one-half the mileage of the surface lines of Chicago. In 1904, the year of the World's Fair, Mr. McCulloch became connected with the United Railways, St. Louis, as assistant general manager, and in 1909 was made vice-president. Upon the death of Capt. Robert McCulloch, in the Fall of 1914, he was made general manager, and was elected president at the annual election on Feb. 9.



RICHARD M'ULLOCH

OBITUARY

A. Wissel, director of the Rheydt Municipal Railways, Rheydt, Germany, was killed in battle in Poland on Dec. 2, 1914.

Judge William M. Kavanaugh, ex-United States Senator from Arkansas, president of the Little Rock Railway & Electric Company, Little Rock, president of the Southern Trust Company, Little Rock, and president of the Southern Association of Baseball Clubs, died at his home in that city on Feb. 21 suddenly from acute indigestion. Judge Kavanaugh was fifty years old. He was a native of Kentucky.

Construction News

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

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

RECENT INCORPORATIONS

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—Application for a charter has been made by this company in Idaho to build electric railways in the Lewiston-Clarkston Valley from Lewiston to the Orchard Tracts, to Asotin and through Clarkston and to the fair and stock grounds east of Lewiston. Capital stock, \$500,000. Incorporators: A. G. Nortz, E. H. Nortz and G. W. Burrows, Breckenridge, Minn.; W. N. Nortz, Devil's Lake, N. D., and R. C. Dahlhjelm and Eugene A. Cox, Lewiston. [E. R. J., Jan. 31, '14.]

***Alva, Buffalo & Colorado Railroad, Buffalo, Okla.**—Chartered in Oklahoma to build a 20-mile interurban railway, the motive power to be either steam, electricity or gasoline, between Buffalo and Rosston. Capital stock, \$10,000. Incorporators: J. H. Moran, L. A. Walton, George Stafford, L. L. Walton and I. M. Morgan, all of Alva, Okla.

FRANCHISES

***Los Angeles, Cal.**—A number of the improvements associations of the southern part of Los Angeles have formally petitioned the City Council to offer for sale an electric railway franchise on South Park Avenue from Thirtieth Street southerly to Manchester Avenue, a distance of several miles. The matter will be considered by the Board of Public Utilities within the next few days.

Stockton, Cal.—The Central California Traction Company has asked the Council for a franchise to extend its lines on North Sacramento Street in Stockton.

Chicago, Ill.—The Chicago & Northern Interurban Railway has asked the State Public Utilities Commission of Illinois for a certificate of convenience and necessity to build a 12-mile electric railway from the city limits of Chicago to Wheeling. Jordan E. Van Natta, Chicago, attorney for the company. [E. R. J., July 18, '14.]

Pocatello, Idaho.—J. R. Munn has received a franchise from the Council to build an electric railway in Pocatello. [E. R. J., Feb. 20, '15.]

Findlay, Ohio.—An ordinance giving the Toledo, Bowling Green & Southern Traction Company a twenty-five-year franchise in Findlay has had its first reading in Council. It requires that the company pay the city 2 per cent of its earnings on the local lines, after it has paid 6 per cent dividends on its investment. It is said that the company will accept the ordinance.

Lorain, Ohio.—A renewal of its franchise is being sought by the Lorain Street Railway and the city authorities have asked Street Railway Commissioner Witt of Cleveland to aid them in their negotiations with the company.

Massillon, Ohio.—A petition has been signed by residents of North Mill Street asking the City Council to confer with the Northern Ohio Traction Company in regard to building a line in North Mill Street from Cherry Street to the city limits of Massillon.

Hamilton, Ont.—Formal application will be made by the Council to the railway board to order the Hamilton Street Railway to relay its tracks on York Street, King West Street, Margaret Street and Herkimer Street in Hamilton.

Toronto, Ont.—The Forest Hill Electric Railway will ask for a franchise at the next session of the Ontario Legislature for an extension of time until 1917 in which to begin the construction of its line. [E. R. J., Feb. 13, '15.]

Toronto, Ont.—The Ontario Railway & Municipal Board has instructed the Toronto Railway to complete certain lines recently ordered by the board.

Milwaukee, Wis.—Residents on Green Bay Avenue and on Twenty-seventh Street in Milwaukee have petitioned the City Council for an extension of the electric railway on the Third Street and Twenty-seventh Street lines to the city limits of Milwaukee. Under the blanket franchise the Milwaukee Electric Railway & Light Company is obliged to develop its tracks as directed by the Council in Milwaukee.

TRACK AND ROADWAY

Birmingham Railway, Light & Power Company, Birmingham, Ala.—Something more than \$150,000 will be required to complete the work begun in 1914 in the various departments of this company. The largest item is for the completion of the First Avenue viaduct. Most of the expenditures will be for improvements and maintenance of the present system.

***Pratt Consolidated Coal & Iron Company, Birmingham, Ala.**—This company is building an electric line from its Maxime mine to a point near the Warrior River, where the backwater from lock 17 will touch. Surveys have been made and work will soon be begun laying the rails.

North Alabama Traction Company, New Decatur, Ala.—This company has received permission from the Senate to build a new bridge over the Tennessee River near Decatur, Ala.

Argenta (Ark.) Railway.—During the next few weeks this company expects to complete 1,000 ft. of track reconstruction and 2,000 ft. of new track, extending its Washington Avenue line to the Rock Island station in Argenta.

Phoenix (Ariz.) Railway.—The Brill extension to Princeton Heights has been completed by this company and will soon be placed in operation.

Calico Rock, Ark.—As soon as financial arrangements can be made this company will begin work on its proposed electric railway to connect Hoxie and Calico Rock. J. W. Myers, Calico Rock, is interested. [E. R. J., Jan. 23, '15.]

***Eureka, Cal.**—Plans and specifications are being considered to build an electric railway to enter Eureka over a line to be built down the Klamath River from Klamath Falls to Requa, and thence down the coast by way of Trinidad. Power will be obtained at Ishi Pishi Falls, on the Klamath River, near the mouth of the Salmon River.

San Francisco (Cal.) Municipal Railway.—This company has placed in operation its California Street municipal line as far as Fourteenth Street in San Francisco. It will be built as far as Thirty-third Avenue. This new line connects with the Geary Street line at Second Avenue, its route being over Second Avenue and Cornwall Street and California Street.

Sausalito (Cal.) Incline Street Railway.—Plans and specifications for this proposed electric cable railway have been completed and the company will soon call for winding machinery, rails, slot bars, cables, ties, pulleys, electric motors, cars and electric trolley equipment, etc. For further information address A. E. Roberts, Sausalito, chief engineer. [E. R. J., Jan. 2, '15.]

New Britain (Conn.) Street Railway.—Preliminary arrangements are being made by this company to complete the organization of this company to build an electric railway between Hartford and New Britain and between New Britain and Plainville. Capital stock, authorized, \$500,000. Mortimer H. Camp, New Britain, is interested. [E. R. J., Feb. 13, '15.]

Jacksonville-Middleburg Electric Railway, Jacksonville, Fla.—Grading is under way on the section of this line from Jacksonville Heights to Jacksonville and will stop at the Seaboard Air Line Shops, and when this section is built the company will begin on the Middleburg end and close in the section between the two. Right-of-way along the entire 24 miles from Jacksonville to Middleburg has been secured. The first 10 miles have been financed and material and labor have been contracted for. Application for a charter will soon be made. A. W. Mackinlay, general manager. [E. R. J., Feb. 6, '15.]

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—Plans are being made by this company to begin work about March 15 on its electric line between Lewiston and Clarkston. Orders will be placed at once for material, machinery and line material. H. C. Hartung, Lewiston, Idaho, general manager. [E. R. J., Jan. 31, '14.]

Murphysboro & Southern Illinois Railway, Murphysboro, Ill.—Preliminary arrangements are being made by this company to build its 8-mile line between Murphysboro and Carbondale. The work will include one 175-ft. span single-track bridge and a 60-ft. plate girder span. The date of the letting of contracts has not been decided. Edward Flad

& Company, St. Louis, Mo., engineer. [E. R. J., Feb. 6, '15.]

Pekin & St. Petersburg Interurban Railway, Pekin, Ill.—Contracts will be awarded at once by this company for the proposed reconstruction and extension of its lines in Pekin.

Chicago, Peoria & Quincy Traction Company, Peoria, Ill.—Preliminary surveys will be begun in Quincy the first week in April by this company on its line between Quincy and Peoria. Work has already been begun on the eastern section of this proposed line. J. L. Soebbing, president. [E. R. J., Feb. 13, '15.]

Peoria & Chillicothe Electric Railway, Peoria, Ill.—The stockholders of the proposed electric railway from Peoria, Ill., to Chillicothe, Ill., have held their first meeting and named an executive committee of five to engage an engineer and to begin the work. The executive committee consists of E. V. Mattice, Henry T. Mallen, W. V. Burroughs, E. A. Mitchell and Arthur C. Black. This committee was given full power in matters of organization. At an organization meeting of the committee Mr. Mitchell was elected chairman and Mr. Black secretary. It is expected that work will begin upon this route shortly after March 1. The line will run from Peoria through Mossville, Rome and Chillicothe and will terminate at the Santa Fé depot in North Chillicothe.

Quincy (Ill.) Railway.—Plans are being considered by this company to reconstruct and improve some of its lines in Quincy.

Springfield & Central Illinois Traction Company, Springfield, Ill.—Plans are being considered by this company to begin work soon on its electric line through southern Illinois and Indiana, with St. Louis as the western terminus. The right-of-way has been obtained from Terre Haute, Ind., to St. Louis, and also for an intersecting line from Springfield to Duquoin, Ill. The necessary franchises have been granted. Isaac A. Smith, St. Louis, Mo., president. [E. R. J., Jan. 9, '15.]

Trenton & Mercer County Traction Corporation, Trenton, N. J.—An extension of the Warren Street and Fair Street division in Trenton, making a belt line to parallel the municipal docks, is being contemplated by this company.

Brooklyn (N. Y.) Rapid Transit Company.—The new Lutheran Cemetery Elevated Line, extending from Ridge-wood depot to Fresh Pond station, has been placed in operation at once by this company.

Manhattan & Queens Traction Corporation, New York, N. Y.—Plans are under way for the extension of this company's tracks from Archer Street and Jamaica Avenue down Archer Street to Sutphin Road and through Sutphin Road to Pacific Street in Jamaica.

Cleveland (Ohio) Railway.—This company will soon ask the Council to authorize an expenditure of approximately \$840,000, mainly to be used in renewing and resurfacing track in Cleveland. About 21 miles of tracks are to be renewed, 5 miles resurfaced and a \$200,000 turbine installed, according to plans recently announced.

Oklahoma Union Traction Company, Tulsa, Okla.—Plans are being considered for improvements of this company's lines in Tulsa.

Berlin & Northern Railway, Berlin, Ont.—During the next few weeks this company plans to complete its ½-mile extension in Berlin.

London (Ont.) Street Railway.—Plans are being made by this company to extend, double-track and install switches on some of its lines in London.

Toronto (Ont.) Civic Railway.—Work on the civic car line on Lansdowne Avenue south from St. Clair Avenue in Toronto will be begun soon. The work will involve an expenditure of \$105,000.

Toronto, Ont.—Representatives of Whitchurch Township waited on the Hydro-Electric Power Commission of Ontario Feb. 17 at Toronto, requesting that a survey and estimates be prepared of a proposed new radial railway starting in Whitchurch and extending northerly to Georgian Bay. The suggested route of the new line begins at the northern trunk of the Hydro radial proposed to run to Vandorf, along the Concession of East Gwillimbury and thence on to Queensville and Sharon, and northerly to Collingwood, via Barrie and Innisfail.

McKinney, Bonham & Paris Interurban Railway, McKinney, Tex.—Preliminary arrangements are being made by this company to begin work soon on its line between Bonham, McKinney, Paris and Blue Ridge. This line will reach Dallas by way of the Texas Traction Company's line from McKinney to Dallas. L. A. Scott, president. [E. R. J., Nov. 21, '14.]

Dallas (Tex.) Northwestern Traction Company.—At a recent meeting of the stockholders of this company directors were named who selected the following officers: E. P. Turner, president; L. M. Dabney, vice-president; Benjamin B. Cain, treasurer; George Williams, secretary, and John T. Witt, chief engineer. [E. R. J., May 30, '14.]

Dallas (Tex.) Southwestern Traction Company.—Work will soon be begun by this company on its extension from Dallas to Brownwood via Mansfield, Venus, Alvarado, Cleburne, Glen Rose, Hico and other towns. Eventually it will be extended west from Brownwood to San Angelo. At a recent meeting of the directors of this company the following officers were elected: E. P. Turner, president; S. P. Cockran, vice-president; George Williams, secretary and treasurer, and John T. Witt, chief engineer.

Ridgeley & Millerdale Electric Railway, Ridgeley, W. Va.—Work will be begun within the next few weeks by this company on the unfinished electric line in Ridgeley. John L. Miller, president of the company, has purchased a large amount of steel rails and a heavy bridge is to be placed over the Western Maryland Railway tracks near Knobley tunnel. The work on this electric line has been going on intermittently for two years. [E. R. J., Nov. 11, '11.]

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—This company has opened its new depot in Culver City.

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—During the next few weeks this company expects to build a new carhouse with an addition to be used as a power house and office building in Lewiston.

Arkansas Valley Interurban Railway, Wichita, Kan.—This company has opened headquarters in the Rorabaugh-Wiley building in Hutchinson.

Boston & Worcester Street Railway, Boston, Mass.—This company's carhouse in Westboro was destroyed by fire on Feb. 18. The loss, which includes ten cars, is estimated to be about \$100,000.

Detroit (Mich.) United Railway.—The building at Jefferson Street and Bates Street in Detroit is being remodeled by this company for use as an interurban station and general offices. It is expected to have this structure completed within the next four months. To make use of the new building a re-routing of interurban cars will be necessary.

POWER HOUSES AND SUBSTATIONS

Mobile Light & Railroad, Mobile, Ala.—This company will add to its equipment a two-unit, two-bearing, 150-kw generator booster set ordered from the General Electric Company.

San Joaquin Light & Power Company, Bakersfield, Cal.—New machinery is being installed by this company at its substation in Madera.

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—During the next few weeks this company expects to purchase one 125 motor-generator set for its power house in Lewiston.

Chicago, Milwaukee & St. Paul Railroad, Chicago, Ill.—This company has ordered from the General Electric Company three substation equipments for the electrification of its second locomotive division between Three Forks and Harlowton, Mont., each equipment consisting of two 2000-kw motor generator sets with transformers and switchboard apparatus. These sets are to be duplicates of those covered by the previous order.

Norfolk & Bristol Street Railway, Foxboro, Mass.—This company has bought sixteen General Electric 200 C motors for its power house.

Texas Traction Company, Dallas, Tex.—This company will place in operation in substations seven 200-kw and four 300-kw synchronous converters with switchboards and accessories, the contract for all the apparatus having been awarded the General Electric Company.

Manufactures and Supplies

ROLLING STOCK

Montoursville, (Pa.) Passenger Railway is rebuilding cars. Grand Forks (S. D.) Street Railway expects to purchase shortly one motor and one trailer.

Buffalo & Depew Railway, Depew, N. Y., expects to purchase one second-hand double truck for a work car to be built in its own shops.

Ogdensburg (N. Y.) Street Railway expects to purchase within the next six weeks four one-man pay-as-you-enter cars with two-motor equipments.

Sausalito (Cal.) Incline Electric Cable Railway will soon call for bids on cars for its new incline railway. A. E. Roberts, Sausalito, Cal., is engineer.

Lewiston-Clarkston Transit Company, Lewiston, Idaho, expects shortly to purchase about three or four cars, probably double-truck, and very likely second-hand.

New York, Westchester & Boston Railway, New York, N. Y., has issued requests for bids on fifteen new cars of the same general type as those already in operation on this line.

Wilkesbarre & Hazleton Railway, Hazleton, Pa., will issue specifications next week for ten all-steel cars. The cars are designed by L. B. Stillwell, consulting engineer, 100 Broadway, New York.

Boston & Worcester Street Railway, South Framingham, Mass., at the recent fire which destroyed its carhouse on Feb. 18 lost ten of its modern double-truck cars, as noted in detail elsewhere in this issue.

Atlantic City & Shore Railroad, Atlantic City, N. J., is at the present time converting two of its open running-board cross-bench cars into open cars of the center-entrance type with the prepayment feature, at its own shops.

Hagerstown & Frederick Electric Railway, Frederick, Md., is reported as expecting to purchase two 50-ft. 50-passenger cars for operation between Hagerstown and Frederick and one pay-as-you-enter car to be used on the Hagerstown system.

Chicago, Milwaukee & St. Paul Railroad, Chicago, Ill., has ordered nine additional 260-ton electric locomotives from the General Electric Company, for operation on the second engine division of its new electrification, between Three Forks and Harlowton, Mont., a distance of 114 miles.

Southern Public Utilities Company, Charlotte, N. C., has ordered from the Southern Car Company six 40-ft. semi-steel closed passenger cars, to be delivered in 90 days. These cars will be mounted on 39-E Brill trucks with rolled steel wheels and equipped with two GE-80 motors and Westinghouse air brakes.

Toronto (Ont.) Suburban Railway is in the market for six steel 55-ft. motor cars. The company wants only the bodies and trucks, the equipment having been purchased and delivered some time ago. The company is also in the market for five steel 55-ft. trailers. All these cars are for use on the Guelph line extension which it is intended to open up this summer.

TRADE NOTES

The J. G. Brill Company, Philadelphia, Pa., its organization, history and growth, is the subject of a descriptive article in the *Philadelphia Public Ledger* of Feb. 17, 1915.

Ohio Brass Company, Mansfield, Ohio, has received an order for porcelain insulators for the secondary catenary insulation of the Chicago, Milwaukee & St. Paul Railroad's second electrified section between Three Forks and Harlowton.

Walpole Tire & Rubber Company, Walpole, Mass., will, by order of the court, offer its property for sale at Walpole on March 10, 1915. This company was placed in the hands of receivers on Aug. 2, 1913, on account of the failure of the Atlantic National Bank, Providence, R. I. During the period of receivership manufacturing and sales operations have been carried on at a profit for each month's operations. It is expected that the company will continue to carry on business in a vigorous manner after the sale. F. Y. Stewart is

general sales manager. Branch offices are maintained at New York and Chicago.

H. C. Hopson, member of the District of Columbia Bar and certified public accountant, Wisconsin, formerly with the Wisconsin Tax Commission and the Interstate Commerce Commission, has severed his connection of upward of six years with the New York Public Service Commission, Second District, where he was in charge of all financial and accounting examinations relative to capitalization, rates and reorganization and has opened an office in Suite 2425, 61 Broadway. Mr. Hopson is prepared to advise about or undertake general supervision of financing, rates, reorganizations, accounting and valuations of public utilities and railways.

Ford, Bacon & Davis, New York, N. Y., have just issued in pamphlet form, an account of the large cotton-warehouses and terminals in New Orleans, built and operated by the Board of Commissioners of the port of New Orleans, of which they were the engineers. In addition to the large size of these warehouses, the principal feature is the method of internal transportation and handling of the cotton bales. For that work the engineers have introduced a liberal system of electric cranes and elevated railways as well as designed a method of withdrawing one or more bales from the bottom of a pile without disturbing the other cotton in the pile. The New Orleans papers speak of the installation as representing great originality and efficiency in its engineering.

Roller-Smith Company, New York, N. Y., has recently made an improvement in the sensibility of its galvanometer for its direct reading bond tester, which was described in illustrated articles which appeared in the *ELECTRIC RAILWAY JOURNAL* of March 21, 1914, page 682, and Sept. 15, 1914, page 442. It is essential that the galvanometer in an instrument of this type be as sensitive as possible in order that the highest accuracy may be obtained, but at the same time it is not practical to increase sensibility to the point where ruggedness of design is impaired. An instrument of this type is necessarily subjected to more or less rough usage, and this company has incorporated into the instrument a galvanometer in which high sensibility, and therefore accuracy, and ruggedness of design have been unusually developed.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., reports the receipt of the following recent orders: Interborough Rapid Transit Company, six No. 302-F-2 field control motor equipments, equipped with automatic battery control, for the new Belmont Tunnel; Oakland, Antioch & Eastern Railway, equipments of quadruple No. 333-E, 100 hp motors and HL control, duplicating previous orders; Los Angeles & San Diego Beach Railway, Westinghouse No. 317 motors with automatic control, for a number of motor cars, locomotives and trailer cars which they will shortly place in service and operate in trains during the Exposition at San Diego; Hershey (Pa.) Transit Company, several quadruple equipments of No. 101-B-2 motors, duplicates of those purchased last year; Public Service Railway Corporation, thirty-five quadruple equipments of No. 307 motors with HL control, for use on city lines throughout the Newark district and arranged for train operation. This company has standardized on this type of control and has purchased to date 223 equipments for operation on both city and interurban lines.

ADVERTISING LITERATURE

Prepayment Car Sales Company, New York, N. Y., has issued a highly attractive-looking folder entitled "Might."

Electric Service Supplies Company, Philadelphia, Pa., has issued an attractive folder listing, describing and illustrating "Never-Creep" anchors. Some claims made for this new anchor are that it will not creep because the entire pull is made against undisturbed earth, and that it is easy to install. In this folder the illustrations compare the effectiveness of the different anchors now most popular with that of the "Never-Creep."

Williams, Dunbar & Coleman, New York, N. Y., have issued the second number of their four-part series entitled "Short Stories of Public Utilities." This pamphlet deals particularly with the growth of gas and electric light properties, but in describing the investment value of specific companies

includes the following known to the electric railway industry: American Power & Light Company, Portland Railway, Light & Power Company and the Pacific Gas & Electric Company.

Newark Engineering Manufacturing Company, Newark, N. J., has issued a folder which contains illustrations and data on "Shaw" insulators, third rail and line suspension composition insulators. Illustrations are shown of different types of insulators, as installed on the following railways: New York Central & Hudson River Railroad, Third Avenue Railway, Pennsylvania Tunnel & Terminal Company, Long Island Railroad, Interborough Rapid Transit Company, Hudson & Manhattan Railroad.

Wm. B. Scaife & Sons, Pittsburgh, Pa., have issued a folder describing its "We-Fu-Go" water softening and purifying system for boiler feed water in power stations. Views are shown of installations of this system by the Harrisburg (Pa.) Railways and the Bay State Street Railway. Among other railways which have installed this system are: Dayton & Western Traction Company, Rochester (N. Y.) Railway & Light Company, Auburn & Syracuse Electric Railway, South Covington & Cincinnati Street Railway, East Liverpool (Ohio) Traction & Light Company, Rochester, Syracuse & Eastern Railway, Pittsburgh & Butler Railway.

Electric Railway & Tramway Journal, London, England, has issued a large bound diary for 1915. A preface to the diary contains a number of useful tables and data helpful to English and Continental electric railway practice, on such subjects as rails dimensions and weights, thicknesses and equivalent weight per foot for steel plates, town planning in relation to tramways and diameters, area, resistance and weight of aluminum conductors. In the diary section opposite each date of the year is given the proper lighting up time for English railway operators, which is one hour after sunset, Greenwich time. The greatest practical reference value of the diary consists in its directory section, which contains details of the personnel of British and foreign electric tramways.

Stone & Webster, Boston, Mass., have issued their 1915 analysis of electric railway, electric lighting, gas and water properties managed by the Stone & Webster Management Association. The book, which is leather-bound and eighty-four pages in length, contains information regarding the security issues of each one of the companies, the coupons, dividends, trustee and registrar of bonds, transfer agents, mileage, franchises, population, and earnings and expenses for the year ended Dec. 31, 1914. Maps of the leading properties are also inserted. At the back of the book there are placed tables showing coupons and dividends due, the earnings and expenses of all of the companies for the fiscal year, the approximate income from stocks paying from 4 to 10 per cent and 5 and 6 per cent bond interest yields.

Harrison Safety Boiler Works, Philadelphia, Pa., has issued a twenty-page pamphlet which describes the Sorge-Cochrane hot process system of softening boiler feed water. This process is based upon the fact that chemical reactions are more rapid and complete in hot water than in cold water, and the precipitate less soluble and coarser, so that it settles more rapidly. It is claimed that for these reasons more complete elimination of scale-forming matter is possible with an apparatus of a given size and with a given amount of excess reagent than if the water be treated cold, and that since the boiler feed water should be heated in any case, the hot process is the logical system to use for preventing scale in boilers. The fact, which has been deduced from reports by boiler inspection and insurance companies, that over fifty per cent of all boilers in use are defective by reason of the use of scale-forming water, should render this booklet of interest to owners and operators of steam power plants.

NEW PUBLICATION

Annuaire pour l'An 1915.—Published (in French) by Gauthier-Villars et Cie., for the Bureau des Longitudes, Paris, France; paper, 1 fr. 50c.

This French year-book, published as usual in pocket size, serves as an almanac for general scientific information and contains various tables on weights and measures and other statistical data.