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## GROWTH OF THE NEAR-SIDE STOP

The graph showing the growth of the near-side stop in American electric railway practice that was submitted at the San Francisco convention constitutes a most impressive argument in favor of this method of operation. In a thoroughly conservative industry like that of electric railroading a consistent rate of expansion for any practice is bound to be an excellent measure of its utility. Thus the regular increase in the number of companies using the near-side stop, which was only four in 1907, but was sixty-five in 1915, shows a normal and thoroughly satisfactory popularity. The reasons advanced in the past for clinging to the far-side stop have, of course, been numerous and varied, but back of all of these has been the prejudice of a public which still shows the influence of an early training in the horse-car days. Clearly enough the near-side stop would have been a practical impossibility for the horse car, which was handicapped first by the impossibility of making a near-side stop with either platform at a cross-walk, and second by a slow and generally uncertain rate of acceleration, and in consequence the new practice has, until recently, been the subject of much opposition. That it has survived this is, we believe, fortunate for the industry, since an increase, during the past year, of 50 per cent in the number of companies using it is a very definite testimonial as to its merit, as well as an indication that the custom will soon become well-nigh universal.

## BALLASTED AND SUB-BALLASTED TRACK

Supplementing the comments on the annual report of the Engineering Association way matters committee made in a general editorial last week we wish to direct attention to another important result of its work. Realizing the chaotic condition existing as regards the types of track foundations used to carry the same kind of traffic in different parts of the country, this committee recommended for adoption two types, of which most all others are nothing more nor less than modifications. Until more satisfactory results can be obtained from solid concrete construction, which contains many meritorious characteristics, the committee's action will doubtless meet with general approval. By every measure of the data collected throughout the country, the ballasted type of construction was the most popular and gave the best satisfaction. The committee believed, however, that this type of foundation would not meet all classes of traffic and soil conditions, hence recommended the concrete slab sub-ballasted construction. This is more expensive, but is certain to bridge over most unfavorable soil conditions and will

provide a uniform load distribution. The concrete slab, sub-ballasted construction also overcomes some of the undesirable qualities of the solid concrete foundation, namely, that it facilitates installation and makes possible tie and rail renewals without destroying the concrete substructure. Variations in the track surface after the concrete slab has set, may be corrected when the ballast is tamped beneath the ties. If the track becomes out of surface under traffic, the ballasted slab lends itself as readily to resurfacing as a plain ballasted foundation.

## MORE TIME ON THE SAFETY CODE

Electric railway managers will approve the action of the United States bureau of standards in postponing for an indefinite period the conference which had been called for Oct. 27. In spite of the industry of the representatives of the bureau, and of the utilities which will be affected by the rules, in holding conferences in different parts of the country, it is still too soon to attempt to cast the rules into anything like final form. As the details are studied more and more closely it becomes increasingly evident that it is a stupendous task to frame rules which will conserve life and health and at the same time impose no unreasonable burdens upon the utilities. That the utilities are already alive to the importance of the safety movement is evident on every hand. A glance through the pages of the last few volumes of the ELECTRIC RAILWAY JOURNAL will serve to convince the most skeptical on this point as far as the electric railway industry is concerned. It should, therefore, be possible to codify the best practice in safety work in a way that will commend itself to all concerned. But such a consummation requires time, effort and co-operation. The bureau has been most reasonable in granting a request for more time so that additional effort in the direction of co-operation may be expended.

## BROAD-MINDED COMMISSION POLICY

The decision of the Public Service Commission for the First District of New York in the Bronx Gas & Electric Company case, abstracted elsewhere in this issue, is not excessively liberal in its allowances of 20 per cent for contractor's profits, engineering supervision, contingencies and incidentals, and 12 per cent for preliminary and development expenses, for, as Commissioner Wood himself points out, these figures represent simply a conservative average of allowances made in analogous cases by this and other commissions. The allowances are essentially fair, however, and the commission deserves credit therefor. Yet it deserves more

credit for outlining at this time a broad and far-sighted policy in regard to such overhead charges. It is, of course, widely recognized now that overhead percentages, dependent upon the character and the continuity of construction work and methods, and upon the completeness of the appraisal and the construction records, should be included in physical value, but few commissions seem to be inclined to lift their gaze beyond the perusal of the facts presented in any particular case. Hence, it is encouraging to find the New York commission clearly enunciating such sagacious principles as the following: "If corporations do not receive fair and liberal treatment and are denied the right to include such items [as the above] in their expenditures to be reimbursed by the sale of securities, there will be no inducement or encouragement to attract capital, extension work will come to a stop and new enterprise will be discouraged," and "the investment of funds in public utility developments should be encouraged by those in authority as far as it is consistent and proper." Such prescience in valuation work is a thing to be cultivated by every commission.

#### RAIL-WEAR VALUE REPLACES GIRDER STRENGTH

Coincident with the more general adoption of permanent types of track foundations has been the tendency to substitute 7-in. rail sections for the 9-in. sections. This has been a logical evolution, since the 9-in. section has not proved to be a panacea for all track ills, although it aided greatly in prolonging the life of the track structure when more or less meager attention was directed toward improving foundations. Permanent types of foundations also, in a measure, account for the success attending the more general use of the plain girder rail sections, and improved pavement construction has done much to overcome municipal objections to this type of rail. From an economy standpoint the increased wearing area available in 7-in. plain girder and in the more recent grooved girder sections has tended to make them more popular than the earlier 9-in. rail sections. Full advantage has not been taken of the reduction in weight made possible by shallower sections to reduce the weight of the rail, but the metal removed from the web has been added to the head or other portions subject to wear and corrosion.

If an engineer designs the track structure in proper proportion, the additional cost of a more permanent type of track foundation may, to a certain extent, be offset by a reduction in the weight of the rail. This is especially true where the tendency was toward the heavier 9-in. grooved girder sections. Great girder strength is not as necessary with the properly designed permanent track foundations as it was with the older types, where attention was not directed to drainage problems and load distribution on the subsoil. Where the generally accepted permanent types of track foundations have been in service for periods of twelve to fifteen years, the substitution of the 7-in. for the 9-in. sections has been vindicated from an engineering standpoint. This applies particularly where the area of the rail head available for wear has been increased,

or, in other words, head wear area has been substituted for great girder strength. Manifestly there are some cities where this change cannot be effected owing to franchise limitations. On the other hand, there are plenty of examples of unusually long life and particularly satisfactory pavement conditions which could be cited as a most compelling argument for the 7-in. rail sections. Of course, there are localities where the traffic consists of unusually heavy interurban or steam road equipment, and a 9-in. rail may be necessary. On the whole, however, for average street railway and interurban traffic the substitution of the 7-in. for the 9-in. rail is a step in a direction which most companies would do well to follow.

#### PROBLEMS OF THE CLAIMS ASSOCIATION

Probably three of the most important points that came up before the Claims Association at the San Francisco convention were those concerning the prevention of motor-vehicle accidents, the standardization of claims statistics and the installation of a moving-picture exchange by the parent association.

Mr. Hare's careful and critical discussion of the first topic adequately summarizes all that has been said concerning motor-vehicle accident prevention, and his suggestion that uniform state laws be passed to cover motor-vehicle operation is commendable. Electric railways have done everything possible to cut down motor-vehicle accidents, but the persistent recklessness and disregard of the rights of others that characterize automobile collisions make it necessary for the drivers to be forced by restraining regulations to protect themselves and others. When, as the Long Island Railroad found out, it is necessary to install solid, heavy pole gates so that foolhardy drivers cannot disregard the warning of the closed roadway and break through, it is evident that the proper solution of the problem requires more than mere physical safety-devices and the like that have consistently been utilized by the transportation companies. We see no reason why the requirements for motor-vehicle drivers and the penalties for violations of operating regulations should not be as strict as in the case of electric railways and similar carriers, if not more so. Fully detailed and uniform state laws, inexorably enforced by state, county and municipal officers, would certainly aid transportation companies in their often unappreciated efforts to conserve public safety, and such a program merits indorsement by the association.

The standardization of claims statistics, together with the adoption of a standard claims-accounting classification, offers a fertile field for extended study by the Claims Association, and we confidently expect that by the next convention the association will be ready to take definite action along this line. The act just now of the joint committee on claims-accounting in deferring its report for a year is more praiseworthy than otherwise, for too much time can hardly be taken in endeavoring to unify, if possible, the multitude of diverse ideas held by claim agents on this topic. The difficulties of standardization may seem insurmountable, but they are

actually by no means so, as the accountants with their co-operative and compromising spirit have proved in their solution of the much broader problem of standardizing all their accounting theory and procedure. Mr. Slick's paper on standardizing claims statistics is valuable in outlining some of the questions that must be solved and in describing one system of statistical forms that has been found fairly satisfactory. As a contribution from experience it should receive due consideration by the joint committee in the final analysis.

The efficacy of moving pictures in safety work has in general been amply attested by those who have made use of this method of instructing employees and the public, but, as Mr. Warnock points out, many companies have not yet awakened to the possibilities of such a campaign or have not become sufficiently enthusiastic to put it into operation. The point here at issue is: "Should the American Electric Railway Association establish a film exchange?" Looking at this question from all points of view, we are inclined toward the belief that such an institution would have more favorable than unfavorable features. In preserving safety films of various manufacturers, in carrying only a specialized line, in saving money through mutual interchange of pictures, in making films readily available at a minimum cost to the small companies—in these and other ways the suggested film exchange would render accident prevention by moving pictures more convenient, economical and generally powerful. Some doubt the usefulness of such means as a deterrent or preventive of accidents, and not the least desirable result of a film exchange would be this—that no company would then have a really legitimate excuse for not proving to itself at first hand the possible results of this method.

#### LOOKING BACKWARD

In these days of the jitney and of the motor bus, it may be difficult to realize the enthusiasm which greeted the advent of the street car and its introduction as a substitute for bus transportation in cities. At present, certain advantages of the omnibus and jitney, such as their freedom of movement and fewer stops because of fewer passengers, appeal to many people, and claims are even made that the independent car is suitable as a transportation agent for at least a considerable part of the traffic in any city. In Denver, for instance, automobiles are carrying about one-fourth as many passengers in and out of the business district as the electric railway system. To understand what complete dependence upon the omnibus and private car would mean, however, and what a great boon the car on rails really was, one must go back to the time when the street car was introduced.

We had occasion in a recent issue of this paper to quote some passages from a book on "Street Railways," by Alexander Easton, published in 1857, when horse cars first began to supplant the omnibus, and said that we might again quote from that book in connection with views held of omnibus traffic at that time. We cannot give space here to all of the points brought out by the

author, but some of them are well worthy of attention.

In the first place, the author shows that both the time of the passenger and space on the street is economized by the car as compared with the bus. Space is economized, of course, because the car easily carries three times the number of passengers carried by a bus, but time is economized by the regularity of the service, as when buses were used exclusively it was found impossible to keep them on a regular schedule. If these conditions obtained sixty years ago with the low buildings of that time and the comparatively small amount of traffic on the streets, the advantages must be even greater now with the larger traffic and the streets lined with tall office buildings holding ten or more times the number of occupants. Again, Mr. Easton says "a street car can be taken and vacated without trouble or danger to the occupants of the car, whether invalid or infirm.

"There is marked reduction in the noise, the danger to other users of the street and to those wishing to cross at a corner are greatly lessened by the street car. The omnibus travels from one side of the street to the other, like 'an old rudderless monster,' picking up passengers or seeking a loophole to gain space, whereas the cars are confined to the middle of the street, where drivers of other vehicles and pedestrians can easily avoid them, because they know exactly the direction in which they are going."

The author sketches this picture. A rainy day. Every corner of the sidewalk crowded with impatient pedestrians, each anxiously peering up or down the street in search of the particular omnibus among the fifteen or twenty approaching to carry him home, which, with as many more coming in the opposite direction, so effectually choke up the street that the drays and carts, unable to cross at the intersections, render the highway impossible to private vehicles. The omnibus is crowded to excess, cannot accommodate those waiting to board, and the sudden halt, with imminent risk of collision, and the driver's "plenty of room, sir," with twenty passengers inside, by no means softens the temper either of those waiting or those who have taken passage, as they look upon each moment of unnecessary delay as an infringement on their right. This scene is compared with another where not an omnibus is seen in the entire length of the street. There is no noise, no blockade. Passengers are comfortably seated, and they converse and read newspapers in comfort. No rain drops in from the roof; ladies' dresses are not splashed with dirty water from the gutters. Private conveyances can use the streets with safety, and every one is pleased with the change.

The author may be somewhat biased, but those who remember the days when buses furnished the only means of transportation in an important section of a city, as on lower Broadway in New York during the seventies, will hardly consider the situation overdrawn. In any event, the great increase in congestion that has come with the advent of the skyscraper to the average business district in late years makes for conditions that demand something more than haphazard transportation.

# Progress on C. M. & St. P. Electrification

*The First Division Electrification of 113 Miles Is Nearing Completion and Construction Work on Three Other Engine Divisions Is Actively Under Way, Making a Total of 440 Miles of Main Line Equipped with Forty-Two 280-Ton Locomotives*

REPORTS from Montana show that the work of equipping the first division of the Chicago, Milwaukee & St. Paul Railway's electrified zone is nearing completion, and it is estimated that by the middle of November the first electric train will be tried out between Three Forks, Mont., and Deer Lodge, Mont., a distance of 113 miles. At present construction crews are working from Harlowton, Mont., which is nearly 100 miles east of Three Forks, as far to the west as Drummond, Mont., the latter station being some 30 miles west of Deer Lodge, the western terminus of the electric division that is about to be placed in service.

The electrification, which includes 440 route miles and 650 miles of single track for the four divisions that extend across the Rocky Mountains is thus practically finished for a distance of more than 200 miles, the trackage that is being made ready for immediate train operation including extensive yards and sidings at Three Forks, Deer Lodge and Piedmont, as well as passing tracks at other points. The 100,000-volt transmission line that is being erected by the railway company to parallel the electrified tracks has been installed for an equal distance, and tie-in lines from the 100,000-volt system of the Montana Power Company are ready for service.

Overhead trolley construction and feeder lines are practically completed from Eustis, Mont., to Janney, Mont., making a total of more than 70 miles of overhead work, the former town being east of Three Forks and the latter near the city of Butte at the middle of the Three Forks-Deer Lodge division. The remain-

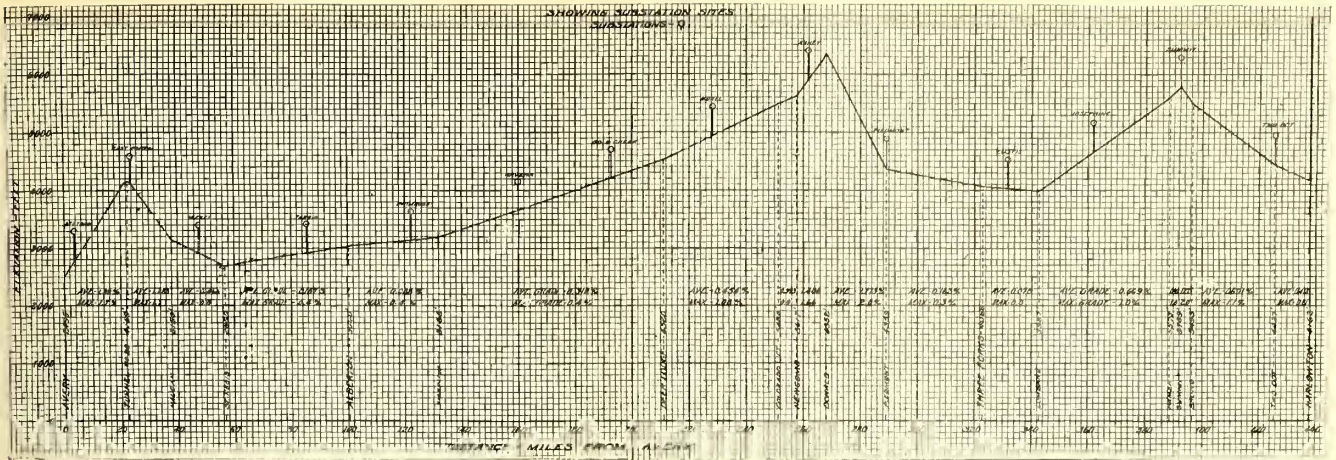
der of the overhead work westward from Janney is stated to be more than 50 per cent complete so that, in general, approximately 75 per cent of the overhead construction is in place. Three track-bonding crews are at work east of Three Forks, the bonding having been completed from Deer Lodge east to Canyon, a few miles east of Three Forks. The transmission line, which is of the wooden-pole suspension-insulator type with double cross-arms, has been completed from a point within 17 miles of Deer Lodge eastward to a point approximately 30 miles beyond Three Forks.

From the foregoing it is evident that the electrified division that extends between Three Forks and Deer Lodge is completely equipped, with the exception of the overhead construction between Butte and Deer Lodge. In addition, a considerable amount of work has been done east of Three Forks on the adjoining division, and in view of the magnitude of the undertaking, which is in charge of C. A. Goodnow, assistant to the president Chicago, Milwaukee & St. Paul Railway, the progress has been remarkable.

The accompanying illustrations show the general appearance of the new type of trolley construction that has been installed. It will be noted that wood-pole construction is used throughout both for cross span and bracket construction. The twin No. 0000 trolley wires are suspended individually and separately from the same steel catenary and the hangers of one trolley wire are located at points opposite the mid-span on the other trolley wire. In the switching yards, however, only one trolley wire is used, because the train movements at these points will take place at low speed, mak-



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—282-TON, 3000-VOLT DIRECT-CURRENT LOCOMOTIVE IN EXPERIMENTAL OPERATION ON TEST TRACK



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—PROFILE OF ELECTRIC ZONE AND SUBSTATION LOCATIONS

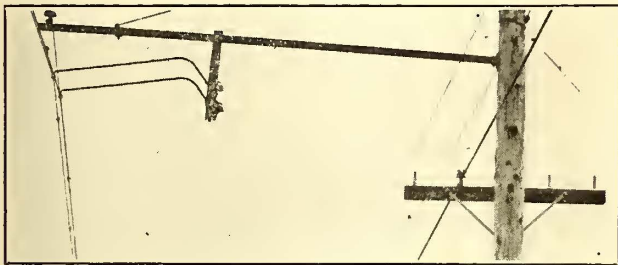
ing the collection of the large drafts of current an easy matter.

SUBSTATIONS AND EQUIPMENT

Seven substations designed to supply power to the eastern half of the 440 miles of route have been completed and electrical equipment is being rapidly installed. Complete shipments of transformers, motor-generator sets, switchboards and other accessories have

erection of the remaining seven substations located between Deer Lodge, Mont., and Avery, Idaho, at the western end of the electrified zone.

Each of the motor-generator sets in the substations consists of a 60-cycle, three-phase, 2300-volt, synchronous motor direct-connected to two 1500-volt direct current generators. The generators are connected permanently in series to supply 3000 volts to the trolley. Each set is also provided with an exciter at each end, one providing excitation for the revolving field of the motor and the other supplying the separately excited fields of the d.c. machines.

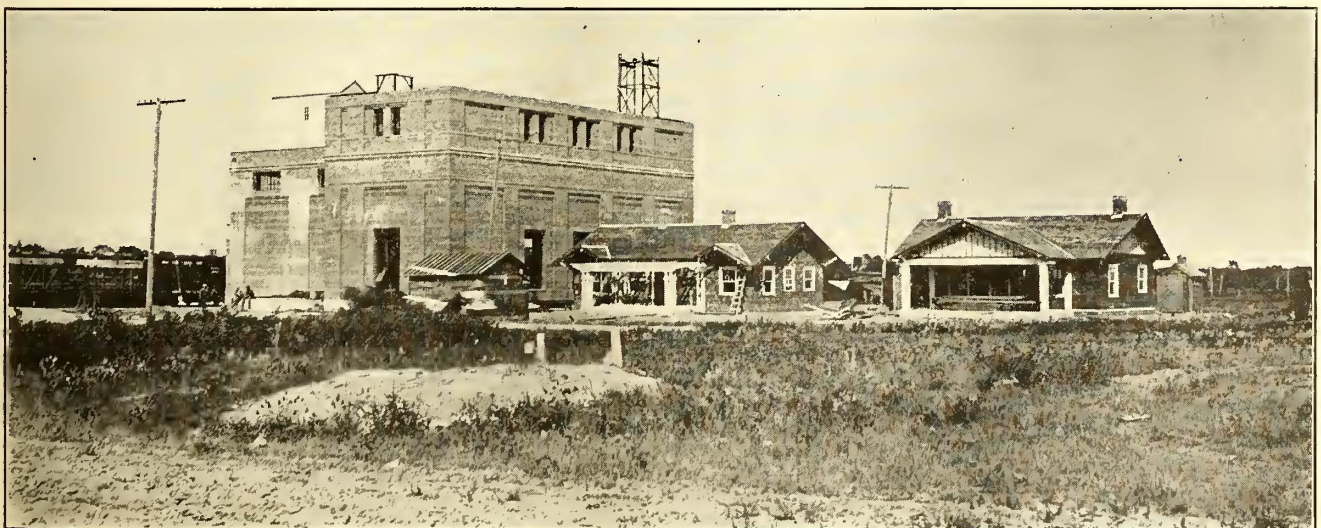


CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—DOUBLE PULL-OFF ON CURVE FOR TWIN TROLLEY WIRE

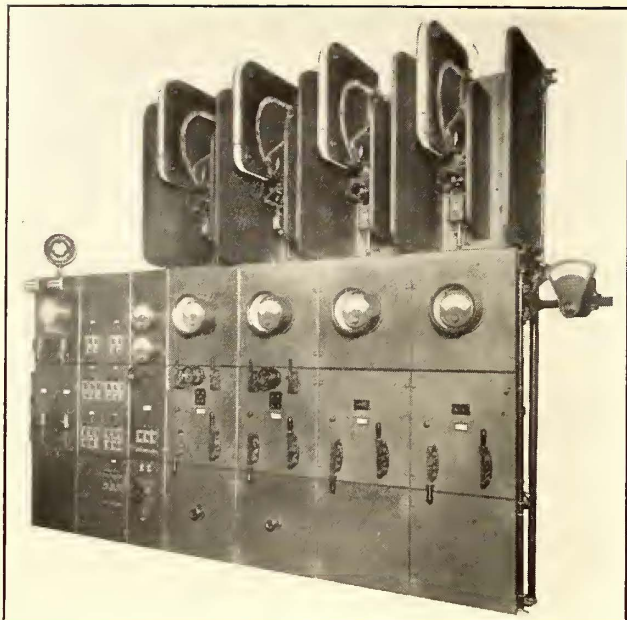
been made by the General Electric Company from Schenectady, N. Y., for the stations first erected, and the equipment of the four substations on the Three Forks-Deer Lodge division is practically ready for operation. Construction crews are proceeding with the

SUBSTATION EQUIPMENT, CHICAGO, MILWAUKEE & ST. PAUL RAILWAY

Station	Miles from Avery	Number Units	Size Motor-Generator Sets	Substation Capacity	Size Trans'rs	Total Trans'rs
Two Dot	425.6	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Summit	392	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Josephine	361.8	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Eustis	331.8	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Piedmont	289.1	3	1,500 kw.	4,500 kw.	1,900 kva.	5,700 kva.
Janney	261.7	3	1,500 kw.	4,500 kw.	1,900 kva.	5,700 kva.
Morel	228.3	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Gold Creek	192.7	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Ravens	160	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Primrose	122.2	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Tarkio	85.6	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
Drexel	47.5	2	2,000 kw.	4,000 kw.	2,500 kva.	5,000 kva.
East Portal	23.7	3	2,000 kw.	6,000 kw.	2,500 kva.	7,500 kva.
Stetson	3.6	3	1,500 kw.	4,500 kw.	1,900 kva.	5,700 kva.
		32		59,500 kw.		74,600 kva.



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—SUBSTATION AND OPERATORS' HOUSES AT TWO DOT, NEAR THE EASTERN END OF THE ELECTRIFIED DIVISION

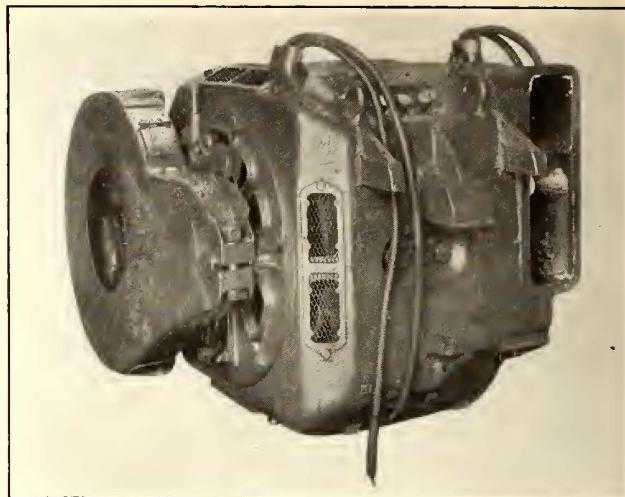


CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—  
HIGH-VOLTAGE, DIRECT-CURRENT SWITCHBOARD  
FOR SUBSTATIONS

These sets are, in general, similar, except as regards voltage and capacity, to the five 1000-kw., 2400-volt units that have been in operation on the Butte, Anaconda & Pacific Railway for the past three years. However, there has been added one new feature which deserves mention. This consists of a longitudinal ventilation of the core and field coils similar to that employed in the well-known GE ventilated railway motor. The use of this method of cooling has effected a considerable reduction in the floor space required per kilowatt.

The d.c. generators are equipped with commutating poles and compensated pole-face windings to insure sparkless commutation under heavy overloads. The overload capacity is 150 per cent of the normal load for two hours, and 300 per cent of the normal load for periods of five minutes. This will provide ample margin for starting a train of maximum tonnage on the most difficult grades.

It is interesting to note in connection with these substations that the motor-generator sets are designed to



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—  
430-HP., 1500-VOLT MOTOR USED ON  
LOCOMOTIVE

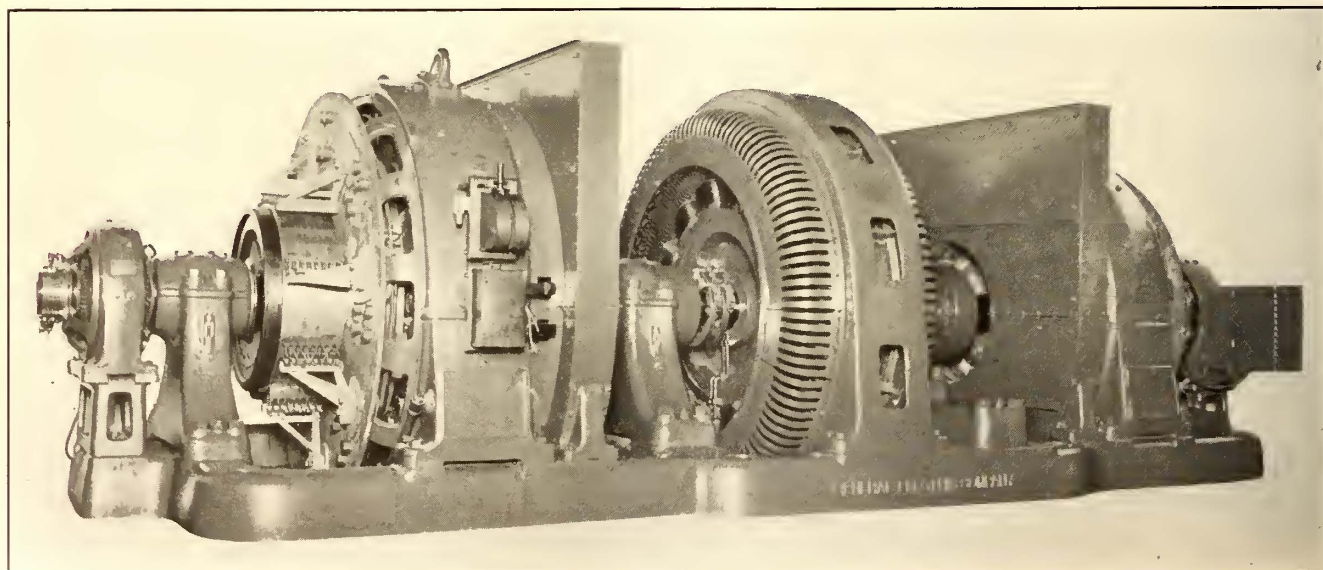
operate inverted in case the power that is regenerated by the locomotives on the down grades exceeds that required by other trains operating nearby. For this reason there is no necessity for water boxes or other energy-consuming devices, since the excess energy is returned direct to the 100,000-volt transmission system.

#### SWITCHBOARDS AND TRANSFORMERS

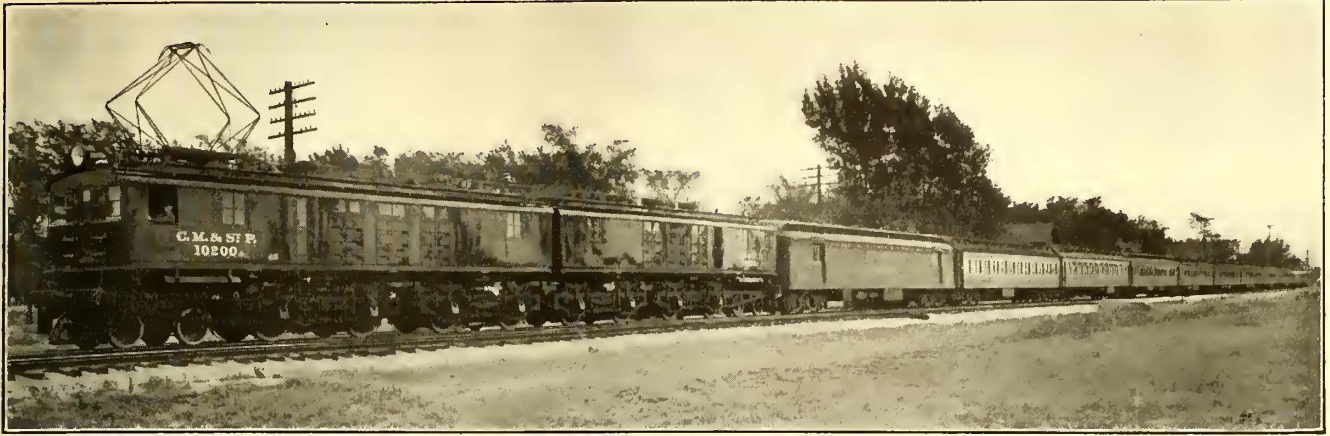
The main direct-current switchboard in each station is of special interest, since it represents the latest practice in high-voltage direct-current switch apparatus. A panel is provided for each set and two panels are provided for feeders in each direction.

The circuit breakers and switches are mounted on separate panels located above and a short distance back of the main panels, similar in general to those now operating in the Butte, Anaconda & Pacific substations. The control handles for operating the breakers and switches are located on the main panels and are connected to the circuit breaker panels through insulated wooden rods.

In addition to the special high-voltage d.c. panels, switchboards are also being furnished for the synchronous motors and auxiliary circuits. Oil switches and



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—VENTILATED 2000-KW. MOTOR-GENERATOR SET FOR 3000-VOLT  
DIRECT CURRENT



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—LOCOMOTIVE COUPLED TO THE "OLYMPIAN," THE FAMOUS TRANSCONTINENTAL TRAIN BETWEEN CHICAGO AND TACOMA

other standard 100,000-volt equipment are also being installed for the high-tension circuits.

The transformers are an excellent example of the most recent design and construction. There is a total of thirty-two of these units which are to be used for stepping down the power supply from the 100,000-volt transmission line to the 2300 volts required for the synchronous motor-generator sets. All are of the three-phase core type with a ratio of voltages of 102,000:2300. For regulating purposes taps are provided for 97,200 volts and 94,200 volts. Taps are also brought out on the secondary windings to give 1150 volts for starting the motor-generator sets.

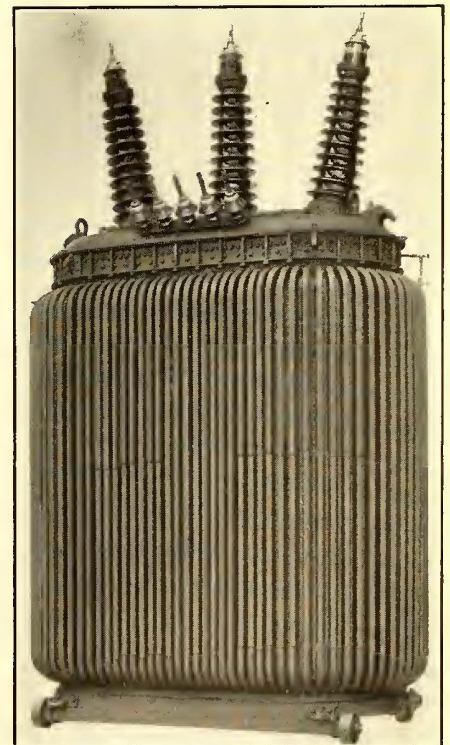
The transformers are oil cooled and the tanks are of the tubular type, the main body consisting of steel plate with tubes welded to the sides of the tank at top and bottom, giving absolutely oil-tight joints. An air dryer and breather is attached to the tank so that all interchange of air between the interior of the tank and the outside must take place through this channel. This drier is provided with chambers containing a

moisture extracting medium thereby preventing the entrance of moisture to the tank.

The bushings furnished with these transformers are weatherproof and as all joints are tight, they are suitable for outdoor as well as indoor operation. At the top of the high tension oil-filled leads is a glass cup which shows the height of oil in the leads. Accessories consisting of thermometer, oil gage and drain valve are also provided. Each transformer is mounted on flat wheels to facilitate movement for making repairs and a lifting device is furnished for removing the transformer core.

In addition to the main transformer equipment, each substation is furnished with a standard 10-kw., three-phase transformer stepping down from 2300 volts to 110 volts for lighting and auxiliary power circuits. For operating the railway signal circuits, a standard, 25-kw., single-phase transformer is being installed in each substation, this stepping up the voltage from 2300 to 4400.

A portable oil drying outfit will be used for remov-



CHICAGO, MILWAUKEE & ST. PAUL ELECTRIFICATION—BONDING CREWS AT WORK—RADIATOR TYPE, 100,000-VOLT TRANSFORMER

ing moisture from the transformer oil. This outfit consists of a motor-driven pump which forces the oil through a specifically-designed filter and an electric drying oven for drying the filter paper. A portable oil-testing set will also be supplied.

For housing the families of the substation operators, four-room and five-room bungalows are being constructed at the stations and these will be furnished with light and power from the low-voltage auxiliary circuits.

#### LOCOMOTIVES

Work on the construction of the forty-two 282-ton locomotives for this electrification is progressing rapidly at the Erie Works of the General Electric Company and in the Schenectady plant of the American Locomotive Company. The first complete locomotive was placed on the test tracks early in September and shipment was made as scheduled on Sept. 25.

This locomotive has been taken in charge by the railway company at Chicago and it is now being towed over the lines of the Chicago, Milwaukee & St. Paul for purposes of exhibition at Chicago, Minneapolis, St. Paul, Spokane, Seattle and Tacoma, Wash. At each of these cities the time and place at which the locomotive is to be on exhibit is announced in the local newspapers. The engine is in the charge of two men familiar with its construction so that any questions which may be asked by the public will be correctly answered. Aside from the exhibition of the locomotive, moving pictures of it are to be exhibited at all points along the lines of the Chicago, Milwaukee & St. Paul Railway. An illustration on page 797 shows the locomotive coupled to the crack train of the St. Paul system, the "Olympian."

A complete set of tests on the Schenectady testing tracks indicate that the locomotive will easily exceed the expectations of the designers which were outlined in the ELECTRIC RAILWAY JOURNAL for June 5, 1915. The actual weights of the complete unit equipped for freight service are as follows:

Total weight .....	564,000 lb.
Weight on drivers .....	448,000 lb.
Weight per driving axle .....	56,000 lb.
Weight per guiding axle .....	29,000 lb.

Twelve of the locomotives on order are geared for passenger service and the remaining thirty are geared for freight service. Both freight and passenger types are equipped for regenerative braking, this apparatus being under control of the engineer. All of the passenger locomotives and several of the freight locomotives will be equipped with oil-fired steam boilers for heating the passenger trains, this equipment, of course, including ample storage tanks for oil and water.

#### Recent Conferences on the Safety Code

The American Electric Railway Association committee to confer with the bureau of standards on the proposed "National Electrical Safety Code of Rules," met in Rochester, N. Y., on Sept. 28, 29 and 30 in pursuance of its study of the code. At this meeting there were present representatives of similar committees appointed by the Central Electric Railway Association, the New York Electric Railway Association, and the Pennsylvania Street Railway Association. Those present were: C. L. Cadle, electrical engineer New York State Railways, Rochester, N. Y., and W. J. Harvie, Allen & Peck, Inc., Syracuse, N. Y., representing the American Electric Railway Association; Adolph Schlesinger, superintendent of distribution Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., and G. H. Kelsay, superintendent of power Union Traction

Company of Indiana, Anderson, Ind., representing the Central Electric Railway Association; James P. Barnes, general manager Buffalo, Lockport & Rochester Railway, Rochester, N. Y., representing the New York Electric Railway Association, and Gordon Campbell, president York (Pa.) Railways, representing the Pennsylvania Street Railway Association.

It was not possible to complete the work at this session and the meeting was adjourned to Oct. 5 at New York, at the rooms of the American Institute of Electrical Engineers, and the same procedure was followed in Rochester. In New York the American Association was represented by Messrs. Harvie and Cadle and by Prof. A. S. Richey, Worcester (Mass.) Polytechnic Institute. The other associations were represented as before excepting that Mr. Kelsay was absent. This meeting produced very beneficial results in co-ordinating details of electric railway practice.

On Oct. 6, by invitation of the bureau of standards, the committee and representatives of the bureau met and discussed in detail the suggestions which had been developed by the American Association's committee, with the co-operation of the state committees above referred to, and it was found possible to eliminate a considerable number of points of difference, thereby enabling the bureau and the committee to come much closer to agreement in perfecting the proposed code. It was not possible during the day to consider completely all of the suggestions made, and the committee expects to co-operate in further conference with the bureau and with the other associations.

#### Report on Taxation Matters

Owing to typographical errors the totals in the last two columns of Table III in the report of the committee on taxation matters of the American Electric Railway Association, abstracted in the ELECTRIC RAILWAY JOURNAL of Oct. 9, page 734, were erroneous. The percentage of total federal taxes to electric railway operating revenue for 1914 should have been 0.237 per cent instead of 6.717 per cent, and a similar percentage for the total of all taxes should have been 6.717 per cent instead of 5.702 per cent. The detailed total for Hawaii in the last column also should have been 5.176 per cent instead of 1.763 per cent. The following table compiled from the data in this committee's report shows the total comparative taxation figures as they should appear:

TABLE SHOWING RAILWAY OPERATING REVENUE, TAXES AND PERCENTAGES OF TAXES TO REVENUE FOR EIGHTY-THREE ELECTRIC RAILWAYS FOR YEARS ENDED IN 1904 AND 1914

	1904		1914	
	Amount	Per Cent of Railway Operating Revenue*	Amount	Per Cent of Railway Operating Revenue*
Railway operating revenue.....	\$140,183,165	100.00	\$237,968,085	100.00
Municipal taxes .....	4,378,048	3.125	8,108,476	3.410
State and county taxes.....	3,997,172	2.850	7,307,440	3.070
Federal tax .....			565,792	0.237
Total taxes .....	8,375,220	5.975	15,981,708	6.717

\*United States percentage.

In a recent editorial the *Engineer* of London expressed the belief that field for the split-phase system of electrification such as has been installed on the Norfolk & Western Railway was limited in Great Britain, owing to the complications on the locomotives notwithstanding its great advantages in the use of the rugged induction motor with an overhead system having but one wire. The direct-current system was considered best suited to conditions on the British Isles.



# Some Neglected Phases of Accounting\*

*Fundamental Valuation Principle Is Not Equity But Attraction of Capital, With Assumption of Risk by Investor Involved—Author Differentiates Between Capital Expenditures and Revenue Charges, and Analyzes Depreciation Accounting, Capitalization of Deficits and Franchise Payments*

By HENRY RAND HATFIELD

Professor of Accounting, University of California, Berkeley, Cal.



**T**HERE are five matters that call for careful consideration—namely, the fundamental principle of valuation; the differentiation between capital expenditures and charges against revenue; the treatment of depreciation; the capitalization of deficits, and the effect of payments for franchises.

Paramount among these questions is that relating to the valuation to be taken as the basis for rate regulation. In the torrent of discussion it seems strange that any aspect of the question should have been neglected. Nevertheless in most discussions there is a startling lack of any fundamental principle, of what Allison calls an "over-theory," by which the varying methods can be judged. One proposes a cost basis, another a reproduction basis, another a present-value basis, but comparatively little attention has been given to the principle by which these are to be tested.

## EQUITY AS FUNDAMENTAL PRINCIPLE OF VALUATION IS NOT ADEQUATELY CONSIDERED

To be sure, it is generally implied that there must be some equity, but the question of what constitutes equity as between the public and the corporation is not adequately considered. Two writers of prominence, Allison and Whitten, have come to closer grips with the subject, but even these fall short of a satisfactory solution. Whitten's idea is that equity consists in an adequate reward for the sacrifice of the investor. Yet this statement is not followed to its logical conclusion and is made to rest on a forced analogy altogether begging the question at issue. In his argument supporting the cost basis, Whitten states: "[The corporation] devoted a certain amount of money to a public use and is equitably as much entitled to a fair return on that investment, provided the business can be made to earn it, as though it had actually loaned that amount to the public. \* \* \* It is the actual investment or sacrifice on the part of the company that is entitled to consideration."

There are several points for criticism in this statement. In the first place, sacrifice is in itself not a basis for remuneration. In the second place, it altogether begs the question to compare the investment to a loan. Conceivably the transaction may resemble rather a lease with revaluations at stated intervals. In such a case no one questions its equity, even though the rental paid

in the later years is altogether out of proportion to the original value contributed by the landlord. Doubtless, if the investment in a public utility were like a loan the return should be like interest; but the bald assumption that it resembles a loan rather than a lease is purely gratuitous. Finally, in the statement that

a fair return is to be paid "provided the business can be made to earn it," the proviso is altogether out of place. No one asserts that San Francisco's obligation to pay interest on the municipal railway bonds is dependent on the road's making a profit.

Many other writers advocate original cost as the proper basis for rates, but all balk at standing consistently by it. The statement is emasculated by saying that the investment must have been a wise one—as if a loan were less valid because unwise. It must be recognized, says one, that competition may arise and destroy the value of the investment; hence it must be a proper investment as well as a wise one. Thus the statement that equity demands a return on the original cost because of the sacrifice involved has been so explained and modified as to lose any consistent character.

Furthermore, in discussing equity, consideration has generally been had to past investments rather than to present-day investments reaching onward into the future. The treatment of an early investment, made without any expectation that it would be subject to valuation, is a more difficult but much less interesting and much less important problem than the formulation of rules by which all future investors are to be guided.

## OTHER CONSIDERATIONS ARE MORE FUNDAMENTAL THAN EQUITY

Attempts to formulate a principle resting on equity have led to hopeless confusion. It is time to recognize that, as far as the establishment of a settled policy for the future is concerned, equity is not the guiding principle at all. Any contract entered into freely and intelligently is equitable. In regard to public utilities there are other considerations more fundamental than equity.

This has, to some extent, been recognized, as when Bemis says: "The problem now is not so much an ethical problem of what a company ought to receive as it is what return, as a matter of fact, will tempt the investor to furnish the money needed for the growth of the business." Bemis here rejects equity and substitutes the incentive to investment of capital. Yet capital can be attracted either by increasing the prize or by guar-

\*Abstract of paper read before San Francisco convention of American Electric Railway Accountants' Association on Oct. 6, 1915.

anteeing against risk, two methods quite distinct in their effect on the public. More fundamental by far is the problem of how the risks and the profits of new enterprises are to be borne, and particularly whether the public is to profit by new discoveries and improvements.

Allison has expressed a vain fantasy in saying: "The true aim of regulation is to bring about eventually a condition where, as far as possible, all risk and all speculation will be removed from the enterprise." Risks never can be eliminated from new enterprises—the question is, who shall bear them? In undertaking a public enterprise there are two distinct kinds of risks. The first is that of miscalculation as to the value of the service rendered, or the cost of its production. Error here may lead to an investment which cannot be profitable. Such a risk cannot be removed by rate regulation. If charging all that the traffic will bear still leaves a deficit, it is evident that no regulation of rates will prevent loss. Such risks may be borne by the investor. Yet to induce him to do so, he must be tempted by the prospect of rates high enough to cover the risk. They may be borne by the public, but only by public ownership or subsidies.

The second class of risks is more important to the discussion. It is, in the words of Chairman Stevens, "the competition of a new and superior service produced at a less cost which will secure all custom." In ordinary competitive industries such competition means inevitably a loss to the investor and a gain to the public. In public utilities direct competition is subordinate to regulation. Yet if a new discovery is made the public must adopt one of two courses—either it must maintain rates so as to yield adequate returns on the more costly plant, or it must adjust rates to correspond with the lower cost of the substitute process. The whole question turns on the advisability of allowing the investor to take this risk, or, on the other hand, of protecting him against this risk, as is implied in the original cost-loan theory. There seems no escape. Either the investor takes the risk, or the public foregoes the advantages to be derived from inventions, at least of inventions which would substitute a cheaper plant.

It is true that the public may itself be the investor, by public ownership or by granting subsidies, but the alternative remains. Either the investor, whether private or public, must bear the risk of competitive improvements, or the public must forego the advantages of radical improvements in the arts and sciences. A compromise may be made, but compromises, while allaying disputes, never settle principles.

It is perhaps not difficult to persuade the investor to undertake the risk. The risk of loss by supersession may be offset by the allowance of high returns during the period before the supersession takes place. Capitalists as a class will profit by some of the undertakings, but lose by others. It is, however, manifestly inconsistent to allow high returns as an offset for possible losses and then to demand that the high rates be reduced in the cases where the enterprise proves successful. It is difficult to determine the point at which a rate of return, only sufficient to induce the original investment, becomes exorbitant. There is need of considerable caution in applying the following statement laid down in the Commonwealth Edison Company report: "Capital is doubtless entitled to returns commensurate with the risks incident to the business. \* \* \* But it should not be supposed that the early large returns should be continued when the development of the business, the elimination of competition, and the necessities of the community have largely reduced the risk of the investment." It much resembles refusing to pay a lottery prize, because the gain seems exorbitant as

compared with the price of a single ticket, although the purchaser may have squandered a fortune in the purchase of unsuccessful numbers.

#### WHAT THE REAL FUNDAMENTAL IS

The neglected phase of railway accounting first to be mentioned then is: In the discussion of a basis for valuation the problem of finding an underlying principle has been neglected. Even those who have attempted it have generally erred in regarding it as having to do with equity. Nor is it merely a problem of how to allure the investor into putting his money into an enterprise. He can be induced to take any risk if the stakes are made high enough. Fundamental to all, however, is the question as to whether the investor is to take risks, or whether the public is to go at a dead level, foregoing the economies coming from new inventions. It suffices to state the problem thus in general terms, although its many ramifications, such as the incentive to initiative in one or the other system, furnish room for much thought.

#### DIFFERENCE BETWEEN CAPITAL EXPENDITURES AND REVENUE CHARGES

The second point to be discussed is the real nature of the difference between capital expenditures and charges against revenue, when these terms are used in reference to the operations of public utilities. In some aspects capital charges and revenue charges are distinct, almost contradictory. These differences are strongly emphasized by the United States Supreme Court in the Kansas City case. Yet even in ordinary commercial undertakings the difference between the two is not diametrical. The machine, the tool, the raw material are all alike expenses of producing commodities. All are operating expenses, provided a long enough field of operation is taken into view. In public utilities the similarity is even greater than in ordinary business. Where rates are regulated so as to yield a fair return, there is little difference between a capital expenditure and a charge against revenue. The consumer must provide for both. For what is called an operating expense the consumer pays promptly. Where the expenditure is capitalized, he returns the payment more slowly but pays interest during the time of delay. There is but little difference whether principal is repaid or not, provided interest is paid indefinitely. In a few instances, as where the capital is invested in land, it resembles a perpetual annuity. Yet what is ordinarily called fixed capital is rather like a sinking-fund bond, in that the consumer pays interest on the investment, and through the charge for depreciation provides for the ultimate extinction of the principal. As far, then, as the relation between the corporation and the public as a whole is concerned, it is relatively immaterial whether an expenditure is called an expense or an investment of capital. In either case the public must provide for the reimbursement of the amount expended, together with a fair return on the investment while it remains unpaid.

In only one point is the difference significant. The public, while a permanent body, is made up of changing individuals. In so far as the body of consumers changes, injustice may be done to the consumers of one or another period, if an expense, which should properly be paid by the consumers of one period, is so treated that the consumers of another period are burdened by it. An expense, capitalized wrongfully, burdens later consumers to the advantage of present-day consumers. The position is reversed when what is properly a capital expenditure is treated as a current expense. The whole question then reduces to equity, not as between the

public and the corporation, but as between individuals composing the public at two different dates.

DEPRECIATION REPRESENTS INTERMEDIATE POSITION

Somewhat analogous is the third point of depreciation. In the discussion of this subject there has been even greater confusion of thought. Depreciation represents a position intermediate between a capital expenditure and a charge against revenue. An absolutely permanent investment of capital demands perpetual interest but no repayment of principal. A pure expense demands immediate return of the amount expended, payment to be made so promptly as to render calculation of interest unnecessary. Depreciation indicates that so-called fixed capital is, as a matter of fact, being repaid through rates, and presumably interest on the unconsumed capital should also be allowed.

TOO MUCH CONTROVERSY ABOUT EQUITY OF DEPRECIATION METHODS

In this matter there has been far too much polemical discussion as to the equity of one or another method of treating the problem. This discussion has become most acute in the conflict as to whether the straight-line or the curved-line method of calculating depreciation is correct. The advocates of either method almost invariably assume that the other method is unfair either to the public or the corporation. Here again there is, in reality, no question of equity as between the corporation and the public. Advocates of the straight-line method generally base the argument on some statement similar to the following, which is taken from the paper of a distinguished engineer: If one buys ten firecrackers and uses one, he has nine-tenths of his purchase still left to him. Similarly a plant costing \$100,000, with a life of ten years, is worth just \$90,000 at the end of one year. The curved-line method, calling for a smaller annual charge than the straight-line, is therefore only a partial payment of the property destroyed and consequently inequitable. The one thing which is certain, however, is that an investment of \$100,000 in a plant with a life of ten years does not represent the purchase of ten annual units each worth \$10,000. The sum of \$100,000 represents the present value of an annuity of \$12,950, interest being at 5 per cent. The decline in the value of such an annuity during the first year is not \$10,000 or \$12,950, but only \$7,949.

This principle can be perfectly illustrated with few figures by assuming a life of only two years and an interest rate of 10 per cent. A payment of \$100,000 for a utility lasting two years represents the present value of an annuity of \$57,619. This is made up of: Present value of first installment, \$52,381; present value of second installment, \$47,619; total, \$100,000. At the end of the first year there remains a value of \$52,381. The reduction in value then has not been \$50,000 or \$57,619, but only \$47,619.

It is apparent that it is incorrect to say that only the straight-line method is equitable. Yet the real error in most of the discussion is not that either side is wrong in claiming its method is correct, but that it fails to see that, where a public utility is concerned, there is no difference between the two methods. This may again be illustrated by taking a utility having an initial cost of \$100,000 and a life of two years, with interest reckoned at 10 per cent. An ordinary two-year investment at 10 per cent should bring in a total return, with interest compounded, of \$121,000. Yet exactly the same returns come in with a depreciating property, whether the depreciation is figured on a straight-line or on a curved-line basis. This is clearly shown by the following schedules:

STRAIGHT INVESTMENT	
Interest on \$100,000 for first year.....	\$10,000
Interest on above sum during second year.....	1,000
Interest on \$100,000 for second year.....	10,000
Principal returned .....	100,000
<b>Total .....</b>	<b>\$121,000</b>
INVESTMENT IN DEPRECIATING PROPERTY—STRAIGHT-LINE METHOD	
Interest on amount invested for first year.....	\$10,000
First installment of depreciation.....	50,000
Interest on above items during second year.....	6,000
Interest on depreciated value.....	5,000
Second installment of depreciation.....	50,000
<b>Total .....</b>	<b>\$121,000</b>
INVESTMENT IN DEPRECIATING PROPERTY—CURVED-LINE METHOD (Amount of sinking fund, \$47,619, + interest, \$10,000.)	
Amount paid at end of first year.....	\$57,619
Interest on above amount during second year.....	5,762
Amount paid at end of second year.....	57,619
<b>Total .....</b>	<b>\$121,000</b>

One may go further. In a public utility a "fair return" is considered necessary. A fair return is an impossible conception unless return of capital in some form is implied. The return of capital may be made at any time, in any sums, without in anyway affecting the equity between the company and the public. If the capital is excessively reduced at one time, the amount on which the public pays a return is correspondingly reduced. Yet just to the extent that interest paid by the public is reduced, the company is compensated by an early return of capital. Actuarially it is immaterial when and how a debt is returned, provided interest is allowed on the unreturned balance.

EXCESSIVE DEPRECIATION ALLOWANCE, HOWEVER, MAY PROVE INEQUITABLE

There is an element of equity, however, that is frequently lost to sight. An excessive allowance of depreciation, being a premature repayment of capital, does work a hardship in so far as there is a shifting of the persons purchasing the output of the corporation. One group can easily be benefited at the expense of another group. Thus in the instance given above the consumers of the first and second years would each pay \$57,619 under a curved-line system, while under a straight-line system the consumers of the first year would pay \$5,000 more than the consumers of the second year. As far as the corporation is concerned there is no difference, and as far as the consumers as a whole are concerned there is no difference between the two methods. Yet as far as there is a difference between the two groups of consumers, the curved-line method is equitable to both bodies, while the straight-line method burdens the earlier users to the advantage of their successors.

IMPORTANCE OF SPECIFIC DEPRECIATION RESERVE

The point just made carries with it some corollaries often neglected. Much discussion has been raised as to the importance of having a specific depreciation reserve set aside. Thus it is claimed by Hayes that the investors are entitled to a return on the full value of their investment only in case they can show that there is property in hand equivalent to the amount of the depreciation reserve. The real question is not whether the original value has been maintained, but whether the consumers have paid enough to cover ordinary operating expenses and depreciation. If \$100,000 is invested for public use and the consumers pay only enough to cover ordinary operating expenses (not including depreciation), evidently there is a decline in the value of the investment. Obviously, if investors are entitled to a fair return on the full cost of the plant they are none the less so entitled because rates have been made so low as not to cover the annual depreciation. The company is entitled to this return even though it does not comply with the requirement made by Hayes.

The question as to whether there is a depreciation reserve fund so placed as to be yielding interest also becomes meaningless, as far as the public and the company are concerned. The annual appropriation to reserve is less where it is calculated on the sinking-fund plan. But that is neither an advantage nor a disadvantage, for just to the extent that the sinking-fund interest lessens the amount annually set aside, to the same extent are the profits kept down by crediting to the sinking-fund reserve the receipts which otherwise would have gone to the general income account.

The problem of depreciation may be summed up by comparing the investment of the company to a loan which the debtor has the privilege of repaying in installments. If it is a loan of \$10,000, it might be repaid in ten annual installments of \$1,000. Yet neither creditor nor debtor would be harmed if more or less than a proportional amount were paid in each year. It might be repaid by any system, or with a lack of system. As long as interest is allowed on the outstanding balance, perfect equity is secured. The debtor might either pay in installments or merely keep up interest and himself accumulate a sinking fund with which to pay the principal. On the other hand, the creditor might, or might not, retain the installments as received and invest them in a sinking fund, so that he should have his principal intact at the end of the ten years. Any of these schemes would not affect the equities as between debtor and creditor.

#### DEFICITS SHOULD BE BORNE BY ALL BENEFICIARIES AS PERMANENT CAPITAL CHARGE

Another difficult problem is the fourth, relating to deficits. Where a deficit occurs in the early operations of a public utility, it is generally admitted that rates in subsequent years should make some adjustment. It is said that such deficits may be treated under either of two distinct theories—the first called “capitalization as an investment” and the second “recoupment as a loss.” The New York commission says there is a real and substantial distinction between considering a loss as an investment and as an expense to be reimbursed. Despite such high authority, it seems to some that a loss which must be reimbursed is an investment until it is repaid. If an ordinary business concern were in question, the distinction would indeed be valid. Yet in a public utility both investments and losses must be covered in order to secure a fair return. When the commission admits that the loss “must be reimbursed” all differences vanish.

Whether losses are actually repaid or are to be permanently capitalized is relatively unimportant, just as the nature of a government loan is not particularly changed when it is a perpetual annuity. Equity as between different consumers, however, may enter into the problem. If the loss is regarded as an essential to the establishment of the enterprise, it should be borne by all its beneficiaries, and the only way to spread the

expense is to make it a permanent capital charge. If paid off by consumers of the next five years, for instance, they are inequitably burdened with an expense which appertains to them no more than it does to the consumers of any other years. From an actuarial viewpoint the granting of a fair annual return on a given sum is neither more nor less advantageous than the actual repayment of the sum, just as it is neither more nor less advantageous to repay in five than in fifty years. This actuarial truth is not affected by other questions of public policy which may seem to make it more desirable to have debts promptly paid, but the equity of the case is not affected by policy.

The United States Supreme Court is doubtless sound in stating that “instrumentalities which are to be used for years should not be paid for by the revenues of a day or year.” (206 U. S. 463.) In so far as the deficit was merely a loss in furnishing service to consumers of one year, there is no shadow of equity in claiming that the consumers of any other year should pay the bills of the earlier consumers. The only justification of carrying the loss forward is that it is considered not as a loss of the first year, but as something pertaining to the entire operating life of the company. If this premise is correct, it follows that all subsequent consumers should pay their share of the burden, and that can most effectively be done by treating the deficit as a capital investment.

#### FRANCHISE FEE NEITHER BENEFITS NOR HARMS EITHER PARTY

Finally, for the fifth point, reference may be made to the effect of charging the corporation a fee for its franchise. Where such a fee is obtained, it is generally assumed by the city that a most successful bargain has been struck, and that the public has been benefited just to the extent that the corporation has been mulcted of the fee. Yet in the midst of the rejoicing over the shrewd bargain, some facts are apparently forgotten. In the subsequent regulation of prices a “fair return” is to be allowed on the entire investment. Hence the public must reimburse the company for the franchise fee paid, and must pay interest at a comparatively high rate while it remains unpaid. The situation is not different if instead of a direct repayment by the public, the fee is capitalized and counted as part of the investment taken over by a successor company. As long as the rule of a fair return is admitted, the entire cost of the franchise is borne by the consumers, whether it is amortized during the life of the franchise or treated as a permanent annuity. Hence the franchise fee neither benefits nor harms either party. All that it amounts to is that the city receives a considerable sum of income in advance, which is subsequently collected, not from taxpayers but from consumers. This indirect and unconscious collection of revenue may be advantageous or may not. Yet the transaction is certainly different from what it is popularly assumed to be.

### Professor Hatfield's Fundamental Principle of Valuation

**I**N the discussion of a basis for valuation the problem of finding an underlying principle has been neglected. Even those who have attempted it have generally erred in regarding it as having to do with equity. Nor is it merely a problem of how to allure the investor into putting his money into an enterprise. He can be induced to take any risk if the stakes are made high enough. Fundamental to all, however, is the question as to whether the investor is to take risks, or whether the public is to go at a dead level, foregoing the economies coming from new inventions.”—HENRY RAND HATFIELD.

# Foundation Principles of Valuation\*

*Appendix to Address Abstracted in Last Week's Issue—Fair Treatment to Public and Investors Demands Considerations of Value in Addition to Cost New—Amortization of Intangible Values and Typical Electric Railway Resettlements Are Described*

BY BION J. ARNOLD

Chairman Board of Supervising Engineers, Chicago Traction, Chicago, Ill.

THE convention report number of the ELECTRIC RAILWAY JOURNAL, dated Oct. 9, 1915, contained an extended abstract of the address of Bion J. Arnold on "Foundation Principles of Valuation," based on electric railway resettlement cases. As an appendix to this address Mr. Arnold also submitted some notes on valuation and the amortization of intangible values, and a description of the three typical resettlement cases in Kansas City, Chicago and San Francisco. An abstract of this appendix follows:

## NOTES ON VALUATION

In the Kansas City (Mo.) Railways proceedings the receivers requested "a disinterested valuation of the property and the necessary work to establish the property in first-class physical condition and enable it to fulfill its moral obligations to the community in every sense, under the conditions peculiar to Kansas City," and the finding of "a fair and reasonable sum to represent the capital value \* \* \* for adoption in a contract for new franchises in the municipalities wherein the properties are operated, various elements of such value and how it should be apportioned between the municipalities."

It is of interest here to recite the considerations attached to this local problem as outlined by the receivers:

1. The use of the properties, present and prospective.
2. Original cost of construction.
3. Cost of duplicating to-day.
4. Present conditions.
5. Advantages and economy in operation as a whole.
6. Earning power at reasonable rates.
7. Territory reached, or allocation of property.
8. Past and prospective growth of tributary communities.
9. Transit facilities afforded between the cities.
10. Density of settlement and character of improvements.
11. Bonded debt in relation to physical property values.
12. Market value of bonds and other securities.
13. New money for present and future extensions.
14. Contractual relations between company and public for making possible the raising of new money.
15. The values fixed by assessing bodies.

Four methods were finally developed to verify the values recommended:

1. Actual cash investment and return thereon in the past.
2. Cost to reproduce new, less depreciation, plus intangible values, based upon reasonable future earnings.
3. Basis of deferred earnings upon actual investment.
4. Fair market value of properties: *i.e.*, "that sum at which a fair buyer would buy and a fair owner would sell, both being willing to deal at a fair price."

In this case, with an assumption of a protected investment and superseded property left in capital, the

accrued deficit amounted to 6.5 per cent of the cost new (including overhead) based upon as low a rate of return as 6 per cent. At a 7 per cent return the accrued deficit similarly amounted to 36 per cent. When the superseded property was charged to operation year by year, the deficits were 40 per cent and 60 per cent respectively. The total valuation of tangibles and intangibles in the two cases, however, differed but slightly for a given interest rate.

It will be seen from the above citations that if valuations are to be predicated upon the assumption of fair treatment as between the public and the investor, there undoubtedly exist considerations of value in addition to cost new. It is also patent that these values can only be developed after searching inquiry and experienced judgment in the use of factors for future predictions. It will be quite clear, too, that the necessity of preserving complete and accurate records of past operations is paramount if utility operators expect to receive the treatment to which they are entitled in the final settlement.\*\*

## AMORTIZATION OF INTANGIBLE VALUES†

Views vary as to how far decapitalization should apply and continue, some contending that not only the intangible but also all the tangible property should eventually be amortized, so that the property would in time become possessed by the city without expenditure of money therefor on its part. Others contend that, in addition to amortizing the intangible values, there should be amortized only that portion of the value of the physical property which represents depreciation, and that such value as then remains in the property should be carried as a continuing investment by the company, in the case of a privately-owned company, or by the municipality, in the case of a municipally-owned property. This investment with present properties (owing to their comparatively recent construction and rapid development into new territory) is usually about 75 per cent of their cost to reproduce new value, although in properties restricted to certain districts and requiring no extensions, reconstruction or betterments but only maintenance and renewals, this would be about 60 per cent of their cost to reproduce new value. Therefore, if it is the policy of the city to retain the right ultimately to acquire the property of the company, the terms for so doing should be agreed upon and stipulated in the ordinance and the character and expense and method of amortization therein provided for.

\*\*In the case of another Western road, which has been subjected to much manipulation and consequent attack, this accrued deficit, on an 8 per cent basis, amounted to 43.7 per cent of the total cost new. This company earned a profit from 1884 to 1887, when a considerable portion of the electric line was abandoned. This caused heavy deficits. Profits ensued after 1902 but only sufficient to reduce the former cumulative deficit by about one-eighth. In the case of a Western telephone plant, where the company had paid dividends of 8.3 per cent on actual cash invested and had maintained a considerable reserve fund for depreciation and other contingencies, the accrued deficit on a 7 per cent basis was comparatively small, amounting to a little more than 4 per cent of the cost new value. Here the reserve funds, while larger than usual, were still inadequate to care for the depreciation.

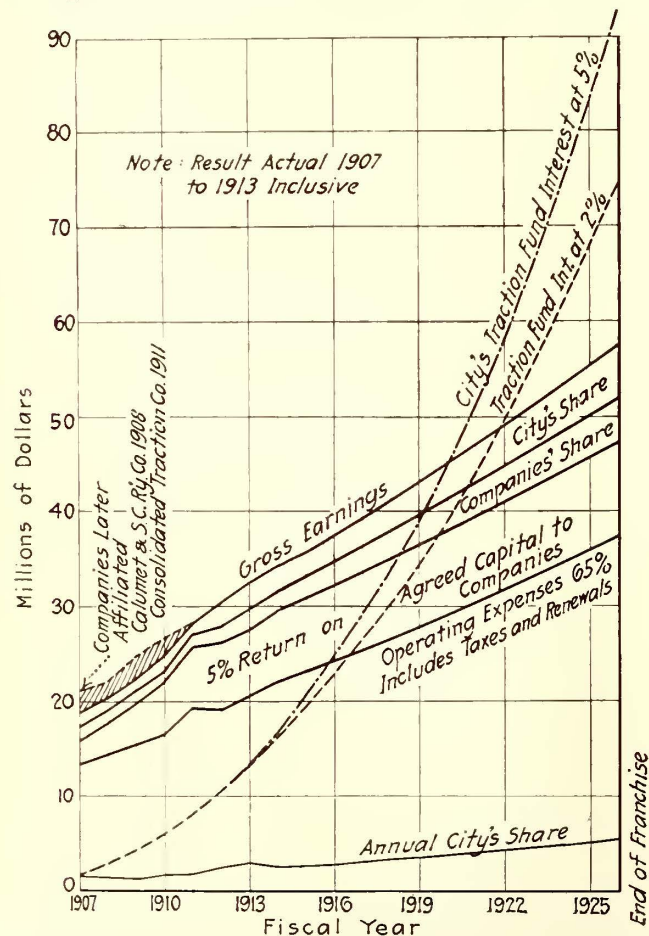
†Metropolitan Street Railway, Kansas City, Mo., report.

\*Abstract of appendix to address delivered before the San Francisco convention of the American Electric Railway Association on Oct. 7, 1915.

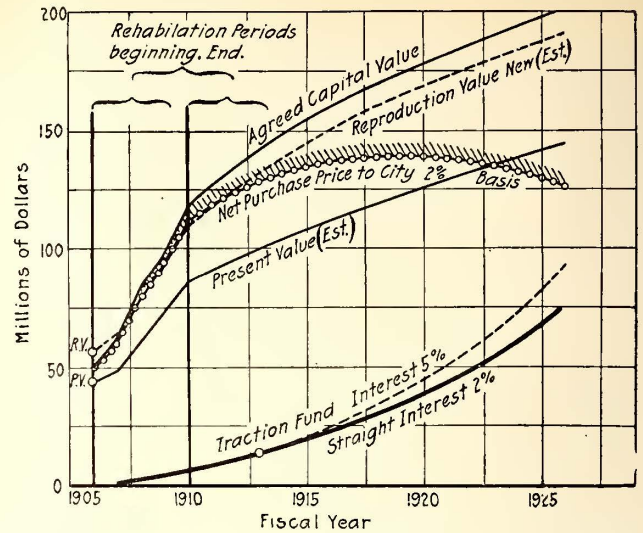
With the continued growth of the territory and the resulting enlargement of the business of the company, the net return from operation will increase and should in time provide sufficient net profit not only to meet the requirements of the agreed fair return on the investment, but also to amortize that portion of the investment, to be agreed upon, which is not now represented by physical property. This procedure will be fair to the operating company, in that the company will be allowed to receive the fair return on all capital actually expended until such time as it is able to retire out of earnings the amount agreed upon in the ordinance as representing intangible values and superseded property.

The result of this procedure will be to decrease gradually the capital investment of the company in its property on a fair and sound basis, and will in the end tend to reduce the cost of the service. This reduction in the cost of the service can be applied either to the reduction of fare or to the increasing of the amount and quality of the service furnished by the company, or to any purpose of value to the public.

The decapitalization of intangible values cannot generally be accomplished economically by gradually retiring outstanding securities that have been issued for a fixed time. It can be accomplished, however, by increasing the physical property without correspondingly increasing the capitalization. The agreed portion of the net revenue from operation appropriated to the amortization fund should be used in the purchase of additional physical property, and the value of the physical property actually furnishing the service will then ultimately equal the capitalization. The rate at which such intangible value can be eliminated from the investment



RESETTLEMENT PLANS—FIG. 1—SHOWING DISTRIBUTION OF INCOME UNDER 1907 CHICAGO TRACTION PLAN, WITH NO SUBWAYS



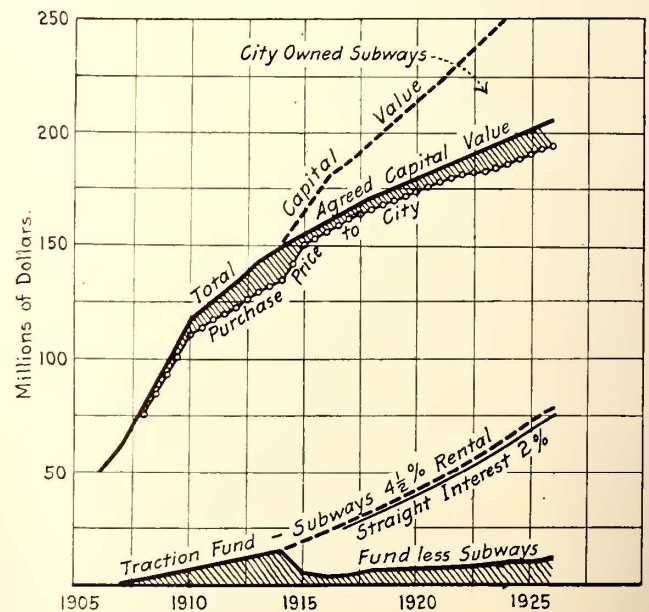
RESETTLEMENT PLANS—FIG. 2—SHOWING INCREASE IN CAPITAL VALUE UNDER 1907 CHICAGO TRACTION PLAN, WITH NO SUBWAYS

is determined entirely by the rate of increase of the gross revenue and by the disposition of the net revenue agreed upon in the ordinance.

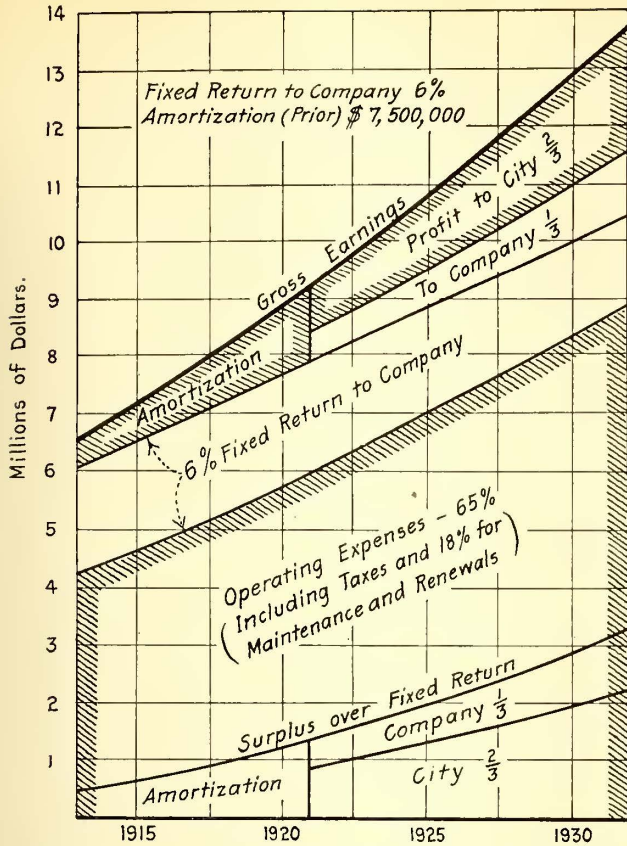
RESETTLEMENT PLANS

As stated in the preceding article, the central idea of the Chicago, Kansas City and San Francisco resettlement cases, although these were based upon somewhat different franchise conditions, was to put tangible property behind intangible values. The following paragraphs and accompanying diagrams show the essential details of these three plans.

Chicago: Fig. 1, Fig. 2 and Fig. 3 indicate graphically the results of the 1907 Chicago traction ordinances up to the present time, with predictions for the future. Two plans are worked out, one assuming the perpetual extensions of the surface system as the only transportation facility, and the other assuming downtown subways for the accommodation of the through-routed surface lines, such subways to be built out of the proceeds of the traction fund without the assistance of outside



RESETTLEMENT PLANS—FIG. 3—SHOWING INCREASE IN CAPITAL VALUE UNDER 1907 CHICAGO TRACTION PLAN, WITH CITY-OWNED SUBWAYS INCLUDED



RESETTLEMENT PLANS—FIG. 4—SHOWING DISTRIBUTION OF GROSS EARNINGS UNDER KANSAS CITY RESETTLEMENT PLAN (PROPOSED 1913)

capital. These subways, on this assumption, would be city-owned and rented to the traction companies.

Fig. 1 shows the probable distribution of income under this plan, based upon a 65 per cent operating ratio (including taxes and renewals). At the end of the franchise, the city's annual share will amount to more than \$5,000,000.

In Fig. 2 the capital value is shown to increase by extension, purchase and rehabilitation from the original agreed value of \$50,000,000 to approximately \$135,000,000 at the end of the rehabilitation period of the last property brought into the system (the Consolidated Traction Company). By the expiration of the ordinances it is estimated that extensions and betterments will have increased this capital value to about \$200,000,000, of which about \$11,000,000 represents the original intangible value of franchise rights and superseded property agreed to at the time of the resettlement. There is no direct amortization provided for in this plan under the ordinances. The city traction fund, however, representing 55 per cent of the divisible net receipts after bond interest on purchase price or agreed value, will gradually accumulate to a total of from \$75,000,000 to \$95,000,000, according to the rate of interest used. On the old basis of 2 per cent interest, the net purchase price to the city will then reduce progressively from a maximum of about \$140,000,000 after 1918-1919, and at the end of the franchise will actually be less than the present value of the property then existing.

In Fig. 3, which includes subways built out of the traction fund, the total capital investment rises to about \$275,000,000 by the end of the franchise. The purchase price to the city for the remaining surface line properties, however, will amount to \$195,000,000, which is less than the purchase price "agreed capital value," as

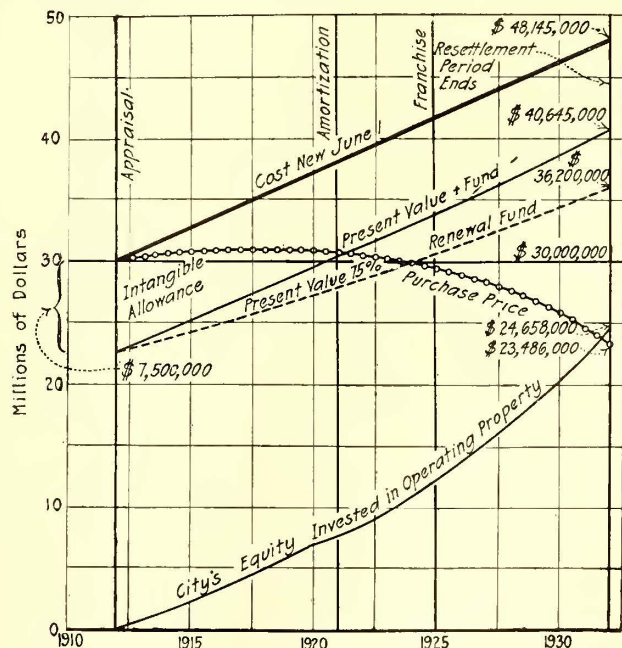
predicted in Fig. 2. By that time, about \$70,000,000 will have been invested in city-owned subways and uncapitalized, with approximately \$11,000,000 still remaining in the traction fund, over and above this subway investment.

In all of these studies the predictions for the future earning capacity have been scaled down to the minimum reasonable limit, far below what the property is now doing and what other larger cities of the size Chicago will probably be in 1927 are now doing. This shows the possibilities of the automatic amortization that can be legally carried out under the Chicago ordinances.

**Kansas City:** The Kansas City plan was similar to the Chicago traction plan except with the improvement embodying the amortization principle. One-third over and above the appraised present value, or \$7,500,000, was allowed in the original agreed value for intangibles. Yet these intangible values must be first amortized before either city or company can share in the divisible net revenues, which would take place about 1920. The operating ratio (taxes included) is fixed at 65 per cent, and 18 per cent of the gross earnings goes for maintenance and renewals. The city's equity is to be invested back into the operating property. Fig. 4 and Fig. 5 show the distribution of gross earnings and values.

In this plan, the purchase price to the city would from about the present time be gradually reduced to the level of the present value of the then operating property by 1924, or about the original "agreed value" assumed. And at the end of the franchise period the cost to the city would be less than half of the agreed value at that time and about equal to the original present value of the property appraised in 1912, or \$23,500,000 in round numbers.

**San Francisco:** The plans illustrated in Fig. 6 and Fig. 7 were developed in order to interpret the provisions of charter amendment No. 34, submitted to referendum in 1913. These are described in detail in the "Report on San Francisco Transportation Facilities," pages 82 to 91. At the time the report was prepared there existed a strong sentiment favoring acquisition of all street railway lines as a part of the municipal system. These plans, therefore, were formulated to show fair and practicable means whereby such results

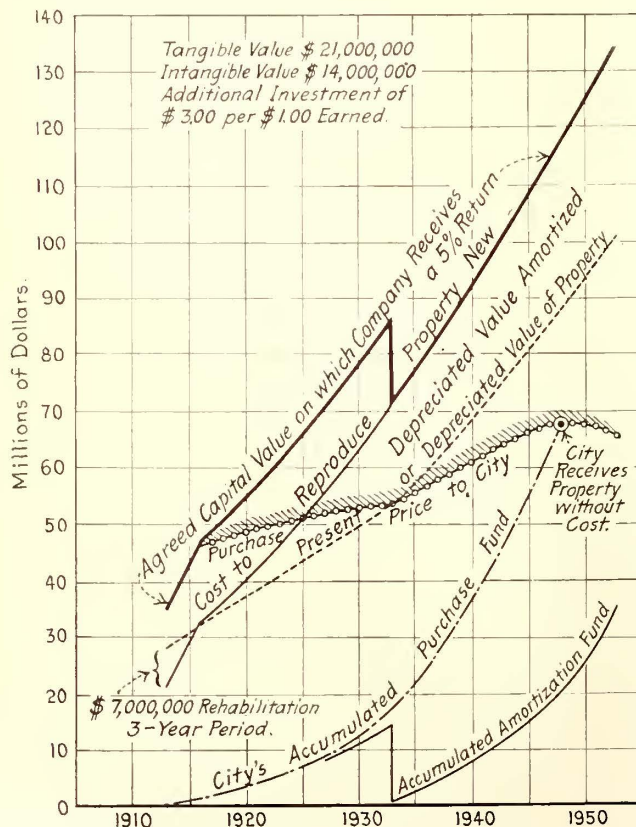


RESETTLEMENT PLANS—FIG. 5—SHOWING DISTRIBUTION OF VALUES UNDER KANSAS CITY RESETTLEMENT PLAN (PROPOSED 1913)

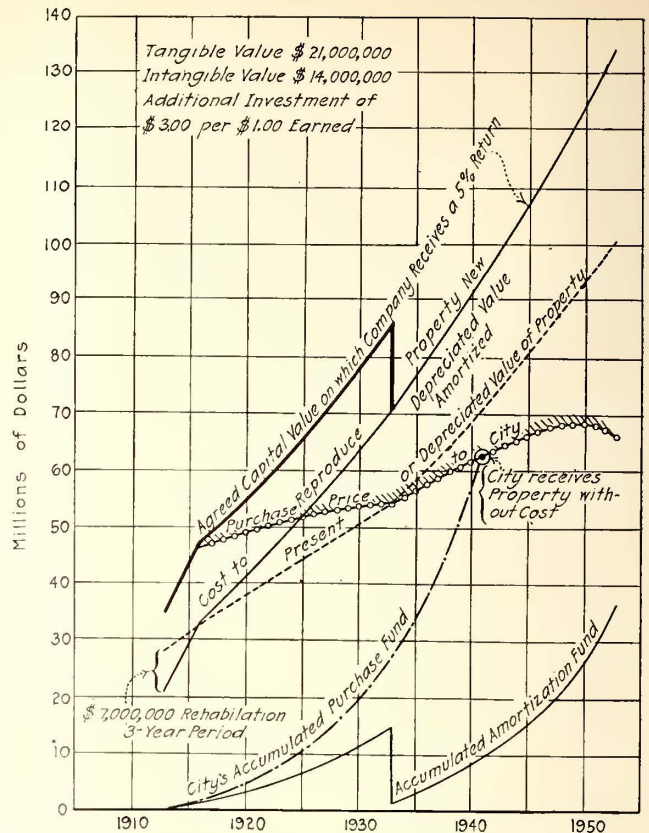
could be ultimately brought about without jeopardizing either service or actually invested values.

The theory of the plans is still applicable to the situation, although the charter amendment was unfortunately lost at this referendum by a narrow margin. In the absence of a definite valuation, an estimated value was assumed for purposes of illustration, and a continuing underlying investment based upon real property. That is, it was intended only to amortize out of earnings original intangible values agreed upon in the resettlement and the shrinkage due to depreciation. This would be accomplished within the franchise extension period of twenty years. The net income used provided for upkeep of the physical property in a perpetual condition of 75 per cent new—i.e., 25 per cent depreciation after the end of the rehabilitation period.

Fig. 6 (resettlement plan No. 2) was based upon a definite apportionment of net income—35 per cent to city, 30 per cent to labor and to company, and 35 per cent in addition to 5 per cent prior return on agreed capital value (shown by full line). The assumed present value of property was \$21,000,000. The initial intangible value was \$14,000,000, all to be amortized at the end of twenty years. There was included \$7,000,000 of rehabilitation work, to be completed and capitalized within three years. The future investment was to increase at the rate of \$3 for each additional \$1 earned. The purchase price to the city at any date is shown by the dotted line, and intangible values to be amortized are indicated by the distance (shaded) between "purchase price" and "investment" (full black) curves, which values include depreciation accrued both prior to the resettlement and after the completion of rehabilitation. The city's share, if allowed to accumulate at 5 per cent, should suffice to equal the purchase price by 1947, and thus automatically recapture the entire property to the city without cost by acquiring the underlying securities covering these depreciated values; i.e., the actual value of physical property producing the



RESETTLEMENT PLANS—FIG. 6—SHOWING PLAN NO. 2 FOR SAN FRANCISCO CASE



RESETTLEMENT PLANS—FIG. 7—SHOWING PLAN NO. 5 FOR SAN FRANCISCO CASE

service. This plan "pools" the shares of the two parties, to give the city the option of increased service, decapitalization, extensions, etc.

In Fig. 7 (resettlement plan No. 5, which was recommended as the most practical one under the conditions) the Chicago traction plan was adopted together with amortization features. This plan differs from that shown in Fig. 6 in that profit sharing in the net income exists only between the city and the company, the former receiving 55 per cent and the latter 45 per cent. This increase in the city's share over that of plan No. 2 enables the city, if it allows its share to accumulate at 5 per cent interest, to take over the property without cost by 1941, six years earlier. In both cases, an annual reserve of 3 per cent of the gross receipts (at 5 per cent interest) will suffice to amortize all initial intangible values allowed (except depreciation). After the first twenty years initial intangible value is retired and this fund starts anew for amortizing part of the physical value. A further fund is necessary for amortizing accrued depreciation (except expenditures for rehabilitation), requiring 4 per cent of the gross receipts for twenty years and thereafter a sufficient amount to cover permanent shrinkage in value through depreciation. It will be noted in plan No. 5 that all initial intangible value is retired by 1933, at which time the cost to the city is equal to the then present value of the property. Amortization fund and purchase fund increase so rapidly during the later years that the actual amount of initial intangible value has relatively little effect on the date of acquisition. This fact is usually lost to view.

The estimated returns indicate that the extended property would be able to earn a rate of return on the probable tangible value approximating 10 per cent in 1930, or 8 per cent on the agreed capital value; that the company would receive more than 7 per cent on tangible values, and the city, exclusive of taxes, as high as 2 per cent in cash on tangible values.



# Relation of Railways to Agriculture\*

*The Author Outlines the Practice of the Pacific Electric Railway in Its Development of Traffic Which Originates With the Farms Along the Company's Route and Advocates Co-operation Between the Railways and the General Public*

By PAUL SHOUP

President Pacific Electric Railway



WHEN we speak of the relations of the electric railways to agriculture, I want to emphasize the fact that ideal agriculture, home-making agriculture, in large part leans upon, and is created by, the electric railways and the associated utilities. An analysis of all the relations would take too much time, but here are two facts that stand clearly forth, and you may make your own deductions: The county of all counties in the United States served in largest degree by an electric interurban railway system is Los Angeles County, Cal. The county of all counties that stood first, according to the United States census of 1910, in the annual value of products of the soil, and which still maintains that position, is Los Angeles County, Cal. Associate these facts and then, better than all the words at my command, you will interpret from them the mutual benefits and mutual independence of electric railways and agriculture.

We illustrate our own conclusions with our own experience, and because it illustrates the relationship between the electric railways and agriculture, I will give the possible experience of a farmer living along our electric railway lines.

He gets up in the morning and looks to the forwarding of his milk by a Pacific Electric fast freight. At breakfast he reads the morning paper brought by a Pacific Electric paper train. After breakfast his wife may telephone to a department store in the city and have the desired article at the house by express operating over the Pacific Electric not later than noon. At 8 o'clock in the morning the children leave for the Union High School on Pacific Electric cars, using school tickets sold at special rates. His place in order, the farmer may leave at 10 for the city, attend to his business at the bank, and if in a hurry get back home for lunch upon our cars. In the late afternoon he may send his berries and vegetables to market for sale the next morning. During the day he can get as many of the morning and afternoon editions of the evening papers as he may desire. In illness he is not isolated, but can get anything promptly, either nurses, drugs or doctors. In the evening, the family may take the electric car to the city and return comfortably after the "movies" are over. His friends may visit him from 40 miles away, spend the evening and get home before the lights go out. Wherever there is any population of consequence, there are electric railway stations not more than 2000

ft. apart, and these are artistic, lighted, resting places for passengers who may be waiting for trains. On holidays the farmer can go to any of the dozen beach resorts or to the crest of the wooded mountains at Mount Lowe, or to the Mission Play in the afternoon at San Gabriel, or to the hot springs at Arrowhead, or to the famous inn at Riverside, or to any of the score of other pleasure places, and get back in time for dinner at home, no matter on what part of our line he lives. What is true in our county is no doubt true elsewhere, and in degree as conditions make possible.

The Pacific Electric Railway has encouraged intensive cultivation and the creation of small ranch homes whenever and wherever it can. It co-operates with communities in creating and distributing advertising matter. The most effective advertising for electric railways in getting people to settle along their lines is through co-operation with the communities already in existence. That is team work. Railway publications are apt to be discounted, though this is not so true as formerly. But where there is co-operation, where the railways back up what the communities state and the communities back up what the railways state, the most effective work is done.

Thus, if a pamphlet is issued by an agricultural community, indorsed by the Board of Supervisors and the Chamber of Commerce, giving individual experiences of satisfactory results from people already there, quoting government analyses as to soils, giving official statistics as to the annual products and the creation of wealth, picturing with photographs the homes achieved, making proper mention of the railway service as a factor in the life of the community, then the circulation of such pamphlets is valuable.

Advertising should request that replies be sent not to the railway company, but to representatives of the communities upon the ground, these in turn to follow up these inquiries and learn the specific desires of the inquirer. Finally they should meet him when he comes, and help him truthfully, directly and with no thought of reward except the good of the community in general. Thus is accomplished a great work. The ends of the electric railway are served for there is an addition to the patrons on its lines, and once resident there, the newcomer can thereafter hardly lift his spoon to his mouth without helping the electric railway.

This requires co-operative organization in high degree, but without it success is much diminished. For

\*Abstract of paper read before the American Electric Railway Association Convention at San Francisco, Oct. 5, 1915.

railways to get out glowing advertising matter about any section and then leave it to the man interested to grope his way in an effort to reach home is not only waste and misdirected effort but is apt to lead to discouragement, disappointment and the bad advertising that follows in its train.

In advertising the sections along its lines the Pacific Electric spends thousands of dollars every year. It believes in co-operation and believes in publicity. The hope of the electric roads lies in the increase in population upon their lines. The work of creating traffic through excursions, conventions, picnics and the like leaves no such permanent results as that which brings population to the line.

The Pacific Electric operates sight-seeing trips every day in the year. These are the Mission trolley trip, the Balloon Route trolley trip, the Triangle trolley trip and the Orange Empire trolley trip. While established for direct profit, they serve a greater purpose in that they give opportunity to see southern California comprehensively to thousands of strangers who otherwise would see very little of it. They are, in my judgment, the best advertisement that southern California has had. No one can travel a few hundred miles upon the Pacific Electric and not be impressed from the very appearance of the homes themselves with the pride and satisfaction therein expressed.

Diverging perhaps slightly from the subject, I wish the people of this country had a real view of the mutual interdependence of the electric railways and agriculture. Putting it a little differently, we would like to get under the same wing of the government with agriculture. When I speak of government, I mean national, state and local. Nothing perhaps more strongly contrasts the views that the public has had than its widely different methods of treatment. The farmer raises something; we distribute it. One is as necessary as the other to give the article value, but the people have not fully found that out yet. The agricultural people have been looked upon as the sheep to be guarded, directed, encouraged; the transportation folks—well, perhaps we have been the goats.

Many of these modern governmental regulatory provisions are all right. Many are necessary from the public's viewpoint. Many of the burdens put upon us are unfair and will disappear in the course of evolution. The commissions learn this, but the public does not. The work of the commissions is thus hampered unless the public knows the facts. One cannot establish a department to deal with these problems because they can only be dealt with by the officers who are familiar in a practical way with the problems presented. This means that much time must be given to problems quite often in themselves not important. From the government the railways receive no such help as is given our agricultural associates.

Contrast these two conditions. Is there any wonder we would all like to be farmers? Farmers, I know, have their troubles. But so far as the relations of agriculture and the electric railways to the government are concerned, I am very sure that we would all be glad to have the association of agriculture and the electric railways so close that in government policy we might be considered as one.

I have no fault to find with the public when it knows it is just and when it is appreciative of our difficulties. But the things we do right are not apt to be uppermost in its mind. The good service we give is accepted unconsciously as a matter of routine. It is up to us to tell effectively and truthfully our trials to the public. We must win its confidence and its interest, and to do so must go further than fair dealing. We must tell

the people of our weakness, as well as of our strength. The public must learn that the electric railways are business institutions traveling upon the most narrow of business margins. Without the government's active support and sympathy they may in large measure disappear.

This is no alarmist statement. The time has passed to gloss over the facts. The electric railways of California have created hundreds of millions in property values, not only in the agricultural communities served but in cities and towns that they have helped to build. No community leans upon jitney service; none desires to lose a single car or train because of that service. They realize unconsciously that all the automobiles in California together transport but a small fraction of the number of people that are carried by the electric lines.

Before me are the earnings of nearly all the electric lines in California for the last three fiscal years. The showing is a bad one. Only one out of twenty-four made as good a showing during the fiscal year ending June 30, 1915, as for either of the two preceding years. Obligations to the public have increased; taxes are higher; paving costs, because of high standards, are greater; labor costs, where there have been changes, have increased; automobile traffic has required additional safety measures. On the other hand, automobile competition has cut revenues. Returns for the year are the worst in the history of the roads in this State, as a whole. No interurban line and but few city lines earned interest on their investments or on their interest-bearing obligations. One only of the twenty-four declared a dividend. Several are in the hands of their creditors. From such a showing, even after making allowance for general depression of business, which is widespread, it is plain that the public view must in some measure change if the electric railroads are to be maintained in their present efficiency.

Taxation must be lessened, not increased. Street paving burdens in many instances must be reduced or the lines abandoned. While adjustments in rates are individual questions, yet fares as a whole must be increased rather than lowered. Jitneys, dividing the traffic of the electric roads, must divide likewise their heavy obligations. Where the electric lines are providing and maintaining a large part of the street and where the community is under moral obligation to protect the investment made because of this and the investment needed to meet franchise requirements as to service and fares, the jitneys must, where practicable, be kept off such streets, and where, in the business centers, they use the streets, they must be required to bear some part of the paving burden. On very few streets or on very few interurban lines is there enough business to support two classes of carriers. Our returns show that. Of course, the jitneys assail our best earning lines, and the natural result of this is, no longer having fat lines to carry the lean ones, the service on the latter must be reduced or the lines given up. Only a small alienation is necessary to reduce income to the level of operating expenses. The public must know these facts, and knowing them must choose between. It is at this point we have arrived.

I have wandered from my subject, but perhaps not far. If the electric railways are impoverished, so will be the communities along their lines, and as the Pacific Electric felt the blow to the citrus fruit industry through the freeze of three years ago, so likewise will these communities feel any blow to the Pacific Electric.

On our side, we should not give too much weight to our troubles as troubles. We are face to face with serious problems, the solutions of which lie in a better

understanding with the public. We should meet the situation with constructive courage. We must seize upon methods to decrease our expenses and at the same time, if possible, to increase the efficiency of our service. That is the door through which we get business. If there be a new industry in sight, go after it. If a new stopping place is needed for passenger traffic, establish it. Furnish freight platforms. Furnish team tracks in plenty. If interline freight and passenger tariffs with steam line connections can be obtained, get them. Let us look after our express and package business and help the express in competition with the parcel post.

Public complaints and demands should never be looked upon as aggressions of an enemy but, instead, as sources of our education as to the public's interpretation of its needs. Its expressions should be listened to with intelligent interest. If its wishes warrant changes being made, meet them. If not, explain pleasantly and patiently why they cannot be made. We must take the people into our confidence. If service has to be reduced or rates raised, put forth the reasons plainly, concisely. Let us do all we can to get more people along our lines.

Population is our greatest asset. The good-will of the public is likewise a great asset. Work in a co-operative and cheerful spirit with every public agency whose duty it is to concern itself with your affairs. Remember these commissions themselves are between two fires. They are responsible, not to our stockholders and bondholders, but to the public, and very, very often they are the agencies that must be called upon to stand between us and the lack of popular understanding of our needs and difficulties. It is thus up to us to help them where we can with their work and never to hinder them, to show them why a thing is so, and if they suggest real improvements upon our methods, to adopt them.

By scrupulous integrity in dealing with these public agencies by fair, truthful and candid statements to the public in all matters pertaining to and concerning the public, we will find the surest road to that goal which we would reach, where the people of the United States will hold the same viewpoint as to the value of agriculture as expressed in the creation of farms and of farm products and the value of transportation in maintaining these farms through the transportation service rendered.

## The Importance of Accrued Accounts\*

*From Point of View of Certified Public Accountant, Operating Accounts Do Not Always State the Entire Facts—Accounting for Commission and Organization Expenses, Depreciation, Taxes, Premiums and Discounts, and Sinking Funds Should Follow Uniform Practice*

BY JOHN F. FORBES, C.P.A.

Haskins & Sells, San Francisco, Cal.



UNDER the inspiration of the American Electric Railway Accountants' Association and the various commissions, state and federal, the accounts of transportation companies are maintained with a greater degree of accuracy and a more highly organized standardization than are the accounts of any other class of business concerns. Yet the certified public accountant rarely has occasion to review the accounts of any electric railway without feeling that there is a need for standardization of practice that is quite as important as the standardization of forms and accounts.

The first and most general criticism is that the operating expenses do not invariably state the entire facts. The elemental purpose of detailed accounts is comparison. An operating cost is high or low only by comparison. The operating expenses of a normal period should present a basis for comparison with some other similar period. Yet when a company begins to apply over a series of months of this year credits for old copper wire, old carwheels, or any other scrap or re-

placed material, which has been garnered last year and sold or taken into stock this year, it has distorted the accounts of both years and the basis of comparison is gone. When it further complicates this by charging one month with enough car paint to last six months, or enough repair parts to last four months, or ties sufficient

to last three months, and so on, just because the departmental requisitions upon the storekeeper happen to come in that way, it is not alone destroying comparative value but is also laying the foundation for serious errors in the balance sheets regularly prepared from the books. Many responsible railway officials point with pride to a supply of stores or a heap of scrap as provision against that rainy day when a credit will reduce some extraordinary operating expense. When the accounts must include certain charges or credits, why not accrue them irrespective of their nature into the periods in which they belong, and thus establish facts?

This condition obtains in various forms in most of the operating expenses. Only last month one company was found accruing its insurance from the date of payment of the insurance bills instead of the date of the insurance itself, upon the theory that another payment

\*Abstract of paper presented at San Francisco convention of American Electric Railway Accountants' Association, Oct. 6, 1915.

would not have to be made for twelve months. The current operating expenses were not affected, for the practice had been in vogue for a long time and the amount of insurance premiums, though large, was fairly uniform, but the balance sheet as disclosed by the company certainly did not present the exact financial condition.

There is absolutely no uniformity in charging off railroad commission expenses, organization expenses, or any of the host of similar unusual expenses over a long period of time. Indeed, there is a reluctance to charge them off at all. Yet in the commission states where the companies have no option in these matters, would it not be better for comparison's sake, if no other, to establish more uniformity in the handling of such items than now exists?

Nowadays, instead of considering the subject of depreciation as a thing apart—something to be considered more for its effect upon the United States Treasury Department than upon the stockholders, electric railways under the urgings of late Interstate Commerce Commission classifications are endeavoring to look upon depreciation as a mere operating expense, but thus far with poor success. Rarely is depreciation handled twice in the same way. Utility commissions touch lightly upon the subject, being fearful of establishing precedents. It is really not such a serious thing in those utilities where the burden is borne by the consumers, but where depreciation must be borne by stockholders, as it must be in those instances where car fare is fixed by franchise, the question of whether depreciation from obsolescence should not be capitalized looms large. This is especially true where changes follow each other so quickly that the capital cannot be returned out of earnings.

Sometimes reserves are accrued according to formulæ prepared by famous engineering firms after elaborate appraisal. If upon the sinking-fund method, then generally the proper investments are not being made and remade on the dates indicated, if at all. Sometimes the accounting officer reminds his associates that the reserves are not being reinvested semi-annually according to the plan, but generally he is satisfied in setting up the reserve. Sometimes depreciation reserves are accrued upon the straight-line basis, represented by specific funds, though more often they are represented by general assets. Sometimes depreciation is accrued upon the curve-line basis and sometimes on a percentage of gross earnings. Almost invariably the reserves are diminished by charges to it. One hesitates at the thought of passing upon the propriety of these charges. It is such a simple thing innocently to defeat the most conservative financial plan by using up these reserves with what would be operating charges if the reserve did not exist. The present situation, therefore, calls for a standardization of ideas upon depreciation—otherwise another element in the detailed operating figures is absolutely useless and the balance sheet departs from the truth.

Perhaps the one account which above all others gives the public accountant most concern is the tax account. As an accounting proposition, it is clear enough. The accrual approximates the monthly tax cost. If taxes are paid in advance of the accruals there is an asset. If they are not paid in advance of the accruals there is a liability. The trouble lies in the fact that there are so many confusing elements to be reconciled. For instance, in California a corporation tax is paid on gross earnings. A tax on the 1914 gross is paid in 1915. It would seem proper to begin to accrue this tax in January, 1914. But when the tax was first instituted the regular property tax was in vogue and property was

assessed and taxed in the year fixed as a basis for the first gross-earnings tax. So the gross-earnings tax had to be paid in the following year. Therefore companies might seem properly to begin accruing the tax to be paid on the 1914 gross in January, 1915, though it is not payable until the middle of the year. And so some corporations handle it. Some, however, contend that the tax is applicable to the State's fiscal year 1915-1916, and insist upon commencing to accrue in July, 1915, while some, bulwarked behind the opinions of eminent counsel, maintain that since taxes become a lien on the first Monday in March, March 1, 1915, is the day upon which to commence accruing the tax. Then comes a corporation which began to operate in April, 1914, and one is almost back at the starting point. Yet the outlook is different, since not to charge up taxes for an entire half year is unthinkable. And in any event the State officials say they most assuredly tax that company in 1914, although they collect the tax in 1915. Then, just to make it hard, the municipal franchise and vehicle licenses join hands, so to speak, with the city, county and State tax on non-operative properties, the State corporation franchise tax and the federal income tax. And out of all this the public expects public accountants to establish an asset or liability, while the company accounting officers grieve if the former do not agree with their figures and say differences reflect discredit upon them.

Much might be said of "accruals, not due" on notes and accounts. Accruals on payables are always handled conservatively. Where the interest is fixed, as in notes, the calculations usually square with experience. Where the interest is neither fixed nor certain, as in accounts payable, accruals are usually based upon the hope of their never having to be paid. Quite the reverse is true of the receivables. Here a spirit of optimism is in constant evidence. "Accruals, not due" are so easily subject to adjustment that they worry no one save the accountant who is trying to establish their cash values as assets or liabilities. Interest on bonds is the one accruing account almost invariably properly handled. It departs from the narrow way occasionally when the bonds happen to have been bought up by the trustees or by the company for investment. Generally, however, this charge is fixed and unvarying and no complications ensue. On the contrary, discount and premium accounts are apportioned off with a marked hesitancy by nearly all utilities. Every old railroader feels that discount is part of the cost of property and that it should be capitalized.

The one account which, above all others, possesses an individuality is the reserve for sinking funds. Regularly it emerges from its closet to disturb the public accountant. A tremendous confusion of ideas, created in great part by the legal phraseology of trust deeds, exists with reference to sinking funds, and many methods of handling them are in force. By far the greatest amount of trouble occurs in not letting these sinking funds completely alone so far as the accounts are concerned.

The impression seems to have gone abroad that, because a company dedicates certain resources to the payment of a debt, surplus is in some way affected. This is absurd. Of course, if a company desires to make specific appropriations of its surplus, there is nothing to do but set up a reserve. Such companies may exist, but the writer has never seen one. Yet company after company ties up its surplus most unnecessarily. It is a most conservative thing to do, however, and public accountants can afford to look upon the practice with complacency. All they ask for is a little uniformity in the practice.

# Papers Before the Claims Association

*Address of President Tichenor—Among Topics Considered Were Prevention of Motor-Vehicle Accidents, Standardization of Claims Statistics, Card Index, and Safety and Its Relation to Conservation, with Written Discussion Accompanying the Last Subject*

## Program for Monday

Annual Address of the President.  
Annual Report of Executive Committee.  
Annual Report of Secretary-Treasurer.  
Reports of Committees:  
Accident Prevention Board—W. F. Weh, chairman.  
Employment—B. B. Davis, chairman.  
Ways and Means—J. S. Harrison, chairman.  
Paper—"The Prevention of Motor-Vehicle Accidents," S. B. Hare.

## Program for Tuesday

Paper—"Standardization of Claims Statistics," E. E. Slick.  
Report of Committee:  
Claims-Accounting—co-chairmen: H. K. Bennett and H. J. Davies.

## Program for Wednesday

Report of Committee:  
Claims-Transportation—co-chairmen: B. B. Davis and R. P. Stevens.



WM. TICHENOR  
President

## Wednesday—Continued

Changes in Constitution and By-Laws.  
Paper—"A Card Index and What It Means," J. J. Reynolds.

## Program for Thursday

Paper—"Safety and Its Relation to Conservation," B. F. Boynton.  
Written Discussion:  
"Financial Benefits Resulting from the Safety First Movement," J. S. Harrison.  
"Justification of the Safety First Movement from a Humanitarian Standpoint," Alves Dixon.  
"Uses and Benefits of Illustrated Lectures," H. K. Bennett.  
"Should a Moving Picture Film Exchange be Established by the A. E. R. A.?" F. J. Warnock.  
General Business.  
Reports of Convention Committees:  
(a) Resolutions.  
(b) Nominations.  
Election and Installation of Officers.

THE ELECTRIC RAILWAY JOURNAL of Oct. 9, page 767, presented an abstract of the proceedings of the Claims Association at the San Francisco convention on Oct. 4-8. In accordance with the usual custom, abstracts of the papers read at the various meetings of this association are published this week, as follows:

## PRESIDENT'S ADDRESS

BY WILLIAM TICHENOR, CLAIM AGENT TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY, INDIANAPOLIS, IND.

From the beginning of this year's work it has been the endeavor of the officers of the association and the executive committee to dispose of unfinished topics rather than to originate new subjects for discussion. Particularly was it desired to place special stress upon three things: The Hooper-Holmes Index Bureau, the safety-first movement, and the standardization and classification of accidents.

The Hooper-Holmes Index Bureau from the beginning has not met with as much approval from claim agents and general officers as many thought it justified. This bureau is not of itself essential to the existence or well-being of electric railway claim departments, for they might build up a similar organization among themselves that would be extremely valuable. Because of its necessarily local existence, however, such a bureau would be of much less value because claim agents would know nothing of what was going on in the index bureau world outside of their own association community. Wonderful benefits are being derived from the Pacific Coast Claim Agents' Index Bureau, and great good is coming from some of the organizations local to the East, but if all companies should join and report freely to one bureau, as in the case of the Hooper-Holmes Index Bureau, each would get the benefit of all engaged in claim work, not only with electric railways but also with steam railroads, manufacturing establishments and insurance companies.

It seems strange that some of the most important electric railway men are utterly opposed to the use of

an index bureau, either national or local, because in their view it requires a great deal of time and expense to the companies and is of no value to them. Yet since the first contract was made with the Hooper-Holmes people, this thought seemed to be so prevalent that at the convention last year the committee on an index bureau recommended that the contract cease. The committee did not consider that the bureau would not be valuable if properly used, but it felt that the contract was practically valueless because nearly all companies then reporting to the bureau were individual subscribers to it and gained no additional right through the contract. On final vote, however, it was unanimously recommended that the contract be extended for at least one more year.

At a meeting of the executive committee of the parent body immediately after the adjournment of the 1914 convention, the question again came up for discussion, and the same point was raised. Finally, however, a renewed contract ending Dec. 31, 1914, was approved, and the secretary was instructed to communicate with the member companies to ascertain their desires as to the continued life of the contract. A sufficient number expressed a wish to continue the arrangement and promised to report in the future, to justify continuing the contract for 1915. It may fairly be said, however, that 1915 is to be treated only as a test, the results of which will control future action on this point.

The safety-first movement since its origin has been as much in doubt as the Hooper-Holmes Index Bureau, if indeed it has not been more of a vexed question than that. Some of the most enthusiastic safety-first advocates put the greatest stress upon the education of children and their mothers. Others insist that a better result is to be obtained through the enactment and rigid enforcement of stringent laws to control the public, especially automobile drivers. Still another class believes that the public cannot in general be educated to a realization of its dangers, and that the better method is to educate company officers and employees until they come fully to an appreciation of the fact that they must expect the public to be careless and to be depend-

ing upon them for safety. Not long ago an experienced claim agent said that 75 per cent of the serious and costly accidents on interurban railways were preventable, and that 50 per cent ought not to happen and would not happen if the car-service men thought straight and right. This claim agent is under the impression that the greatest benefit possible to be derived from the safety-first movement must come from a hounding process causing the motormen and conductors to think safety instead of speed. In short, there are as many different plans as there are different minds dealing with the subject, but it is to be hoped that at this meeting harmonious action may be suggested.

At the 1914 convention the Claims Association had a joint committee with the Accountants' Association on the subject of the standardization of accidents and accident reports, as well as accident accounts. When this joint committee met, it seemed to have concluded that the first division of the subject was completely a claim agents' affair and that the latter division was completely the work of the accountants. The accountants had no trouble in agreeing upon the recommended standards of their side of the committee and the report was unanimously adopted. When the report was presented by the claims side of the committee, however, complete chaos prevailed on account of the many ideas suggested in discussion. The whole subject was therefore referred to the committee for another year's study. This committee held several meetings during the year and I trust that eventually the whole subject will be understood and agreed upon.

#### PREVENTION OF MOTOR-VEHICLE ACCIDENTS

BY SAMUEL B. HARE, CLAIM AGENT ALTOONA & LOGAN VALLEY ELECTRIC RAILWAY, ALTOONA, PA.

No other class of accidents contains the elements of carelessness, recklessness and utter disregard of the rights of others that are found in automobile and motor-vehicle collisions. Transportation companies, realizing their responsibilities, have done everything possible to protect the public from harm, yet there is a tendency on the part of the public to demand protection without making an effort to protect itself. To relieve this condition, we must seek measures to protect ourselves from the expenditure of large sums of money in damages, by throwing around others a safeguard which they are unwilling to provide for themselves, or which they carelessly and negligently refuse to exercise. The time has come when we must prohibit the automobile and motor-vehicle driver from using his own judgment (or misjudgment, as is frequently the case), and surround him with restraining regulations for the protection of himself and others.

It may reasonably be presumed that railway companies have done that which is necessary to prevent accidents. Their constant change from old to new appliances and equipment, the introduction of every practical safety device, the most careful supervision of track conditions, the rigid preliminary examination and patient, early training of car operators, the rigorous discipline that punishes any infraction, the constant warnings by signs, and numerous methods of advertisement—all these, accomplished at an enormous expense, are indubitable evidences of the good faith of the railway companies toward the question of conserving the safety of the public.

As compared to this preparation, care and attention, what qualifications as to mechanical knowledge, physical ability or fitness are requisite for the applicant as a driver of a motor vehicle? None! He need only fill out a printed blank form, stating the make and character of

his machine, its horsepower, his name and residence, and inclose the fee, proportionate to the horsepower of his machine, whereupon the state grants the license with authority to operate, making no inquiry whether the applicant is mentally, physically, morally or mechanically prepared to assume the implied responsibilities. The conclusion is certain that the great number of motor-vehicle accidents must be attributed to stupid, inadequate and worthless license laws now operative, and the foremost step toward the prevention of this class of accidents should be made in the revision of these laws.

Compulsory legislation by the enactment of uniform state, county and municipal laws is the only solution to the prevention of motor-vehicle accidents. Of what use to an automobile driver is a sign if he cannot see? What effect has a horn or gong upon a deaf driver? What escape for a careful person as against an epileptic? What refuge has a person from the wild wanderings of a drunken, careless or negligent driver? Of what use is an emergency brake to a one-armed or one-legged man? What does the joy-rider care for the safety of the man he meets? Should a high-powered motor vehicle be permitted in the control of a young boy or girl under the age of twenty-one years, or an old man or an old woman over the age of sixty years? Should a dwarf 36 in. in height be permitted to operate an automobile? Should a person adjudged of unsound mind be given authority by the state to operate a machine? Should a driver who had already recklessly killed three persons in his machine be allowed to retain his license? Should an unnaturalized person be granted a license? Should any license be issued without the assurance of physical fitness and mechanical qualification? Not one of these persons could ever hope to obtain employment as a street car operator on any railway line, yet each and every one can obtain the privilege of operating a motor vehicle, of much greater horsepower than a street car, on every highway within the commonwealth.

The first move toward the prevention of motor-vehicle accidents would be the enactment of uniform state laws, a section of which should be devoted to the regulation of the speed of all motor vehicles, fixing a speed limit for rural as well as congested city districts, establishing rights-of-way and providing for the turning at the approach of or in passing another car. The dominant measure of such a statute should be a standard or test of the physical fitness, mechanical knowledge and the moral character of the individual, with the positive requirement of a practical demonstration. The owner of every car should be required to file an approved bond, either for himself or driver, conditioned upon the proper indemnity to persons killed or injured. Penalties for violation of the law should be severe and should include the arrest or impounding of the motor vehicle and its sale for fines, costs and damages. The state department should immediately be informed of the transfer of ownership of each motor vehicle. Lighting regulations should be the subject of legislative enactment.

Rigid ordinances for the operation of motor vehicles, in conformity with state laws, should be enacted by municipalities, and traffic squads and police officers should relentlessly enforce such requirements. Such ordinances should designate the line of travel, the manner of passing standing or moving street cars or other vehicles, the method of crossing at intersecting streets and the establishment of safety zones, and in short should incorporate all the provisions of the state laws. After the enactment of such uniform state and municipal laws, it would be the duty of automobile associations, motor clubs, safety committees, committees of 100 and all interested individuals to exercise a general supervision in relation to the strict and inexorable enforce-

ment of the laws by the officers of the state, county and municipality.

In the past, much has been written and said concerning motor-vehicle accident prevention, and it is now fitting and proper that this association take some concerted action to meet this imminent peril. The subject should be presented to the accident prevention board, appointed two years ago, or possibly a new and separate committee could be specially appointed with directions to draw up immediately a bill for presentation to the legislatures of each state. In view of the ultimate beneficial results of such procedure, there is scarcely a doubt that it will receive the indorsement and financial support of the parent association.

#### USES AND BENEFITS OF ILLUSTRATED LECTURES

H. K. BENNETT, CLAIM AGENT FITCHBURG & LEOMINSTER STREET RAILWAY, FITCHBURG, MASS.

This kind of publicity, illustrated lectures, is one of the most tactful ways to present the question of public safety in use at the present time. One may theorize and speculate to his heart's content and still be far from the mark, but a truthful representation of what has happened impressed upon the brain of the individual starts a train of thought that will never be entirely dissipated and cannot fail to produce results. It is not enough, however, to show pictures of electric car accidents and the perils of the street. Neither is it enough to confine education by means of pictures to the public alone, for as "charity begins at home," so should education begin with the employee. He should be thoroughly schooled as to the common accidents that occur in the performance of his duties, and be shown how easy it is to prevent just such an occurrence with his advance intelligence of what the public may be expected to do under certain circumstances. When he is shown what thoughtlessness may do in a personal way, he will think of himself and the net gain will be for the welfare of the public and the company that he represents.

Hence the scope of this kind of a campaign should not be limited, and as a matter of fact there is no limit. It can be adapted to the use of the kindergarten or the board of trade, and for every intermediate point that can be imagined. There is not a single society or organization that could not be entertained and instructed. In an eastern city where 300 women, representatives of the best homes, were gathered at one of these lectures and were shown how they invariably got on and off cars, along with other interesting views and the consequent results under certain circumstances, they agreed that they had never given the matter personal thought but that what they had seen was all true. Since that time there has been a marked decrease in this class of accidents, and it therefore cannot be said that there are no results from this kind of work.

At a recent meeting of the "Safety First Association" of an eastern city, the president of the local team drivers' union pledged the support of himself and his society to do everything possible to minimize traffic accidents, and when a representative of a street railway showed views of various vehicle accidents in connection with electric cars, this delegate admitted they were true. Think of it, a labor organization, primarily organized for the sole benefit of its members, standing shoulder to shoulder with a railway corporation for the betterment of humanity through the prevention of needless accidents. Does educative publicity pay? Can one picture a more ideal condition of affairs?

The public schools, from the creeping tots to the senior classes of the high and normal schools, clubs of

all kinds, lodges of every description, labor unions of every class are a target for a campaign of this character. Even the churches have been invaded with gratifying results, for those who have experience with accidents and their results can never have a creed for the righteous or unrighteous, the rich, poor, blind or crippled. There is no limit to the use, and the benefits are as many as the human mind is capable of absorbing. Seeing is believing, and the nearer the public can be brought to actually seeing what they are doing every day to fill the hospitals and the streets with cripples, the more they will appreciate their responsibility in avoiding accidents.

A criticism has been made that nine-tenths of the accidents happen to a class of people to whom one might talk by the hour and show pictures all day with as much effect as if they had not been approached. This cannot be so. There is not a single individual who has an ounce of perception and a teaspoonful of brains, that cannot be brought to a realization of conditions through the eye. People will not grasp everything, but they will grasp enough to get an idea, and what more can be asked than to have them absorb enough to keep them out of danger along certain lines. It cannot be expected that one picture and one lecture will be enough to produce miracles, for it is only by repetition and bringing the matter to these minds time and time again that real results are secured. The results are not going to come to-day, to-morrow or next week, but when the public has been reached in all of its classes. To speed the good work there should be no delay in starting this educative campaign, this gospel of "Safety First and First Aid to the Uninjured."

#### STANDARDIZATION OF CLAIMS STATISTICS

BY E. E. SLICK, CLAIM ADJUSTER UNION TRACTION COMPANY OF INDIANA, ANDERSON, IND.

The difficulties in the way of standardizing claim accounting and statistics appear almost insurmountable, since there are almost as many different ways of transacting claim business as there are different companies. For example, in one class of companies all the accounts of the claim department are kept by that department and its results are audited, while in another class the accounts are kept entirely by the auditing department, to which all claims are referred for payment after an adjustment or agreement has been reached. Under these divisions, it would appear to make little difference in the details of the payment, whether the claim account is kept by the claim department or by the auditing department, but the author recommends the general method of the account being kept at least nominally by the auditing department, in harmony with the standardized accounting rules, regardless of the details or methods by which money is placed in the hands of the claim department for settling claims after an agreement has been reached.

A standardized plan will not show all the valuable data at a glance, because the classification will present condensed facts. These condensed facts will probably answer very few of the questions that may be required by the management, and the classification must be such that any question may be readily answered from the collected data at some stage of the boiling-down process. It is conceivable that the management may ask for data concerning platform accidents at a certain road crossing, or collisions with vehicles at a highway crossing, the number of employees injured at certain shops, the number of accidents of any week or month as compared with any corresponding week or month of another year, the accident record of all or part of the men

employed, the number of collisions with automobiles, the number of third persons killed and injured, and numberless similar questions, all of which may or may not be asked in comparison with other weeks, months or years. Hence there must be a uniform system setting out these data, so that the statistical sheets will answer such questions as well as give the final results used for comparative purposes.

Even after selecting a standardized classification, the choice of a physical basis for keeping statistics presents a vital problem, for the physical property of the associated companies consists of interurban systems, city systems, park lines, elevated lines, subways and perhaps many others. The writer's personal view is that the physical unit should be a terminal, or a division of the property generally under the control of a local superintendent, from which point trains are originated and runs are estimated. Sub-terminals should be classed with the terminals. The terminal may be made up of both city and interurban service. In the smallest properties, either of city or interurban service, there would be at least one terminal, while the larger properties must be made up of a number of terminals, since all trains cannot originate at one place, if the physical property is stretched over a large territory.

Whatever classification of accidents is used, the same classification must be carried forward uniformly from the actual events to the financial results or the cost of this same class of accidents, in order to make the statistics valuable for comparison. If platform accidents are a class, the cost of platform accidents must also be given, and likewise with every item of the various classes. In order to do this it is necessary to make the very earliest collection of accident data in harmony with a definite plan. It is inconceivable that the management of any property does not want accident data, and accordingly it is suggested that a report be made at stated intervals, presumably weekly, by collecting the accidents and classifying first as to terminals and second, under the terminals, into accidents on city cars and accidents on interurban cars. Make other divisions as desired, but hold to the above-named divisions.

Probably the cost of cleaning up a wreck will not enter into the claim statistics at any stage of the game, but the matter of car repair on account of particular accidents, such as collisions and derailments, is an important question, and especially so if damage should be done to foreign cars. It would appear the more reasonable that the cost of repairs to foreign cars should be charged to some item in the claim department, and no doubt it would be fair so to charge this expense.

When special data for claim statistics were demanded of the writer by the management, he found a virgin field from which to extract the data, since no statistics had been kept by his predecessor, except a weekly report to the general manager, classified under as many heads as there were different lines. Since the method put in practice has produced reasonable results, it may be well to outline these results. The first act was to collect the accidents for one week under the head of the proper terminal, which was responsible for the men involved in the accident; and, second, to group this division into city and interurban accidents. It is generally assumed up to this point that accidents to employees are as carefully kept as accidents to other persons, but a simpler form under the following heads is used: Roadway, Electrical and Shops, and Trainmen. These divisions are recommended, whether or not the company has a larger or smaller number of departments having control of this line of work, since it is believed that practically all the work on the physical property is done under these classes.

If a number of heads are used for a terminal, the same heads will be applicable to either interurban or city accidents, and no matter how many terminals there may be, the same items are simply repeated under each terminal. Therefore, in presenting such an outline, it is necessary to give it for only one interurban terminal, the same item being repeated for the city terminal, if it be desired to keep them separate.

The first real statistical blank is a monthly blank with items as indicated below:

Day of Month.....	1	2	3	30	31	Total
Platform accidents.....	1	1	1	1	1	5
Collisions with vehicles...	..	..	..	..	..	..
Collisions between cars...	..	..	..	..	..	..
Collisions with persons, things and animals frightened.....	..	..	..	****	..	..
Derailments.....	..	..	..	..	..	..

Under general heads, the following items are used: employees slightly injured, employees severely injured and employees killed; passengers slightly injured, passengers severely injured and passengers killed; trespassers injured and trespassers killed; all other persons injured and all other persons killed; baggage claims; ejections, and stock killed. City and interurban accidents were classified under these heads for a given terminal, and the terminal repeated as often as necessary.

On this monthly sheet there are thirty-one spaces for the days, and the item is indicated with the date of the happening. The items added horizontally indicate the number of accidents in that class for the month, and added vertically indicate the number of accidents for each day, the latter having no special statistical value. The figures obtained from the horizontal additions, of course, indicate the accidents under that head for the month, and are the figures carried to the next condensed sheet, as follows:

ACCIDENT REPORT		MONTHLY FOR THE YEAR 19...				
Month of Year.....	Jan.	Dec.	1910	1920		
	**	*****	**			
Platform accidents.....	5	6	19	20		
Collisions with vehicles...	..	..	..	..		
Collisions between cars...	..	..	..	..		
Collisions with persons, things and animals frightened.....	..	..	..	..		
Derailments.....	..	..	..	..		

The above outline contains the same items reduced from all the terminals, and for both city and interurban, into one class under its appropriate head, i. e., all the platform accidents are collected in one number for this sheet, and twelve spaces are used for the months, followed by any number of spaces for the years, so that this last sheet will show at a glance the items for the different years.

Then a financial sheet is prepared as follows:

FINANCIAL SUMMARY OF ACCIDENTS		MONTHLY FOR THE YEAR 19...				
Month of Year.....	Jan.	Dec.	1910	1920		
	**	*****	**			
Platform accidents... Cost	\$75	\$50	\$200	\$150		
Collisions with vehicles...	..	..	..	..		
Collisions between cars...	..	..	..	..		
Collisions with persons, things and animals frightened.....	..	..	..	..		
Derailments.....	..	**	*****	..	**	..

This contains the same items as the monthly accident report, followed by twelve spaces for the months and totals for any number of years. Thus the last financial report will show at a glance the cost for each year



under its appropriate head, as indicated above. This blank should be filled by taking account No. 92 from the auditor's books and collecting the data under the proper head.

The foregoing suggestions are not intended in any way to influence the work of the Claims Association committee on this subject, but only to indicate a method that has been put into practice and found fairly satisfactory.

#### A CARD INDEX AND WHAT IT MEANS

BY J. J. REYNOLDS, CLAIMS ATTORNEY BOSTON (MASS.)  
ELEVATED RAILWAY

A card index is nothing more or less than an intelligence department. As the intelligence department is part of the claim organization, it must act in conjunction with other departments, and its highest efficiency can only be reached when all other departments are kept up to the same high standard. Stated briefly, the work of the intelligence department can be brought under the three heads: filing, indexing and summarizing. By filing fixed places are provided for the materials; by indexing there is extracted what is useful, and by summarizing the various extracts are brought into one consistent statement. By indexing the bulk of the original materials is reduced, and by summarizing the bulk of the indexed information is reduced. The most important part of the entire work of the intelligence department is indexing, for through it information is made accessible and ready for use, and is selected for special requirements.

No pains should be spared, therefore, to construct indices on the most systematic plan. A systematic card index of whatever kind or for whatever purpose is not to be regarded as a pretty plaything, or a little odd job to be hurried through in a few minutes, which may be entrusted to one of slender understanding. With the increase of information an index becomes sufficiently intricate to demand the best efforts to run it with anything like economy and efficiency. Those who have in view the construction of a card index and are looking about for methods should have in mind the simple fact that cards are only written once, but they may be consulted or referred to an infinite number of times. From the point of view of both cost and efficiency, therefore, the ease of reference is the best criterion. The work left undone by those who write the cards must be done by those who consult them, and at each consultation. Hence when possible this work should be done once and for all when the cards are being written.

#### NECESSARY OPERATIONS

The operations necessary to apply the method of systematic indexing may be summarized as follows:

1. Index cards: Writing the result of indexing on cards in accordance with uniform rules which will facilitate filing and consulting.
2. Card index: Arranging or classifying the cards according to the plan provided for.
3. Guides: Dividing the cards into classes to facilitate reference and bringing these various classes into relation. To these must be added the practical test of the card index as a whole.
4. Consulting: Tracing cards or sets of cards for the purpose of using the information.

The various operations connected with the filing of the cards may be selected as follows: (a) Verifying and checking the cards to be filed; (b) placing each card in its proper position in the index; (c) attending to guides (this work should be in the hands of one reliable man so as to enable him to observe the utmost consistency).

Before the cards are incorporated into the index the filer should examine each card with a view to checking the work, generally, so as to eliminate errors.

#### IMPORTANT POINTS

The card-index method aims to bring to a focus complete and concise information concerning each claim filed and furnishes a short cut to all the information about the claim that may be required. By use of signals of various colors attached to the top of a card, any case requiring special attention may be kept constantly before the eye of the claim agent. In this way the claim agent may keep track of cases he should review, with the minimum effort.

Cross reference is of the greatest importance and should be made as perfect as possible. A card-index system will not give the very best results for the money expended if the cards are not properly guided and the fullest advantage taken of the opportunity for cross reference. Guides are just as essential to one consulting the index as street signs are to a pedestrian. To file a large number of cards is as a rule not so difficult as to trace cards wanted afterwards. By connecting related cases, or numbers, strings are tied to the cards, thus making it impossible to miss any. Access is also made easier by the systematic disposition of the information on the cards, limiting the related terms to those which are actually in the index and, by referring from one name or number to another, connecting those which are related by making a cross reference on each. The most valuable feature of the card index is the safeguard it provides against repeaters and fakirs. Such an index properly planned and cross referenced serves as a check against dishonest claimants, doctors and witnesses.

#### EXAMPLE OF INDEX DATA

The following record of the Hogan case, which was tried and is therefore a matter of public record, was furnished from the record of the Boston Index Bureau. It illustrates the method and extent of the record kept:

Honora Hogan, sometimes called Honora A. and sometimes Nora A. Hogan. 60 East Springfield Street. Case 4815-13 against the Boston Elevated. Tried in Third Session, March 15, 16 and 17, 1915. Whipple, Sears & Ogden for plaintiff. Fletcher, Ranney and Thomas Allen, Jr., for defendant. Verdict for defendant.

Claim thrown by starting of car at corner of Washington Street and Cedar Street, June 23, 1913, at 10.30 p. m. Claimed synovitis of left knee, shortening of left leg and injury to left sacroiliac joint. Dr. Eugene Thayer attended plaintiff. Plaintiff also called Dr. H. H. Germain for consultation and Dr. Charles F. Painter and Dr. DeWitt Wilcox of Boston University Medical School.

Previous accidents admitted on cross-examination by plaintiff:

1. Born in Boston about 1865. Name, Honora McCarthy. Injured when seven years old by a piece of steel run into her left shin. Scar still present.

2. In 1898, corner Dover and Washington Streets, thrown from elevated car on back. Name then Honora Hogan. Number of this case is unknown. She claimed injury to back and spine. Received \$60 from claim agent day after accident.

3. Case 3351-1 against the Elevated. Claimed she was thrown about in elevated train on July 23, 1901. Hurt back and head. Out of work a year. (She being an expert laundress.) Was paid \$700 in settlement. Charles S. French, attorney for the defendant. Feb. 21, 1907.

4. 1908. Name, Honora Hogan. Claim against C. F.

Hovey & Company for a blow on head from fall of electric light globe.

Claimed injury to head and was laid up six months. Charles S. Knowles, attorney for insurance company, and Hardy, Foster & Stone know about this claim. She received \$75 in settlement from the insurance company. At the time of accident No. 4 she lived at 24 Village Street. One Thomas Thornley has the care of this house. Address, 24 Village Street. She lived there five years. She has recently moved to 60 East Springfield Street. She had two or three other addresses between Village Street and East Springfield Street, but could not recall just what they were.

In 1901, time of accident No. 3, she lived at 51 Allston Street, Charlestown.

Her husband, Cornelius Hogan, died about six years ago. She has a son 24 years old, who works for McGann (rent autos) and another son, about 20 years old, who is also working. She is a short woman, about 5 ft. 2 in., weighing now 220 lb. A very voluble and persuasive talker.

#### BOSTON INDEX BUREAU

The Boston Index Bureau was formed in December, 1905, with twelve subscribers. New members have been added every year and it now has a total membership of twenty, representing four railway systems, three railroads, nine casualty insurance companies, one telephone company, one gas company, one law department (city of Boston) and one law firm.

The file for plaintiff's cards, now including more than 403,000, consists of twenty-three cabinets of eight drawers each, each drawer having two compartments. Two cards are made out for each claimant, one of which is filed alphabetically and the other by street and number.

In the first year the members filed 33,529 claims, which included settled cases four or five years old. Since then they have filed 20,698 in 1907, 15,514 in 1908, 16,063 in 1909, 18,175 in 1910, 18,402 in 1911, 20,061 in 1912, 21,261 in 1913, and 22,421 in 1914. In the nine years a total of 186,664 claims was filed, on which the bureau returned 74,138 references, or 39 per cent. In addition to these regular claims, sent in by subscribers, the bureau has the names of 5500 or more persons which were clipped from newspapers and court records or which were reported to the bureau by investigators, attorneys' assistants, etc. These persons are very likely to turn up as plaintiffs sometime.

The references or items of information consist of previous claims by the same person against the same or other companies; previous claims by persons of the same name or similar names in the same town, district of Boston or neighborhood, and previous claims by others in the same family and by claimants at the same address. The bureau is also filing, with the regular claims, all witnesses for plaintiffs. These names are furnished by the attorney's assistants. A surprising number of previous claims of the witnesses themselves or at their residences have been found. These records are sure to become very valuable. In this file also are about 8000 guide cards, lettered by hand and spaced so as to aid the eye and permit the greatest possible speed and efficiency.

A separate file consists of 5700 attorneys' cards and 9000 doctors' cards, on which are written the names of the claimants and such general information as may come to the bureau's notice. These cards are posted daily from the plaintiff's cards. On these cards also are posted all the facts of any case that has been tried in court. This latter information is sent in by the trial attorneys or their assistants on furnished blanks, giv-

ing the names of the doctors who testified and the names and addresses of the plaintiffs' witnesses. This information is likewise posted on the claimant's card.

When detailed information regarding any particular doctor's case is required by the trial attorney, the bureau picks out the original claim cards and writes out on prepared blank sheets the full details. It has about 250 of these special lists, the use of which has repeatedly been the means of winning or lessening a verdict.

The local jury lists are checked up as soon as the names are available. It is found that 40 per cent of the jurors have had claims in their families or at their places of residence, or have appeared as hostile witnesses against some of the companies.

The references referred to above vary considerably in the percentage on claims filed. The averages have been about 39 per cent, while the references returned to the Boston Elevated Railway average over 70 per cent. This shows that the claims of subscribers whose operations cover a wide territory show a smaller percentage of returns than those which operate in a more restricted territory.

#### OTHER INDEX BUREAUS

On or about May 1, 1915, the Hooper-Holmes Index Bureau had in its card system nearly 4,000,000 records and each year there is an increase not only in the number of reports received but in the percentage of "duplicates" or references, these accumulations clearly indicating the value of the service to subscribing companies. The Chicago Index Bureau had about 1,000,000 cards on file in April, 1915. The card index of the "Alliance Against Fraud" in New York has more than 250,000 names at present on file. The Philadelphia Index Bureau has a present index of approximately 150,000 names, and the Pacific Coast Claim Agents' Index Bureau has cards as follows: Claims, including suits, 30,560; attorneys, 426; doctors, 638; occupations, 4500; descriptions of injury, 6500. The point to be stressed here, and now, is that the claim departments did not make the index bureaus, but that the card index, as represented by the index bureaus, made the claim departments the formidable organizations to the fakir that they are to-day.

#### BOSTON ELEVATED EMPLOYEE INDEX

A card index and what it means is further exemplified in the card index record of the Boston Elevated Railway employees. From this record can be found the name, address, age and history of the employee, the nature of the position he holds, the length of time in each class of work, the change to a new position, if any, with the company, together with such information about the employee as may be especially valuable to the claim department when desiring information concerning any past or present employee or claimant.

The card index in addition to giving the history of the new employee shows that he has been notified, as required by law, and is therefore possessed of actual personal knowledge that this company is a subscriber to an insurance company under the workmen's compensation act. In the case of injury to the employee any question of his waiver of notice of his common law rights is a matter of record in the claim department.

All cards in this index are kept separate from the general claim index except that the net information accruing may be transferred in any manner desired. This card index originated in and is maintained in the claim department of the company, under the personal supervision of one of the department men. Since its establishment in 1904 it has resulted in the centralization in the claim department of practically all the information

Name	Birth Place
Occupation	Town
Badge No.	
Date appointed	
Previous Record	
Age	
Address One Year Ago	
Nearest Relative	
Address of Nearest Relative	
Form 3390-8-12-5m BOSTON ELEVATED RAILWAY CO.	

EMPLOYEES' INDEX—FIG. 1—SHOWING CARD USED TO FURNISH INFORMATION FOR LOCATING EX-EMPLOYEE

in the possession of the company relative to its 8500 employees. It contains at the present time about 60,000 cards. The cards are filed alphabetically, by streets and by all the principal cities and towns in New England and the British Provinces. When an employee leaves the service the record card is removed from the live index and on it is entered the date and reason for going. A past employee file is kept, arranged alphabetically and territorially so that when applications for reference from other employers are requested they may be quickly consulted.

This index gives a street directory of employees, showing whether or not the company has any employee residing in or near a given number in a particular street. It is really surprising to see how often it will be found that one or more employees actually live at or near the address given by a claimant, so that in the event of the claim department desiring specific information of a claimant, his previous history, his conduct since the accident, etc., it is in a position to get available and speedy information almost at first hand. In fact, through this street phase of the record, the Boston Elevated Railway was aided in discovering that a certain claimant, who had given a different place of employment, was actually working for the company. For the benefit of the claim agent or attorney handling the claim in the department a stamp is placed on the lower corner of the case file when it is made. In this may be written the names of from one to three employees living at or near the claimant's residence. This is a great help to one handling large numbers of claims.

The card index is also used in checking up the jury lists (this being in addition to the same use made of the local index bureau before referred to) to ascertain whether jurors or members of their families are present or past employees. Then, too, the various divisions and

NAME IN FULL							
PRESENT ADDRESS							
AGE	HEIGHT	EYES	HAIR	COMPLEX.	WEIGHT	BEARD OR MUSTACHE	
DATE OF BIRTH		PLACE OF BIRTH	PLACE OF FATHER'S BIRTH		HANDS		
PREVIOUS ADDRESS				CAUSE OF REJECTION			
REMARKS							

EMPLOYEES' INDEX—FIG. 2—SHOWING DATA CARD FILLED OUT AT TIME OF APPLICATION

department heads consult the index for information which they may desire concerning employees. It is used by the treasurer's office to locate men who have assigned their wages or who have had wages trusteeed by the bureau of audit, etc. All mail addressed to employees which contains no street or number, but is directed in the care of the company, is delivered at the bureau, where it is properly addressed and forwarded by the man in charge. The same is true of the general public and all outsiders who may wish to communicate with or locate any of the employees. The great care exercised in connection with this phase of the index insures minimum "leakage."

Fig. 1 shows a card (3 in. x 5 in.) which, properly filled out, gives the necessary clue by which an ex-employee may be located. This card is immediately sent to the claim department from the department of employment when a man is hired, and is retained in the index after the man has left the service.

Fig. 2 is a card (3 in. x 5 in.) filled out at the time of application. Signature and address are written in ink by the applicant, all other information required being filled in by clerk. The result of eye examination is recorded on the reverse side of this card (Fig. 3). This card is kept on file with the applicant's papers until his references have answered. If the applicant is rejected, the papers are filed away and the card is filed in the "rejected" list. The bureau uses the Lockhart binding cases, and the date of filing is placed on the first line of the card, which corresponds with the date on the binding case in which the papers are located. By simply locating the card, papers of any applicant can be readily secured, even though the application may have been made ten or fifteen years previously. Cards are filed alphabetically.

Cards are made out for every man appointed and for

Form 3148 11-14-10111		RIGHT EYE	LEFT EYE	BOTH EYES	READING TEST BOTH EYES
ADVANTAGE OF VISION WITHOUT GLASSES AT 20 FT.					OPER WITH GLASSES
SMALLEST LINE OF TEST TYPE READ CORRECTLY		VISION WITH TEST GLASSES			SATISFACTORY
COLOR SENSE					
NO. ON SERIES IN STERO. NO. WHICH COLOR SET SELECTED AS SIMILAR TO TEST SENSING					
A	CHEEK	1	2	3	4
B	ROSE	5	6	7	8
9		10	11	12	13
14		15	16	17	18
19		20	21	22	23
24		25	26	27	28
29		30	31	32	33
34		35	36	37	38
39		40	41	42	43
44		45	46	47	48
49		50	51	52	53
54		55	56	57	58
59		60	61	62	63
64		65	66	67	68
69		70	71	72	73
74		75	76	77	78
79		80	81	82	83
84		85	86	87	88
89		90	91	92	93
94		95	96	97	98
99		100	101	102	103
WORDS REPEATED CORRECTLY IN CONVERSATIONAL TONE					
HEARING		NO. OF FEET		RIGHT EAR	LEFT EAR
MATCHET SPROCKET CORRECTLY COUNTED		NO. OF FEET			
BOSTON ELEVATED RAILWAY CO. EXAMINER					

EMPLOYEES' INDEX—FIG. 3—SHOWING REVERSE SIDE OF DATA CARD (FIG. 2) FOR EYE EXAMINATION RESULTS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20																					
Name										Occupation											
Address										Married or Single					Age		Height		Aver. Weight		
Experience with										Address					Length of Service						
Letter from																					
Recomm. by																					
Action taken										Date											
Remarks																					
FORM 3111 10-10-11 BOSTON ELEVATED RAILWAY CO.																					

EMPLOYEES' INDEX—FIG. 4—SHOWING APPLICATION CARD FOR EMPLOYEES IN OTHER THAN CAR OR TRAIN SERVICE

BOSTON ELEVATED RAILWAY CO.			
RECORD OF MEN SENT FROM EMPLOYMENT BUREAU			
The Bearer, Mr. _____			
Sent to _____		} Interview For / Employment	
A. _____	Date _____	to _____	
Reference _____			
Signed _____			
Date card presented _____		Reported for work _____	
Married } Single } Age _____	Class _____	Rate _____	
Residence _____		} When Vaccinated _____	
Remarks _____			
Form 3056-12-20		Signed _____	

EMPLOYEES' INDEX—FIG. 5—SHOWING CARD GIVEN TO APPLICANT FOR PRESENTATION TO SUPERINTENDENT OR DEPARTMENT

every badge issued to employees. One card is for the alphabetical live list; the card shown in Fig. 2 (application card) is filed with the same. The second card is a tab card, the tab denoting the last figure in the badge number. Badge number 1248 would require a No. 8 tab. These cards are filed in numerical lists, and when the employee leaves the service, the tab is cut off, the date and the reason for his leaving are noted on the card, and this is filed again in the numerical list. Thus the bureau is able to tell at a glance just what employees have had certain badge numbers for the last fifteen years, and the other information necessary in such cases. Classes are denoted by different colored cards—namely, motormen, yellow; conductor, white; brakeman and gateman, salmon. Miscellaneous employees, such as inspectors, starters, switchmen, employees, etc., are denoted by a salmon card with the position occupied stated.

The card (5 in. x 7 in.), shown in Fig. 4, is used in receiving applications for positions other than for car or train service, such as shop and power station employees, etc. The tab numbers on this card denote the position applied for. In filing this card, all tabs are cut off except the tab number denoting the special position applied for. If there is occasion to look for applications for machinists one would simply run through the cards, picking out those of the proper number.

Fig. 5 illustrates the card (3 in. x 5 in.) that is filled out and given to an applicant for presentation to some superintendent or department. This is kept on file at the office where presented. The card (4 in. x 6 in.) in Fig. 6 is filled in by each new man appointed,

BOSTON ELEVATED RAILWAY COMPANY, 101 Milk Street, Boston, Mass.		191.
Sirs:		
Under the provisions of Chapter 577, Acts of 1907, I hereby request that I be given seven days work each week until further notice.		
	Signed _____	
	Classification _____	
	No. _____	
Sirs		
Referring to Chapter 577, Acts of 1907, it is my wish to work but six days in seven until further notice.		
	Signed _____	
	Classification _____	
	No. _____	
Form 3125-4 12-20		

EMPLOYEES' INDEX—FIG. 6—CARD FILLED IN BY EACH NEW MAN APPOINTED AND FORWARDED TO DIVISION SUPERINTENDENT

and is forwarded to his division superintendent for file. The bureau also has a card file containing the name of every employee in the blue uniform service, cards of which are arranged by date of appointment into years, months and days of service. A report is made monthly of the number of blue uniformed employees in service by years and classes. This file is also used in sending notices for increases of pay and others for stripes. It is kept accurate by simply taking out the card when a man leaves the service and adding new cards for new appointees.

CONCLUSION

From the very beginning of organized effort in this country for the dissemination of information relative to accident claimants, reckoning from the founding of the Hooper-Holmes Index Bureau and the Alliance Against Fraud organized in New York, and the Index Bureau in Boston, Mass., which was the first local bureau in the country, the leaders in claim department work have been searching for means of co-operation between claim departments and the resultant elimination, as far as possible, of the fakir or repeater. It is universally accepted opinion that a card index is the most efficient method discovered up to this time. The card index may appear insignificant to the uninitiated, but it means that the resources of the combined claim departments of the American Electric Railway Claims Association are being made easily accessible to all member companies who wish information of certain claimants. The field of usefulness of a card index to the association is limited only by the extent of the activities of its members in seeking and exchanging information concerning claimants of whom they have even a bare suspicion. No argument is needed to prove that the hour has struck for intense activity toward perfection of this defense.

JUSTIFICATION OF SAFETY FIRST MOVEMENT  
BY ALVES DIXON, CLAIM AGENT EL PASO (TEX.) ELECTRIC RAILWAY

Figures are cold and lack expression, and only the eyes of those familiar with the subject can appreciate the full significance of "Yearly Accident Report of a Great Institution," and farther down: "Reduction in Fatal Accidents this Year over Last, Twelve." The general public reads perhaps the headlines, and hurriedly turns the page until "The Great Ty Steals Home" catches and holds the eye. But you and I, of the inner circle, what do we see? If it is possible to visualize negation we sense a darkened room—a stillness broken only by the moans of a small, tear-eyed woman racked with grief—her hands worn thin and wrinkled through loving service—sobbing children—mourning relatives and a few sympathetic friends. The curtains are drawn, but through the oppressive gloom we see a long, narrow box, covered with flowers, and as the scene changes, we see the little company standing beside an open grave, we hear the hollow sounds of falling clods, the wail of women and the hard dry sobs of men. With outstretched hands, the Man of God is commending another soul into the keeping of its Maker—we multiply this scene by the twelve lives saved, and then, like a glorious flash of light, comes the thrilling thought: To twelve families has this been spared—to twelve wives there are saved husbands who are still full of life and the joy of living—to twelve groups of little children there are still devoted fathers and happy, happy mothers, and instead of the small group, bare-headed beside the new-made grave, and the accompanying sound of a funeral dirge, we see a happy family gathered around an open hearth

and hear from a tiny phonograph on the dining-room table the rollicking chorus of "The Five Fifteen."

And this is just the reduction made in one institution. Multiply this by the great reduction made throughout the country; grasp, if you can, what a saving it means—not only in mere life and limb itself but in the sum total of human happiness—and grasping it, you feel that while your work is done without the blare of trumpets and with perhaps little appreciation, it is none the less effective.

## RELATION OF SAFETY TO CONSERVATION

BY B. F. BOYNTON, GENERAL CLAIM AGENT PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

Safety and its relation to conservation is twofold. It is humanitarian and it is economic. To conserve life, limb and health is the highest ideal of the human race. To conserve efficiency is the basic principle of economic success and an incomparable asset to society. To attempt to achieve that which is humanitarian and at the same time economic, is worthy of the most careful thought and the highest endeavors without stint or selfishness, that can possibly be put forth by society or any unit of society.

In any large organization the first step toward safety and conservation must be with the head of that organization. The president or general manager—whatever title he may use—must be a man of such ability and capabilities that he can gather around him men who will work with him in harmony. They in turn must be men of such a caliber that they can organize their different departments along the same line of harmony—that is, with each and every man working toward the one purpose. When this is done, the greatest step that can be taken along the line of safety from every standpoint is accomplished.

The next step, if the property be a big utility, a street railway, is to establish an employment bureau. The one in charge of such a bureau should be a good level-headed man with exceptional qualifications in regard to reading and judging the character of humanity. The employment of insufficiently trained men is hazardous, and over-confidence in employees breeds bad results. Each and every applicant should be investigated as to his character and habits as well as ability. No matter what position he may be seeking, he should have a thorough medical examination by a competent surgeon, so that if he has or ever had any afflictions, can these be made note of in order to make the record complete. Before the man is allowed to assume his duties in any department, he should be taken through a school of instruction along accident lines by some competent person, preferably a representative of the claim department. After the men are placed in their positions, they should be called together at least once every six months and again be talked to about safety and its relation to conservation, for the purpose of keeping them well informed. Close observation should always be kept of all employees, and wherever a careless or indifferent person is found, he should be relegated to the scrap heap. It should be remembered, too, that earnest investigations of the primary causes of accidents and adequate safeguards all tend toward conservation from a safety standpoint. By making conditions safe, safety and conservation are absolutely brought together.

To show some practical applications of these principles it may be said that in Portland for the last seven years lecturers have covered the public schools once or twice a year, talking to the school children and teachers and distributing safety mementos of different kinds.

Every carman, before he can assume his duties, is sent to the claim department for instruction on accident prevention and the care of accidents. These men are re-instructed twice each year. All of the other various employees are also assembled two or three and sometimes four times a year and talked to along the same lines.

The company has organized safety committees in each and every department from the track greaser to the president's office. It holds safety picnics and safety dances, safety socials and safety gatherings of every name and nature, and tries to make them not only interesting and attractive to the employees and their families but also instructive along safety lines.

Through the safety committees, by the different suggestions that have been sent in from time to time, the company has found and made safe hundreds of dangerous conditions that never would have been reached in any other manner. It never fails to answer and follow up a suggestion, letting the sender know the outcome and, in any case, always thanking him for the interest he has shown.

From time to time prizes are offered to the trainmen on the different divisions for the best articles on some particular line of safety. This has brought forth a great deal of good thought, and some fine papers have been written on safety and conservation.

Once in a while, safety suggestion blanks are placed in the pay envelope of every employee, asking if they know of any condition which could be remedied to make things better and safer, and if they will kindly note any such condition on the blanks and return these. Through this channel a great deal of good has resulted.

Through the various meetings and gatherings and by getting in touch with the employees directly, the company has created a harmonious family touch between the employees and the heads of departments, and that alone has helped greatly toward safety and conservation.

The company had signs painted in various parts of Portland on large billboards (some of them 20 ft. x 30 ft.). These signs, containing different safety slogans, were placed in as conspicuous places as possible and near danger zones. These signs, perhaps, to the layman, look like money ill spent, but the company feels that it obtained wonderful results from the investment. The city has joined in this work by placing between 300 and 400 safety-first signs. They are steel disks 18 in. in diameter, mounted on steel tubing 6 ft. high and painted red with a green center, and are set in concrete just inside the curbing on the right hand side of the street at various distances from danger zones, warning drivers of teams or machines of the conditions ahead. "Sharp Turn," "Steep Grade," "Railroad Crossing," "School, Drive Slow," "Fire Station," "Reverse Curve," "Hospital," and various other things, as required, are painted in clear letters on these little disks.

The company has gone further than the reaching of its employees by inducing the authorities, through the mayor and commission, to appoint a public safety commission. This commission consists of the following bureaus under the following men:

Bureau of Public Safety.—John T. Moore, captain of police.

Bureau of Fire Prevention.—A. M. Churchill, lawyer and chairman of fire prevention bureau of Civic League; E. F. Dowell, chief of fire department; Jay Stevens, fire marshal.

Bureau of Traffic.—H. P. Coffin, chairman public safety committee of Portland Automobile Club; A. S. Kirkpatrick, city traffic engineer.

Bureau of Schools.—L. R. Alderman, superintendent of schools.

Bureau of Transportation.—F. L. Burckhalter, general superintendent Southern Pacific Railway.

Bureau of Electric Transportation.—B. F. Boynton, general claim agent Portland Railway, Light & Power Company.

Bureau of Industrials.—Marshall N. Dana, *The Evening Journal*.

Bureau of Buildings.—Robert L. Withrow, *The Evening Telegram*.

Bureau of Publicity.—Horace E. Thomas, city editor, *The Oregonian*.

Advisory Board.—J. E. Wheeler, McCormack Lumber Company; F. C. Knapp, Peninsular Lumber Company; A. H. Averill, Averill Machinery Company.

Their various walks in the business world show what these men represent. These different safety bureaus have woven a chain of friendship and harmony among the newspapers, the schools, the fire department, the police department, and in fact all of the public utilities. The company has lent and is lending every effort possible to each bureau to accomplish the results which are necessary to be obtained by these various functions, and in this way is breeding a harmonious, good-fellowship feeling between the company and the city and at the same time accomplishing great results along the line of safety and conservation. The children in the schools and the people in the factories, the department stores and various other places are being taught what to do and how to do it in case of fire, and the merchants and the manufacturers are being induced to cover and protect accident hazards. The traffic bureau of the commission, up to May 1, 1915, had 153 automobile drivers arrested for disobeying the traffic ordinance in passing street cars while they were discharging passengers. The bureau of schools has organized safety committees among the school children in each school. All this accomplishes the one great result of setting the people to thinking right along safety lines. Whenever this is done, the battle is more than half won.

#### FINANCIAL BENEFITS OF SAFETY-FIRST MOVEMENT

BY J. S. HARRISON, CLAIM AGENT JACKSONVILLE (FLA.) TRACTION COMPANY

The subject "safety first," as a means to financial results, divides itself into two sections. The first covers "safety devices," such as rotary gongs, safety gates, life guards and other numerous excellent safety devices which up-to-date street railways have adopted as part of the safety-first plan in order to reduce accident costs. The second section is devoted to "educational methods," subdivided with the operating employees in one class and the public in the other. The educational means employed for these vary materially in point of expense, for the education of the public, embracing the safety education of school children, the use of cuts and catchy epigrams in newspaper advertising, the employment of moving pictures and numerous such devices, does of course necessitate a greater outlay of money than does the education of employees. Just what relation, from a financial saving standpoint, the safety devices installed upon the cars will bear to the educational methods employed would be, of course, hard to compute. It is believed, however, that greater financial results have been accomplished by the use of automatic and semi-automatic safety devices and the giving of more attention and education to employees of the Jacksonville Traction Company than have resulted

from the education of the public by the ordinary means and methods, such as cited above.

As regards the joint result of the two methods the following is pertinent. The Jacksonville Traction Company began actively to equip its cars with safety devices about the time it also inaugurated its safety-first educational methods. In 1914 a trained safety-first man was placed in charge of the movement. This man has been devoting all his time and attention to the work by formulating apt and careful advertisements, working up movements in the different clubs, encouraging the safety-first movement among the public schools, and, of course, delivering regular and practical lectures to the trainmen two or three times a week, using as illustrations actual recent accidents with which almost every employee was familiar. These two methods of safety work resulted in a decrease of 42 per cent in accidents in 1914 as compared to 1913. This figure was compiled after a careful classification of the different accidents under different headings. One can reasonably conclude, therefore, that if there is an average annual expense or loss of \$25,000 from accidents to any electric railway the institution of the safety-first movement will reasonably result in a financial benefit or a saving, on the basis of the population of Jacksonville, of \$10,500.

Aside from the fundamental humanitarian aspect of safety work, the practical business benefits resulting from the institution, in intelligent and systematic manner, of safety first, with every part of the human machinery of the corporation alive and aflame to its importance and thoroughly enthusiastic over the results, cannot but convince the public service corporation itself, as well as the public at large, of the prime importance of such work. Of all the modern ideas and theories advanced in relation to the operation of street railways, safety first has done more to popularize the public service corporations with the public, but more particularly in financial circles, than anything else. Anything which prevents accidents saves money, and anything which saves money necessarily tends to pay dividends. The safety-first movement has ceased to be a theory or an experiment and has become an actual, practical necessity, from the financial as well as the humanitarian point of view. It is the mortal enemy of the ambulance chaser and a real automatic safety device against the worst of all accidents—a receivership.

#### MOVING PICTURE EXCHANGE FOR A. E. R. A.?

BY F. J. WARNOCK, CLAIM AGENT MAHONING & SHENANGO RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

If one is satisfied, as many companies are, that public instruction is the final solution of the problem of accident prevention, the question arises as to the methods to be used in imparting such instruction. There are several ways in which this can be done—among them being the use of the press, the distribution of literature and the use of car signs bearing illustrations and printed matter on the subject of safety. But the most powerful medium of all, through which to teach safety, is moving pictures, because these pictures make a deeper and more lasting impression on the mind, and especially on the minds of children, than any other means that can be used. The moving picture comes nearer to the reality than anything in existence, and therefore leaves a more profound impression than anything outside the reality. Furthermore, moving pictures are now so popular that it is not necessary to put forth any effort to create interest in them, for anything that comes in this form appeals to the public.

Those who have used moving pictures for safety work can testify as to their efficacy. The Mahoning & Shenango Railway & Light Company has used them some in past years and has been conducting a regular campaign during the present year, particularly directed to educating school children. During this time, many expressions and illustrations have been received showing the effect that has been produced. Some companies can even show figures to prove that accidents have been reduced following a moving picture campaign. We can only say that we have not, since starting out some months ago, had a single car or wire accident reported among school children to whom pictures have been shown.

Thus far, however, there has been no concerted action. Here and there promiscuously companies have become enthusiastic over the moving picture as a means of instructing the public, but others have not awakened to the possibilities which lie in a campaign of this kind, or at least have not warmed up to the point of putting it into operation. Accident prevention will never come into its own until everyone puts his shoulder to the wheel and co-operates with everyone else. No doubt in time the subject of safety will be taught in the schools as physiology is now taught. In fact, already some states have passed legislation requiring that some time be devoted to this important thing. In Ohio, it is required by law to be taught one hour a month. In New Jersey a law has been passed providing that more time be devoted to it than in Ohio and that it be taught from text books prepared for that purpose.

Yet the time has not come when one can rely upon the teaching of safety through the natural channels. No doubt in time it can be so brought about that teachers can train children to take care of themselves as skillfully as they now train them in other things. When such an atmosphere of safety shall prevail, companies can devote their entire time to their own organization and equipment. But before such an atmosphere can be created a great amount of agitation is necessary, and it falls upon the shoulders of corporations to create and sustain it until safety instruction can be placed upon a natural and permanent foundation. There can be no question about the value of moving picture film as a means to the desired end. The great trouble, however, has been the difficulty experienced in procuring films as well as the expense.

The establishment of a film exchange by the American Electric Railway Association is a school that is entirely possible and practicable. In fact, it offers the only true solution to the problem of country-wide accident prevention, because with it in existence it would be comparatively easy for all companies to engage in this work instead of a few. It has already been tried and found to be a success. On various occasions when our company has sought to obtain films from various sources, and failed, we were able to secure them from an exchange conducted by the National Council for Industrial Safety, whose headquarters are in Chicago, Ill. This council conducts a very successful exchange for the benefit of its members who are engaged in safety work. It is too extensive in scope, however, to suit street railway purposes, as it embraces, together with railroads, every form of industry where men are employed and in which safety instruction is needed. Its films are also directed almost entirely toward instructing employees, while the most important task of electric railways is with the public. At any rate, it demonstrates that the proposition is feasible and leads to the conclusion that if the National Safety Council can do a thing of this kind, the American Electric Railway Association should be able to do it and even with greater success, for the reason that it would be specializing

instead of carrying safety films of every description.

It should not be difficult to establish a film exchange, where safety films could be collected and kept for the use of members. The association could decide upon its location and care for the appointment of the person or persons to take charge of it. Many companies have already made films, being unable to secure them in any other way. These could be put in the exchange, when they are through with them, instead of being destroyed. The contribution of films could be made to entitle the contributor to membership in the exchange. Those who do not furnish any and who desire to participate, could be charged a fee for use in making new reels, to be kept in stock by the exchange.

In addition to this, the influence of the association could be brought to bear in securing and preserving safety films created by the film manufacturing concerns of the country. In past times these films, after going the rounds of the theaters, have been called in and destroyed. On two or three occasions our company endeavored to rent pictures of which it had heard, but received the answer that they had been called in and disposed of. If the negative were preserved, of course new reels could be made from time to time, but as it is now, the manufacturers usually keep the negative and later destroy it.

Another argument for the exchange is that it would mean a great saving in money to members. Those who have used this means of public instruction in the past have been forced to make their own films or have them made. They cannot use the same material over and over again after it has covered the territory in one campaign. They must, therefore, make new films, if there is no place where they can look for them. The films they have just finished using will be suitable for some one else in another locality and others would have pictures which would fit their requirements. Thus the necessity of always making new films would be avoided. The film exchange would serve as a sort of clearing house for the mutual interchange of pictures. It would take a little time to get such a supply as would take care of all possible demands, but with good co-operation and with many patrons any reasonable request could be promptly met. Moreover, films could probably be made for less money under the management of the association than is now the case.

Perhaps the strongest argument in favor of an exchange is that it would remove the greatest obstruction in the way of engaging in this work, in that it would then be convenient and inexpensive for companies to get material. Thus the only real excuse for not carrying on this most effective form of safety campaign would then be a thing of the past. In this way vigorous safety work would become general instead of promiscuous. Some may argue that pictures taken in one locality are not suitable for use in another where different types of cars are in use and different conditions prevail. The same kinds of accidents, however, happen wherever cars are operated and wires are strung, and the principles of safety that should be instilled into the mind are the same the world over. The important thing after all is to get people to thinking about safety, and pictures made anywhere, even if not covering every form of accident, will do this.

The creation of a film exchange would positively render the work of accident prevention more convenient and economical, more general in its scope and more powerful in its influence and effect. It would aid in the work which, wherever it has been tried, has generally elicited from the public commendation instead of criticism and has brought companies into closer touch and into a better understanding with those they are endeavoring to serve.

# Echoes of the National Convention

*Total Attendance at Convention was 777—"Red Special" Party Had Pleasant and Profitable Days at Los Angeles and Pasadena, Santa Catalina and Yosemite Valley, Now at San Diego—Consolidated Railway Bands Made Hit at Los Angeles*

**T**HE thirty-fourth convention of what is now the American Electric Railway Association closed in San Francisco on Friday, Oct. 8, with the presentation of memorial plaques to the American and Manufacturers' Associations. Most of the proceedings were covered in last week's issue, practically all of the remainder being given this week. There remains now only to mention the registration and the details of the return trip.

## CONVENTION REGISTRATION FIGURES

Eighty-eight electric railway companies were represented in the registration at San Francisco. The numbers of individuals in attendance were as follows: Railway representatives, delegates, 395; guests, 34; ladies, 132; total, 561. Manufacturers' representatives, 175; guests, 2; ladies, 39; total, 216. Grand total of attendance, 777.

## HOMEWARD BOUND

After spending Saturday, Oct. 9, in visiting the exposition, the convention party left in the evening for the Yosemite Valley, which was reached early Sunday morning. That day and Monday were spent in the Valley. Tuesday was Transportation Day at Universal City where an elaborate program had been arranged. Owing to the late arrival of the "Red Special" at Los Angeles this program had to be somewhat curtailed. However, the train was met at San Fernando by representatives of the local committee and the delegates were taken in a special three-car train to Universal City. Attending the local committee was a band made up by consolidating the regular brass bands of the Pacific Electric Railway and the Los Angeles Railway.

At Universal City other convention attendants and delegates, who had reached Los Angeles by other trains, joined the "Red Special" party and a Spanish barbecue was greatly appreciated by the hungry guests. After lunch President Bulla, of the Los Angeles Chamber of Commerce, introduced President Charles L. Henry, of the American Association, and W. O. Wood, president New York & Queens County Railway, who addressed the gathering on the important railway questions of the day. The delegates then inspected the methods used in manufacturing moving-picture films.

The party returned to Los Angeles and Pasadena by special cars of the Pacific Electric Railway. At the New Maryland Hotel, Pasadena, the local headquarters, there was an informal reception on Tuesday evening, with dancing, tendered by the Southern California committee on entertainment.

On Wednesday the party was divided, many going to Santa Catalina Island, others spending the day at points of interest in the cities. The Santa Catalina party comprised about 400 persons and they were accompanied on the boat by the consolidated band. The band also led the way to the luncheon tables on the island where a Catalina sea-food repast was served. The visit to Santa Catalina proved to be a most delightful incident of the trip. The steamer left Avalon for Los Angeles toward the close of the afternoon.

On Thursday the party left Pasadena at 2.30 p. m.

over the Santa Fé, and on arrival in San Diego was taken to the headquarters hotel, Del Coronado, by special cars and ferries, under the guidance of the San Diego local committee. After dinner a formal reception was held and a grand ball given in honor of the guests. At the reception President Charles L. Henry called the guests together and introduced Retiring-President C. Loomis Allen who, on behalf of the "Red Special" tourists, presented a number of testimonials to those who contributed most directly to the success of the tour. A picture was given to Mrs. H. G. McConnaughy, a scarf pin to Mr. McConnaughy, a gold watch to Frank H. Gale and a pocket-book to E. C. Cook, special representative of the New York Central Lines, the presentation being accompanied by expressions of appreciation of the attention which had been shown the tourists.

As this issue of the JOURNAL goes to press the "Red Special" party is enjoying the sights of the Panama-California Exposition. Up to this point the weather on the return trip has been perfect.

## Saving Power by Watt-Meter Records

In the ELECTRIC RAILWAY JOURNAL for Aug. 22, 1914, there was given an account of the savings in energy consumption effected by the use of wattmeters on the New York, Westchester & Boston Railway, and the accompanying table shows the record that has been established since that article was published, the figures being given by months since April, 1914, as the previous months were recorded in the article cited. The energy consumptions per car mile, as indicated, include the power that is used for all miscellaneous purposes, as well as for propulsion of the cars. This covers the

Month, 1914	Kw.-hr. per Car Mile	Month, 1915	Kw.-hr. per Car Mile
April	4.61	January	5.53
May	4.35	February	5.46
June	4.38	March	5.22
July	4.34	April	4.41
August	4.33	May	4.24
September	4.33	June	4.26
October	4.42	July	4.24
November	4.91	August	4.20
December	5.63	September	4.15

operation of the auxiliary equipment, the heaters, the lights and the transformer blowers, which are kept running continuously when the atmospheric temperature is above 80 deg. In addition, the power used in switching the cars about the storage yards and in testing them after inspection is reported as part of the overall energy consumption, and it is estimated that the minimum figures obtained in the summer time, when no heaters are used, represent approximately 10 per cent more power than is actually consumed by the propulsion of the cars.

The low record for the summer of 1912, it may be said, was 8.2 kw.-hr. per car mile, this being made prior to the establishment of the present system of competitive records for individual motormen which are made up from readings of the wattmeters on the cars. During the summer of 1913, after the competitive records had been put into effect, the low figure was 4.5 kw.-hr. per car mile. In 1914, as shown by the accompanying



table, the record was reduced to 4.33 kw.-hr., and in 1915 it was brought down still further to 4.15 kw.-hr.

The cars to which these figures apply are 72 ft. long, and with their passenger load weigh about 65 tons. In consequence, the figure for 1915 represents an energy consumption of 64 watt-hours per ton mile, and if 10 per cent is deducted for lights and yard switching the energy consumption becomes only 57.5 watt-hours per ton mile; an astonishingly low figure for the service involved. The average schedule speed for all trains, both express and local, is 26.4 m.p.h. with an average of 0.93 stop per mile.

Under the system that has been established the meter readings are made by the motormen at the end of each round trip and are turned in to the dispatcher on a report form. The inspector, or switchman, who takes the car at the end of the trip also reads the meter before and after the switching operation and turns in a separate report. The two reports serve as the basis for a check whenever that appears to be desirable and as evidence of the accuracy of the reports it is decidedly interesting to note that the total monthly consumption of single-phase power used by the road checks within about 20 kw.-hr. of that obtained by totalling the figures given by the reports of the motormen and inspectors. The monthly totals are of the order of 800,000 kw.-hr.

## I. C. C. Holds Valuation Hearing

### Steam Railroads Set Forth Their Views of Fundamental Principles in Two-Day Conference at Washington

Depreciation and intangible elements of value were the chief bones of contention at the valuation conference held by the Interstate Commerce Commission in Washington from Sept. 30 to Oct. 2, inclusive. The steam railroads furnished most of the argument, basing their discussion on a 544-page brief previously filed with the commission. The state commissions had not prepared any formal argument. The railroads' case was presented by G. S. Patterson, Pierce Butler, W. G. Brantley and Sanford Robinson. A. E. Helm of the Kansas Public Utilities Commission was the spokesman for the state commissions.

The arguments of the railroads were presented under eight main heads: (1) Reasons for the Valuation Act, (2) cost of reproduction new, (3) unit prices, (4) depreciation, (5) the phrase "owned or used for the purposes of a common carrier", (6) land, (7) property charged to expenses or surplus, and (8) other values and elements of value. One or two other subjects treated in the brief were not reached in the oral presentation.

Mr. Patterson, opening the discussion, said that the recommendations of the commission to Congress for the last twenty-five years indicated that the valuation act was deemed essential: (1) To obtain a trustworthy comparison between present value and original cost, (2) for use in rate questions, (3) in connection with taxation, (4) in determining a proper depreciation reserve, (5) in testing the accuracy of the carriers' balance sheets, (6) in standardizing railway statistics, and (7) in determining whether the railroads are under or over-capitalized. Mr. Butler, discussing reproduction cost new, asserted that this implied original topographic conditions, but construction according to present-day methods and prices and with present facilities other than the railroad itself. It also implied a construction program combining speed and economy. Mr. Robinson held that the unit prices should be arrived at by a consideration of prevailing prices, price tendencies and conditions affecting labor and material markets during a reasonable period of time next preceding and at the

date as of which the valuation is made, due consideration being given to the existence of active railroad construction during that period. Weighted averages for prices should be used.

Mr. Brantley insisted that where there was no deferred maintenance there was no depreciation, and that it was impossible for the numerous field men to "guess" how long a car or a bridge would remain useful. Questions put by representatives of the government indicated that they deemed it mandatory to record the "condition per cent" of the individual parts. The meaning of the phrase "owned or used" was discussed briefly by Mr. Patterson, who held that the question of title was immaterial, only the use signifying. In the case of joint facilities all property should be credited to each carrier regardless of the other users. Mr. Butler, discussing land, held that while the Minnesota rate decision did reject the use of speculative multipliers, it did not conflict with the railroads' views that values should be what it would now cost to acquire the land. He asserted that allowance of unearned increments was fully sustained by law. As to property charged to expenses or surplus, Mr. Patterson stated that the doctrine excluding this was highly destructive to railroad practice. Mr. Robinson conceded that it might be very difficult to estimate intangible values separately, and that the railroads would not as yet undertake to say how they should be determined. He thought they should always have a plus sign unless it were conceded that the railroad ought not to have been built and would not be replaced if removed.

This closed the carriers' discussion. Before adjournment Mr. Helm asked that the states be given a later hearing, but the commission was unable to grant the request. The state commissions were allowed sixty days to file a brief, and the carriers twenty additional days to reply to it. Chairman McChord pointed out that the commission would not render any formal order covering the questions raised, but the progress of the valuation work would necessitate orders from time to time on various matters under discussion.

## Chicago Surface Lines Advertise

Immediately following the wage arbitration award on July 16, 1915, President L. A. Busby of the Chicago Surface Lines inaugurated an advertising campaign notable for the character of display and the treatment of the topics discussed. These advertisements began with one-half pages in all the Chicago daily newspapers, the advertisement with new text appearing twice each week. As the campaign progressed the size of the advertisements was gradually reduced until they are now at the minimum or standard size, being 4¼ in. x 9½ in. During this change, however, the interval between the advertisements remained the same. Typical examples of these are reproduced on the following page.

In the beginning the company sent its 12,000 employees a letter which was published in the daily newspapers, the trend of which was an appeal for the co-operation of the trainmen in increasing courtesy to the public. Shortly after this appeared, the company received a letter from one of its employees, the contents of which along with comments, were published as a half-page advertisement. This letter contained a suggestion to the company that in addition to requesting its men to be courteous and the public to file written complaints when they were not so treated, that the public write of any courtesies extended by the trainmen and that these be used as a mark of credit. This letter began a campaign, the motive of which was essentially preaching the gospel of courtesy to the em-

## HOW YOU CAN HELP THE STREET-CAR SERVICE

The furnishing of street-railway transportation is a complex human problem, always subject to the limitations of human beings.

The great majority of the trainmen on the Surface Lines are doing the best they can, oftentimes under trying conditions, to handle three millions of people daily and to give everybody good service.

We ask you to co-operate with them in every way you can. There still will be a proportion of errors, misunderstandings, and some inexcusable faults.

*We are even more anxious than our patrons to have every one of these faults eliminated from the service.*

Help the service all you can by co-operation, especially by reporting both your bad and good experiences. Give us both criticism and suggestion; both will receive prompt attention and every possible effort will be made to give you good service.



## COURTESY IS EFFICIENCY

Courtesy is a part of every man's work. In the street-railway business it is just as important as running on time, collecting fares, issuing transfers or avoiding accidents.

Four-fifths of the complaints against the street-car service in large cities are based upon avoidable deficiencies in the work of employes—such things as incivility, starting cars too quickly, running-by passengers, etc. We say *avoidable* deficiencies because such defects can be reduced to a minimum if the public will co-operate with the management in its efforts to eliminate them.

This co-operation should take the form of reporting both your good and bad experiences. You do yourself and the community a service every time you write us a letter of commendation or criticism.



## YOU ARE ENTITLED TO COURTESY AS A MATTER OF RIGHT

The majority of men have personal standards of courtesy and efficiency which lead them to do their best under all circumstances, without outside pressure or special stimulus.

There are exceptions, however, and we cannot always tell in advance just how well fitted a man is to carry out our intentions toward the public.

Therefore we ask the public to *help us to help our men*—by commendation where it is merited, by criticism wherever it is deserved.



## THE HUMAN EQUATION

There are defects in all human institutions and the defects increase in direct ratio to the number of *human beings* involved in their operation.

*It requires fourteen thousand men to operate the surface street-railways of Chicago and three million people are carried daily as passengers.*

The service of experts is employed every hour of the day and night to co-ordinate the work of these men in such a way that delays and defects of every character will be reduced to a minimum. To those who are most familiar with the problem of street railway operation in large cities, the wonder is not that the service fails to satisfy every individual every day but that it serves so many individuals so well every day.

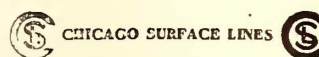


## In the modern search for new and expensive luxuries we are apt to overlook the possibilities of everyday, inexpensive pleasures.

A street-car ride in the less crowded hours of the day—or at night—contains *all* of the elements of healthful recreation.

It gives you fresh air, change of scene, a chance to relax and forget your customary surroundings. It will take you to the parks, the beaches, the country or into sections of your own city which are as interesting as a trip to foreign lands.

It costs five cents. Try it today—or tonight.



## AT YOUR SERVICE

The most highly paid body of street-railway conductors and motormen in the world is at your service on our lines.

These men are practically a unit in their desire to give good service. The company is back of them in their effort to be courteous and helpful to the public.

You help such men every time you call our attention to the good work they are doing.

### ALSO—

Every large organization of employes includes some men who are not as conscientious or as efficient as the majority. The faults of these men are a constant reflection upon the work of their fellow-employes and give a totally wrong impression of the attitude of the company towards the public.

You can help the service as much or more by pointing out the deficiencies of these men as you can by calling attention to the merits of the others. We ask you to do *both*, in the interest of better street-car service for Chicago.



ployees and the public. At times these courtesy talks are displaced by advertisements calling attention to the points of interest in Chicago in the day time and at night, particular attention being given to the various kinds of amusements. Under such headings as "Get Acquainted with Chicago," "How to Enjoy the Park" and "See Chicago at Night" these advertisements have attracted much attention. As will be noted in the sample advertisements, occasionally the text is turned to an explanation to the public, stating why it should not expect perfect service because of the complexity of the problem and the limitations of the employees. This campaign of courtesy and service has resulted in a marked improvement in the service and a change in the spirit of the employees toward the public. In other words, the management of the Chicago Surface Lines feels that the expense of this publicity has been justified.

### Tests Show Satisfactory Return-Circuit Conditions in Providence, R. I.

#### On Account of the Use of Concrete Track Base and Other Local Conditions Electrical Welding of Rails Was Considered Impracticable, Although Approved in Principle

Robert L. Brunet, public service engineer, Providence, R. I., has submitted a report to Commissioner of Public Works Walter F. Slade upon electrolysis in the city of Providence, continuing an investigation inaugurated last year. The report points out that since 1914 there has been a general improvement in conditions of this character, marked by the elimination in many cases of serious potential variations between the water mains and the negative return system of The Rhode Island Company. Weak points have been found in the water main system in many parts of the city, but none of these can definitely be attributed to recent conditions, possibly having been affected by stray currents at a former date, with breaking-down points just realized.

The investigation was made in a manner similar to that of 1914,\* with the exception that the company did not participate. It expressed its willingness to accept the results of the city as conclusive, suggesting, however, that where marked variations existed or where danger points were indicated it would be advisable to check the data obtained. The scope of the tests included the determination of the voltage variations between water mains and the company's tracks. In addition, current values were taken at many points, and at all the test stations both current and potential readings were taken. Conditions were also noted at bridges and between gas pipes, water mains and rails. Readings of voltages between water pipes and rails were generally taken at fire hydrants.

In many of the streets in the positive district, where a difference of potential exists between underground structures and rails, the voltage variations were in the main found to be of less magnitude than a year ago, and the city's engineers concluded thereby that less current is being transmitted by the underground structures than last year, due to improvement in the return circuits. The maximum current observed in the water mains was less than a year ago. The maximum current observed between water mains and tracks was 40 amp.

In Providence the distances are rather long, and in order to reinforce the rail drainage additional negative return feeders must constantly be installed by the company in order to limit the liability to damage to underground structures, as well as the loss of energy through the high resistance medium. Since July, 1914, the com-

pany has installed a 500,000-circ. mil negative cable between the tracks at the end of the Douglas Avenue line and those on Admiral Street, and another of this capacity between Admiral Street and Branch Avenue. The service troubles discovered within the past year all seem to indicate that the damage was done at a previous date. Within the past year two insulating joints were installed, one in Cranston and one in Warwick. A detailed review of service troubles examined is included in the report.

In last year's November report, immediately after a test car had been employed to determine the number of open and defective joints in Providence, 946 open and 1245 defective joints were recorded, making an estimated total of 13 per cent of the entire number of joints on the system. Following this tabulation, track in fifteen streets was renewed and double-bonded by the company with No. 0000 bonds, covering not far from 700 joints. The total number of joints estimated in use on the entire city system is 20,894, in 92.6 miles of single track. The city recommends that the defective joints be repaired at once, in order to reduce the dangers of electrolysis.

In the 1914 report it was recommended that the Rhode Island Company electrically weld all of the joints in Providence. Investigations were made and several interviews were held with representatives of the Lorain Steel Company, with the result that it appeared a rather expensive task to attempt electric welding under the local conditions, a concrete base for the track being used in a number of cases. The cause of the excessive cost of electric welding in this case is as follows.

With the headway prevailing in certain sections it was found to be impossible to place cross-overs, between which to operate single-track sections, more than 1000 ft. apart. As the concrete base would have to be set up at least a week, this spacing of cross-overs would permit the company to build about 150 ft. to 200 ft. of track per day. Its engineers believed that it would be of no use to build any faster because the 1000 ft. would only be done before the week was up, and work would have to be stopped for the concrete to set before the cross-overs could be removed. Building 150 ft. to 200 ft. of track would call for welding about six joints per night. The company found that it was required to furnish thirty-two joints per night to keep the welder busy or to pay about \$6.50 per hour to keep the welder on the job. Representatives of the welding company conceded the impracticability of using their equipment under these conditions, pointing out that in most cities the street railway does not confine itself to such a short stretch of torn-up track, and sometimes lays temporary track to care for traffic. Where the streets are wide enough the traffic is diverted to parallel lines and a half mile or more is opened up at once. The welding company's opinion is that crushed stone ballast gives better results than concrete, on account of the lack of time in large cities for hardening the latter, the tendency toward hard running and noise, and the liability of corrugation in rails due to excessive rigidity.

H. W. Sanborn, chief engineer The Rhode Island Company, stated in a letter to Mr. Brunet, dated April 21, 1915, that the railway company believes the electrically welded joint to be the best on the market, both mechanically and electrically, but cannot find it practicable to install welded joints on tracks with concrete base. The present agreement of the company with the city requires that tracks be laid on a concrete base, although a modification of this requirement is under consideration. It is recommended that the company investigate in the meantime the electric welding of bonds. The report also favors the installation of permanent pilot wires between selected points on the track

\*See ELECTRIC RAILWAY JOURNAL, Nov. 14, 1914, page 1109.

system and the basement of the City Hall, holding that the maintenance of low potential variations will be facilitated and the prompt discovery of abnormal conditions hastened. The report also contains the results of various mechanical tests of strength in pipes removed on account of electrolytic action. Temporary bonding during construction and repair work is also advised, with further test-car observations in the spring of 1916.

### Colorado Association Meeting

The thirteenth annual meeting of the Colorado Electric Light, Power & Railway Association was held at Glenwood Springs on Sept. 23 and 24, with a record-breaking attendance. W. F. Raber, general manager Arkansas Valley Railway, Light & Power Company, presided. The program for this meeting was printed in the issue of the *ELECTRIC RAILWAY JOURNAL* for Sept. 18, page 605.

The special feature of the convention was the presence of three members of the Colorado Public Utilities Commission, Messrs. Aylesworth, Rankin and Herbert.

The president in his address drew attention to the work of the association. "During the past year," he said, "the association has made an earnest effort to bring about the recognition of that fundamental principle of all public utility legislation—the elimination of competition, with complete regulation. The future of the business depends largely upon the inducements offered capital for permanent investment."

On motion of L. P. Hammond, vice-president Colorado Power Company, resolutions relating to the matter of federal control of water power were passed. One of these was as follows:

"Be it resolved, That the Colorado Light, Power & Railway Association in annual convention assembled deprecates and protests against the federal policy contained in the Ferris bill directly contravening the views herein expressed, and against any federal policy denying to the States the right to condemn public lands at not exceeding the fair market value of the lands so condemned, or any policy depriving the States of their inherent right to control and regulate their own internal affairs, or conflicting with such control and regulation by the State."

W. N. Casey of the Denver City Tramway Company, in his paper on "Present-Day Street Railway Problems," treated principally of the matter of taking the public into one's confidence, remarking that the relations of the street railway company to the public embraced a great many of its problems. The jitney was naturally taken up in the discussion as it furnishes one of the pressing problems of the day.

F. V. Rankin, engineer of the commission, gave a paper on "Valuation of Public Utility Properties." He said that the whole theory of regulation is built upon the foundation that private ownership shall be required to furnish adequate and satisfactory service at reasonable rates and shall be allowed to earn a reasonable return upon the fair value of the property dedicated to the use of the public.

Fred W. Herbert, auditor Colorado Public Utilities Commission, followed with a paper on "A Uniform System of Accounting." Mr. Herbert said that any system of accounting must be simple but accurate and effective and designed to show satisfactorily a complete analysis of the investment, the earning and operating expenses, and embody enough detail to enable the commission to determine the profitableness and efficiency of the utility and to enable the utility to make its annual report to the commission in conformity with this classification.

"The Indeterminate Franchise and the Certificate of

Public Convenience and Necessity" was the subject of a talk given by M. H. Aylesworth, member and attorney Colorado Public Utilities Commission. Mr. Aylesworth interpreted the indeterminate permit as the right to occupy and use the streets of a city or a part of the State highways, service being given for reasonable compensation under regulation by the State, and monopoly being assured to the operating company, but with the power vested in the municipality to buy the property through a vote of its people at a fair value to be fixed by the regulating body of the State.

The next paper, "Depreciation as Affecting Valuations and Assessments," was given by Daniel W. Knowlton of Smith, Knowlton & Hatch, attorneys of Colorado Springs, Col. Mr. Knowlton presented one of the best papers of the convention, discussing his subject fully and with complete knowledge. He treated of tax assessments, "sinking-fund" and "straight-line" methods, and left no point uncovered.

Other papers treated of topics of particular interest to the lighting companies.

Following is the list of officers elected: President, John J. Cooper, Denver, Col., secretary Gilpin County Light, Heat & Power Company; vice-president, L. P. Hammond, Denver, Col., general manager Colorado Power Company; secretary and treasurer, Thomas F. Kennedy, Denver Gas & Electric Light Company. The executive committee will comprise H. U. Wallace, Boulder, Col., vice-president and general manager Western Light & Power Company; W. J. Barker, Denver, Col., vice-president and general manager Denver Gas & Electric Light Company; F. P. Wood, Trinidad, Col., general manager Trinidad Electric Transmission, Railway & Gas Company; W. F. Raber (ex officio), Pueblo, Col., general manager Arkansas Valley Railway, Light & Power Company.

### The B. R. T. Mechanical Department

A Review of Organization Progress During the Past Decade with Figures Showing Recent Excellent Work in Safety Promotion

The introduction to the fourth quarterly report of the departmental safety committee, mechanical department Brooklyn Rapid Transit System, reveals in a frank, intimate manner the organization of the department and the degree of co-operation between the executive and the rank and file. An abstract of this report as made by W. G. Gove, superintendent of equipment, follows:

Within the ten-year period covered by Mr. Gove's superintendence, all employees have been classified upon payroll standards, with standard rates of pay for each occupation. Previously there was no set standard rate of pay, whereas the new classification provides (except for carpenters, who have a split rate between the 25-cent and 27½-cent grades) for promotion by steps of 25 cents per day. The rates of pay reflect an average increase of approximately 20 per cent within ten years.

There were but few weekly-salaried employees previous to July 1, 1905, and foremen were paid upon an hourly basis. On that date, however, a new schedule and standard classification was inaugurated. Foremen were placed upon a weekly-salaried basis and received a larger salary than when paid upon an hourly basis. In general these salaries have since been increased.

#### PROMOTION AND A SQUARE DEAL

Knowledge that a few foremen had practiced favoritism to the disadvantage of employees and appreciation that such tactics reflected no credit upon any-

one, least of all upon the management, led to the establishment of a non-partisan system of promotion. An employee can be advanced only by recommendation to the main office of the department, where his record is scrutinized and approval or disapproval obtained. Seniority of service always receives careful consideration, whether for promotion or re-employment after lay-off. This practice is in harmony with the policy announced years ago, namely, that consistent with the work involved, no man for any advanced position would be placed upon the rolls from an outside source where eligible men are already employed.

The weekly-salaried force at the surface carhouse shops now comprises a foreman, an assistant foreman, a responsible night foreman and a clerk, in addition to the regular force employed upon an hourly and daily basis. The elevated shops have also a chief clerk and a clerical force; and at the southern division elevated shop, there is an overhauling department, the head of which reports to the foreman of that shop, independent of the inspection organization. This department is responsible for the overhauling of the entire elevated and subway car equipment.

#### TIME OFF AND VACATIONS FOR WEEKLY-SALARIED EMPLOYEES

Previous to July 1, 1905, no foreman or employee upon a then so-called weekly basis received time off with pay unless a day off now and then was asked for specifically. At first, one Sunday each month was granted only to the foreman, but now the foreman is expected to be at his shop only on alternate Sundays, the assistant foreman being in charge during the foreman's absence. Upon the elevated lines, the assistants are allowed Sundays off when the foreman is on duty, and upon the surface lines the assistant foremen are granted alternate Wednesdays off with full pay; night foremen upon both the surface and elevated lines receive alternate Saturday nights off with pay; clerks while expected to report at their respective shops in case of emergency, are not ordinarily required to work more than six days per week with Sundays off.

At the large general repair shops, the shops are now closed at 12 o'clock noon each Saturday, remaining closed until 7 a. m. Monday. The foremen and clerks, therefore, except in the shop offices which close simultaneously with the main departmental offices at 1 p. m. on Saturdays the year round, receive Saturday afternoon off the year round with pay, in distinction from the previous practice of working until 4.30 p. m. The hourly-rated employee receives six hours' pay for five hours' work instead of ten hours' pay for nine hours' work.

With the summer of 1907 the company inaugurated a vacation schedule of from one to two weeks (one for employees holding their positions six months and less than one year, and two weeks for a year or more). These vacation privileges were granted to superintendents and foremen and the office force at the three general repair shops, to the office force and heads of the elevated and surface maintenance shops, as well as to all employees at the main departmental offices, including engineers, draftsmen, clerical force, etc. In the spring of 1914 it was decided to include the assistant and night foremen at the elevated maintenance and surface carhouse shops and the clerks at the latter. However, in these latter additional cases, but one week or three days is granted as the one year or six months' tenure of office would indicate.

#### MILITARY DUTY

Col. T. S. Williams, president Brooklyn Rapid Transit System, has granted leave of absence to all

employees who wish to attend encampments of the State militia. They will receive their regular pay, based upon salary received or average wage earned. The only reservation made is that a weekly-salaried employee must take such tour of camping duty as falling within his vacation, and shall not be entitled to an extension thereof, with pay.

#### WELFARE WORK AND SAFETY WORK

Upon the earnest solicitation of the superintendent of equipment, the management granted free transportation early in 1913, through the use of appropriate badges, to all employees of the surface and elevated maintenance shops. Upon July 1, 1915, 428 employees of this department were using such badges. All weekly-salaried employees receive one or more books of employees' tickets, according to their position and work. This is another privilege gained by their re-classification from an hourly to a weekly basis.

Wherever possible, lounging and lunching rooms have been and are being provided, wherein smoking is permitted. Other efforts have been made to make the shopman's surroundings more attractive. To this end the company has appropriated several hundred dollars for flowers each spring, and maintains lawns and flower beds wherever the property will permit their introduction. Flag poles have been erected and flags displayed upon proper occasions at several of the shops.

As the work of the mechanical department is laid out from season to season and from year to year, and is frequently planned as much as three years in advance, with the idea of maintaining as constant a force (now about 1700) as possible, it is recommended that—

First: All employees at the various surface and elevated maintenance shops and departments of electrical repairs who may be eligible to membership in the Employees' Benefit Association shall belong thereto.

Second: All employees engaged upon such work at the general repair shops where they have every reasonable assurance of continuous employ, should also be members or should promptly apply for membership.

The pension system inaugurated on Jan. 1, 1910, also applies to the mechanical department.

To promote fair treatment and a thorough understanding of the various duties of all employees, a book of rules was formulated after many conferences with the heads of all shops concerned. This book has been issued to all employees of the maintenance shops, and in certain instances to employees at the general repair shops. Substantial bulletin boards are used to post placards, notices to employees and other essential information, that all may be kept posted as to changes or regulations.

The following recent safety suggestions made by employees have been approved:

Provide respirators to those engaged on work where there is much dust.

Install lights over stairs leading from shop to street at eastern division elevated shop.

Alter connections between the storeroom and the Fifty-second Street surface shop.

Use safety appliances at all shops to hold motor shells open when replacing armatures, fields, etc.

The total safety expenditures to June 30, 1915, were \$7,813.61. The medical inspection bureau of the B. R. T. Employees' Benefit Association shows the following reductions in accidents for the first six months of 1915 compared with the last six months of 1914: Total accidents reduced from 159 to 123—electric burns alone from 102 to 73. Days lost for the latter injuries were cut from 102 to 73.

## COMMUNICATIONS

### Box-Frame Motor Practice

THE RHODE ISLAND COMPANY

PROVIDENCE, R. I., Sept. 24, 1915.

To the Editors:

By way of contributing to the discussion of box-frame motor practice, begun in your issue for Sept. 4 by an abstract of an article by J. L. Booth of the General Electric Company, I would state as follows:

When we installed box-frame motors about Jan. 1 of this year we planned a method for removing armatures without tipping the motors up on end for the purpose of avoiding danger of accidents and the trouble resulting from oil spilling out of the commutator and armature bearings. Outside of experimental work we have only had occasion to remove one armature which was defective, and we may not have to remove another for a considerable period of time. The method which we worked out is described in the abstract referred to, page 411, this company being the one mentioned as operating GE-200, box-frame motors.

We designed the cast-iron ring carrying the sheave, which is secured to the commutator end of the motor frame by two loose-fitting cap screws. These can be set in place without a wrench. The ring is a fairly loose fit and is flanged so that it is self-supporting.

With a GE-200 motor the armature is of such light weight and the leverage obtained at the pinion end is so great that one man can easily remove the armature from the frame to a point where a support can be placed under the end of the tube, and final removal can be taken care of by the overhead hoisting block, a sheet metal sling being placed around the body of the armature. The cost of the apparatus used is small and so far it has proved satisfactory.

W. D. WRIGHT, supervisor of equipment.

### Automatic and Distant-Control Substations

THE EDISON ILLUMINATING COMPANY OF DETROIT

DETROIT, MICH., Sept. 29, 1915.

To the Editors:

Referring to the recent article on the automatic substation by Messrs. Allen and Taylor, I would state that the conditions requiring a distant-control substation (of which the Detroit Edison Company now has three) and those requiring an automatic substation such as that on the Elgin & Belvidere Railway, are quite different. I believe that the Elgin & Belvidere substation is a sequence of a visit by B. J. Arnold to Detroit, during which I casually mentioned to him and later, by his request, showed to him our Rowena Street substation. Mr. Arnold immediately saw that the stopping and starting of the rotary might be made automatic; under control of voltage variation in the d.c. line. He also saw that the conditions of an electric railway would be better served by such automatic starting and stopping; whereas the conditions of a d.c. light and power network would be better served, as in the Detroit case, by control normally from a distant point, becoming automatic only under abnormal conditions.

The essential difference in the conditions is that the daily load curve of a light and power network can be predicted with reasonable certainty and the starting and stopping times of the outlying rotary can be scheduled within narrow limits for weeks ahead. The only reason why the starting cannot be precisely scheduled is that a dark afternoon requires an earlier start, but

the variation to be made for that cause may be left to the discretion of the distant operator. On the other hand the load of an interurban railway varies rapidly within very wide limits, and in an irregular manner. Minor departures from time-table by cars moving in different directions may become cumulative, or may cancel quite erratically, in their effects upon the requirement of current at an outlying substation. A collateral difference is that a considerable variation of voltage is permissible on an interurban trolley wire, and therefore no very fine setting of automatic starting and stopping gear is required. On a d.c. network supplying light, close regulation is customary and the variation of voltage desirable for reliable starting and stopping would be sufficient to cause service complaints. In practice the "distant-control" substation is handled rather carefully for the express purpose of avoiding notable local voltage variations.

There is a future for the automatic substation on railway work. In conjunction with the 1200-volt trolley wire it practically removes the distance limit from d.c. service to thinly settled territory.

ALEXANDER DOW, President.

### Taxation of Utilities

COLUMBUS, OHIO, Oct. 12, 1915.

To the Editors:

The question propounded in the ELECTRIC RAILWAY JOURNAL of Sept. 11 by F. N. Fletcher, former member of the Nevada State Tax Commission, namely, "Should utilities be assessed by public service commissions?" naturally opens up the more important question, "Ought utilities to be taxed?"

Mr. Fletcher discusses this second question before he takes up the first. There can be small chance for disagreement with his contention that where utilities are unregulated as to either rates or service and can charge all that the traffic will bear, some form of taxation should be indulged in. Inasmuch, however, as most States attempt to regulate the service and service charges of all utilities, that phase of the subject is of little interest in this discussion.

Mr. Fletcher completely answers this second question when he says at the outset, "In the quite different case of utilities under the intelligent and continuous regulation of public service commissions, it really makes little difference to the utilities whether they are taxed or not." As Mr. Fletcher asserts, such taxes are added to the expense account, "and rates are allowed to cover expenses. The incidence of its taxation," he continues, "is, properly enough, passed on to the consumer." In the old days a utility was allowed to charge more than the service was worth, and the public thought it was doing the smart thing to tax a part of that back into the public treasury. We do not hear so much about this these days, for the reason that as soon as the public began to regulate service and charges therefor, it was discovered that one of the costs was this very charge arbitrarily put upon the service by the public. That cost had to be paid, and the only fund out of which it could be paid was the fund that came from the consumers, who are really the public.

With Mr. Fletcher's contention that utilities ought to be taxed, because only a part of any community uses the service of any one utility and should not receive a lower rate for such service through the exemption from taxation of the property used in furnishing it, I do not agree. It must be apparent that in any community practically all of the people use all of the utilities, most of them directly and all indirectly. Therefore it is too costly to go through the operation of assessing and col-

lecting taxes through service charges, when after it is done practically everybody in the community has contributed. It would be much easier to remove taxation from the service charges, save the cost of assessment and collection, and let everybody contribute to the cost of government in the usual and more economical way.

Of course, the real reason why a utility ought not to be taxed as such, is because its presence in any community enhances the value of the land more than the cost of the utility. The financial benefits of a utility are passed on to the landowner. The consumer has to pay increased rents, which is all right as far as the consumer is concerned, but all wrong if in addition he also has to pay a higher rate for service because of taxes. In other words, the consumer has to pay these taxes twice, once in higher rents and once in higher service charges.

E. W. DOTY,

Former Member Ohio Public Utilities Commission.

## Girder and High T-Rail Renewals

NEW YORK STATE RAILWAYS

ROCHESTER, N. Y., Sept. 17, 1915.

To the Editors:

The article which you recently published on "Girder and High T-Rail Renewals," invites considerable study, as there are many points brought up which are worth serious consideration. There are also some statements which presumably will be objected to by a number of the engineers throughout the country.

The wear limit on rails which determines the renewals is a matter that has not been given a great deal of study on account of the truth in the old adage, "The life of the joint is the life of the rail." Another factor which has contributed largely to rail renewal is paving conditions. City ordinances are frequently passed requiring the construction of new pavement, necessitating new tracks even though the rail wear limit has not been reached. In the past, renewals have been made and rail discarded without being worn out because there was sufficient profit to permit this waste. Economic conditions, however, as pointed out in this article, are such that a waste of this kind can no longer be countenanced.

As stated in the article the wear limit of the rail is a variable factor, and different types of rail have different wear limits. For instance, a tram rail, such as Lorain Steel Company's section 73-291, would reach the safe limit of wear when the flanges of the wheels begin riding on the tram. Anything beyond this point is at the expense of safety. This is illustrated in a derailment with which I am familiar, which was the result of the track having a flange bearing on one side, whereas, due to a broken joint and a new piece of rail being cut in, there was no flange bearing on the opposite side. As a result of the flange bearing the wheels had a larger diameter on one rail than on the other, which resulted in the slewing of the trucks to one side and the derailment of the car.

The permissible wear with the groove or trilby rail is considerably greater on account of the guard effect of the groove. However, all things considered, a reasonably safe assumption would be that rail reaches its natural life at the time the flange bearing becomes noticeable.

The article states that rail corrosion is a matter to be considered in rail renewals. While this may be true, there are very few occasions when corrosion is sufficient to warrant renewals. Theoretically the article is perhaps right in the assumption that a well-drained track leads to more rapid corrosion, but actual observa-

tions do not verify this, on account of the fact that rail corrosion is more frequently due to electrolysis than oxidization. Therefore, well drained track is less liable to suffer than poorly drained track.

Recent changes in the chemical analysis have materially increased the wear of the rail. In addition to this the harder rail results in a better joint; that is, there is less tendency to cup at the joint with the high carbon rail than with the rail formerly used. As an example of the wear, measurements taken about two years ago show that on open-hearth rail having 0.70 to 0.90 carbon the rate of wear was 1/64 in. per year; whereas, the rail of a different type having 0.40 to 0.60 carbon wore at the rate of about 1/16 in. per year. This difference may not have been entirely due to the chemical analysis as the track was of a different type of construction and different type of rail, but both were subject to the same traffic.

Another factor pointed out in the article which is worth serious consideration is the type of ballast and other details of construction. Though I have been unable to obtain any figures which would show the relative wear of rails laid on a rigid foundation, such as concrete, as compared with rails laid on a resilient foundation, such as crushed stone, yet I am of the opinion that the author's statement will be substantiated. At least it has been my observation that joints cup less on a resilient foundation than they do on a rigid foundation.

The character of the pavement is a matter which, while having no real bearing on the actual wear of the rail, is frequently the reason for renewals. While pavement is a matter which is now almost invariably a local situation and one which must be decided locally, yet there are conditions of which advantage may be taken. For instance, ten or twelve years ago a number of streets throughout the city were paved, and on account of financial or other conditions existing at that time new rails were not placed in the pavement. As a result these rails were worn out much before the pavement or ties. The situation was met by relaying new or second-hand rail on the old foundation without disturbing it in any way, and relaying the paving surface. This resulted in a comparatively cheap reconstruction of track and gave a construction in which the rail and the ties embedded in the concrete would all last about the same length of time, and like the "One-Hoss Shay" would be all scrapped together.

Another matter in connection with pavement is proper maintenance. With suitable paving gangs the pavement can be repaired from time to time, adding such new brick or stone as are necessary, with the result that the life of the paving can be so increased that the rail may be worn out.

Another important factor brought out in the article which affects the track as well as the pavement is the drainage. Inasmuch as dry soil has considerably greater bearing power than wet soil, proper drainage will increase the bearing value of the soil, and by increasing the depth of the ballast, the area of weight distribution can be increased so as to produce a uniform distribution of weight on the sub-grade or soil. This depth of stone or gravel ballast obviates the necessity of putting in a sub-base of concrete under certain soil conditions and also contributes to good drainage.

A matter in connection with the crown of the streets which affects the rail wear but which is not brought out in the article, is the practice in some cities of placing the devil strip rails 1/2 in. or 1/4 in. higher than the outside rails so as to assist in giving the street a crown. This method of laying track is not satisfactory on account of the fact that it increases the weight on the

outside rail, increasing the rail wear in addition to increasing the wear on the equipment, particularly with single-end cars. In addition to this there is an increased tendency to create wide gage in track, and as soon as this wide gage obtains there is marked tendency for the cars to nose or sway. Therefore this practice is an increasing factor in the wear of the rail as the track becomes older.

Relative to the formula which the author of the article in question has suggested to determine the proper time for renewal, it would seem to me that this is rather complicated and that it includes a number of factors which need not be taken into consideration. For instance—the taxes, at least in the State of New York, are based upon the franchise value and this has nothing to do with the cost of the track. Another is that the distribution of accounts, whether betterments or operating expenses, has little or no bearing upon the economics of the situation, and it would seem to me that a simpler means of determining the proper time for replacement of rails would be as follows:

Total estimated cost of replacement with old rails less the estimated scrap value, divided by the estimated life of old rail, plus the estimated average annual maintenance on the old track, plus the annual interest on the estimated cost of replacement with old rails, or

$$\frac{R_1 - S_1}{L_1} + M_1 + I_1$$

equals the total maintenance and fixed charges per year with the reconstructed old rail. This figure, the total maintenance and fixed charges per year, should be compared with the total maintenance and fixed charges per year on track reconstructed with new rail, which is arrived at as follows:

Total estimated cost to replace track with new rail, less the estimated scrap value, divided by the estimated life of the new rail, plus the estimated average annual maintenance per year, plus the interest on the estimated cost to replace track with new rail, or

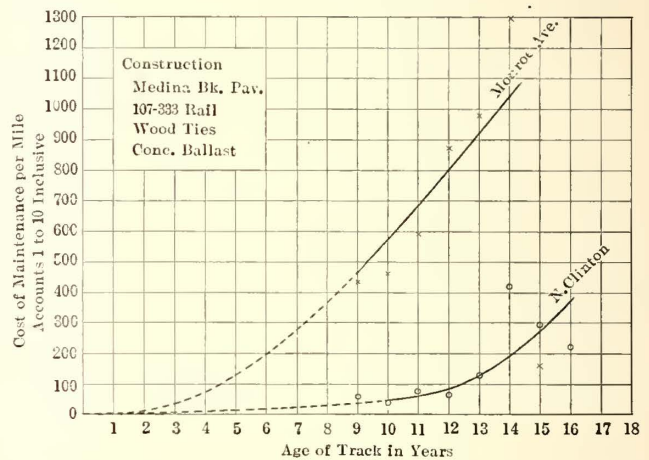
$$\frac{R_2 - S_2}{L_2} + M_2 + I_2$$

The latter figure equals the total annual maintenance and fixed charges per year with the new rail. When the total maintenance and fixed charges per year with the old rail are greater than the figure arrived at with new rail, then new rail should be used in the replacement. When the opposite condition obtains old rail should be used in the replacements.

In considering this comparison of the estimated total maintenance of each type of construction different factors can be used. For instance, in case the old rail is to be used it might be possible by co-operating with the city authorities to convince them that a cheaper type of pavement would be suitable under the conditions, which would result in that the total estimated cost of replacing old rail would be a less amount, and therefore might favor the use of the old rail. As an example of this, during the present year our plans for reconstruction include some tracks in which the ballast, ties and other material are to be renewed except that the brick which is now in place when taken out will be sorted over and that which is suitable will be relaid. During the past two or three years on construction of this kind we have found it possible to use from 25 per cent to 50 per cent of the old brick which has resulted in considerable saving without detriment to the new construction.

Another street we have planned for improvement this year is outside of the city and the rails have been worn for eight or nine years. This track was originally laid with gravel ballast, 7-in. rail and mac-

adam pavement. It is now proposed to renew the pavement outside of the tracks with brick, and the construction in the track is to be the same ballast with the necessary tie renewals and the same rail, the foundations not being disturbed in any way as the grade of the street remains the same. It is proposed to carry the brick pavement outside of the legal width up to the rail. Between the rails and in the devil strip it is proposed to use a concrete pavement which will be coated with Tarvia. In addition to this there will be placed a Medina block header adjacent to the gage side of each rail so as to take the extra wear due to vehicular traffic along the rail. It is estimated that the concrete pavement under the existing traffic conditions will last about the life of the rail, and this will result in the entire track and pavement being worn out at approximately the same time. Since this stretch of track is adjacent to the city it is probable it will be taken inside



CHARACTERISTIC CURVE OF SINGLE-TRACK MAINTENANCE FOR TWO STREETS WITH DIFFERENT TRAFFIC CONDITIONS

the city within the next few years and that sewers, water mains, etc., will be placed. The tracks may therefore be reconstructed without serious loss.

Matters of this kind can only be arranged through co-operation with city and state officials because when these men appreciate that the railway companies are interested in the best results possible they will be willing to make what may seem to be concessions in order to gain the greatest good for the greatest number.

Another factor in the comparison is the estimated maintenance per year. It is a well-known fact that the maintenance increases with the age of the track so that the curve representing the annual maintenance charge would not be a straight line. An example of this is shown in the accompanying cut which is taken from actual maintenance costs on certain streets. It will, therefore, probably be necessary in order to obtain the maintenance item per year to take the accumulated maintenance for the entire life of the track and to divide this by the life so as to obtain an average annual maintenance. This figure could only, of course, be arrived at through a study of the maintenance charges on individual stretches of track, taking into consideration all of the variables, such as traffic, type of construction, etc.

Relative to the conclusions submitted in the article in question, certain of them are questionable. For instance, the conclusion that appears as No. 5 refers to the responsibility of heavy vehicular traffic for rail renewals, but it would seem to me that, with proper maintenance and proper selection of pavements, this



condition need not obtain. The same criticism can be made of No. 6, whereby means of proper selection of pavement and rail and with proper maintenance, no one factor could require the renewal of the entire structure.

Relative to the amount of head reduction for groove and girder rails, it would seem that 50 per cent is too large for the older types, 30 per cent being more properly the safe limit. This difference in the per cent, however, may be due to a difference of opinion as to what constitutes the head of the rail. Fifty per cent may be a reasonable figure for wear on T-rails, but it is rather questionable if this amount of rail wear can be obtained where other factors such as the shape of the head, gage of the track, joints, etc., may not be such as to require renewals. On the whole this is an article which covers a field which has not been given a great deal of consideration from the press, and it would be very interesting if a number of the engineers throughout the country would give their opinions and experiences with regard to this matter.

D. P. FALCONER,  
Engineer of Maintenance of Way.

## Fair Overhead Charges Allowed

**Commission Sets 20 Per Cent for Contractor's Profits, Engineering Supervision, Etc., and 12 Per Cent for Preliminary and Development Expenses of Bronx Gas & Electric Company**

The recent decision of the Public Service Commission for the First District of New York, in passing favorably upon the application of the Bronx Gas & Electric Company, New York, for permission to fund \$16,880 expended from current revenues, took up the question of the company's valuation and the inclusion therein of allowances for certain intangible values—i.e., 20 per cent for contractor's profits, engineering supervision, contingencies and incidentals, and 12 per cent for preliminary and development expenses. The opinion, which was rendered by Commissioner Robert C. Wood, was approved on Sept. 28 by a four to one vote. The company produced no data upon which to base reasonable allowances for these items, and as the early records were missing, estimates based on general knowledge and experience had to be made.

According to Commissioner Wood, it was asserted that the allowance of 20 per cent for contractor's profits, engineering supervision, contingencies and incidentals over and above the net cost of the property, was too large and should be reduced to 10 per cent. In his opinion, however, during the construction period of public utility corporations many and varied expenses have to be met, contractors must be allowed a fair profit, or, if the work is done by the company itself, proper supervision must be provided for. Engineers must be employed to supervise construction and installation of plant and equipment, and a sum must be set aside to meet the unforeseen contingencies that are bound to occur in every undertaking of this character. In appraising the plant and equipment, therefore, a fair allowance should be made for all these items. Allowances of 10 per cent for contractor's profits, 5 per cent for engineering supervision and 10 per cent for contingencies and incidentals are figured on a most conservative basis when taken individually. In this decision they are only taken collectively in the form of 20 per cent. In several cases as decided by this commission, a larger amount was found to be justified, but the figure now approved represents a conservative average of the previous allowances made by this and other commissions. In the Kings County Lighting Company

case (2 P. S. C. R. 659) an allowance for these items of 21.6 per cent arrived at in this manner received the approval of the Appellate Division.

Similar arguments are said to apply to, and the same principles should be followed in, the allowances that should be made for preliminary and development expenses. The Bronx Gas & Electric Company was incorporated in 1893 and began business in 1895, when the electrical industry was in its infancy, and the gas business was in a comparatively crude state as compared with that of the present day. The company's franchise rights and field of operations covered a sparsely-settled territory extending over a large area. The company had before it the question of its ability to market its bonds and so raise funds to meet the requirements of the territory it served. The commission has recognized that public utility companies, especially those beginning business in new territory, are entitled to a legitimate sum for certain expenses that must be met before the plant can begin operation. The present allowance of 12 per cent is simply a conservative average of allowances made in similar cases by this and other regulatory bodies.

Commissioner Wood calls attention to the fact that the decision recommends the deduction of \$137,722 for accrued depreciation from the net cost of the property. When the statement is made that \$267,264 is added for overhead expenses (viz., \$160,243 for contractor's profits, engineering supervision, etc., and \$107,020 for preliminary and development expenses), it should also be stated that the sum of \$137,722 is deducted for accrued depreciation on tangible property other than land. Instead of adding \$267,264 to the basic figures of the engineers, the net addition is but \$129,542. The total net overhead charges recommended to be allowed are therefore but about 8 per cent of the present capitalization of the company and about 13 per cent of the capitalization as of Dec. 31, 1908. When the \$137,722 recommended for accrued depreciation is deducted from the \$160,213 allowed for contractor's profits, engineering supervision, incidentals, etc., the amount to be added to the net cost of the property is but \$22,523. This sum is about 2½ per cent of the capitalization of the company as of Dec. 31, 1908, and about 1½ per cent of the present capitalization.

A considerable portion of a supplementary memorandum to Commissioner Wood's decision is devoted to showing that the actual overhead charges in the New York & North Shore Traction case (3 P. S. C. R., First District, N. Y. 67) amounted in both instances (contractor's profits, engineering supervision, etc., and preliminary and development expenses) to more than 20 per cent. Commissioner Haywood had stated that these charges amounted to only 9 per cent.

## Jitneys in South Bend, Ind.

The Chicago, South Bend & Northern Indiana Railway has been keeping a careful tabulation of the number of jitneys operating in South Bend. Notice is taken not only of the total number of jitneys each day but also of their license number, so that it is possible to keep track of the number of days which each car runs. A graph of these data during July was published on page 399 of the issue of this paper for Sept. 4. The figures for August show that on Aug. 31 there were thirty-eight jitneys in operation, but that since July 1, 336 different cars had been engaged in the service. In other words, 198 gave up to every thirty-eight which stayed in. Aug. 31 was a Tuesday, which is an average day for the jitneys. Saturday is the day of largest traffic. On that day the number is about fifty. Monday seems to be the low day of the week.

# 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.)

## Snow Plow and Life Guard Combined

RY C. M. FEIST, MASTER MECHANIC SIOUX CITY (IOWA) SERVICE COMPANY

All cars of the Sioux City (Iowa) Service Company are equipped with a device which has served as a snow plow during the winter months and as a life guard at all times. This combined plow and guard is made of 3/16-in. sheet steel reinforced with 3/8-in. x 2-in. x 2-in. angles. The plow wings distend at an angle of about 120 deg., and they are 14 in. high at the ends and 8 in. high at the nose. The feature of the plow is the method of mounting it beneath the vestibule platform. The nose is pivoted in a fixed position 4 in. above the top of the rail. A trip operated by the motorman from



COMBINED SNOW PLOW AND LIFE GUARD

the vestibule floor releases the ends of the wings, which drop to the pavement surface. These wings drag along the tops of the rails clearing away the snow and, in case an obstruction is met, they merely slide over it. In other words this plow readily adjusts itself to any inequalities in the street surface and, at the same time, clears away the snow down to the tops of the rails. The method of pivoting the plow nose is by way of two brackets or hangers which in turn support the ends of a 3/4-in. x 4-in. bar with the ends rounded to form the pivots. This combined plow and wheel guard has been in service for a number of years and has been found very effective. A view of one of them is shown in the accompanying illustration.

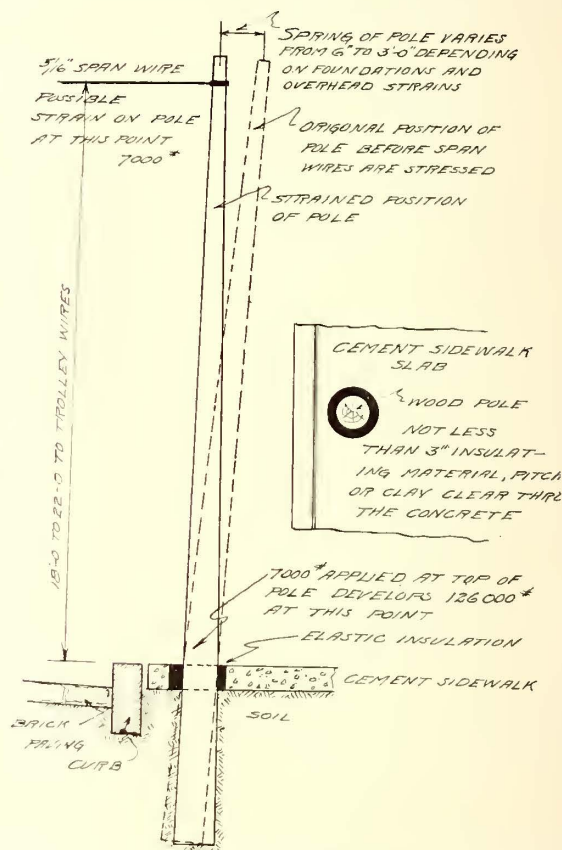
## Destruction of Cement Sidewalks by Trolley Poles

BY CARL H. FULLER, GREENSBURG, PA.

It is not an uncommon sight to see long stretches of cement sidewalks disfigured by being badly split, checked and broken, or curbing pushed out of line where the slab surrounds and comes in contact with trolley poles, public service poles, fire hydrants and such obstructions, which extend through the sidewalks to various depths in the soil below. Unquestionably this defect is most

noticeable around the trolley poles of the electric railway companies.

The writer has long been an advocate of 3 ft. or more of street lawn between the sidewalk and the curbing, which provides ample space for locating these inevitable obstructions where they will do the minimum of damage and at the same time affords an opportunity to beautify the street by planting trees therein. Unfor-



SKETCH SHOWING STRAIN APPLIED TO CEMENT SIDEWALKS BY TROLLEY POLES AND METHOD TO PREVENT DAMAGE

tunately, the street railway man has to adjust his work to existing conditions by setting his poles through cement sidewalks already constructed and extending to the curb line. To do this, he chips a hole in the cement walk, excavates for and beds his pole, then finishes the job by restoring the cement walk around the pole. Later the sidewalk becomes checked and broken around the pole and the company is blamed for careless workmanship. The railway company is not always to blame for this condition as the walk is frequently laid after the poles are set, the mechanic doing the work also cementing tight around the pole, when in a short time the same defect appears.

In several instances coming under the writer's observation either the public has demanded, or the railway company of its own initiative has sought to avoid this trouble by employing various expedients that usually have failed to recognize the threefold basic cause of the

trouble. However, the cause is not far to seek and the remedy is neither expensive nor difficult to apply.

The sidewalk slab contains within itself its own most destructive agency, expansion, and competent sidewalk men endeavor to provide for this, when laying walks, by the use of various types of expansion joints. They usually overlook the fact that any pole or other object extending through the slab to any considerable depth in the soil below, being thus anchored, acts effectively to destroy the thin slab of concrete by preventing its lateral movement while undergoing expansion. That this lateral movement is considerable and of enormous force is evidenced by its frequent overturning effect on adjacent curbing. The writer knows of one instance in Guthrie, Okla., where a 200-ft. stretch of continuous sidewalk, effectively anchored at one end, moved uphill under the expansive action of the rising summer temperatures until the upper end projected fully 6 in. over the curbing. Had there been poles in this walk they would have been sheared off at the sidewalk line or portion of the slab surrounding them would have been broken.

Another cause of checking and breakage may be traced directly to the pole itself. The majority of the poles used are of wood, and their swelling alone, due to varying conditions of moisture, is sufficient to crack the thin slab of concrete surrounding them. An evidence of the immense expansive power of wood when swelled with moisture is seen in one of the methods used in quarrying fine building stone. In this a series of holes, sometimes several feet in depth, is drilled along the desired line of cleavage, and the holes are filled with tightly-fitting kiln-dried wood plugs which are then saturated with water. As this process will split huge slabs of the hardest granite, the thin slab of concrete, not being designed to withstand tensile strains, cannot be expected to resist such forces.

The third, and possibly the most destructive, agency where trolley poles are concerned is indicated by the location and direction of the cracks in the sidewalk slab surrounding them, and may be traced directly to the highly stressed overhead work which the pole carries. When the pole is set, the top is inclined from 6 in. to 3 ft. from the vertical and away from the center line of the track. The poles are then connected in pairs by 3/16-in. to 3/8-in. stranded span wires 18 ft. to 22 ft. above the ground, and by means of tackle pulled nearly vertical. A 5/16-in. span wire is capable of producing a 7000-lb. pull which, if the pole is capable of withstanding such a strain, induces a permanent set or spring in the pole with a possible reaction at the sidewalk line up to 125,000 lb. The railway man counts on the resiliency of his poles to take up the expansion and contraction of his overhead, due to the climatic changes of temperature. Between the cool of midnight and the heat of noon, the tops of a pair of trolley poles may vary as much as a foot in their relation to each other, and this movement, to a lesser degree but greatly multiplied in stress effect, is communicated to the thin sidewalk slab that surrounds the pole, and which, being of a comparatively unyielding composition, breaks at the point of contact.

As a remedy, when building new sidewalks around such obstructions, the writer usually specifies that a space of approximately 3 in. be left clear of concrete around the poles, giving them an opportunity to perform the functions imposed by saturation of pole, overhead strains or expansion of concrete. This may be readily effected by wrapping the pole at the sidewalk line with several narrow thicknesses of Carey "Elastite" (the material is 1/2 in. thick.) or other expansion filler before concreting, or a circle of tin may be used,

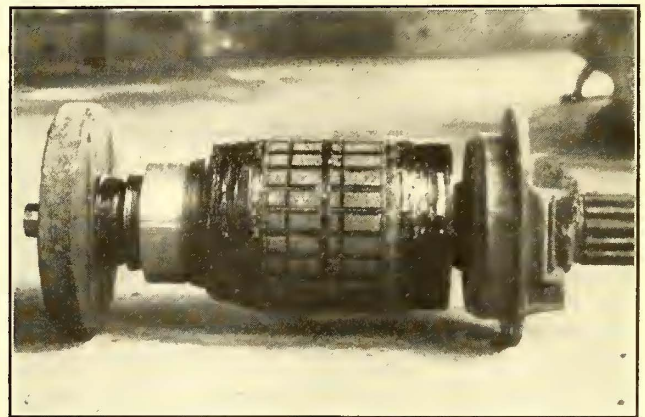
leaving the desired clearance around the pole to make a form to finish the concrete against. If the latter method is used, care should be taken to fill the metal form with sand, clay or pitch to prevent a careless workman from defeating the object of such precautions by disposing of surplus cement in the interstice. When it is desired to prevent water from entering the joint between the pole and the concrete a soft pitch makes a good insulating material as it readily accommodates itself to any slight movement of the pole or the concrete.

When a hole is cut in an old sidewalk for the purpose of setting poles, the same precautions should be observed before patching the paving, except that the pole may be set closer to the concrete on the side away from that to which the strain is applied, making the insulation eccentric around the pole. Where poles have already been set with the sidewalk laid flush to the pole, any further development of cracks may be prevented by chipping out a 2-in. or a 3-in. ring through the concrete around the pole and filling the interstice with pitch.

The writer does not advocate such insulation as a cure-all for defects in sidewalk work, but experience and observation have demonstrated that such protection will eliminate the damage done by trolley poles.

### Handling Box-Frame Motor Armatures in Minneapolis

The Twin City Rapid Transit Company, Minneapolis, Minn., decided to buy box-frame motors in preference to split-frame motors ten years ago and has had no cause to regret that decision, as the box-frame motor has proved in every way superior to the split-frame motor. The practice of the company in handling box-frame equipment is as follows: When it is necessary to make repairs on a motor or truck, the car body is lifted



BOX-FRAME MOTOR ARMATURE MOUNTED FOR TRUNDLING

from the trucks by means of an electric crane, and the trucks are sent to the truck shop in trains of six or ten.

The company's truck shop is well equipped with electric hoists, but has no pits in the floor. When it is necessary to make repairs on a motor, it is lifted from the truck and another motor is put in its place. If it is necessary to remove the armature from the motor for repairs, the waste is removed from the oil boxes, two bolts are removed from the motor head on the pinion side, and eye-bolts are screwed in instead. The motor is then placed on end by means of a small electric hoist and the head is drawn loose from the frame by turning in the two eye-bolts. This is done by two men walking around the motor and using bars in the eyes of the bolts. The armature is then lifted out

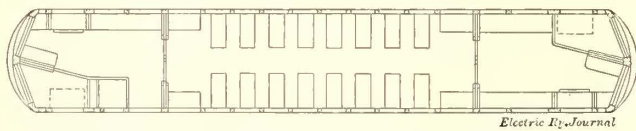
of the frame without taking off the pinion or head. When the armature is lowered to the floor the end of the armature shaft enters a hole in a wooden wheel, made of 2½-in. plank. The armature is then tipped down on its side and can be rolled on the floor by means of the motor head and this wooden wheel. An accompanying illustration shows the armature with head and wheel. When the armature gets to the winding shop a pinion puller is used to remove the pinion, the head is taken off, new bearings fitted, etc.

The time required to do this work is but little longer than that required to describe the operation.

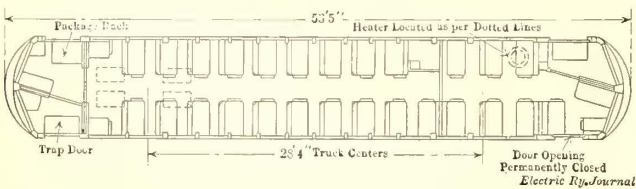
### Making Interurban Cars Comfortable

Recently a desire to provide increased comfort for passengers and a more compact seating arrangement induced the Milwaukee Electric Railway & Light Company to remodel a number of its interurban cars. Wider seats were installed and the space between them was increased, involving a reduction in the car capacity from sixty-four to sixty-two seats. The cars were also rearranged with two regular passenger compartments in place of the three which were provided in the original cars, this change giving a seating capacity of forty in the main passenger compartment. In the new plan, also, transverse upholstered seats for seventeen passengers were substituted in the smoking compartment for the longitudinal slatted seats of the old car.

The changes in the arrangement of the compartments were effected by moving the bulkheads, and at the points from which these bulkheads were removed cast-steel angle reinforcements were provided to maintain the



MILWAUKEE INTERURBAN CAR—ARRANGEMENT OF ORIGINAL CAR



MILWAUKEE INTERURBAN CAR—ARRANGEMENT OF REMODELLED CAR

transverse stiffness of the body. No changes were made in the arrangement and location of the motorman's cabs, these being unique in that sliding doors in the partitions and trapdoors in the floor permit them to be utilized for the entrance and exit of passengers when either is at the rear end of the car. They are located in the diagonal corners of the car body, and the original exits opposite each are permanently closed.

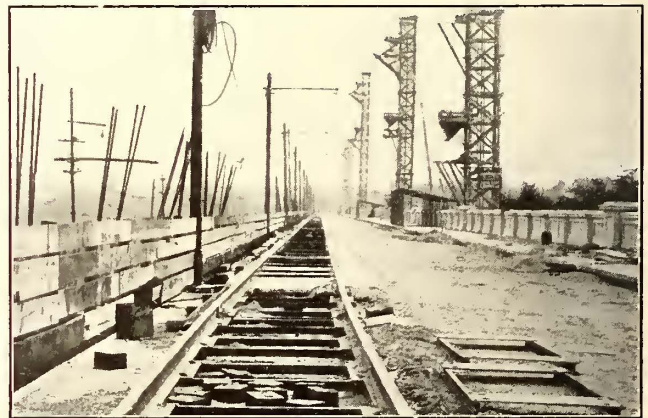
The new seats are of the Walkover type and are 38 in. long as compared with 35 in. for the old seats, and the spacing has been increased from 29 in. to 33½ in. The new seats in the passenger compartment are upholstered in plush and those in the smoking compartment in rattan. The inside width of the car body was slightly increased by recessing the panels between the window posts, but this did not make up for the increased seat width, which also necessitated a reduction from 24½ in. to 20½ in. in the aisle width. During the winter months one of the seats in the smoking compartment will be removed to make room for the heater equipment. The toilet room has also been moved from one end of

the car to a point beside the bulkhead between the smoking and main passenger compartments.

Changes in the lighting system were also effected in a new scheme including ten 56-watt Mazda lamps with reflectors, installed along the center line of the car. These are spaced at regular intervals and wired so that the alternate lamps are in the same circuit. In addition the composition flooring of the old cars was resurfaced and covered with a cocoa matting, and the old inside finish was restored wherever it was in good condition, all of it being thoroughly scraped, stained and given three coats of varnish. It is contemplated that all interurban passenger equipment will be remodeled after this plan.

### Steel Ties on a Cleveland Bridge

The Brooklyn-Brighton Bridge, Cleveland, is a reinforced concrete and stone-trimmed structure 2200 ft. long, which will carry two tracks for the cars of the Cleveland Railway and for several interurban lines. In connection with the selection of the type of support for the 7-in., 95-lb. Lorain rail that was used, Charles H. Clark, engineer maintenance of way Cleveland Railway, decided that International steel ties of the "twin" type would be preferable to wood inasmuch as a clearance of only 4 in. between bridge floor and rail base was available. The Cleveland Railway, it may be said, was already familiar with these ties because some 15 miles of track had been equipped with them since the spring of 1910, the first installation, which is in open track,



STEEL-TIE LAYOUT OF A CLEVELAND RAILWAY ON BROOKLYN-BRIGHTON BRIDGE

unlike the following ones, and which carries both city and interurban cars, having required no maintenance to date.

The twin ties on the Brooklyn-Brighton bridge are laid to the standard spacing of 6 ft. centers with the usual eight clips per twin-tie. This spacing gives a lineal support to 50 per cent of the rail. The 13-in. x 36-in. plates which constitute the main bearing surface of the tie rest on 4 in. of concrete between the base of the rail and the bridge floor, and the channels, themselves, rest practically on the bridge floor, the track being concreted to about 1 in. above the ties. This concrete in turn is covered with a 1-in. sand cushion and then paved with granite block.

The electric railway system in Rosario, Argentina, which was financed by Belgian capitalists, has modern equipment and service. The cars run only in one direction on most streets. There are altogether 100 miles of street car lines in the city, all operated by the one company.

### Switchboard Fittings

The General Devices & Fittings Company, Chicago, has recently furnished switch and bus support equipment for three of the largest power stations to be built, and a description of a few of the new designs

that were used should be of interest. Fig. 1 shows a back-connected, posi-

per; the blades are extra hard drawn pure blading copper; the handle fork and entire lock are of Hertz non-magnetic metal; and the handle itself is of black fiber made from rings turned to size and treated. This switch is made in sizes up to 16,000 amp., all sizes above 10,000 amp. being equipped with double cushion locks and interferences.

In Fig. 2 is shown a special-extra-heavy switch for 2000 amp. and 15,000 volts equipped with positive snap lock and vertical terminals for bus insertion. The patent bridge base is a continuous unit, giving an assurance of absolute alignment. The clip blocks are one-

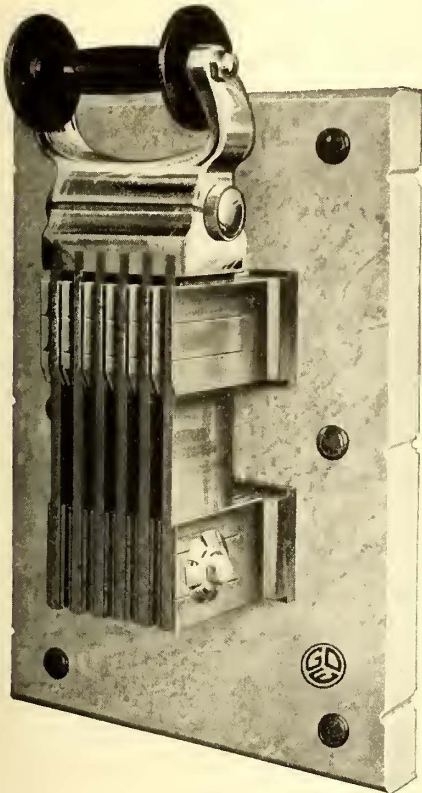


FIG. 1—LARGE-CAPACITY SWITCH

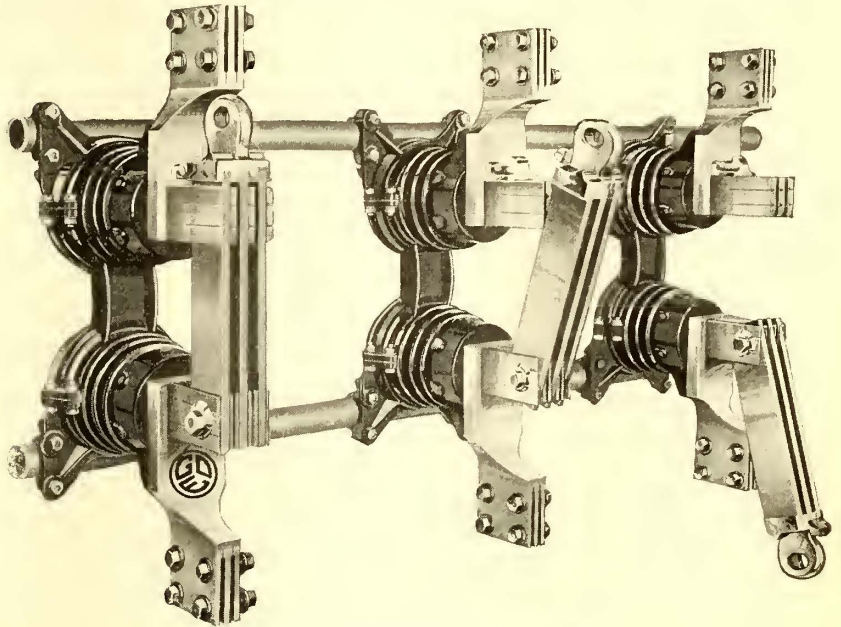


FIG. 3—PIPE MOUNTED SWITCHES

tive-lock-type switch with a rating of 6000-amp., 600 volts, 60 cycles, with a 20-deg. Fahr. limit for temperature rise. This is said to be the only switch ever provided with a positive lock that is thrown in or out with the switch handle. The studs are milled from solid copper forgings and slotted 7 in. deep for bus insertions. The studs can also be slotted for vertical buses.

piece solid copper forgings milled and slotted to micrometer size. Any switch can be arranged, if necessary, for mounting upon pipe frames, either single or double pipe, and on the horizontal or vertical plane for front-connected switches and on the horizontal plane only if the switches are back connected.

Such a mounting is illustrated in Fig. 3, which shows a triple-pole, locking-type switch equipment mounted upon a horizontal pipe frame. These switches are rated at 2000 amp. and 600 volts, 60 cycles. They are equipped with positive interference locks and are the first of their kind to be made. The bridge bases permit of vertical adjustment, and barriers are provided between switches, although these are not illustrated.

A disconnect-type support for a 15,000-volt expulsion fuse is shown in Fig. 4. These supports are also built for cartridge-type fuses and may be mounted on bridge bases. They are furnished for both flat and pipe mounting.

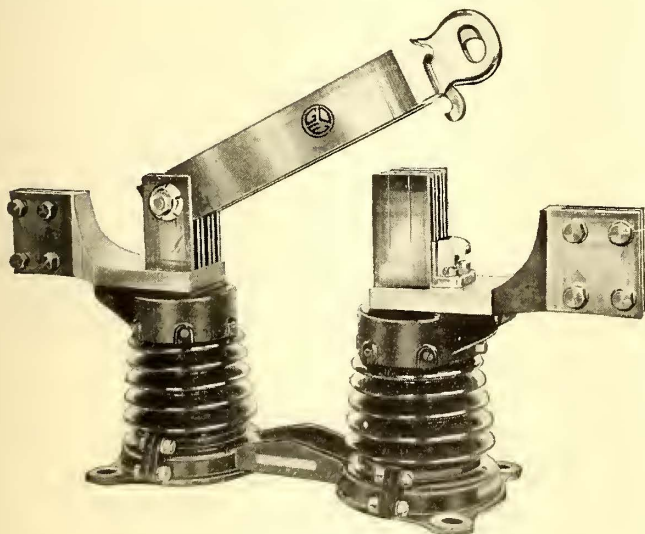


FIG. 2—DISCONNECTING SWITCH

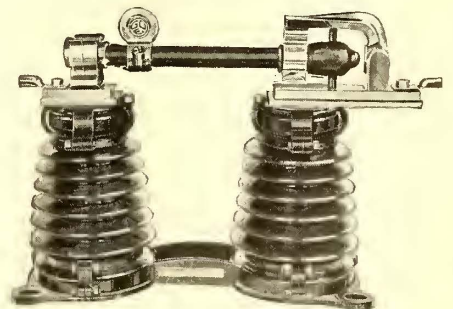


FIG. 4—EXPULSION FUSE SUPPORT

All contacts are ground to reduce the millivolt drop to the lowest possible point. All hardware, bolts, nuts, spring washers, etc., are of phosphor bronze, turned from solid rod. The clips are of Sigamond spring cop-

per. Fig. 5 shows a special three-phase bus support for 600-volt service. In this all metal except the base is Hertz non-magnetic metal, and the bolts are phosphor bronze, machined from solid rod. The support is made in all

sizes and voltages and to support up to nineteen bars  $\frac{1}{4}$  in. x 10 in. Any combination of mounting that may be desired can be arranged. This support is adjustable to any need and the weight is 320 lb.

A 15,000-volt special-extra-heavy clamp-type bus support for holding heavy vertical buses is shown in Fig. 6, this being arranged to be mounted in a 36-in.

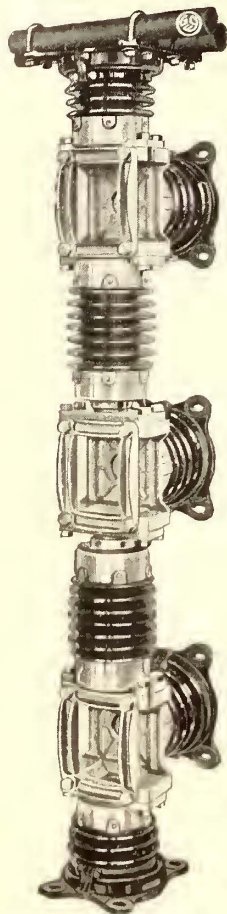


FIG. 5—THREE-PHASE BUS SUPPORT

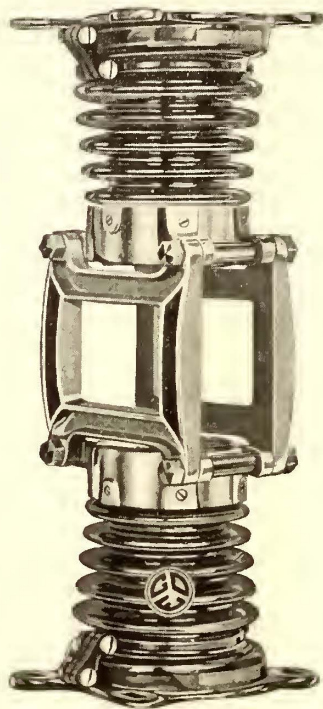


FIG. 6—COMPARTMENT SUPPORT FOR BUS

compartment. A similar design may be arranged for  $3\frac{1}{2}$ -in. copper tubing. This is adjustable all around, and can be removed from the bus with power on bus.

Fig. 7 shows a single support to take one phase leg from the big support shown in Fig. 5, this being arranged for mounting on two parallel pipes. It is built to clamp the bus and is not intended for contact or taps.

All porcelain used in these devices is tested at 280,000 cycles and is also given a combined high potential and high frequency test before shipping, this test being made with all of the regular hardware and equip-

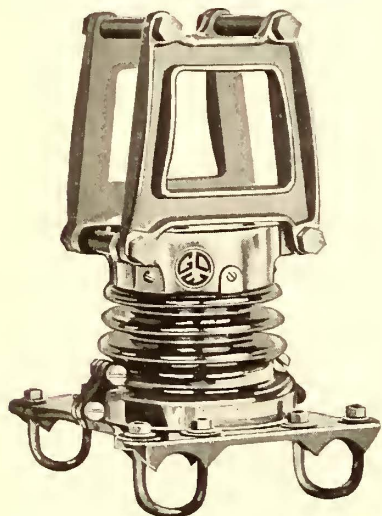


FIG. 7—SINGLE-BUS SUPPORT

ment in place. All shipments are packed in cartons, each unit complete. The switches are designed with a guaranteed millivolt drop, on both the heavy capacity and the central station standards. Copper forgings are used for all switch work and terminals. The porcelain

used has not an equal for design or strength, and is guaranteed to be made only by the wet process.

### Lamp Grips for Screw Sockets

A great deal of trouble and inconvenience has been experienced in the use of lamps in sockets when installed where they are subject to vibration. This is particularly true in factories using high candle-power lamps where heavy machinery is operated, and on electric cars. Constant jarring and vibration cause lamps to unscrew or "back off" from the base contact so that the circuit is broken and often the lamp falls.

To overcome this difficulty, the Bryant Electric Company has developed a very effective lamp grip. In this new form of socket, the threaded copper portion that receives the lamp is slotted on two diametrically opposite sides in such a manner as to provide two tongues which are flexible. Two flat steel springs are mounted in the porcelain base with the free ends so arranged as to bear on the outside of these copper tongues. This will be clearly understood from the illustration. Thus, without any external adjustment or any other labor than the insertion of the lamp, sufficient tension is brought to bear upon the lamp base to prevent vibration from causing the contact to break even under the most severe conditions. This lamp-grip feature can be supplied, at a slight additional charge, in connection with practically all sockets of both the medium and mogul type manufactured by the above company.

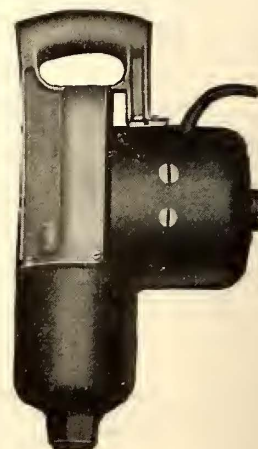


LAMP GRIP

### Electric Hammers in Railway Work

In answer to the question that is frequently asked in regard to the ability of the electric hammer to do the work of the pneumatic hammer in railway work, the Western Electric Company states that the former is recommended for every kind of work, except riveting, that can be assigned to any hammer. In electric railway work especially, where there are power mains always ready to be tapped, the electric hammer looms far above its pneumatic brother. In power economy it is 80 per cent more efficient, and in flexibility the advantage is obvious. A pneumatic hammer requires a compressor with its attendant piping; an electric hammer needs no special apparatus since the power mains follow the railway.

Not only will the electric hammer do the things the pneumatic hammer is now doing, but it opens up possibilities in many fields which would not justify the installation of air equipment. It may be used in subways where the trolley hangers, guide wires, etc., must be fastened to concrete; in power houses and substations for all drilling for cable racks, railings, piping, etc.; for scaling paint from iron work on elevated and other structures; for bush hammering concrete retaining walls and stations; for roughing up store stair-



ELECTRIC HAMMER

ways; for chipping scale from condenser tubes, and for taking out foundations, ripping out doorways and the like. The electric hammer, however, cannot be used for riveting and heavy chipping.

When it is remembered that a man with a hand hammer strikes from fifty to seventy-five blows per minute and that operating a pneumatic tool requires compressor, piping and considerable power, there are obvious advantages in a tool which is absolutely self-contained because it may be connected to any lighting socket or trolley circuit and which strikes 1800 blows per minute, as is the case with the electric hammer.

### Portable A.C.-D.C. Electro-dynamometers

The Western Electric Instrument Company, Newark, N. J., has recently perfected a new line of instruments which mark a distinct advance in the science of electrical measurements, problems hitherto considered impossible of solution having been solved in their design. They constitute, in fact, the latest development in instruments of this type and embody characteristics never before attained.

The instruments are made in voltmeter, ammeter and wattmeter forms, all of which are adapted to measurements of precision on either a.c. or d.c. circuits. They



PORTABLE A.C.-D.C. ELECTRO-DYNAMOMETER

are guaranteed to an accuracy of 0.25 per cent full-scale value at any frequency up to 133 cycles per second and any wave form, and they can be used on circuits of any commercial frequency even as high as 500 cycles per second with only slight error. Double ranges are provided for both current and voltage circuits and the wattmeter can be used for 100 per cent overload indefinitely without introducing error. The movable systems of the instruments have an extremely low moment of inertia and they are very effectively damped. The indications are independent of room temperature or the heating effect of the current passing through the windings, and the instruments are shielded from external magnetic influences. The scales, which are  $5\frac{1}{4}$  in. long, are uniform throughout their entire length in the wattmeters, while in the voltmeter and ammeter the upper four-fifths of the scale is especially legible and uniform, although absolute uniformity is impossible owing to the principle of operation. Each scale is hand-calibrated and is provided with a mirror over which the knife-edged pointer travels. The pointers are equipped with a simple zero-setting device. The dimensions of all of the instruments are 8 in. x  $10\frac{1}{4}$  in. x  $5\frac{3}{4}$  in.

In the wattmeter form instruments can be furnished for very low power factors, such as are involved in measuring core losses in transformers giving full scale deflection for 20 per cent power factor. Temperature errors are very small and can be corrected by reference to the certificates that accompany all Weston instruments. The line includes a polyphase wattmeter that

is guaranteed to an accuracy of 0.5 per cent full-scale value on a.c. circuits of any frequency up to 133 cycles per second and any wave form. Even on circuits as high as 500 cycles per second there are only very slight errors due to phase displacement.

### Jack Designed to Remove Poles

Railway companies frequently have occasion to remove poles from one location to another or to take them out entirely, and to meet this demand Templeton, Kenly & Company, Ltd., Chicago, have placed on the market a jack designed especially to remove poles. In an actual test it took nineteen minutes for the jack to remove the pole shown in the accompanying illustration, this being done without digging around the pole or employing any other tool. The jack is single acting, operating on the down stroke of the lever and



SINGLE-ACTING, 15-TON POLE JACK WITH 24-IN. LIFT

tripping at any point. It has a capacity of 15 tons, a lift of 24 in. and a complete height of 39 in. It pivots on its own base, revolving from 30 deg. to 90 deg. from the vertical, and hence will follow the angle of the pole as it is pulled, a recessed cap holding securely the links of the chain which is fastened around the pole. The jack, together with a 5-ft. heavy chain with a grab hook, a steel lever bar and a section of 10-in. I-beam used for a bearing block, make up the standard equipment for completing the entire operation.

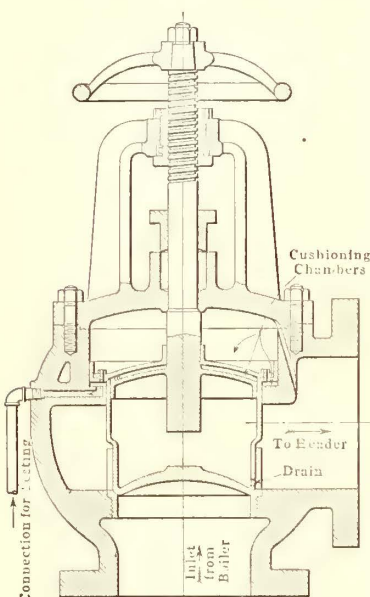
### 35,000-Kw., 60-Cycle Unit for Chicago

The Commonwealth Edison Company of Chicago has just purchased a new turbine unit, the generator end of which will be the largest 60-cycle machine in existence. The unit was sold by the Westinghouse Electric & Manufacturing Company and will be a tandem-compound machine of the straight Parsons type, rated at 35,300-kva. at 85 per cent power-factor. It will produce electrical power at 12,000 volts, three-phase and 60 cycles, its speed will be 1200 r.p.m. and it will operate in parallel with the Commonwealth Edison Company's 60-cycle system. The turbine will take steam at 220-lb. pressure with 200 deg. superheat and will exhaust against a 29-in. vacuum. Forced ventilation for the generator

will be supplied by an external motor-driven blower which is to be placed in the air duct leading from the air intake to the generator. The exciter will be direct-connected to the main machine and the unit complete will measure 75 ft. long by 18.5 ft. wide by 21 ft. high over all. This new unit will be installed in the company's Northwest station and, according to the terms of the contract, will be ready for operation in time to carry the peak load in the fall of 1916. In design the unit represents a radical departure from the large Westinghouse machines now operating in the Interborough station in New York in that the entire unit will be placed on one shaft instead of being divided into two cross-compounded machines. Auxiliaries for this unit have not been purchased as yet.

### Double-Cushioned Non-Return Valves

The non-return or stop-and-check valve made by the Golden-Anderson Valve Specialties Company, Pittsburgh, Pa., is provided with a number of unique features, of which one of the most important is that the automatic action can be tested in service. Consequently



Electric Railway Journal

CUSHIONED NON-RETURN VALVE

the installation of one of the valves in the steam header of a boiler insures absolutely that the boiler will be protected in case of accidents, that the pressure between the various units of the battery will be equalized, and that there is no possibility of turning live steam into a boiler in which repair men may be working.

As shown in the accompanying cut, the valve is cushioned in both directions and is made positive in operation because of the large area that is effective for the steam pressure which acts to close the valve in case of its automatic operation. This cushioning is carried out by a double dashpot which occupies the full area of the upper portion of the body and thus positively prevents any hammering or pounding. There is only one moving part, the piston or hollow valve, and this is always kept in perfect alignment with the seat, regardless of its position. The valve is therefore practically indestructible and its low maintenance charges make it, in the end, one of the least expensive automatic devices provided for the protection of life and property in connection with the use of steam.

The operation of the valve is simple. When the steam pressure raises the hollow valve there exists a space between the top of the hollow valve and the disk that is integral with the stem, and this space is promptly filled with steam which leaks past the disk. The area above the hollow valve is also filled with steam so that the valve is perfectly cushioned both in opening and in closing. The feature of automatic testing in service consists in permitting an exhaust of steam from the cushioning chambers by opening a small hand valve that may be located at any convenient point. The non-return valve will then automatically close, but by closing the exhaust the non-return valve moves back to the open

position ready for automatic action. The makers absolutely guarantee these valves not to chatter, hammer or stick and warrant them to be the most positive, durable and economical automatic valves on the market. All of the valves are made double extra heavy regardless of the service for which they are to be used.

### Rating Concrete Mixers

Up to the present time there has never been any standard method of rating batch mixers for concrete. Some mixer manufacturers rate their machines by their capacity in mixed concrete while other manufacturers rate them by their capacity in loose, unmixed materials. It is a well-known fact that a mixer having a batch capacity of, say, 9 cu. ft. of unmixed sand, stone and cement will hold only about 6 cu. ft. of mixed concrete per batch. For this reason the capacities 3 ft., 4 ft. or 9 ft. when applied to concrete mixers have never had any definite significance.

However, the National Association of Mixer Manufacturers at its August meeting took steps toward remedying this difficulty by adopting a resolution providing for the uniform rating of batch mixers. This resolution provides that, in future, catalogs and circulars shall specify the capacity of each mixer as the size of wet-mixed batch and not otherwise. The resolution further provides that the dry, unmixed capacity of a mixer may be approximately as one and one-half times the size of the wet-mixed batch, assuming the use of cement, sand and 1½-in. crushed stone with 1¾ gal. of water per cubic foot of mixed concrete. The members of the association further agreed not to use the dry-batch rating in their correspondence, advertising, etc., unless the standard wet-batch rating was used also and with equal prominence.

The association feels that the step is a very desirable one, and one that will prove beneficial to all contractors, mixer manufacturers and, in fact, every one connected with the concrete and cement industries. A contractor can now arrive at a real comparison between mixers, not only in price but in capacity, a problem that would be exceedingly difficult without a standard rate to serve as a basis.

### Standard Screw Threads for Electric Sockets

A statement recently issued by the American Society of Mechanical Engineers covers a report from its committee on standardization of special threads for fixtures and fittings, which submits standards for rolled threads for screw shells of electric socket and lamp bases. Dimensions for four different sizes are given, these approximating ¾-in., ½-in., 1-in. and 1½-in. diameters of thread. The standard is expressed in the form of dimensions for maximum and minimum gages, the difference of diameter between these being 0.006 in., 0.006 in., 0.008 in. and 0.012 in. for the four sizes respectively. The number of threads specified are respectively fourteen, ten, seven and four per inch, while the depths of thread are 0.02 in., 0.025 in., 0.033 in. and 0.05 in.

Albert H. Hale, a motorman of the Cairo Electric and Traction Company, Cairo, Ill., has been given a patent for a new brake which is constructed in such a manner that the momentum of the car serves to give the power necessary to tighten the brake. Thus, the operator has merely to exert a slight pressure of his hand upon a bar which slides through a ratchet in order to bring the car to a sudden stop. The brake was first tried about three years ago and is now in active service on one of the Cairo cars.



# News of Electric Railways

## WILKES-BARRE WAGE AWARD REPUDIATED

Representative of Men on Wilkes-Barre Wage Board and  
Umpire Concede Employees' Contention That Contract  
Should Be Limited to Flat Scale Basis

Thomas D. Shea, representing the men on the board of arbitration selected to settle the controversy over wages between the Wilkes-Barre (Pa.) Railway and its employees, and Dr. John Price Jackson, State Commissioner of Labor of Pennsylvania and umpire in the arbitration, have handed down a final decision that the contention of the men is correct and that the award made by the board on July 10, 1915, complied with on the part of the company, is not binding. In so doing they recommend that a flat scale of wages of approximately 27 cents an hour should be paid, and state that further negotiations for the fixing of a wage scale must be between representatives of the men and officials of the company. In brief, the situation, in some respects, is practically the same as it was on Jan. 9 last, when the agreement for arbitration was signed by the men and by the company. The official statement of the two arbitrators, dated Oct. 11, follows in part:

"The board of arbitration received a protest on the part of the Amalgamated Association, Division No. 164, on Oct. 5, claiming that the award of the arbitrators was not in accordance with the submission by the two parties, and that when they signed the submission to the arbitrators they had in mind only a flat scale of wages and not a sliding scale with a profit-sharing arrangement, such as was contained in the award.

"The board having given the railway an opportunity to submit evidence bearing upon this protest, and having received a reply, has decided that the contention of the Amalgamated Association is correct, and that the award is not co-extensive with the submission, and, therefore, is not binding. This decision is based largely upon the facts that the contract under which the board was created could readily have been construed as being limited to a flat rate of wages by those having that rate of wages in mind, and because the preliminary negotiations between the company and the employees were based solely upon a flat rate.

"The company and the arbitrator appointed thereby have withdrawn from the case, and as a result the remaining two arbitrators do not care to continue further. The situation, therefore, is now the same as was the case before the agreement for the appointment of the arbitration board was entered into, and the parties at interest are free to enter into negotiations toward a settlement of their differences. The board rules that the association did not accept the terms of the award by reason of the employees having received pay under its terms.

"Though the board does not care to continue its work by modifying the award to meet the conditions that it now deems necessary to make it co-extensive with the submission, it, nevertheless, deems it proper to state that in its judgment a flat rate equivalent to the present sliding scale, plus the amounts it believed would be available through the profit-sharing arrangement, could conservatively be estimated at between 26½ cents and 27 cents an hour. It further deems it proper to advise that in its judgment it would be well for the two parties to delay, reasonably, further negotiations in order that more data may be obtained on the possibilities of the profit-sharing plan."

T. A. Wright, general manager of the company, said that the decision of Dr. Jackson and Attorney Shea did not alter the view of officials of his company with reference to arbitration as expressed by him several weeks ago. He said that "the findings of the board of arbitration as made public several months ago, are final, binding and without appeal." He repeated that the board, after making its award, was automatically disbanded and had no legal right to reconvene or to receive further evidence. Asked whether officials of the company would grant a hearing to the men, Mr. Wright said: "I will always give an audience to a committee of our men. That is as far as I will go at this time."

The representatives of the men concluded their protest against the award of the arbitrators as follows:

"We repeat that your commission was organized to state definitely what the wages of these men should be over and above the present wages paid, and your conclusion in basing the future wages of these men on an increase car-hour earning power, or, in other words, what is commonly known as the 'profit-sharing plan,' is wrong and not within the terms of submission to arbitration."

Commenting editorially on the board's reversal of itself, the Wilkes-Barre *Evening News* of Oct. 12 said in part:

"Dr. John Price Jackson, who served as umpire on the board of arbitrators, has proved himself to be utterly unfitted to hold the responsible position of Commissioner of the State Department of Labor. He has fallen down on his first big job. In the dispute the deliberations of the board were long and thorough. The arbitrators were named in April and their decision was not handed down until early in July. Both sides submitted their briefs in full, and there was a wealth of material bearing upon every phase of the controversy to permit the arbitrators to arrive at a definite decision without resorting to snap judgments. Dr. Jackson had more than ample time to come to a conclusion as to his personal decision, and his recent stand shows his failure to do so.

"Dr. Jackson, through his wavering, fickle and altogether spineless attitude, has established a most dangerous precedent for future labor disputes throughout the State. Apparently, any agreement that does not meet with the approval of either of the contestants in a wage or other economic or industrial dispute, can be appealed from, or perhaps summarily set aside. This, obviously, defeats the very fundamental principles of arbitration as the ideal solution for labor controversies. In view of his palpable failure, Dr. Jackson would do well to resign from the office to which he has been appointed, and thereby make it possible to conserve the value of such an important department, if its functions are properly exercised."

## POSTPONEMENT OF THE CONFERENCE ON THE NATIONAL ELECTRICAL SAFETY CODE

The Bureau of Standards announces the postponement of the conference that was to meet at Washington on Oct. 27 and 28, 1915, until a date to be announced later. This sudden change of plans is due to the urgent request of the National Electric Light Association, the American Institute of Electrical Engineers, and the Association of Edison Illuminating Companies that additional time be granted for the consideration of the code of rules that has been formulated by the bureau before they are submitted to a formal conference.

The Bureau of Standards has proposed that the rules be accepted tentatively for a trial period of one year before they are adopted formally by commissions or municipal authorities, and that the joint advisory committee to be established by the Washington conference should take up with the bureau the work of further revision and development of the rules if it was not found by the conference that the code as presented by the bureau or as modified by the conference was satisfactory for preliminary use. It was felt, however, by many members of the associations previously mentioned that more time should be taken and the rules very carefully studied by many who have not done so as yet, and further modified if necessary, so as to make them as generally satisfactory as possible before they are submitted for the consideration of so large and representative a body as the Washington conference would be.

Although the bureau postponed the conference last June for nearly four months it feels that the electrical companies that are most affected by the proposed code should have the fullest opportunity to study it and submit to the bureau any further information and experience bearing on its revision and development which they may think desirable.

### COUNCIL PASSES DES MOINES GRANT

The City Council of Des Moines, Iowa, has passed the new franchise ordinance drawn up by a committee of the Des Moines Chamber of Commerce. Mayor Hanna and Councilman Myerly, who fought the draft to the last moment, cast their votes for it on the final ballot. They were cheered by a large audience of citizens when the vote was made unanimous for the franchise.

The franchise will be submitted to a vote of the people at a special election on Nov. 20, and following its approval it will go into effect on Jan. 1, 1916. A feature of the franchise providing for a city supervisor of the street railway system, who will work in conjunction with company officials, will be an innovation in Des Moines. The position will pay from \$3,000 to \$5,000 a year. Mayor Hanna says the supervisor must be a man with complete knowledge of street railway affairs and that a man from outside the city, who has had experience along this line, may be chosen.

### SEATTLE COMPANY OFFERS TO ADVANCE APPRAISAL MONEY

In order that the controversy between the Puget Sound Traction, Light & Power Company, Seattle, Wash., and the city of Seattle, on certain franchise obligations may be terminated soon by a hearing before the Public Service Commission, officials of the company have offered to appropriate for the use of the Public Service Commission an amount not to exceed \$10,000 for the completion by the commission of the valuation of the company's property at an early date.

The principal matters in controversy between the city and company are the paving between tracks and payment to the city of 2 per cent of the gross earnings annually. The company, because of its petition on these and other franchise questions before the State Commission, has refused to pave between its tracks in five recent improvements. Mayor Gill threatened to recommend the revocation of franchises unless the company complied with the franchise agreement, which is alleged to have required the company to pave between tracks. Later it was tentatively agreed to begin a mandamus suit to compel compliance. In commenting on the franchise requirements with respect to paving and payment of a percentage of the gross receipts to the city the company's statement says:

"The company cannot comply with those provisions of the franchise and at the same time have additional burdens placed upon it by the Public Service Commission, some of which burdens the city has endeavored to have the commission place upon the company.

"The company lost more than \$60,000 by reason of the city's action in illegally compelling the company to sell tickets upon its cars. The position of the company in regard to the sale of tickets was sustained by the courts, but the city made no compensation for the loss which the company sustained during the litigation and prior to the decision. The company also has sustained heavy losses from the operation of the jitney.

"The position of the company is that if it is required to maintain the standard of service ordered by the commission, which is more burdensome than that stipulated by the franchises, the company must be relieved from some of the provisions of the franchises. The question whether the public service commission law has not already eliminated these burdensome provisions and whether, if not, the commission should not relieve the company of these provisions, is one which should be settled in an orderly manner. The decision of the courts is necessary to such settlement. A valuation of the property by the commission is also probably necessary for such settlement. The company proposes to the city to unite with it in bringing about a speedy determination of the questions involved."

The company agrees to keep the unpaved space in paved districts in a safe condition by planking until the controversy is settled, and if the time comes for paying its 2 per cent of earnings before the courts have decided the question it will make payment under protest and, in the event of the court rendering a decision favorable to the company, ask a refund of the money thus paid.

### CONSUL REAT ON THE EDMONTON MUNICIPAL RAILWAY

United States Consul Samuel C. Reat at Calgary, Alberta, Canada, has written on "Municipal Ownership in Edmonton" in *Commerce Reports*. In discussing the street railway department, Mr. Reat said:

"On Nov. 8, 1908, Edmonton instituted the street railway system, the largest venture in the municipal ownership program and at present the gravest problem. It seems impossible for this utility to be operated without incurring a big deficit each year. Edmonton has the difficulty to contend with of a large area and a relatively small population. The population of Edmonton is about 40,000, scattered over an area of some 27,000 acres. The establishment of a jitney service has affected somewhat the street railway earnings, but as this service was not established until the spring of 1915 its competition need not be taken into account in this review.

"The trackage of the Edmonton street railway system consists of 43 miles of double track (figured on a single-track basis) and 11 miles of single track. The utility had 258 employees and paid \$284,159 in salaries during 1914. Its debenture liability as of Dec. 31 was \$3,004,429. The cost of the system to that date totaled \$3,063,784, the buildings, track and equipment having cost \$2,887,866, discount on debentures \$115,876, Strathcona franchise \$10,000, and land \$50,042. The sinking fund amounted to \$174,691. The year's expenditures were: operating, \$535,430; maintenance, \$80,282; other, \$251,958; a total of \$867,670; against which were receipts aggregating \$642,109, leaving a deficit for the year of \$225,561.

"In 1914 the Edmonton street railway had one fatal accident and ten suits for damages, all of which were successful, the department paying \$11,182 in damages."

### NEW CLEVELAND BRIDGE PROPOSAL

The Cleveland (Ohio) Underground Rapid Transit Company agreed on Oct. 4 to enter no objections to the proposed subway approaches from both east and west to the new bridge across the Cuyahoga River at the foot of Superior Avenue, provided it is allowed to use the bridge upon the same basis as the Cleveland Railway. The company, however, indicated its intention to contest any rental charge, if the Cleveland Railway is allowed to use the bridge free, as has been suggested by Peter Witt, street railway commissioner. An ordinance will be drafted soon to cover this agreement between the company on the one side and the city and county on the other.

In an interview recently C. E. Ruthenberg, socialist candidate for Mayor of Cleveland and author of the ordinance providing for the purchase of the Cleveland Railway by the city, explained his plan of taking over the property. He believes that it would be possible to sell an issue of \$34,000,000 of bonds with the railway property as security and have many of the stockholders accept bonds for their holdings. He said that the interest rate on bonds should not be more than 4½ or 5 per cent. Nothing, however, has been said by Mr. Ruthenberg as to the possible basis of exchange of bonds for the stock.

A. J. Campbell, chief engineer of the Foundation Company of New York, said that such subway disasters as occurred in New York recently are very unlikely in the construction of the subway to be built under East Fifty-fifth Street, Cleveland, Ohio, by the Cleveland, Akron & Canton Terminal Railroad, in case the franchise is approved at the November election.

County and city officials and the Cleveland Rapid Transit Railway are still working on plans for the subway approaches to the new Superior Avenue bridge. The main arch of the bridge was lowered into place last week, and it is probable that the construction work will now be hurried along as rapidly as possible. The completion of the bridge will make it possible for the Cleveland Railway to furnish much better service to the West Side.

The street railway approach to the proposed new union passenger station will be through a subway from Lakeside Avenue, according to the latest plan announced. The new station is to be made a part of the group plan, in connection

with the new City Hall, the Courthouse and the Federal Building, which have already been completed.

The Cleveland Railway was granted a franchise on Oct. 11 to construct a single track on East Seventy-third Street from Denison Avenue to the city limits.

#### FULL SCHEDULES IN FORT WAYNE

Operation of cars in Fort Wayne, Ind., continues under full schedules. There has been no serious disorder and a gradual increase in the number of people riding. The Federation of Labor has assessed all members of the unions at Fort Wayne to raise \$1,500 a week for the striking car men. Every effort is being made to divert travel to the jitneys, and a stock company is proposed by the labor people to operate a line of large buses with a capacity of twenty-five passengers each in competition with the street railway. The chief of police has issued orders for the immediate arrest of any persons shouting at operating trainmen or seeking to incite violence against them. The City Council has decided, on the advice of the City Attorney, that it was not good policy to pass over the Mayor's veto the ordinance requiring extended experience in operating cars in Fort Wayne. The new men now operating cars have already had the necessary experience provided for in the ordinance, so that present operation by the company in Fort Wayne would not be affected. Mayor Hosey and a committee from Fort Wayne called on Governor Ralston at Indianapolis and requested the appointment of a committee to investigate the strike. The Governor stated that the matters in dispute in Fort Wayne, where a contract had been signed by the company and the employees covering working conditions, should be decided by the courts. In view of Judge Anderson's hearing to be held on the injunction proceedings, Governor Ralston would take no action.

**Work on Cleveland Underground Line to Begin by Jan. 1.**—W. R. Hopkins, president of the Cleveland Rapid Transit Railway, told the city officials and county commissioners at Cleveland recently that the company will begin work on building its subway before Jan. 1, 1916. This statement was made before the Council in a discussion of plans for subway approaches to the new Superior Avenue bridge across the Cuyahoga River.

**New Haven Conspiracy Trial Begun.**—William Rockefeller, Lewis Cass Ledyard, Edward D. Robbins and eight other past or present directors of the New York, New Haven & Hartford Railroad appeared on Oct. 13 in the Federal District Court at New York to stand trial before Judge Hunt and a jury on a charge of having conspired to violate the Sherman law by seeking to monopolize all the transportation facilities of New England. The work of selecting jurors was begun at once and three provisional talesmen were agreed upon the first day. It was expected that several days would be consumed in securing a panel of jurors considered to be qualified to pass upon the evidence in the case.

**Question of Union Jurisdiction.**—W. D. Mahon, president of the Amalgamated Association of Street & Electric Railway Employees of America, was authorized at the recent convention of the association in Rochester, N. Y., to name a committee to confer with a similar committee from the Order of Railway Conductors and the Brotherhood of Locomotive Engineers on the subject of jurisdiction where joint operating agreements exist between companies with labor agreements with both associations. Up to Oct. 1 Mr. Mahon had not announced the members of the amalgamated committee. One of the cases awaiting adjudication is that of the Hudson Valley Railway and the United Traction Company, Albany, N. Y.

**Brighton Beach Reconstruction Contract Approved.**—The form of contract and plans for the reconstruction of the Brighton Beach rapid transit line in Brooklyn, submitted by the New York Municipal Railway Corporation, has been approved by the Public Service Commission for the First District. This contract involved the reconstruction of the line from Church Avenue northward to Malbone Street and the widening of this portion from two to four tracks and the reconstruction of three stations, namely, the Church Avenue, Woodruff Avenue and Prospect Park stations. This work, it is estimated, will cost from \$750,000 to \$1,000,000. When it is finished it will make the Brighton

Beach line four tracks from Sheepshead Bay to Prospect Park station, a distance of about 4 miles. From Sheepshead Bay southward the line is to be elevated into Coney Island and four-tracked. This line is to be connected by a new two-track subway branch through Flatbush Avenue at Malbone Street with the Fourth Avenue subway near the Long Island Railroad terminal at Atlantic and Flatbush Avenues, Brooklyn.

**Colorado Commissioner on Weakness of Municipal Ownership.**—S. S. Kendall, chairman of the Colorado Utilities Commission, in a recent address, said: "It is a notorious fact that very few cities and towns have the slightest conception as to what it costs them to build, operate and maintain a plant; possibly in some instances they do not care, but as a plain business proposition they should know whether a plant is self-sustaining, or whether it is maintained partially from general revenues. Under a proper system of accounting they will be compelled to segregate all items of income and disbursements which properly belong to a plant from other departments, and will be required to set aside annually from their revenues a depreciation reserve fund to cover depreciation cost. While this is done in most cases of privately-owned plants, it is seldom done in the case of municipally-owned plants. It is only natural that city officials want to make as good a showing as possible and are only too willing to allow their successors to assume the burden of renewals to the property. The result is that in a few years not much value is left to the plant except as junk."

**A. G. Snell Bats 600.**—The employees of the various departments of the Rockford & Interurban Railway, Rockford, Ill., entered a team in the City Commercial Baseball League, a six-team organization. The season opened on May 1, and games were played every Saturday thereafter until Aug. 14, making a fifteen-game season. The company furnished the uniforms for the team. Fellow employees were very loyal rooters. Out of the fifteen games played, the team won eleven, a percentage of .733, giving it the championship of the league. One game of eleven innings was the only extra inning contest of the season. It was won by the traction champions. Most of the games were closely contested and the championship was not decided until the last game on Aug. 14, when the railway team defeated the team of employees from the Clark Manufacturing Company. Stewart Ralston, chief clerk to the electrical engineer of the Rockford & Interurban Railway, was the manager of the team. He played the position of catcher. Practically all of the games were won by the heavy hitting ability of the team. A. G. Snell, superintendent of transportation, played at second base. He led the team with a batting average of 600, getting twenty-seven hits on forty-five trips to the plate, six of which were for two bases and two for three bases.

#### PROGRAMS OF ASSOCIATION MEETINGS

##### Kansas Gas, Water, Electric Light & Street Railway Association

The Kansas Gas, Water, Electric Light & Street Railway Association will meet in Topeka, Kan., on Oct. 21, 22 and 23.

##### Association of Railway Electrical Engineers

The eighth annual convention of the Association of Railway Electrical Engineers will be held at the Hotel La Salle, Chicago, Ill., on Oct. 18, 19, 20, 21 and 22, 1915. Following the address of President H. C. Meloy, who is connected with the New York Central Lines, standing committee reports will be presented on "Reciprocal Relations," "Loose-Leaf Binders for Filing Specifications and to Keep Specifications and Standards to Date," "Data and Information," "Specifications for Wiring Crossings for Potentials Above 100 Volts," "Standards for Train-Lighting Equipment," "Electric Headlights," "Wireless Telephone and Telegraph as Applied to Moving Trains," "Industrial Trucks," "Wire Specifications," "Metal Conduit Specifications," "Standard Rules for Car Wiring," "Rating of Train-Lighting Lamps," "Illumination," "Standardization of Cranes," "Turntable and Transfer-Table Motors" and "Compressed-Air Generation" and "Shop Practice."

# Financial and Corporate

## ANNUAL REPORT

### Cumberland County Power & Light Company

The combined comparative statement of income, profit and loss of the Cumberland County Power & Light Company, Portland, Me., and its subsidiaries (intercompany items eliminated) for the fiscal years ended June 30, 1914 and 1915, follows:

	1915	1914
Gross earnings .....	\$2,551,263	\$2,447,406
Operating expense .....	\$1,331,992	\$1,303,797
Taxes .....	112,750	106,158
Total .....	\$1,444,742	\$1,409,955
Net earnings .....	\$1,106,521	\$1,037,451
Interest, etc. ....	\$777,210	\$753,305
Preferred stock dividend.....	138,000	138,000
Total .....	\$915,210	\$891,305
Balance .....	\$191,311	\$146,146

The comparative statements of the two electric railway subsidiaries, the Portland Railroad and the Lewiston, Augusta & Waterville Street Railway for the same periods follow:

	Portland R. R.†		Lewiston, Augusta & Waterville St. Ry.†	
	1915	1914	1915	1914
Gross earnings .....	\$1,043,735	\$1,046,674	\$703,897	\$677,723
Operating expenses and taxes .....	647,596	642,867	459,876	458,174
Net earnings .....	\$396,139	\$403,807	\$244,021	\$219,549
Interest charges .....	\$261,730	\$247,561	\$187,543	\$184,834
Dividends .....	99,950	99,950	36,000	36,000
Balance-surplus .....	\$34,459	\$56,296	\$20,478	*\$1,285

\*Deficit.

†Intercompany items are included, and the figures show the results, as if the companies had been operated separately.

The Portland Railroad, leased, showed a decrease of \$2,939 in gross earnings during the fiscal year ended June 30, 1915, owing to the inclement weather in July and August, 1914, and to the competition of jitneys (regulated since Sept. 4, 1915, by ordinance) and other automobiles in Portland. Moreover, the operating expenses included \$32,000 to cover depreciation on the car equipment, an item not included in previous years. Interest, etc., increased \$14,169, this being caused by charging to operating expenses the actual manufacturing cost of additional power purchased from the Cumberland County Power & Light Company and charging the balance to interest, etc.

The Lewiston, Augusta & Waterville Street Railway (controlled through stock ownership) had an increase of \$26,174 in gross earnings during the year, attributable to the mild weather conditions during the winter of 1914-1915, to the fact that the Legislature was in session in Augusta and to a satisfactory increase in the freight and express business. The operating expenses included a new item of \$16,000 for estimated depreciation of car equipment. The interest charges increased \$2,709 on account of interest and discount on additional notes outstanding and an increase in unfunded debt.

### FARES COLLECTED ON BROOKLYN ELEVATED

The Public Service Commission for the First District of New York has issued a statement showing the fares collected at stations of the New York Consolidated Railroad and connecting lines of the elevated system of the Brooklyn Rapid Transit Company for the year ended June 30, 1915.

As compared with 1914, the statement shows a material falling-off in fares collected at practically every station on the various lines. At Brooklyn Bridge, for instance, the total fares collected in 1915 were 30,791,711, a decrease of 2,279,593 under the previous year; at the Park Row station 29,205,995, a decrease of 2,259,666; on the Fulton Street city line 25,278,312, a decrease of 1,305,008; on the Lexington Avenue-Cypress Hills lines 19,689,324, a decrease of 798,179; on the Myrtle Avenue-Ridgewood line 12,189,-

942, a decrease of 392,601; on the Broadway line 9,235,328, a decrease of 89,738.

The Brighton Beach-Franklin Avenue line, while showing a decrease, did not suffer so severely as most of the other lines. The total fares taken in by this line were 12,104,540, a decrease of 160,544 as compared with 1914. The Fifth Avenue-Bay Ridge line showed a decrease of 407,807, its total fares collected in 1915 being 17,707,609. Coney Island Terminals showed a decrease of 474,437, the total fares being 10,647,697; Williamsburg Bridge collected 6,376,304 fares, a decrease of 1,509,263. The grand total on all of the lines amounted to 167,400,086 fares, a decrease of 3,471,194.

### THIRD AVENUE BONDS AUTHORIZED

#### Public Service Commission Authorizes Company to Issue \$2,020,487 of Bonds—Might Mean Beginning of Dividends

The Public Service Commission for the First District of New York on Oct. 8 authorized the Third Avenue Railway, New York, to issue \$2,020,487 of first refunding mortgage fifty-year 4 per cent gold bonds. The bonds are dated Jan. 1, 1910. The sum of \$4,000,000 had already been issued under an application for \$6,650,000 made on Dec. 24, 1913. The amount authorized now has not been in dispute, but the remainder of the \$2,650,000 covered by the original application is yet held up. A statement by the company in regard to the general delay was published in the ELECTRIC RAILWAY JOURNAL of Oct. 2.

The items for which payment is provided out of the proceeds of the bond issue just sanctioned, include the following: Balance owing for fifty low-step cars, \$93,033; capital stock of the Pelham Park & City Island Railroad at par, \$25,000; to reimburse the treasury for expenditure in purchasing bonds, stock and claims against the New York City Interborough Railway over and above \$1,000,000 allowed by the order of Feb. 20, 1914, \$421,996; to reimburse the treasury for expenditures out of income, including the following: 450 shares of stock of the Pelham Park & City Island Railroad, \$40,000; \$20,000 of capital stock of the Third Avenue Bridge Company, \$20,000; demand notes of the same company, dated July 1, 1914, \$96,908; property and additions on Third Avenue Railway lines, Jan. 1, 1912, to Feb. 1, 1915, \$431,919; to reimburse the treasury for expenditures during the same period for additions upon the controlled lines of the Third Avenue Railway companies over and above those upon the Third Avenue Railway proper, as just indicated, \$451,022; to cover expenses of sale and to make up discounts, \$444,507.

The bonds are to be sold at not less than 78 per cent, and provision is to be made for the amortization of any discount on sale. The \$4,000,000 of bonds first authorized was to be issued at not less than 82, with amortization also provided for.

In some circles this bond authorization has been accepted as indicating an early payment of dividends on the stock of the company. The expenditures for improvements and betterments have been heavy for some time, and in the absence of authorization to issue and sell bonds, requirements for such purposes have been met from current income. It has been contended that many of these outlays were properly chargeable to capital and not current income, and one group in the board of directors is now expected to insist that certain of these improvements be capitalized, in which case there will be left available money for the payment of dividends.

American Light & Traction Company, New York, N. Y.—The American Light & Traction Company has declared a cash dividend of 2½ per cent on the common stock and a stock dividend at the rate of 2½ shares of common stock on every 100 shares of common stock outstanding. There has also been declared a dividend of 1½ per cent on the preferred stock, all payable on Nov. 1 to stockholders of record on Oct. 15. A. P. Lathrop, president of the company, who recently returned from a month's trip to cities in which the operating companies are located, was surprised by the improvement in general business since his last inspection trip. Detroit is showing a wonderful expansion industrially, but

there also has been a great improvement in St. Paul, Milwaukee and other Western cities. According to Mr. Lathrop, the improvement appears to be based on a firm foundation and not at all of a temporary nature. The earnings of the operating companies are feeling the full effect of these better conditions and good gains are being made over last year.

**Brooklyn (N. Y.) Rapid Transit Company.**—The Central Trust Company, Kuhn, Loeb & Company and Kidder, Peabody & Company, New York, who privately opened subscriptions for their purchase of the new issue of \$20,000,000 of Brooklyn Rapid Transit 5 per cent secured notes, noted in the *ELECTRIC RAILWAY JOURNAL* of Oct. 9, announce that the entire amount has already been over-subscribed. Only members of the old syndicate which underwrote the original \$40,000,000 of the issue were given an opportunity to subscribe, and the subscription price was 100 less  $\frac{1}{2}$ .

**Fairmount Park Transportation Company, Philadelphia, Pa.**—E. W. Clark & Company, Philadelphia, announced on Oct. 1 that they were buying coupons on the \$750,000 of first mortgage 5 per cent bonds of the Fairmount Park Transportation Company, due that day. The sale of this property subject to the bond issue was noted in the *ELECTRIC RAILWAY JOURNAL* of June 26.

**Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa.**—N. W. Halsey & Company, New York, are offering \$5,500,000 of first mortgage 5 per cent bonds of the Fort Dodge, Des Moines & Southern Railroad to yield 5.5 per cent for the eighteen later maturities and 4.5, 4.75, 5, 5.25 and 5.4 for the installments maturing in the years 1916 to 1920, inclusive. These bonds are dated Dec. 1, 1913, and are due serially on Dec. 1, \$50,000 yearly 1916 to 1937, both inclusive, and \$4,400,000 in 1938, but redeemable all or in part on any interest date at 105 and interest. They are secured by a first lien on 128.75 miles of electrified railroad, extending from Des Moines to Boone, Ames, Rockwell City and Fort Dodge and carrying on both passenger and freight business. The entire outstanding bonded debt of \$5,500,000 is said to represent 62 per cent of the replacement value of the physical property.

**Hudson & Manhattan Railroad, New York, N. Y.**—The Board of Public Utility Commissioners of New Jersey has approved the application of the Hudson & Manhattan Railroad to issue \$615,500 of 5 per cent first lien and refunding mortgage bonds to the Central Trust Company, New York, as trustee. The bonds must net the company not less than 80 per cent of par. The authorization of this issue by the Public Service Commission for the First District of New York, with the purposes of the issue, was noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 18.

**Kansas City Railway & Light Company, Kansas City, Mo.**—Kuhn, Loeb & Company, Lee, Higginson & Company and Blair & Company, reorganization managers for the Kansas City Railway & Light Company, have announced that Judge Hook has extended the time for the deposit of Kansas City Elevated Railway general mortgage 6 per cent bonds and general mortgage 4 per cent bonds and Kansas City & Westport Belt Railway first mortgage 5 per cent bonds to Nov. 10. Judge Hook has reserved decision as to whether further deposits of bonds and notes embraced in the reorganization plan other than those above mentioned shall be accepted.

**Long Island Railroad, New York, N. Y.**—The President of the Borough of Queens has approved the report of C. B. Moore, consulting engineer, in favor of leasing the tracks of the Long Island Railroad for operation of rapid transit trains from Corona to Whitestone and Little Neck. The report shows that the cost of constructing a city built line to Whitestone and Little Neck would be approximately \$6,000,000, on which the interest would be \$300,000 a year as compared to an initial rental of the railroad tracks for \$125,000 a year, with an annual increase of 6 per cent. In regard to the rental figure, the report states that the payment should be based upon the present net earnings of the company derived from the portion of its lines over which it is proposed to lease traffic rights, considering traffic on the Port Washington branch diverted to the rapid transit service and the future development of the territory. A ratio equal to the present net income of the company, increasing in such ratio as the average increase for the last five years, is deemed to offer a fair return for the rights to be leased.

**Mansfield Public Utility & Service Company, Mansfield, Ohio.**—The preferred stockholders of the Mansfield Railway, Light & Power Company, who in 1912 brought suit for dissolution against the common stockholders and secured on Dec. 28 an order of sale, have formed the Mansfield Public Service & Utility Company with \$3,500 of capital stock (par \$1), as compared to the former company's capital stock issue of \$1,000,000. At the sale the Mansfield Public Service & Utility Company bought the assets for \$10,000, subject to a \$942,000 mortgage lien. The assets of the old company were appraised at \$1,430,000. The court has confirmed the sale, and the transfer of the property is expected soon to take place. The officers of the new company are: President, F. Hertenstein, Cincinnati; vice-president, Reid Carpenter, and secretary, S. A. Foltz, both of Mansfield.

**North Branch Transit Company, Bloomsburg, Pa.**—It is reported that the Columbia County Court on Sept. 28 appointed A. W. Dusy as receiver of the North Branch Transit Company, which owns and operates 30 miles of electric railway connecting Berwick, Bloomsburg, Catawissa and Danville. The company took over the Columbia & Montour Electric Railway and the Danville & Bloomsburg Street Railway several years ago.

**Northern Electric Railway, Chico, Cal.**—The reorganization committee of the Northern Electric Railway and its subsidiary and allied corporations has addressed a communication to the creditors of all the corporations, announcing that the plan has been agreed upon and setting forth the procedure necessary to make the plan effective. The time for owners or pledgees of bonds and creditors to become parties to the agreement is now limited to Nov. 15.

**Ocean Shore Railroad, San Francisco, Cal.**—It is reported that an assessment of \$3 per share has been levied on the stock of the Ocean Shore Railroad. A previous assessment was announced in the *ELECTRIC RAILWAY JOURNAL* of April 24, 1915.

**Philadelphia & Western Railway, Upper Darby, Pa.**—The revenues of the Philadelphia & Western Railway for the fiscal year ended June 30, 1915, were \$422,806, an increase of \$50,949 over the preceding year. Of this \$401,672 (an increase of \$51,141) came from passenger traffic and \$1,003 (a decrease of \$593) from freight traffic, with other small items included in the total revenues. Operating expenses totaled \$210,040, an increase of \$1,663, leaving net operating income of \$212,766, an increase of \$49,286. The operating expenses were made up as follows: Maintenance of way and structures, \$47,785 (\$5,865 increase); maintenance of equipment, \$33,490 (\$9,428 decrease), traffic, \$2,989 (\$534 increase); power plant, \$49,415 (\$563 decrease); conducting transportation, \$60,600 (\$3,068 increase), and general, \$15,759 (\$2,186 increase). The operating ratio for the year was 49.68 per cent, a decrease of 6.36 per cent. The deductions from income decreased by \$765 to \$147,339, leaving \$65,426 to be transferred to profit and loss. During the year the company carried 2,931,693 passengers, an increase of 306,476. The receipts per passenger amounted to 13.7 cents, an increase of 0.3 cent, and the earnings per passenger car-mile 31.4 cents, an increase of 2.8 cents. The expenses per revenue car-mile were 16.2 cents, a decrease of 0.5 cent. The steam railways with which the company competes increased their passenger fare rates in December, 1914, and this favorably affected electric railway passenger revenues, including the receipts from traffic interchanged with the Lehigh Valley Transit Company. In June, 1915, the company paid off \$480,000 of floating debt by the sale of first mortgage 5 per cent bonds, due in 1960.

**Quebec Railway, Light, Heat & Power Company, Quebec, Que.**—The board of directors of the Quebec Railway, Light, Heat & Power Company, which at the last annual meeting was reduced from nine members to six, was recently increased to eleven members. The new directors are Arthur Berthiaume, Trefle Bastien, Louis J. Tarte, Arthur Ecremont and L. G. Morin.

**St. Cloud (Minn.) Public Service Company.**—The Chicago Savings Bank & Trust Company, Chicago, is offering for sale at 100 and interest, to yield 6 per cent, a block of first mortgage gold bonds of the St. Cloud Public Service Company, dated 1914 and due in 1934. These bonds are subject to redemption on any interest date at 105 and interest on or before Nov. 1, 1920; at 104 and interest on or before Nov. 1,

1925, and at 103 and interest thereafter. The bonds are secured by an absolute first mortgage on the gas, electric light and street railway properties in St. Cloud, and by the electric light and power properties in Sauk Rapids, Rockville, Cold Springs, Richmond, St. Joseph and Waite Park.

**San Diego (Cal.) Electric Railway.**—The California Railroad Commission on Sept. 28 issued an order extending the time until Oct. 1, 1916, in which the San Diego Electric Railway may issue bonds amounting to \$4,748,000 heretofore authorized. The application for this order was mentioned in the ELECTRIC RAILWAY JOURNAL of Oct. 9.

**San Francisco, Napa & Calistoga Railway, Napa, Cal.**—The Mercantile Trust Company, San Francisco, has invited bids for the sale to it on Nov. 5 of a sufficient amount of San Francisco, Napa & Calistoga Railway first mortgage 6 per cent gold bonds for the investment of \$6,764 now in the sinking fund. The bids must not exceed 105 and accrued interest and must be in by Oct. 26.

**Scranton & Wilkes-Barre Traction Corporation, Scranton, Pa.**—Lamarche & Coady, New York, are offering at par (with a 50 per cent bonus of common stock) a block of 6-7 per cent cumulative preferred stock of the Scranton & Wilkes-Barre Traction Corporation. The dividends on this issue are at the rate of 6 per cent up to 1917, and 7 per cent thereafter. This company owns all the bonds and stock, except directors' shares, of the Lackawanna & Wyoming Valley Railroad, the interurban electric railway between Scranton and Wilkes-Barre.

**Second Avenue Railroad, New York, N. Y.**—The receiver of the Second Avenue Railroad recently announced that holders of receivers' certificates would receive payment of interest for the six months ended Sept. 30, 1915, at the rate of 6 per cent per annum, upon presenting their certificates for appropriate indorsement at the Guaranty Trust Company, New York, on or after Oct. 1.

**Taunton & Pawtucket Street Railway, Taunton, Mass.**—The Supreme Judicial Court of Massachusetts on Oct. 7 affirmed a decree of the Superior Court authorizing the Federal Trust Company to foreclose a mortgage given by the Bristol County Street Railway in 1901 to secure a bond issue of \$200,000. In 1904 the company was declared bankrupt, and the receiver sold the property to persons who subsequently organized the Taunton & Pawtucket Street Railway. The latter company attacked the validity of the bond issue, but the full court now holds that all the real estate, fixtures and rights-of-way owned by the Bristol County Street Railway at the time of the receiver's appointment were covered by the mortgage and an enforceable supplemental agreement thereto.

**Tidewater Southern Railway, Stockton, Cal.**—An assessment of 10 cents per share was recently levied on the stockholders of the Tidewater Southern Railway. The assessment was effective on Oct. 4, and the sale date was set for Nov. 1.

**Washington-Oregon Corporation, Vancouver, Wash.**—It is said that plans are slowly materializing for the reorganization of the Washington-Oregon Corporation, which has for some time been in the hands of a receiver. Articles of incorporation have been filed for the Washington-Oregon Utilities Company with a capital stock of \$1,750,000, of which \$1,200,000 is to be preferred stock and \$550,000 common stock. The company is to have a life of fifty years. It will bid for the companies and assets of the Washington-Oregon Corporation when sold. Previous references to the latter company were made in the ELECTRIC RAILWAY JOURNAL of May 15 and July 31, the last noting an indefinite postponement of sale.

**Wilmington Southern Traction Company, New Castle, Del.**—The Wilmington Southern Traction Company, whose entire \$250,000 of common stock and \$100,000 of preferred stock are now owned by the Wilmington & Philadelphia Traction Company, as announced in the ELECTRIC RAILWAY JOURNAL of Oct. 9, has made a mortgage to the Wilmington Trust Company to secure \$300,000 of first mortgage 5 per cent gold bonds. The present issue of these bonds is to be \$231,000, the remainder being reserved for 85 per cent of the cost of new construction. The bonds are guaranteed principal and interest by the Wilmington & Philadelphia Traction Company.

**Worcester (Mass.) Consolidated Street Railway.**—Francis H. Dewey, president Worcester Consolidated Street Railway and also president New England Investment & Security Company, which controls the former property and the Springfield Street Railway, is reported to have said in a recent interview that there is no probability of the two sub-holding companies being merged in the immediate future. Old rumors in this connection were noted in the ELECTRIC RAILWAY JOURNAL of July 24. President Dewey now states that closer affiliation of the Worcester and Springfield properties will for the present be considered only as it relates to better service for the public. As to liquidation of the sub-holding companies and their consolidation, this will undoubtedly come in time as surely as it comes to all such companies, but it may not happen for ten years yet. It has been under consideration for at least five years and is no nearer a fact now than then.

**Youngstown & Southern Railway, Youngstown, Ohio.**—It is reported that the New York Trust Company, as trustee, has brought suit for the bondholders to foreclose the \$1,500,000 mortgage of the Youngstown & Southern Railway. The appointment of a receiver for this company was noted in the ELECTRIC RAILWAY JOURNAL of Jan. 30, 1915.

DIVIDENDS DECLARED

Green & Coates Streets Passenger Railway, Philadelphia, Pa., quarterly, \$1.50.

Kentucky Securities Corporation, Philadelphia, Pa., quarterly, 1½ per cent, preferred.

Nashville Railway & Light Company, Nashville, Tenn., quarterly, 1¼ per cent, preferred.

Public Service Investment Company, Boston, Mass., quarterly, \$1.50, preferred.

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

Youngstown & Ohio River Railroad, Leetonia, Ohio, quarterly, 1 per cent, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '15	\$189,975	\$116,770	\$73,205	\$40,214	\$32,991
1 " " '14	211,108	119,831	91,277	39,858	51,419
2 " " '15	377,463	233,585	143,878	80,654	63,224
2 " " '14	427,855	240,837	187,018	79,871	107,147

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO.

1m., Aug., '15	\$242,299	*\$153,572	\$88,727	\$40,232	\$48,495
1 " " '14	243,564	*156,117	87,447	40,193	47,254
12 " " '15	3,056,293	*1,813,726	1,242,567	470,899	771,668
12 " " '14	3,066,923	*1,952,953	1,113,970	480,077	633,893

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

1m., Aug., '15	\$285,383	*\$140,399	\$144,984	\$65,003	\$79,981
1 " " '14	272,799	*28,777	144,022	63,464	80,558
12 " " '15	2,567,923	*1,465,251	1,102,672	780,274	322,398
12 " " '14	2,491,684	*1,433,513	1,058,171	762,736	295,435

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

1m., Aug., '15	\$79,359	*\$43,415	\$35,944	\$15,962	\$19,982
1 " " '14	76,293	*41,221	35,072	15,503	19,569
1 " " '15	709,775	*465,555	244,220	188,455	55,765
1 " " '14	670,432	*460,149	210,283	184,754	25,529

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m., Aug., '15	\$166,467	*\$108,536	\$57,931	\$43,140	\$14,791
1 " " '14	180,508	*107,927	72,581	41,900	30,681
12 " " '15	2,149,747	*1,281,951	867,796	494,828	372,968
12 " " '14	2,249,944	*1,390,416	859,528	491,437	368,091

PORTLAND (ME.) RAILROAD

1m., Aug., '15	\$121,917	*\$62,414	\$59,503	\$19,947	\$39,556
1 " " '14	121,027	*59,455	61,572	19,880	41,692
12 " " '15	1,043,174	*651,087	392,087	261,501	130,586
12 " " '14	1,033,387	*643,829	389,558	253,497	136,061

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

1m., Aug., '15	\$460,861	*\$257,583	\$203,278	\$186,507	\$16,771
1 " " '14	487,264	*275,914	211,350	186,186	25,164
12 " " '15	5,668,404	*3,084,826	2,583,578	2,210,856	372,722
12 " " '14	6,575,622	*3,336,059	3,239,563	2,141,145	1,098,418

\*Includes taxes.

# Traffic and Transportation

## JITNEY JOTTINGS

### Hearing Before New York Commission on First Jitney Petition Under New Law Requiring Certificate from Commission

The application of the Troy Auto Car Company for a certificate of convenience and necessity was argued before the Public Service Commission for the Second District of New York on Oct. 6. Attorneys for the United Traction Company, Albany, opposed the petition. Witnesses for the jitney bus company testified that it has carried more than 200,000 passengers since the cars began to run on Fifth Avenue, Troy, through Lansingburgh. Attorneys for the United Traction Company contended that this was patronage to which that company was entitled in view of its large investments and its heavy expenses in Troy. Testimony showed that the bus line ran parallel to the electric railway and from one to three blocks or from 200 ft. to 1000 ft. to the east of it. The bus company sought to show the need of its service, while the traction company contended that the trolley service was adequate without the buses.

Charles H. Smith, assistant general manager of the United Traction Company, testified as to the service rendered in North Troy. He showed that the schedule provided a minimum of thirteen cars an hour north of Twelfth Street and many more to the south until more than fifty cars an hour were operating at Bridge Avenue in Troy. W. H. Elder, auditor of the company, testified as to the manner in which transfers could be obtained between the Lansingburgh lines and the other lines in Troy and to Cohoes, Waterford, Green Island, Watervliet and Albany. He said the United Traction Company operated 34 miles of single track in Troy. This was one-third of the company's total trackage. Exclusive of expenditures for equipment the company had expended in the last year \$124,000 in Troy for improvements and betterments. About \$90,000 was spent for the better equipment of the whole system. The annual payroll was \$483,000 divided among 732 employees in Troy, and \$85,350 was paid in taxes.

In the course of the testimony of Orville C. Bosca for the bus company it was brought out that the North End High School was on the line of the buses and that many of the students rode on the buses. The traction company attorneys called attention to the fact that the students had to pay the full 5-cent fare on the buses while the traction company afforded a half-fare school ticket. Mr. Bosca also testified as to the general character of the district served and the character of the patronage of the buses, their schedule and operation and their comfort and convenience. He said the buses ran on a fifteen-minute headway from 6 o'clock in the morning until midnight.

Commissioner Frank Irvine, before whom the case is being conducted, promised to make a personal inspection of the two lines through upper Troy before the next hearing, and both sides reserving the right to introduce further testimony, the case was adjourned until Oct. 15.

This petition is the first to be filed with the commission under the new law requiring its certificate for all bus lines in cities. In addition to this one there are now before the commission more than a score of applications for bus rights from cities in all parts of the State.

With the overruling of a demurrer filed by the Philadelphia city authorities in Common Pleas Court No. 4 in the suit of the Union Motor Bus Company to stop the enforcement of the jitney ordinance, a new action was begun in the same court by the People's Motor Club to restrain Director of Public Safety Dripps and the police from arresting drivers of "club" cars. An attorney representing the "club," which recently began to revive the jitney business on Broad Street, maintains that the organization has a legal right to extend its special privilege to its members, and that as a private organization it is exempt from the provisions of the jitney ordinance.

Jitney buses at Springfield, Ill., have been operating for several months without any regulation, but recently the

City Commission passed a regulatory ordinance. Immediately upon passage of this city law, A. D. Mackie, vice-president and general manager of the Springfield Consolidated Railway, announced that the company would come in under the ordinance and operate jitneys. Mr. Mackie is understood to be negotiating with a defunct jitney company in the West for the rental of a dozen motor buses, and it is said that he expects to complete the deal so as to put the buses in operation in Springfield by Nov. 1. Passengers will be given transfers from the buses to street cars and vice versa.

Several petitions, asking for an election on the proposition of placing the jitney operators under bond and other regulations, were placed in circulation at Houston, Tex., immediately following a special session of the City Council at which a resolution was adopted expressing a willingness to turn the question over to the voters for decision providing the people would petition for what they want. When the original jitney ordinance was passed the Mayor and a majority of the commissioners were opposed to the bond feature which was left out of the ordinance. Since then there has been an insistent demand by many citizens for an amendment of the ordinance to provide for a bond and other stringent regulations. The jitney men object to the election. They say that the bond feature would put them out of business, and they are preparing an ordinance, which is expected to be a compromise between those financially interested in the jitney business and the citizens at large who have been agitating regulations more strict than are imposed under the present ordinance. The jitney men's ordinance, to be submitted at an election, will reduce the license fee from \$72 to \$24 a year and provide for contributions from each jitney operator of a stipulated amount to a fund out of which will be paid indemnity for injury to passengers and pedestrians. The fund would be maintained by monthly assessments.

After jitneys have been operating in Victoria, B. C., for eleven months the City Council has passed a by-law regulating the traffic on practically the same lines as employed by other cities of the same class.

For the purpose of holding the jitney ordinance in abeyance until the next municipal election, Chauffeurs' Union No. 163 at Portland, Ore., has filed with the city auditor referendum petitions containing the signatures of nearly 12,000 citizens. Unless the Supreme Court holds that the use of the emergency clause on ordinances is valid there will be no ordinance in Portland regulating the jitneys until 1917. If the Supreme Court holds that the city has the power to pass emergency ordinances there will be immediate regulation of the jitneys under the ordinance.

The City Council of Jacksonville, Fla., has passed a jitney regulatory measure. The new bill requires among other things that any company operating more than one line of buses shall give transfers on all its lines. A bond of from \$2,500 to \$50,000 will be required, according to the number of passengers carried.

The National Indemnity Exchange, organized to write jitneys, has been licensed in Missouri, Oklahoma and Minnesota, and is now seeking entrance to Arkansas. Applications for the right to do business in California and Pennsylvania will probably follow shortly. The largest business has probably been done in Minneapolis. In many cities of the States mentioned the jitney owners are not ready to take insurance, because the owners fear the ordinances that are passed may require bonds, and they cannot afford both bonds and insurance. In many cities the bonds required are now so large that there is little chance of auto owners taking insurance. A call came recently from New Orleans, where several hundred jitney owners wanted insurance, and where it was said local ordinances would permit the writing by the National Indemnity Exchange, but Louisiana has no law relating to inter-insurance, and there, as in Texas, the exchange must wait the solving of that problem. In some States, State laws require jitneys and livery owners to give a bond which eliminates the insurance feature.

The city of Kokomo, Ind., has passed a jitney law, under which a bond of \$3,000 is required for all five-passenger cars, with \$500 added for each additional passenger carried. All buses are to be inspected by the chief of police

and not more than 5 cents can be charged for one continuous trip through the city. An annual license fee of \$50 is required for each five-passenger bus with \$10 more for each additional passenger.

### FAILURE OF AUTOMOBILE FREIGHT SERVICE

#### Well-Developed Automobile Freight Service at Los Angeles on Decline

The jitney freight business in southern California has apparently run its course and commenced a decline almost as rapid as the start, according to reports from Los Angeles. It was believed a year or two ago, according to the *Southwest Commercial Bulletin*, that the automobile truck in southern California would practically supplant the steam and electric railways in handling merchandise between Los Angeles and southern California towns. A study of the situation recently, however, developed the fact that, like the jitney bus, the interurban truck has lived but a little while and now is rapidly ceasing to be.

A few days ago the largest interurban auto truck concern operating in Los Angeles announced that service had been discontinued to two more cities—Anaheim and Fullerton. About a year ago it was possible to get auto truck service at railroad rates to practically every village and hamlet in that part of the State, including points as far distant as San Bernardino. At that time there were dozens of individual truck owners.

The scheme apparently worked well for a few months, but two difficulties developed. The first came when inexperienced and short-sighted private owners began to find that overhead and depreciation on their machines more than ate up their net receipts for handling freight. The second developed in the form of opposition from jobbers and manufacturers who were unwilling to trust valuable merchandise to irresponsible and unknown parties, who in the event of loss and damage could offer no guarantee. In an effort to obviate these difficulties a well-financed company was organized. This company bought fifty or sixty auto trucks and the opinion seemed to be general that these modern machines could be operated over southern California's wonderful system of paved roads at a profit, despite the keen competition of the steam and electric lines. The company also put up a bond for the protection of jobbers against the loss of their merchandise, thus overcoming in a measure the second objection. At first they covered nearly all points but, as indicated above, have slowly cut down until now only a few of the larger near-by towns are served. Apparently, the business did not prove profitable. When asked why the automobile truck apparently had proved impracticable in the interurban handling of merchandise here, a local jobber said:

"The rail lines have all the advantage. We may dream all we want to about competing with them, but they can handle merchandise for a great deal less money than can the auto truck. The life of a box car, they tell me, is more than twenty years. It costs \$1,400 against \$3,000 or \$4,000 for a good auto truck, and yet has four or five times the capacity. An auto truck is junk in three or four years. Another reason is that somehow the merchant expects more of the truckman than he does of the railroad. He will go to the station with his own wagon and pick up freight without the least question, but if he orders it sent by auto truck he expects it delivered on his sidewalk without additional expense. Thus the auto people give more for the money than the railroads. Another trouble is breakage. Despite the greatest care, you will find that the percentage of breakage and loss on auto trucks is materially larger than over the same mileage by rail. The railroads have the advantage of fifty years of evolved system in handling goods, and this tells in the final analysis."

Those who have advocated interurban trucking at Los Angeles express the keenest disappointment that it seems to be a failure. They say that if it cannot succeed here under present conditions it certainly cannot succeed any place else. They point out that nowhere in the world are roads and climatic conditions better than in southern California for such a test. They further point out that the experiment has been well financed and the equipment has been of the highest order.

**Directing the Fair Visitor.**—The Topeka (Kan.) Railway used large display space and received liberal co-operation from the newspapers in informing the public as to service during the free fair recently. All conductors wore badges, on which was printed "Ask Me," a custom followed by the company during all large gatherings in the city. The railway's business during the week of the fair was 350,000 fares and transfers, of which it is estimated that about 110,000 were people attending the fair. The company built a special spur into the fair grounds.

**Three Out of Four Los Angeles Hospital Cases Traffic Accidents.**—Los Angeles hospital records show that during the past twelve months more than 9000 cases out of a total of 12,000 entered at the receiving hospital in that city have been due to traffic, practically all automobile. A conference of the police officials, the police court judges and Police Surgeon Wiley followed the report that 75 per cent of all emergency cases in the city are caused by traffic. It was shown that recklessness, ignorance and irresponsibility on the part of motorists cost several hundred lives yearly. Traffic accidents alone made necessary an enlargement of the receiving hospital and the maintenance of a larger ambulance corps. As a result of the conference it was decided to increase the traffic squad, dismiss the commission form of dealing with offenders and require every lawbreaker to go to the police court.

**Service Advertised in Kansas City.**—The Metropolitan Street Railway, Kansas City, Mo., continuing its practice of using display space in the newspapers to inform the public of details of service, recently published an advertisement containing an illustration of Electric Park illuminated, and notifying patrons of the routing of cars to the park during a manufacturers' and merchants' exhibition. An even more striking and serviceable advertisement was one in reference to owl cars. This advertisement showed the outlines of an owl, the eyes formed of headlights, the feet resting on an electric car that was shown illuminated, the moon in the background. The reading matter consisted of the full schedule of owl car service on all lines, with terminals mentioned so that patrons could determine their transfer connections. The hands on a clock in the distance pointed to a few minutes past midnight.

**Inducing Excursions Into the Country.**—The Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company are making a special effort to interest people in the fall scenery which is to be viewed from the tops of the Silver Hills. At the instance of the companies the local papers in Louisville, Ky., have been taking notice of the numbers of trolley parties which have been made up to take the trip over the river. In connection with what the *ELECTRIC RAILWAY JOURNAL* said some time ago about the plans of the Louisville & Interurban Railroad to interest Louisville people in the fall scenery, one of the Louisville papers noted editorially at considerable length that the trips were well worth taking and would reward those who made them. The indulgence of the conductors toward those who brought large bunches of their flowers aboard the cars was alluded to in a most appreciative way.

**Handling Traffic at the Astor Cup Race.**—During the day of the Astor Cup Race on the new Sheepshead Bay Automobile Speedway, Brooklyn, N. Y., on Oct. 9, ample provision was made by the Brooklyn Rapid Transit System for handling the passenger traffic to and from the race. Special six-car train express service was furnished at frequent intervals over the Brighton Beach rapid transit line between Park Row, Manhattan, and the Sheepshead Bay Speedway, at which latter place a terminal had been provided for the unloading of patrons of races formerly held on the old Sheepshead Bay race track. Extra ticket selling booths were in operation at the Park Row station and sixteen ticket sellers were employed at the Sheepshead Bay terminal during the rush for trains directly after the race. An additional fare of 5 cents besides the ordinary 5-cent fare was collected at the Sheepshead Bay terminal. While the attendance at the race was estimated at 100,000 the price for seats and admission was such as to confine the race-goers largely to the automobile owning or hiring class. On this account, despite the huge attendance, the problem of transportation did not present unusual difficulties.



## Personal Mention

Mr. L. M. Taylor, Champaign, Ill., has been appointed contracting freight and passenger agent of the Illinois Traction System to be associated with Mr. E. E. Kester.

Mr. W. H. Torrey has been appointed purchasing agent of the Toledo Railways & Light Company, Toledo, Ohio, succeeding Mr. H. W. Thompson, who has returned to Denver.

Mr. Harry O'Brien, superintendent of overhead of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been appointed by the company to the position of superintendent of telephones, interlocking plants and bonding.

Mr. James Couzens, who has resigned as vice-president and general manager of the Ford Motor Company, Detroit, Mich., is president of the Street Railway Commission of that city, which has conducted the negotiations with the Detroit United Railway for the sale of the lines of the company in Detroit to the city. Approval of this purchase is to go before the voters at the election in Detroit on Nov. 2.

Prof. W. S. Franklin, who recently resigned as head of the department of physics of Lehigh University, South Bethlehem, Pa., will spend the fall and winter in making a lecture tour through the West and South. The lectures will be given principally in universities and technical schools and will cover appropriate topics such as wave motion, mechanical analogies in electricity and magnetism, phenomena of fluid motion, etc. Professor Franklin has been connected with Lehigh University almost continuously since 1897, having previously taught at the University of Kansas and the Iowa State College. He is the author of a number of books on physics and electrical engineering.

Mr. John J. Cooper, who was elected president of the Colorado Electric Light, Power & Railway Association at its Glenwood Springs convention, is secretary and operating manager of the Gilpin County Light, Heat & Power Company, the Arkansas Valley Electric Company and the Brush Light & Power Company and is vice-president of the Hinsdale Mining & Development Company. He has lived twenty-five years in Colorado and has always been engaged in the electrical business, having worked his way up from office boy and stenographer. He was at one time manager of the Trinidad Gas & Electric Company, Trinidad, Col., and is at present stationed in Denver as manager of the supply department of the Mountain Electric Company.

Mr. H. O. Marler, whose appointment as traveling passenger agent of the Pacific Electric Railway, with headquarters at Los Angeles, Cal., was noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 25, started railroading at the age of fifteen as office boy and clerk in the general auditor's office of the Santa Fé Railroad in Los Angeles, where he remained until July 31, 1904. On that date he resigned to enter the service of the Los Angeles Pacific Railroad, one of the first electric railroads of California. With the latter company Mr. Marler acted as clerk, receiving cashier, assistant agent and agent respectively until the consolidation of the Los Angeles Pacific Railroad and the Pacific Electric Railway, when he was appointed to the position of ticket stock clerk. Subsequently he served as traveling traffic inspector and chief clerk in the general passenger department, remaining in the latter position until his recent appointment as traveling passenger agent.

Mr. E. L. Moore, superintendent of transportation of the Evansville (Ind.) Railways, has in addition been appointed roadmaster of the company to succeed Mr. E. W. Wheeler. Mr. Moore's first railway experience was with the Johnstown (Pa.) Street Railway, the employ of which he entered in 1900 as a trainman. Later he accepted a position with the Cambria Steel Company, and in 1902 he moved to Columbia, Ind., and accepted a position as conductor on the lines of the Indianapolis, Columbus & Southern Traction Company. During the construction of the extension from Columbus to Seymour in 1907 Mr. Moore worked as construction foreman. On Aug. 1, 1908, he accepted the position of trainmaster of the Evansville Railways, and in July, 1912, he was appointed superintendent of transportation, his control extending over

the city lines of Henderson, Ky., operated by the Henderson Traction Company. On the resignation of Mr. Wheeler as roadmaster of the company Mr. Moore assumed the duties of that position.

Mr. Orin B. Coldwell, general superintendent of the light and power department and electrical engineer of the Portland Railway, Light & Power Company, Portland, Ore., heretofore in charge of the construction and operation of the light and power department, will have added to his duties those of the commercial department which have been discharged by Mr. F. W. Hild, former general manager, who has assumed the office of vice-president and general manager of the Denver Tramways. No general manager will be appointed to take the place of Mr. Hild, but the duties heretofore discharged by him will be divided among other members of the executive staff. Mr. Coldwell has been connected with the electrical end of the company from boyhood, except during the time he was at Stanford and Cornell Universities. Mr. Coldwell has resided almost entirely in Portland. He is thoroughly familiar with the operations of the company, having worked his way up from the lower ranks through positions of foreman and superintendent in nearly all of the construction done by the Portland Railway, Light & Power Company and its predecessors.

Mr. J. J. Rockwell has rejoined the staff of the McGraw Publishing Company, Inc., publisher of the *ELECTRIC RAILWAY JOURNAL*, in the capacity of advertising counsellor to that company and its customers, and will make his headquarters at the company's general offices in New York. Since Mr. Rockwell's previous association with the McGraw Publishing Company, during the years 1910 and 1911, he has been engaged in the advertising agency business in Chicago in connection with the Crosby-Chicago Advertising Agency. In earlier years he was associated with the Mahin Advertising Company and the Long-Critchfield Corporation, both well-known advertising agencies in Chicago. His work as an advertising expert has frequently excited highly favorable comment and his long experience in the general agency business, as advertising manager, in publishing fields, and as counsellor for advertisers in many lines of business, and his special and unusual experience in industrial and technical fields, should enable him to be of peculiarly valuable service to the McGraw Publishing Company and its customers.

Mr. T. P. Kilfoyle, whose election as president of the American Electric Railway Accountants' Association on Oct. 6 at the San Francisco convention was noted in the *ELECTRIC RAILWAY JOURNAL* of Oct. 9, is auditor of the Cleveland (Ohio) Railway, operating 344 miles of line and 1157 motor cars and 426 other cars in Cleveland, "The Sixth City," and vicinity. He has been auditor of the railway since March 1, 1910, and previous to that time was connected with the auditing department of the company for a number of years except during the short interval while the Cleveland Electric Railway was being operated by the Municipal Traction Company during the administration of former Mayor Tom



T. P. KILFOYLE

L. Johnson. Prior to the time when he became connected with the Cleveland Railway, Mr. Kilfoyle was general auditor for the Warren Bicknell Company, Cleveland, Ohio, which operated the Cleveland, Lake Shore & South Bend Railway, the Youngstown & Ohio River Railway and the Springfield & Xenia Railway. Mr. Kilfoyle has been connected with the street and electric railway business for the last eighteen years. Mr. Kilfoyle was born in Cleveland on June 28, 1868. He has been first vice-president of the American Electric Railway Accountants' Association for two terms and has served in other years on the executive committee of the association.

# Construction News

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

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

## RECENT INCORPORATIONS

\*Bellevue & Western Railway, Bellevue, Mo.—Incorporated in Missouri to construct a railway from Graniteville to Bellevue, about 3 miles. Capital stock, \$40,000. Incorporators: William R. Orthwein and Louis Hudson, St. Louis, and J. H. Long, Bellevue.

\*Washington-Oregon Utilities Company, Vancouver, Wash.—Incorporated in Washington to take over the property of the Washington-Oregon Corporation to be sold under foreclosure. Capital stock, \$1,750,000, of which \$1,200,000 is to be preferred stock and \$550,000 common stock.

## FRANCHISES

Los Angeles, Cal.—The City Railway has received a franchise from the Council for the construction of a line on South Park Avenue from Thirtieth Street to Slauson Avenue.

San Jose, Cal.—The San Jose Railroads has received a franchise from the Council for the construction of a modern standard-gage line from the northeasterly city limits of San José to Linda Vista.

Coeur d'Alene, Idaho.—The Spokane & Inland Empire Railroad has received a franchise from the Council to construct a single-track steam and electric railway along certain streets in Coeur d'Alene.

Rockport, Ind.—The Evansville Railways have received a franchise from the Council to construct a line on Washington Street to the bank of the Ohio River.

Franklin, Mass.—The Milford, Attleboro & Woonsocket Street Railway has asked the Council for a franchise to relocate its tracks on Central Street, Franklin.

Buffalo, N. Y.—The International Railway has asked the Council for a franchise on Bailey Avenue between Kensington Avenue and East Delavan Avenue and between East Ferry Street and Seneca Street. The company holds franchises to all of Bailey Avenue except between the streets named. It desires permission to operate double-track lines over the entire length of Bailey Avenue, thus linking the south with the north in an unbroken line.

Utica, N. Y.—The New York State Railways has received a fifty-year franchise from the City Council of Utica to extend its Elm Street line through James Street to Neilson Street.

Elyria, Ohio.—The Cleveland, Southwestern & Columbus Railway has received a twenty-five year franchise from the Council to operate a railway in Elyria. Concessions gained by the city include twenty-minute city service and six tickets for 25 cents.

Pawtucket, R. I.—The Rhode Island Company has asked the Council for a franchise to relocate its present track and lay additional track on Broad Street from Exchange Street to Miller Street, Pawtucket.

Dallas, Tex.—The Dallas Northwestern Traction Company and the Dallas Southwestern Traction Company have received from the Board of City Commissioners an extension of six months on their franchises in which to begin construction of their proposed lines to Denton on the north and Glen Rose on the south. [May 1, '15.]

Dallas, Tex.—The Northern Texas Traction Company has received a franchise from the Council to operate a double-track line on Jefferson Street between the Oak Cliff viaduct and Commerce Street.

Steilacoom, Wash.—The Tacoma Railway & Power Company has received a fifty-year franchise from the Council to build an extension from Steilacoom Boulevard to Starling Street, along Starling Street to Steilacoom Street, along Steilacoom Street to Union Avenue and along Union Avenue to Lafayette Street. The franchise also permits

the abandonment of the old line along Lafayette Street between Wilkes Street and the town limits.

## TRACK AND ROADWAY

Florence & Huntsville Interurban Railway, Florence, Ala.—A preliminary survey has been made by this company between Florence and Elk River, 27 miles, and it is expected that the entire survey between Florence and Huntsville will be completed soon. Thurston H. Allen, Florence, secretary. [March 20, '15.]

Pacific Electric Railway, Los Angeles, Cal.—This company has filed a petition with the California Railroad Commission for permission to construct more than twenty grade crossings and one under-grade crossing along the Hawthorne cut-off between Watts and Redondo Beach, a franchise for which has been granted.

San José (Cal.) Railroads.—Work has been begun by this company on the construction of a modern standard-gage electric line from the northeasterly city limits of San José to Linda Vista, in place of the present narrow-gage line. The old line will be used from Linda Vista to Toyon.

\*Coeur d'Alene, Idaho.—The project of an electric railway system joining the principal towns of the Coeur d'Alene district and extending to Coeur d'Alene has been revived. Prior to the present European war the enterprise had been successfully financed. French capitalists had sent their engineer here to report on the proposed road, and the report was favorable to early construction. Among the local people interested are Herman J. Rossi, Hugh Toole and William Fishinger, all of Wallace.

Lewiston-Clarkston Transit Company, Lewiston, Idaho.—Work will be begun by this company within ninety days on the construction of a 1¼-mile extension in Clarkston. The route to be followed will be south on Sixth Street to Highland Avenue and west on Highland Avenue to Thirteenth Street. The company has already asked the Council for a franchise to construct and operate the proposed line.

Chicago & Milwaukee Electric Railroad, Chicago, Ill.—This company will remove the old rails in Washington Street, Waukegan, from Sheridan Road to Spring Street. These rails were used when the old Bluff City Electric Railroad operated cars in Waukegan. The company has ordered from the Wisconsin Bridge & Iron Company 225 tons of material for the construction of a bridge near Milwaukee.

Keokuk-Jefferson City Electric Railway, Keokuk, Iowa.—In connection with this company's proposed line from Keokuk, Iowa, to Jefferson City, Mo., a meeting was held in Paris, Mo., at which a committee was appointed to raise \$1,350 among the citizens for the survey of the line through Paris. Practically all of the amount has been raised. Funds for the survey have already been subscribed in Clark and Lewis Counties and are being solicited at Shelbina. H. W. Knight, Chicago, is interested. [Oct. 9, '15.]

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—Work on this company's extension to Lawrence is progressing rapidly and it is expected that cars will be operated into Lawrence by the first of the year. Construction of the line to Topeka will be begun as soon as the Lawrence section is completed and operating.

Arkansas Valley Interurban Railway, Wichita, Kan.—This company's extension to Hutchinson is practically completed and it is expected that the track will be ready for the operation of cars to the city limits within five weeks.

\*Baltimore, Hancock & Berkeley Springs Railroad, Baltimore, Md.—Rights-of-way are being purchased for a proposed electric railway to be built from Hancock to Berkeley Springs. Littleton F. Johnson and J. M. Savin, Baltimore, are interested.

St. Paul (Minn.) Southern Electric Railway.—Grading has been begun at White Rock on the Zumbrota extension of the St. Paul Southern Electric Railway. The completion of the line to Rochester will give this company the shortest route to that city from St. Paul, 86 miles.

Hattiesburg (Miss.) Traction Company.—An agreement has been reached between the citizens of Hattiesburg and the Hattiesburg Traction Company whereby the company will extend its lines to the Woman's College at once.

**Metropolitan Street Railway, Kansas City, Mo.**—Work has been begun by this company on the construction of tracks on Main Street from Twenty-fourth Street to Twenty-seventh Street, through the big cut south of the Union Station.

**City Electric Company, Albuquerque, N. M.**—This company has taken over the property of the Albuquerque Traction Company sold at a special master's sale on Oct. 1. George Roslington is president of the new company and Lloyd Sturges secretary and treasurer.

**New York Municipal Railway Corporation, Brooklyn, N. Y.**—The Public Service Commission for the First District of New York has approved the contract and plans submitted by this company for the construction of foundations and structure of Section No. 2 of the Jamaica elevated extension. This comprises 2.2 miles of two-track elevated railway extending from Walnut Street along Jamaica Avenue to Cliffside Avenue. The commission also approved the form of contract submitted by the company for the erection of steel for additional tracks on the Myrtle Avenue line from Willoughby Avenue to Palmetto Street, as well as for certain additional work on the Lutheran Cemetery line.

**New York State Railways, Syracuse, N. Y.**—Work has been begun by this company raising and improving its track on Douglass Street between Graves and Oak Streets, Syracuse. The work will cost about \$9,075.

**Cleveland & Ohio Central Electric Railway, Cleveland, Ohio.**—Steps are being taken to secure final right-of-way for this company's proposed line. Construction will be begun as soon as the right-of-way is obtained. E. A. Norton, Cleveland, general manager.

**Oklahoma & Interstate Railway, Oklahoma City, Okla.**—Plans for the proposed interurban line between Galena, Baxter Springs, Columbus and Miami were furthered at a recent meeting of the Galena Commercial Club. The company is ready to begin construction on the line as soon as the \$10,000 bonds asked from Galena are voted and the right-of-way obtained. A committee was appointed to go over the proposed route and obtain an estimate of the cost of purchasing terminals and obtaining a right-of-way to Baxter Springs, 5 miles west of Galena, and after the estimate is made to go before the Council and ask it to call a bond election. [Sept. 25, '15.]

**Sandwich, Windsor & Amherstburg Railway, Windsor, Ont.**—This company will make application to the Ontario Railway Board for permission to extend its tracks on Ottawa Street and Strabane Avenue, Ford City.

**Rhode Island Company, Providence, R. I.**—Plans are being considered to double-track this company's line on Chalkstone Avenue from Smith Street to Mount Pleasant Avenue. The plan also involves the possible extension to Unit Street.

**\*Sumter, S. C.**—Plans are being considered to build an electric railway from Sumter to Shiloh, thence via Turbeville to Olanta, about 32 miles. It is reported that the Chamber of Commerce of Sumter is interested. E. I. Reardon, Sumter, is secretary of a committee in charge of surveys, rights-of-way, etc.

**Carolina, Greeneville & Northern Railroad, Greeneville, Tenn.**—Bristol has been definitely decided upon as the terminus of the Carolina, Greeneville & Northern Railroad. Bristol and Sullivan County subscribed and paid nearly \$20,000 toward the preliminary survey, options on rights-of-way, terminal and factory sites, etc. The new line will be built between Bristol and Knoxville via Kingsport, Newport and Sevierville. The new road will use electric power but will be equipped to handle freight cars of the connecting steam roads. [July 10, '15.]

**Houston, Richmond & Western Traction Company, Houston, Tex.**—Engineers will be in the field within the next thirty days locating the line for the Houston, Richmond & Western Traction Company and actual construction will be begun within sixty days thereafter. The line will extend between San Antonio and Houston, entering each of these cities over the local traction company's rails. Passengers and express will be handled. Motive power will be supplied largely from the Guadalupe River at Seguin and

Gonzales. Two routes are being considered for the interurban, one by way of Seguin, Gonzales and Columbus, and known as the northern route, the other by way of Sutherland Springs, Cuero and Yoakum, and known as the southern route. E. Kennedy, who is promoting the line, has already obtained bonus and stock subscriptions amounting to nearly \$300,000. He anticipates raising an additional \$200,000, represented by town sites and right-of-way. [Sept. 25, '15.]

**Ogden, Logan & Idaho Railway, Ogden, Utah.**—This company has completed its extension from Ogden to Preston and operation will soon be begun.

**Petersburg & Appomattox Railway, Petersburg, Va.**—The grading on the Petersburg & Appomattox Railway, which is expected to link Petersburg with Hopewell and City Point on or before Jan. 1, is progressing rapidly. The work has been completed as far as Cedar Level, and a considerable amount of material to be used in the construction of the road has been delivered. Cross-ties are being spread along the right-of-way and the laying of rail will be commenced at Cedar Level within a few days. [Aug. 21, '15.]

**Chicago & Wisconsin Valley Railroad, Madison, Wis.**—It is reported that this company will resume construction at once on its line between Portage and Madison. J. E. Jones, president. [June 19, '15.]

#### SHOPS AND BUILDINGS

**Wilmington & Philadelphia Traction Company, Wilmington, Del.**—The power house of the People's Railway at Sixth and Hawley Streets is now being converted into a carhouse by the Wilmington & Philadelphia Traction Company. The merged systems will receive power from the plant of the company on the Brandywine. The carhouse at Delaware Avenue and duPont Street is being enlarged 30 ft. x 139 ft. The new shops, which will be 30 ft. x 100 ft., will also be located at Delaware Avenue and duPont Street.

**Union Traction Company, Indianapolis, Ind.**—This company will remove its station at Alexandria, Ind., to a point nearer the business section of the city.

**Arkansas Valley Interurban Railway, Wichita, Kan.**—Work has been begun on the construction of this company's \$10,000 terminal at Hutchinson.

**Lehigh Traction Company, Hazleton, Pa.**—Work has been begun by this company on the construction of a new carhouse near Hazle Park.

**Philadelphia & Western Railway, Upper Darby, Pa.**—Steps will soon be taken toward the erection of a new station at Norristown for the joint use of the Philadelphia & Western Railway and the Lehigh Valley Transit Company, whose lines connect at that point, to relieve the congestion now caused by the loading and unloading of cars of both lines in the middle of the street. At a conference of railway officials and the highway and railway committees of the Norristown Borough Council, it was the unanimous judgment that the station should be an overhead structure. The engineers of both companies are now working on the plans.

**Ogden, Logan & Toledo Railway, Ogden, Utah.**—Among the improvements to be made by this company is the construction of carhouses, storehouses and repair shops amounting to from \$145,000 to \$160,000.

#### POWER HOUSES AND SUBSTATIONS

**Cumberland & Westernport Electric Railway, Cumberland, Md.**—This company has purchased additional coal land at Reynolds, adjacent to a mine that has supplied the power house at that point for twelve years. It is expected that considerable saving will be effected by the operation of the new mining property.

**Burlington (Vt.) Traction Company.**—This company will install one 500-kw. 600-volt d.c., six-phase, 60-cycle, 900-r.p.m. compound-wound a.c. self-starting rotary converter; three 165-kva., 2400-volt, high-tension to rotary converter voltage low-tension, single-phase 60-cycle O. I. S. C. transformers and one two-panel switchboard. The apparatus has been ordered from the Westinghouse Electric & Manufacturing Company.

# Manufactures and Supplies

## ROLLING STOCK

Des Moines (Iowa) City Railway is reported as planning to purchase twenty-five new steel cars. This item has not been confirmed.

Trenton & Mercer County Traction Corporation, Trenton, N. J., is reported as preparing specifications for ten new city cars. This item has not been confirmed.

Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa, has added a new single-truck folding step car to its Fort Dodge Street Railway equipment. The car is of the same type heretofore used by this company.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y., was noted in the *ELECTRIC RAILWAY JOURNAL* of Oct. 9 as having issued specifications for the new double-truck cars. These cars will be 45 ft. 1½ in. over all and will be of all-steel construction, steel carlines being used. The United Gas & Electric Engineering Corporation, New York, which prepared the specifications, has designed the car closely after the type of the new New Orleans cars, except that it will be slightly shorter and will have cork insulation for its roof and sides. These cars will be for city service in Erie, Pa.

## TRADE NOTES

W. McKay White has resigned as sales manager of the Esterline Company, Indianapolis, Ind., manufacturer of "Golden Glow" headlights.

Johnson Fare Box Company, Chicago, Ill., has received an order to equip with fare boxes the ninety-two new cars ordered by the Connecticut Company, which will be operated in New Haven, Bridgeport and Hartford.

W. S. Miller, who resigned as general superintendent of the St. Louis Car Company last November, has moved from his home in St. Louis and has purchased a 140-acre improved stock farm at St. James, Mo. After this enterprise has been thoroughly organized Mr. Miller hopes to locate with some company either in the manufacturing or selling end.

Root Spring Scraper Company, Kalamazoo, Mich., has received an order to equip all the cars of the Michigan Railway's 2400-volt third-rail line from Kalamazoo to Grand Rapids with its No. 3 pneumatically operated scraper. This completes the equipment of all city and interurban cars owned and operated by the Michigan United Traction Company and the Michigan Railways.

Western Electric Company, New York, N. Y., has leased the thirteenth, fourteenth and fifteenth floors of the new Telephone & Telegraph Building at 195 Broadway, to be occupied by the general departments now located at New York, with the exception of the engineering and patent departments. It is expected that the removal into this building will take place during the summer of 1916.

Union Switch & Signal Company, Swissvale, Pa., announces the appointment of George A. Blackmore as general sales manager in charge of the activities of the New York, Montreal and Atlanta offices, with headquarters at New York. Resident Managers A. Dean of New York, T. H. Patenall of Montreal and Sales Engineer Brastow of Atlanta will report to him. He will eventually be located in Swissvale in charge of sales, construction and commercial engineering.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., announces that, effective Aug. 1, the sale of the standard product of the Westinghouse Machine Company will be handled by the prime mover department of the electric company. E. H. Sniffin, formerly vice-president and sales manager of the Westinghouse Machine Company, has been appointed manager of the prime mover department, and as such will direct the sales of the product of this company as he has done in the past. Mr. Sniffin became associated with Westinghouse, Church, Kerr & Company in 1888, first as salesman and afterward as sales manager. In 1903, when the Machine Company organized a sales department, Mr. Sniffin was made sales manager. Subsequently in 1905 he was elected vice-president, which posi-

tion he held at the time of the organization of the prime mover department of the electric company. A marine department of the Westinghouse Machine Company has also been established, with headquarters at East Pittsburgh, which will handle all matters pertaining to the sale of marine refrigeration and main propulsive machinery for vessels and auxiliaries using this class of apparatus.

## ADVERTISING LITERATURE

General Fire Extinguisher Company, Providence, R. I., has issued a circular describing the successful results obtained from installing the Grinnell automatic sprinkler in a large number of plants and factory buildings.

Internal Combustion Locomotive Company, Inc., Wilmington, Del., has issued Bulletin No. 1 describing its internal-combustion locomotives and railway motors, for railway and street car service, also for industrial usage. Fuel for this method of operation may be gasoline, kerosene or distillates. The locomotives are built for heavy grades and sharp curves and range in weight from 5 tons to 50 tons. Only one man is necessary for operation.

S. K. F. Ball Bearing Company, New York, N. Y., has issued an ingenious advertising circular entitled, "Read What a Few Users Say About S. K. F. Ball-Bearing Hangers," which includes a large number of testimonial letters as to the effective use of the ball-bearing hangers. The circular is prepared in quick reference form. The bottom of each page extends beyond the preceding page. On each margin of extension the substance of each testimonial letter is summed up in one sentence, so that each summary is legible without turning over the pages of the circular.

C. A. Wood-Preserver Company, Inc., St. Louis, Mo., has issued a sheet describing examples of the longer life of treated as compared with untreated ties. This contention is well supported by an illustration showing the difference of condition between a treated and an untreated tie of equal time length of service, which were removed from a test track of the Denver City Tramway Company. Mention in the folder is also made of successful results obtained from service on the Asheville (N. C.) Street Railway, Los Angeles (Cal.) Railway, Ohio Electric Railway, Galveston (Tex.) Electric Company, Minneapolis (Minn.) Street Railway, Union Electric Light & Power Company and Greenville (S. C.) Traction Company.

## JOVIANS HOLD ANNUAL CONVENTION IN CHICAGO

Business sessions addressed by prominent men in the electrical industry and extraordinary entertainment features marked the thirteenth annual convention of the Jovian Order held at the Hotel Sherman, Chicago, Ill., Oct. 13, 14 and 15, 1915. Reigning Jupiter Homer E. Niesz and his general convention committee did themselves proud in preparing and conducting the business and entertainment program of the convention. The principal addresses were delivered by E. W. Lloyd, vice-president Commonwealth Edison Company, Chicago, and president of the National Electric Light Association, who spoke on "Extending the Utilization of Electrical Energy"; H. M. Byllesby, president H. M. Byllesby & Company, who spoke on "The Public Utility as a Factor in the Development of a City"; Ernest McCleary, past president National Electric Contractors' Association, who spoke on "Safety in Electrical Installations"; John F. Gilchrist, vice-president Commonwealth Edison Company and president Electric Vehicle Association of America, spoke on "Contingent Benefits from Promotion of Electric Vehicle Sales," and H. L. Doherty, president Doherty Operating Company, who addressed the association on "The Relation of the Jobber to the Electrical Industry." Entertainment features included a luncheon tendered by the association of commerce of Chicago Oct. 13, where an address was delivered by Dr. Frank W. Gunsaulus; a reception and dance given by the executive officers and the Past Jupiters' Association Wednesday evening; a luncheon tendered by the Electric Club-Jovian League of Chicago, Thursday; degree team competition at Powers' Theater, Thursday afternoon; annual rejuvenation with a class of approximately 300 candidates, Thursday evening, and the Feast of Jupiter, Friday evening.