

Electric Railway Journal

Published by the McGraw Publishing Company, Inc.
Consolidation of STREET RAILWAY JOURNAL AND ELECTRIC RAILWAY REVIEW

Vol. XLV

NEW YORK, SATURDAY, FEBRUARY 20, 1915

No. 8

THE STATUS OF THE ENGINEER

It was a notable group of engineers that gathered on the auditorium platform at the home of the United Engineering Societies in New York last Wednesday evening to define the status of the engineer and to suggest means for improving it. The group included the presidents of two great electrical manufacturing companies, a chief telephone engineer and four past presidents of the electrical, civil and mechanical national societies, all prominent in their respective fields and two of them also as educators. Surely the composite picture drawn by these men without collaboration ought to be worth more than a passing glance. To epitomize our impressions of the picture it can be said first that the engineer as a man is more important than the engineer as a technician. It was clearly shown that the nature of engineering compels accuracy and honesty in all technical matters and this fact produces the same qualities in the engineer's character; that no amount of specious argument can offset the inexorable test of the laws of nature. But the status, or reputation of the engineer depends partly upon his personal qualities, largely inherited, and partly upon his activity in taking a practical interest in the large problems of his community and his profession. To be of benefit to the auditor a pronouncement like that of the A. I. E. E. symposium must suggest action. The practicable and desirable thing for the conscientious engineer to do is, by introspection, to determine whether or not he is doing what he can personally to enhance the reputation of the profession as a body of effective citizens and then to map out his course by the result.

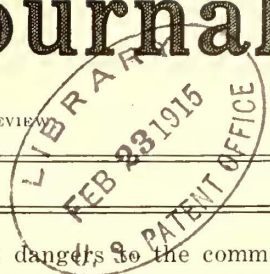
REGULATION FOR THE JITNEY BUS

One feature of the jitney bus situation that stands out above all others is the need for regulation. Primarily the new conveyance aims only at competition with the much-regulated street railway for the cream of its traffic—a fact borne out by the naïve testimony of a jitney operator in one of the western cities to the effect that he couldn't operate on streets other than those occupied by railway tracks because he could keep his car full only by picking up groups of people who were waiting for the street cars. From the standpoint of ethics it is manifestly impossible to enforce the principle of regulation for the electric railway and to permit its competitor to go free of all restraint. Unfortunately, however, ethics are frequently a poor basis for argument, and regulation of the jitney, at least during its early stages, will probably come about not so much through a spirit of fair play as through the realization by the affected cities that the advent of the unrestricted

jitney involves more direct dangers to the community than the abandonment of outlying and unprofitable electric railway lines. Already reports of extreme vehicular congestion are heard from the western towns where appreciable numbers of jitneys are operating, and fatalities to pedestrians struck by the recklessly driven vehicles have brought home generally the need for imposing responsibility by means of indemnity bonds. This matter is a serious one for every citizen to consider. If a man is injured while on the public thoroughfares he can look for damages only to the owner of the vehicle that hits him, and if the owner's only asset is a second-hand automobile, the victim is not likely to be well compensated. This is a point which might well be emphasized in communities where the advent of the jitney has been hailed as a complete solution for the transportation problem. Another is that, to the jitney, a schedule has not even the value of a "scrap of paper," one driver admitting with perfect frankness that he never completed his advertised route in rush-hours because it wasn't profitable.

WORDING OF NOTICES TO THE PUBLIC

The use of public notices on railway property is essential to safe and expeditious service. The wording of these often leaves much to be desired. "This way out," "Leave by the front door," "Keep to the right," etc., do not necessarily indicate curtness in the attitude of the management, but patrons would be better pleased, unconsciously perhaps, if the signs were more diplomatically worded. If brevity is sought a simple notice, "Entrance" or "Exit," answers the same purpose and cannot offend the most peevish passenger. The liberal use of the word "please" in the proper places involves little extra cost for lettering and is an effective lubricant in eliminating friction in the contact between management and public. The term "proper places" was used advisedly above. There are sign-boards upon which it would be out of place or incongruous. "Look out for the locomotive" is none too curt to startle the heedless pedestrian—it suggests the imperativeness of appropriate action. "Watch your step" would be weakened by "politeness." The criterion for notice wording appears to be this: Where the patron is asked to do a favor for the convenience of the company and his fellows a notice should be phrased much as a verbal request would be, with due allowance for brevity. Where the favor is to the passenger, particularly if it relates to his safety, the wording should be chosen primarily on the basis of securing attention. Harshness in an automobile horn is justified, but there are places where deference is preferable to emphasis.



THE COMPANY SECTION AND INDIVIDUALISM

We have discussed various phases of the company-section movement, but one point which has not been mentioned is the development of the individual employee. After such a section has been organized, experience shows that a great many surprises in the form of latent ability will be discovered, the reason being that hitherto there had been no channel through which it could express itself. In a large industry like electric traction in this country, it is of the utmost importance that the prudent managers or department heads surround themselves with efficient assistants. Moreover, these understudies should be selected from the ranks rather than from outside sources, because of the moral effect such a plan will produce. Some railways have been averse to publicity in any form, and this policy has tended to suppress individualism among the employees. But the company-section movement encourages these employees, especially among the younger men, who have ideas which may be of help to the company, to demonstrate their ability to solve difficult service problems. Many instances, no doubt, can be recalled where employees have shown an inaptitude for certain work, but a change in their duties has revealed unlimited capacity. The broad policy of showing no favoritism in the company-section work is also certain to result in improvement in the personnel of any organization. Other opportunities assisting in this development present themselves from time to time, and the individual employee should be encouraged by and under the direction of his superior to take advantage of every occasion.

SUGGESTED CHANGES IN THE CODE

An extended discussion of the code of principles, written by Oscar T. Crosby, is published elsewhere in this issue in the form of a letter to the editors. Although we do not agree with all of the author's contentions, we are glad to give space to this communication, partly because of Mr. Crosby's attainments and service in the field, and partly because we consider with Mr. Crosby that the JOURNAL should be the forum where those who wish to better the conditions in the industry should have an opportunity to express their views, whether or not these views coincide with those of the editors. Again, some of the changes suggested by Mr. Crosby, perhaps all of them, may have occurred to others, and it is well to have expression given to them so that they can be analyzed and discussed. Before taking up the suggestions in detail, however, it is well to state that in the present code, as we understand it, brevity was considered one of the essentials. The purposes for which it was intended necessitated that it should be kept within small compass. This made it impossible for the committee to expand on any of the principles and give the reasons for the wording used.

Mr. Crosby's objections to the code are principally on two points. The first of these is in regard to the return which a public utility should be allowed to earn. The second is in regard to labor disputes. These two points will be considered in their order.

The code says that in an appraisal of an electric railway for the purpose of determining reasonable rates all methods of valuation should have due consideration. This means, as Mr. McCarter explained in our issue of Nov. 7, a consideration of the investment, the reproduction cost new, the amount and market value of the stocks and bonds, the going concern value and all intangible elements which have served to bring the physical property and the business of the company to its present state of development. After this is done, and the rate for service to give a fair return on the value so obtained, all things considered, is found to be abnormally high, it may properly be reduced, but if found to be abnormally low it should be raised. Mr. Crosby, on the other hand, believes that where a specific charge for service has been agreed to, the railway and the public should stand or fall by that. Where no specific service charge appears in the contract, he says: "The investor is not to be forced into loss by arbitrary exercise of power in fixing rates."

The discussion, therefore, centers largely, as we understand it, on the case where there is a specific charge for service, such as exists on most city lines. Is it for the benefit of the public and the public utility that this rate should be always fixed, for eternity in the case of a perpetual franchise, or should either side under restrictions be able to petition for a change in the rate? Again, are there not precedents to show that the public, acting through the legislature or other authoritative body, will reduce rates for public utility service when they are abnormally high? If this is being done where the rates are high, or are considered to be so by the public, should not the public utility make the claim that the opposite should prevail and its rates should be increased when they are abnormally low?

The idea of a flexible charge for public utility service, depending on the rate of return earned by the public utility and the quality of service, is comparatively new, and the argument has been made that it is theoretically unsound because it is equivalent to a guaranteed return on the capitalization of the public utility, irrespective of the quality of its management. We think this claim is incorrect. But if the state is to exercise authority over rates for service, as it seems disposed to do and practically has to do on account of the monopolistic character of public utility service, it can take into consideration the questions of management, capitalization, return requisite to attract new capital, etc., in establishing its service rates. Under such a system there would be fewer bonanzas and fewer bankruptcies among public utilities than under the "common law" system of free competition and rates which the traffic will bear. But for good or evil, the former times when the public utilities could be conducted with the same freedom from restraint as a private business have passed. The present plan of state control of rates and service may not be the ideal system, but it at least is better for the community as well as the companies than municipal ownership, which seems now practically the only alternative. For these

reasons we prefer the thought as expressed in the code on this point to Mr. Crosby's proposed substitute.

Let us pass now to the criticism of Mr. Crosby upon the seventh principle, which is the one on labor. We think that there is a difference in meaning which is an essential one between the principle as it appears in the code and the wording suggested by Mr. Crosby. Mr. Crosby's principle reads: "Electric railway companies, being public servants regulated by public authorities, should be protected from all forms of violence or intimidation during strikes." This, of course, is entirely proper, but protection against violence or intimidation is a kind of protection to which every employer of labor is entitled. The code goes further than this and says that owing to its public character an electric railway company is entitled to something more, just what it does not state, but this added protection may be simply a sympathetic public opinion. As Mr. McCarter said in his article in our issue for November 7, "a strike among the employees of such a railway company should be regarded with as much public disfavor as a strike in the police department of the municipality." Owing to the public character of his services the railway employee should recognize a duty to the public as well as to his employer and take a justifiable pride in it. As it reads, the code does not require the service to be put upon a military basis nor does it recommend any interference with an employee's freedom to stop work in a reasonable manner.

Mr. Crosby concludes his letter with the suggestion that before any changes are introduced in the code an endeavor should be made to interest other public utilities in the adoption of a standard set of principles applying to all. To this proposal that the other classes of utilities should co-operate in formulating the "rules of the game," as described by President Wilson, there can be no dissent. Such a plan should greatly help in clarifying public opinion in this important matter. But as the electric railway companies have formulated a code applicable in principle to any class of utility and as none of the other interests has drafted any similar statement, so far as we know, it seems to us that the present electric railway code could well be used as a basis for such a standard code, or even adopted in toto, with such changes in wording as are required to make it apply to public utilities in general.

A RATIONAL UNIT FOR STEAM BOILER RATING

Our esteemed contemporary, *Power*, has taken rather an iconoclastic stand in regard to the method of rating boilers which has been recently suggested by *The Locomotive*, whereby the anomalous "boiler horse-power" may be replaced by the more rational unit, heating surface. Of course, every one admits the inadequacy of the boiler horse-power as a convenient or even intelligible term. In fact, it was admittedly misnamed when it was originated some forty years ago as an arbitrary basis for comparison in the famous boiler tests at the Centennial Exposition, and it has held on, in spite of its limitations, merely because of the lack of attention

that has been devoted to getting something better.

Apparently the difficulty that stands in the way of any change is the fact that the boiler instead of the furnace is almost invariably considered as the productive unit. The very acceptance of a unit of boiler output on a power basis shows that fact beyond a doubt, and it is obvious that in the minds of engineers generally the true meanings of the terms boiler, heating surface, and furnace are inextricably confused. For example, take the case of the description of a plant with 300-hp boilers, as cited by our contemporary, and assume that the data about the so-called boiler output are worth mentioning. If the plant has a 150-ft. stack and Roney stokers, each boiler will do well to make 9000 lb. of steam per hour, but if forced-draft, underfeed stokers are installed under the same boilers, is there any doubt that each can evaporate 27,000 lb. of water? Just what difference does the size of the boiler make, except to a boiler expert? Is not the stoker the important feature? Here is a case where the same boiler might have two perfectly legitimate but widely different ratings if the fallacy of measuring boiler output is persisted in. How much simpler it would be to rate the stokers!

As a matter of fact, the ultimate ability of boiler heating surface to transfer heat has not even been approached in stationary practice, and within limits that are far beyond anything that is now considered permissible, the whole matter of output and practically the whole matter of economy rests directly upon the furnace or stoker. Before the recent years of scientific stoker operation we were all obsessed with the idea that the extent of heating surface had a vast influence upon economy, but now that the principle of reduced excess air is understood, it is recognized that the admission of a few more pounds of air than are needed to burn the coal will have far more influence upon the coal pile than any reasonable increase in the rate of driving.

The heating surface—a term which is frequently considered to be synonymous with "boiler"—is merely a means for transmitting the energy, or heat that is liberated by the stoker, into a form that is available for use. It would be quite as reasonable to rate steam piping on a horse-power basis as it is to speak of boiler output in terms of horse-power, unless, perchance, the term boiler was intended to mean furnace. The piping transmits heat in the form of steam between the water in the boiler and the prime mover, and the duty of the heating surface is no whit different in principle when it transfers heat between the furnace and the water.

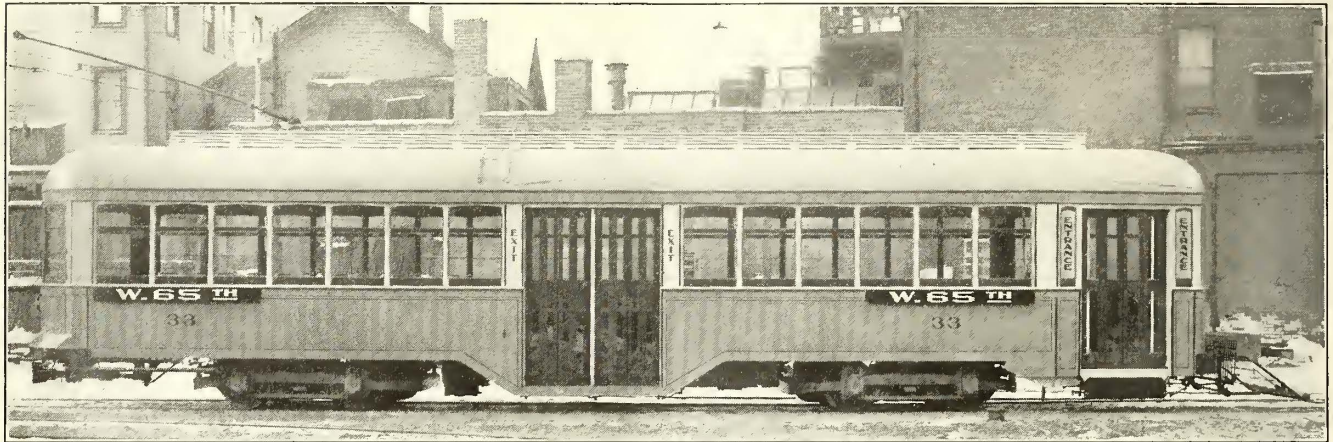
When a boiler is bought, the purchaser gets heating surface, which is nothing but a means for heat transfer, and what he obtains from this heating surface in the way of heat transferred will depend solely upon himself. If he is up to date he will use the boiler in connection with a modern stoker and will get 10 lb. of steam or more from each square foot. If he is somewhat behind the procession he will only get 3 lb. Manifestly the measure by which he should buy is heating surface, because that is the practical measure of the cost of boiler construction.

Front Entrance, Center-Exit Car for Cleveland

This New Semi-Steel Car, Which Is Designed Especially for Crosstown Service, Combines the Principles of the Near-Side and Center-Entrance Types, and also the Pay-As-You-Learn and Pay-As-You-Enter Systems of Fare Collection

The most recent experiment in car-body arrangement is the Cleveland Railway's new combination near-side-entrance, center-exit, pay-as-you-leave car for crosstown line service. In this car there are longitudinal seats in the front half of the body, and the fare box is located beside the center-exit doors, so that the front entrance loading area embraces practically one-half of the car body in addition to the vestibule. Practically speaking,

Since all stops on crosstown lines are on the near side, the reason for the adoption of the front-end entrance is obvious. Past experience also has shown that, even with the roomy platforms as are used on Cleveland cars, the number of transfer passengers picked up at any intersection is so large that they cannot be handled without considerable delay. However, with the enlarged loading area provided by the pay-as-you-leave system



CLEVELAND CROSSTOWN CAR—GENERAL VIEW OF CAR

the arrangement is expected to permit loading the maximum number of passengers found at any transfer point without the delay incident to collecting fares on the platform. At the same time the usual jostling of incoming and outgoing passengers on center-entrance cars is eliminated, while the center-exit assures quick alighting. Loading at the front end also is advantageous, because the boarding passengers are under the surveillance of the motorman.

that is applied to the front half of the new car, it is believed that this delay will be obviated.

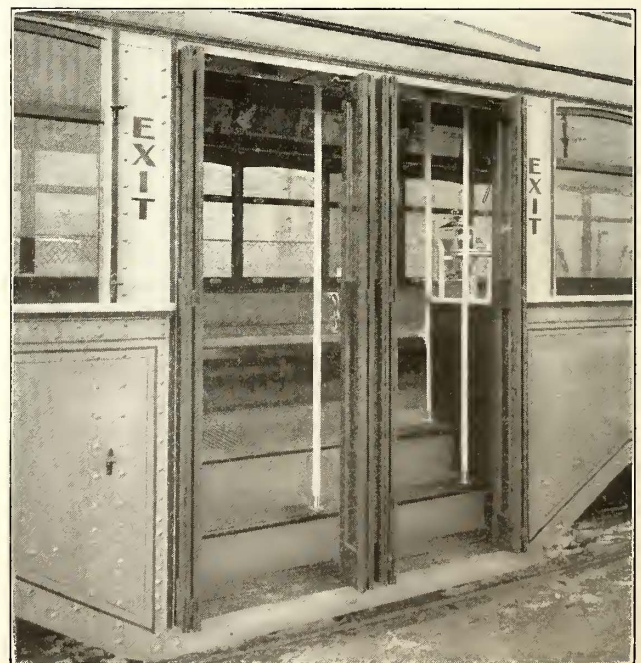
FEATURES OF DESIGN

The new car, like most cars in Cleveland, is equipped for single-end operation. Its construction is semi-steel, and it is practically similar to that of the Cleveland center-entrance motor cars, which were described in the

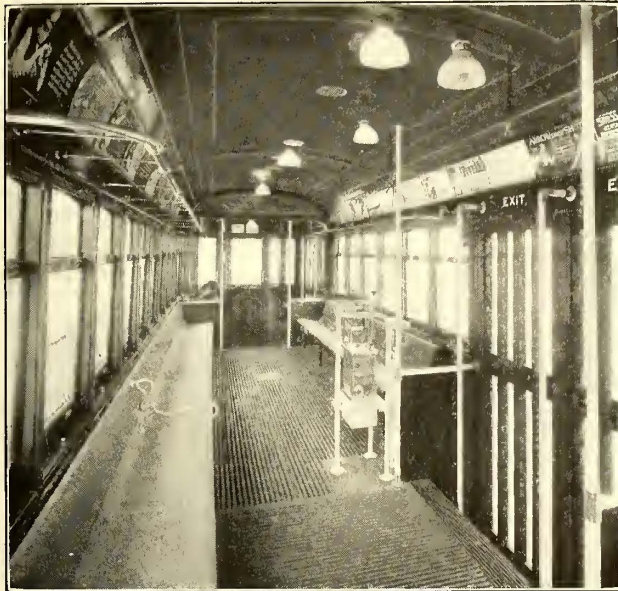
DIMENSIONS AND WEIGHTS OF CLEVELAND CAR

Length over bumpers.....	51 ft. 1 5/16 in.
Length over corner posts.....	40 ft. 4 3/4 in.
Truck centers.....	39 ft. 1 in.
Wheelbase.....	4 ft. 10 in.
Floor to rail.....	32 in.
Width over side plates.....	8 ft. 2 in.
Width over belt rail.....	8 ft. 4 3/4 in.
Height inside.....	8 ft.
Height of exit doors.....	7 ft. 2 3/4 in.
Height of entrance doors.....	6 ft. 4 3/4 in.
Step heights front vestibule.....	12—11—9 in.
Step heights center entrance.....	12 3/4—9 5/8—9 5/8 in.
Passengers seated in summer.....	56
Passengers seated in winter.....	55
Passengers standing.....	77
Total passenger load.....	133
Weight of body with accessories.....	27,590 lb.
Trucks.....	5,300 lb.
Air-brake equipment.....	1,826 lb.
Motors.....	9,600 lb.
Control.....	1,300 lb.
Total weight completely equipped.....	45,616 lb.

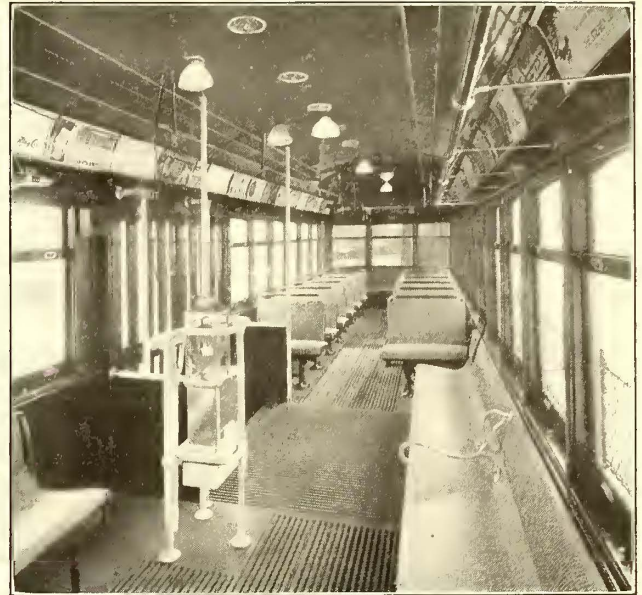
The car was designed especially for crosstown-line service, and if the experiment proves successful other cars of this type will be built in the near future. The necessity for it is found in the fact that, in Cleveland, some of the crosstown lines intersect as many as twelve main trunk lines within a distance of less than 3 miles, and this makes transferring passengers the principal business of the crosstown lines. The character of this service involves the movement of a large number of passengers at each transfer point, and it is important that they should be encouraged to move quickly.



CLEVELAND CROSSTOWN CAR—VIEW OF CENTER EXIT



CLEVELAND CROSSTOWN CAR—INTERIOR VIEW LOOKING TO FRONT PLATFORM



CLEVELAND CROSSTOWN CAR—INTERIOR VIEW LOOKING TO REAR

ELECTRIC RAILWAY JOURNAL of Feb. 28, 1914, on page 455, the only modifications being to make the body floor continuous from the front to the rear by the elimination of the center-entrance well and to provide for a front platform. The table on the opposite page gives general dimensions and weights.

The clear width of the front entrance with the folding doors open is approximately 40 in., and this is sufficient to permit two passengers abreast to board at one time. Stanchions flanking each side of this opening are installed to encourage the rapid movement of passengers in boarding the car. The 10-in. step from the front platform to the car body floor is flanked by two pipe stanchions which, in addition, protect the feet of passengers seated on the longitudinal seats. All pipe stanchions are white enameled.

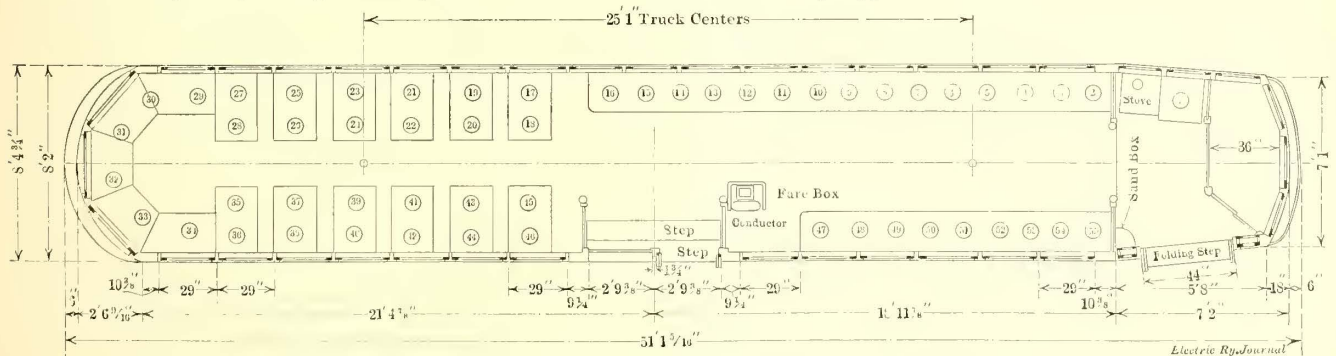
The clear width of each of the two center-exit doors is $33\frac{3}{8}$ in. Stanchions on each side of this opening and one at the center are installed on the second step, while two more stanchions are located inside the car. Two-leaf folding doors are used instead of the sliding doors employed on the Cleveland center-entrance motor cars. In the open position these occupy a portion of the available entrance and exit width, but the clear openings are still ample for the free movement of passengers. At the same time the use of this style of door eliminates the usual complications incident to providing sliding-door pockets in the side of the car, which, in the center-entrance motor car, were in the panel separating the two door openings. In the new car, of course, the panel between the center doors is unnecessary.

Seats for fifty-six passengers are provided in summer

and for fifty-five in winter, two of these occupying space immediately to the rear of the motorman's cab on the front platform. In winter one of the platform seats is removed, the space being occupied by a Peter Smith heater. The motorman is inclosed in a small cab with windows on all sides. Partly as a means for getting passengers to occupy the rear of the car twelve cross-seats and a semicircular seat in the rear vestibule were provided, as it was believed that the passengers would avail themselves of vacant seats in the rear end of the car before the longitudinal seats would be occupied.

METHOD OF COLLECTING FARES

All passengers availing themselves of the seats in the rear of the car pay their fares as they move by the conductor's stand. Passengers remaining in the front half of the car and occupying the longitudinal seats, however, are not required to pay their fares until they approach the center-exit doors to alight. In consequence, all the advantage of the center-entrance car in shortening the movements of alighting passengers is afforded, and an increased loading area is provided, thus tending to eliminate congestion incident to collecting fares at the entrance. A hand-rail, in place of the usual hand-straps, has been provided at a convenient height over the longitudinal seats in the front half of the car body. The brackets supporting the hand-rail, as well as the other car hardware, are made of Aero metal—a new light-weight, high-strength alloy which recently has been placed on the market by the Garford Engineering Company, Elyria, Ohio, through its selling agents, the Ellcon Company, New York.



CLEVELAND CROSSTOWN CAR—SEATING PLAN

EQUIPMENT

By a combination of the Peter Smith Heater Company's forced hot-air heater and the Scullin exhaust ventilator, which takes the form of a dummy monitor on the arch-roof car, with louvres along its sides and grated, circular ventilator openings in the car-body ceiling, ample ventilation is assured. The scheme of artificial illumination that is used is the result of exhaustive tests conducted by Mr. Scullin, being similar to that adopted for the Cleveland center-entrance motor cars. The lighting system includes five 92-watt Mazda lamps in series. These lamps are fitted with Alba shades and are mounted in the headlining along the center line of the car. A sixth, or spare, lamp is so connected with a selector switch that it can be instantly cut into the circuit in case of failure of any one of the five lamps regularly lighted. In addition to these lamps for general illumination, five 23-watt tungsten lamps are also used, one on the front platform, one over the fare-box, one in the headlight and two in the destination sign.

This car body is mounted on two Brill 51-E-1 trucks with 26-in. wheels. Each truck carries two Westinghouse, No. 340, 40-hp, 550-volt commutating-pole motors with PK control. This type of motor was selected because it was well adapted to low-floor cars where wheels smaller than 33 in. were used. The motor equipment is also exactly like that used on the center-entrance motor cars, but the adoption of the PK control is new, the advantages claimed for it being the removal from the car platform of all heavy current-carrying parts, thus eliminating controller burnouts and circuit-breaker flashes, and at the same time providing increased platform space through the use of a small master controller. It was described in full in the ELECTRIC RAILWAY JOURNAL for Nov. 28, 1914.

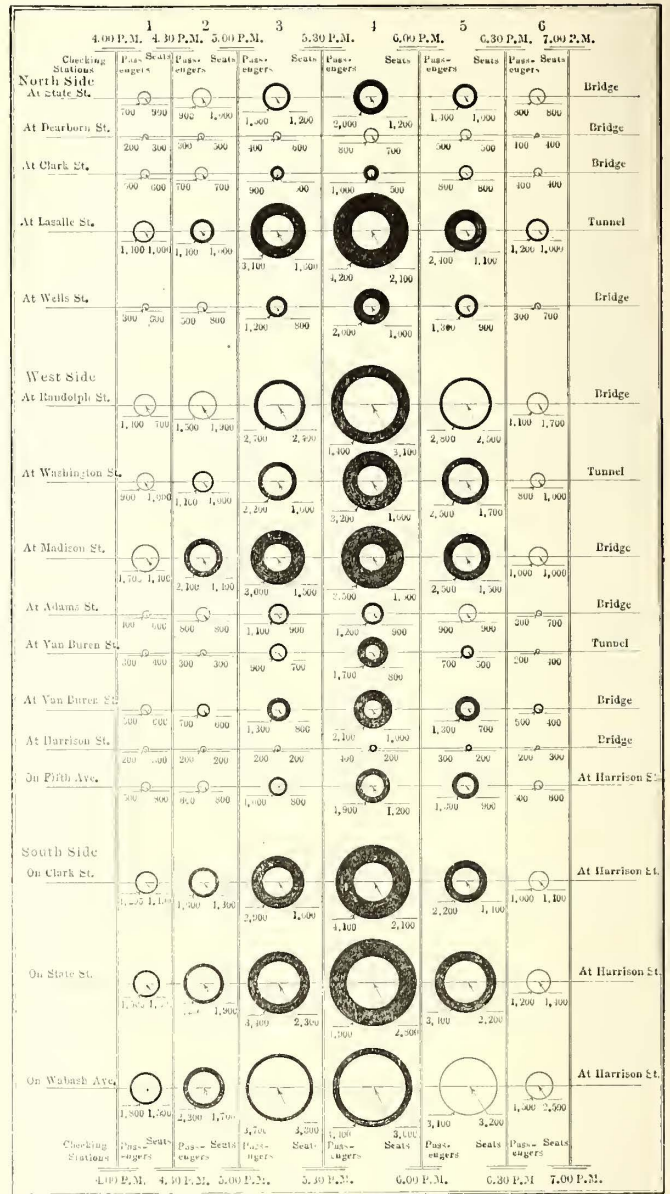
The novel combination of passenger-interchange facilities and fare-payment systems embodied in the new car should be credited to Peter Witt, street railway commissioner, Cleveland. The experimental car itself was designed and built in the shops of the Cleveland Railway Company under the supervision of Terrance Scullin, master mechanic.

A Novel Service Record Chart

From time to time engineers making service checks are confronted with the problem of putting these checks in such form as to make them readily understandable to the layman. In its effort to accomplish this end, R. F. Kelker, Jr., in charge of the transportation bureau of Chicago's Department of Public Service, has devised a service record chart which at once indicates to the alderman the service condition existing at certain fixed points during certain periods of the day. As shown in the accompanying illustration of one of these charts, which was originally designed to show in a comparative form a record of the number of seats offered and the number of passengers on the car, the white space in the center of each ring represents the number of seats, and the black area surrounding it shows the number of passengers standing.

While this chart does not show the instantaneous peaks at any one period, it does indicate the average number of seats offered to the total number of passengers during any half hour between 4 o'clock p. m. and 7 o'clock p. m., which comprises the evening rush period. In addition to the diagrammatic indications, the actual number of seats offered and the total number of passengers carried are also shown in figures. The circles on each horizontal line show the condition at any single checking station for each of the half-hour periods, and the circles in the vertical columns show, comparatively, the character of service rendered in each period at each

checking station. Many other interesting comparisons may be made from a study of this chart, such as the maximum number of passengers carried in the maxi-



NOVEL SERVICE RECORD CHART

imum half hour, the minimum number of passengers carried in the minimum half hour, the minimum and maximum traffic checking points, and as the comparative service offered at the different checking points.

C. A. Reynolds, chairman of the Public Service Commission of the State of Washington, has announced that the board will organize a department to handle all complaints relative to service. According to Mr. Reynolds, the distance between the city in which the complaint arises and the city in which the office of the commission is located frequently precludes the possibility of immediate attention. Complaint branches have already been established in Spokane, Everett, Seattle and Tacoma.

The Pueblo Star-Journal in a recent industrial edition devoted nearly a page to an illustrated description of the electrical and street railway properties of the Arkansas Valley Railway Light & Power Company which serves Pueblo, Colorado, the Cripple Creek mining district, Canon City and the Arkansas Valley agricultural district between Pueblo and La Junta.

Results Obtained by Instruction Department New York State Railways, Rochester Lines

The Author Describes the Methods of Instruction Employed and the Remarkable Reduction in Number of Accidents Secured by Concentration of Effort on Instruction of New Platform Men

BY GEORGE LAWSON, SUPERVISOR EMPLOYMENT AND INSTRUCTION

A brief description of the instruction department of the New York State Railways, Rochester lines, appeared in the ELECTRIC RAILWAY JOURNAL for Dec. 2, 1913. The results obtained since July, 1913, are given in this article, with further details of the methods used in instructing and recording the work of new men.

INSTRUCTION METHODS

Men are employed for the train service between 8 a. m. and 10 a. m. daily except Saturday, by the supervisor of employment and instruction. After filling out the necessary application blanks, they are taken out on an instruction car operated over some 2000 ft. of track that has been laid for this purpose in the Blossom Road yards of the company. This car is used in regular service, and

employment office for final instruction. The men report between 8 a. m. and 9 a. m., and read over the bulletin book while other men are being employed. This work is usually completed by 10 o'clock, and the men are then taken in hand and examined on their work and duties. Full instruction is given on accident reports, handling complaints from passengers, and conduct while in uniform, as well as explanation of the why and wherefore of the various rules. Suggestions are given as to how the work may be most easily and accurately done and how men may get work other than that provided by the extra board. New men are told of the irregular hours they

P. 125 600 415
NEW YORK STATE RAILWAYS
ROCHESTER LINES
MOTORMAN'S INSTRUCTION CARD

Date on Sept 11 1914 Date off Sept 10 1914

Mr. J. R. Smith has received instructions in operating cars on lines with instructors as follows:

NAME	RUN	DATE
<u>J. De</u>	<u>109</u>	<u>9-3-14</u>
<u>R. He</u>	<u>1011</u>	<u>9-7-14</u>
<u>A. Brown</u>	<u>503</u>	<u>9-9-14</u>
<u>C. Jones</u>	<u>805</u>	<u>9-10-14</u>
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
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NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE
NAME	RUN	DATE

Examined September 11 1914
George Lawson Instructor
Approved ABC Div. Supr.

RECORD OF STUDENT'S TIME.

This side of card should be filled in by Student, showing actual hours spent under instruction.

DATE	ON	OFF	HOURS
9-1-14	5 32	7-11	15 11
9-2-14	5 32	7-11	10 11
9-3-14	5 32	7-11	10 11
9-4-14	11 21	1 37	10 02
9-5-14	11 21	1 37	10 02
9-6-14	11 21	1 37	10 02
9-7-14	11 21	1 37	10 02
9-8-14	10 56	11 29	9 56
9-9-14	10 56	11 29	9 56
9-10-14	9 36	8 19	9 48
TOTAL			99.01

Form No. 11
NEW YORK STATE RAILWAYS
ROCHESTER LINES
INSTRUCTOR'S REPORT

NAME _____ BADGE _____

CAR _____ TRAIN _____

DATE _____ TIME _____

ADMONISHED	ADMONISHED	ADMONISHED	ADMONISHED
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
Correct	Correct	Correct	Correct

Instructor

Form No. 12
NEW YORK STATE RAILWAYS
ROCHESTER LINES
INSTRUCTOR'S REPORT

NAME _____ BADGE _____

CAR _____ TRAIN _____

DATE _____ TIME _____

ADMONISHED	ADMONISHED	ADMONISHED	ADMONISHED
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
Correct	Correct	Correct	Correct

Instructor

NEW YORK STATE RAILWAYS—MOTORMAN'S INSTRUCTION CARD AND INSTRUCTOR'S REPORT

differs in no way from others of the same type except that it is equipped with an air brake in addition to the hand brake. Along the instruction track are found the usual signs used throughout the system, such as passenger stop, circuit breaker and safety stop signs, with which the student thus becomes familiar.

Students are given one or two hours' practice on this car under the supervision of the traveling instructors and are then sent to the company's doctor for medical examination. After passing the doctor they are sent to the divisions to which they have been assigned, where they present to the station master the instruction card shown in an accompanying illustration. On this card is kept the record of the men with whom the student breaks in on each line, and the number of hours of practice done each day. A list of instructing motormen and conductors is furnished to each station master by the supervisor of employment and instruction, by whom the time slips of the instructing trainmen are compared with the time entries on the students' cards before they are passed for payment.

Motormen are required to practice for ninety hours, and conductors seventy hours before reporting to the

will work while "bucking the list" and are advised to be regular in their habits to avoid sickness and depression. The writer has known men who were thoroughly discouraged to take an entirely different view of their work after one or two visits to the company's physician, whose services are furnished by the benefit association.

The final instruction occupies usually from one and a half to two hours; the shorter this can be made the better it is for the student and the company. More good can be done by impressing a few necessary and important details than by giving vague ideas on a number of points of minor importance.

During the first six months of his service, the new man is followed up by the traveling instructor, who corrects his faults and tries to impart the fine points of his duties that can only be learned by experience. The instructor makes a report on the forms shown in accompanying figures every time he rides with a student. In the column headed "Admonished" a punch mark denotes that the man has been in error on the subject opposite the punch mark, and that he has been instructed on this point. A punch mark outside this column would denote that he was in error but was not admonished. Such a

case of motormen, but the age limit for conductors was not changed from 21 years and the greater instability of the younger men is shown by the larger proportion that are under six months in service. The net change in number of conductors has been an increase from 478 on July 1, 1913, to 489 on Sept. 1, 1914, while the percentage of men less than six months in service has decreased from 19.95 to 12.46 during the same period.

A comparison between the number of men employed for the two years from July, 1912, to July, 1914, is shown on the accompanying diagram.

The effect of the instruction on the number of accidents occurring to new men is shown in the accompanying table. In this table, column 5 shows the accident index for the men under six months in service, i.e., the ratio of the accidents per 100 men under six months to the accidents per 100 men for all periods of service. The low figures for October and November are due to changes that were made in the method of compiling the

net result obtained, however, has not been altogether unsatisfactory, as the reduction in the number of men new in the service has brought down the proportion of accidents due to new men from 35.16 per cent in October, 1913, to 19.30 per cent in August, 1914; a reduction of 45.2 per cent, and this reduction has accompanied a reduction in the total number of accidents of approximately 21.50 per cent for the current year.

A. I. E. E. Midwinter Convention

The third midwinter convention of the American Institute of Electrical Engineers was held in New York on Feb. 17, 18 and 19. The program comprised a dozen papers of which five contained practical information on power transmission matters. In other papers the topics discussed were: Characteristics of electric motors, distortion of a.c. wave form, dimmers for tungsten lamps, searchlights, and the theory and practice of electrical precipitation of matter suspended in gases. An evening was devoted to a symposium on "The Status of The Engineer," abstracted elsewhere in this issue, in which several very prominent engineers took part.

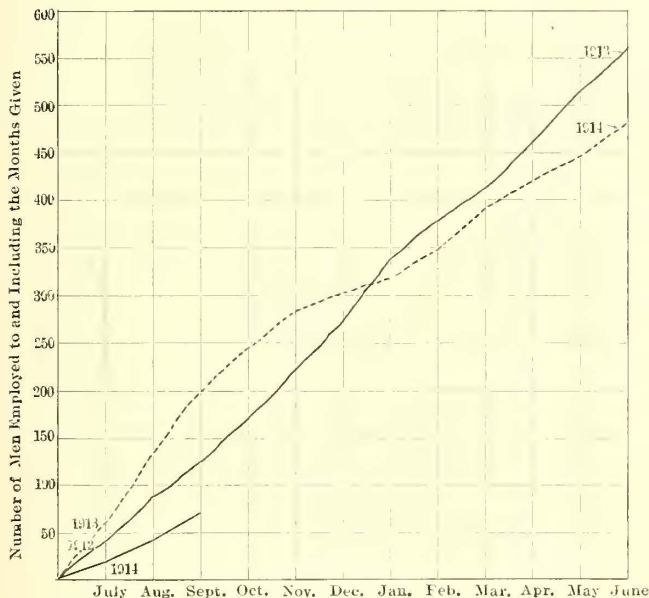
F. W. Peek, Jr., consulting engineer General Electric Company, compared the results of line corona loss tests, made during ten years under various conditions, with formulas developed on the basis of laboratory measurements. The agreement was satisfactory. The discussion brought out that voltages of less than visible corona values produce uncertain losses due to irregularities on conductor surfaces.

L. E. Imlay, superintendent Niagara Falls Power Company, described a successful method for keeping underground cables cool by insuring moistness of the earth surrounding conduits. Temperatures of cables are measured systematically and when they indicate deficient heat radiating capacity, due to soil dryness, water is distributed through porous drain tiles laid parallel with the conduits. Mr. Imlay gave valuable test data bearing on the heat conductivity of soils.

K. C. Randall, engineer Westinghouse Electric & Manufacturing Company, spoke upon arc phenomena in oil circuit breakers showing that an arc hangs on until the next zero value of current after a switch opens, generating an amount of heat depending upon the frequency. He described the improvements being made in breaker design, including the accelerating feature and the reactance shunt. On the rating of circuit breakers he recommended that "if a unit may immediately be put back into permanent satisfactory operation without immediate repair, it is proper for the particular application." In this he was seconded by Philip Torchio, chief electrical engineer New York Edison Company.

The 100,000-volt portable substation described by C. I. Burkholder, general manager Southern Power Company, and Nicholas Stahl, commercial engineer Westinghouse Electric & Manufacturing Company, consisted of three 1000-kva, self-cooling transformers with supplementary fan ventilation and three horn gap switches mounted on a steel flat car. It was arranged for convenient connection to the transmission lines of the Southern Power Company and adapted to use a wide range of supply voltage. The weight was 135,000 lb. and the cost \$21,000, i.e., \$7 per kva.

The paper on electrical porcelain by E. E. F. Creighton, consulting engineer General Electric Company, was a 100-page report of exhaustive character. It was divided into three parts, the first covering the principles and methods of testing insulators; the second, the factors in porcelain manufacture, and the third, the results of elaborate tests made with the high-frequency oscillator. The paper contained the results of extensive research many of which were presented graphically.



COMPARATIVE CURVES, MEN EMPLOYED 1912-1913

figures at the time this record was first kept. Since December these figures have been computed on the same basis and the index shows that the performance of the

ACCIDENT TABLE—NEW YORK STATE RAILWAYS, ROCHESTER LINES

	(1) Percent- age of Men Less than Six Months in Service	(2) Percentage of Accidents for Men less than Six Months in Service	(3) Accidents per 100 Men Under Six Months in Service	(4) Accidents per 100 Men, for Total Men in Service	(5) Index $\frac{3}{4} \div \frac{4}{5}$
1913					
October	22.66	35.16	67.5	43.4	1.55
November	21.63	35.00	66.2	40.9	1.62
December	20.10	34.60	83.5	48.5	1.72
1914					
January	16.72	27.60	76.8	46.3	1.65
February	14.60	23.31	78.0	48.9	1.60
March	14.18	21.92	83.4	54.0	1.54
April	13.02	18.30	50.0	35.7	1.40
May	10.58	20.43	94.0	48.7	1.92
June	11.16	20.98	76.4	40.6	1.88
July	10.40	18.24	78.5	44.7	1.75
August	9.87	19.30	63.8	33.1	1.93

new men improved steadily up to April, 1914. At that time changes were made in the organization of the department due to the necessity for retrenchment, and the efficiency of the new men has decreased to some extent. It should also be noted that with smaller numbers involved a numerically small increase in the number of accidents makes a relatively larger showing in the percentage table.

It has been the aim of the instruction department to make the new men as efficient as the old men in respect to the record of accidents, and this result was apparently at one time within the possibility of achievement. The

The Code of Principles

In a Letter to the Editors, O. T. Crosby Suggests Certain Changes in the Present Code—The Sliding Scale of Returns to Capital Discussed and Co-operation with Other Public Utility Associations Recommended.

WARRENTON, VA., Jan. 26, 1915.

To the Editors:

It is with sincere regret that I find myself unable to approve all that the Code seems to stand for. May I point out some of the difficulties as they appear to me?

It is doubtless your habit, as it is mine, to consider all problems, first, from the point of view of a citizen of the United States, and second, from the point of view of one's own personal interest. In my judgment, the question of private ownership versus public ownership rises above any question of the interests of those now putting their money or their time into public utilities. If every dollar which I, myself, happen to have in public utilities, and all the other dollars that my friends have, were to be fully repaid by the state in the taking over of public utilities, I should still feel strongly opposed to that action. The opposition would be based upon fundamental political convictions. It is because some of the opinions stated in the code seem to lead inadvertently toward state ownership or its equivalent, purely bureaucratic private ownership, that I feel it a duty to comment upon them.

It is not probable that the Association—a numerous body having very short hours of discussion every year—would undertake to amend a code presented to it by a committee of distinguished members. It is not with this presumption that I suggest changes in the language of several articles. It is only that such redrafting offers a convenient form of expressing my own views. The expansion suggested of Articles III and VIII results in mere commentary on, rather than change in, the original text.

Whether the forum in which we have usually appeared for such discussions, namely, the JOURNAL, is open for criticisms of the code, I do not know. You alone have the right to make that determination.

The first article of the code reads as follows:

The first obligation of public utilities engaged in transportation is service to the public. The first essential of service is safety. Quality of service must primarily depend upon the money received in fares. For this reason it is necessary that the rate of fare should be sufficient to permit the companies to meet the reasonable demands of patrons and to yield a fair return on a fair capitalization.

I think the last two sentences should be changed to read as follows:

"Quality of service, must, in the long run, depend upon the money received in fares. For this reason, it is necessary that the rate of fare should be sufficient to permit companies to meet the reasonable demands of patrons and to yield average returns to the whole industry sufficient to obtain, in competition with all other enterprises, necessary capital from the general investor."

My reason for substituting the words "in the long run" for the word "primarily" rests upon the fact that in the inception of any enterprise the selling price of its product may be placed so low, or there may be temporarily such small market for its product, that its operations are carried on at a loss of original capital. Moreover, as the excellent brief of the Public Service Corporation in its recent gas case points out, the company undertakes an obligation which may require the exhaustion, in losses, of all its capital. It is important that this element of risk should never be obscured. But,

in the long run, the operation will cease unless selling prices be greater than costs.

The change suggested in the last sentence reflects my objection to the use of the term "fair," when it is possible to express more clearly the specific conditions which we mean to set forth. The fact that this word "fair" has found its way into decisions of courts and commissions, has not, unfortunately, clarified its meaning.

We are quite likely to cut each others' throats in controversy over the application of such words. Today in Europe, both the British and the Germans conscientiously believe that they are upholding a "fair" cause. In all rate controversies, commissions and companies declare for these same "fair" words.

Article II of the code reads as follows:

Regulated private ownership and operation of electric railways is more conducive to good service and the public welfare than government ownership and operation because the latter are incompatible with administrative initiative, economy and efficiency, and with the proper development of cities through the extension of transportation lines. The interests of the public are fully protected by the authority given to regulatory bodies.

I merely suggest that the word "is" should be changed to the word "are," thus securing euphony and grammatical uniformity at the same time. The general idea expressed by this article seems to be sound.

Article III of the code reads as follows:

In the interest of the public and good service local transportation should be a monopoly and should be subject to regulation and protection by the state rather than by local authorities.

The preference here expressed for state control as distinguished from local control is a wise one in our present political development. My own thought on the matter would be more fully expressed if we should add to the article as it stands, the following:

"When sound general principles of regulation shall have been developed by the state, and when municipal or other local governments shall have developed higher efficiency and conservatism than is now usually found, then the regulation of local monopolies might be left to local authorities."

Article IV of the code reads as follows:

Short-term franchises are detrimental to civic welfare and growth because they ultimately check the extension of facilities and discourage good service.

This is so sound that even short-term advocates of a few years ago have been generally converted wherever the twenty-year limitation has been tried.

Article V of the code reads as follows:

In order to render good service, electric railways must be allowed to earn a fair return on a fair capitalization, and the foundation for this result will be obtained if the issuance and sale of securities representing such fair capitalization shall be legally authorized on such terms as will produce the requisite funds.

I would suggest that this article be changed to read as follows:

"In order to render good service, the electric railway industry must be allowed to earn average returns on investment comparable to those obtained in other enterprises of like riskfulness, and the foundation for this result will be obtained if companies be legally authorized to sell their shares, or to borrow money on such terms as will produce the requisite funds."

It will be observed that the word "securities" is stricken out. The reason for this will be found in the comment on Article VI. The word "average" inserted before "returns" has an important bearing, appearing below.

Article VI of the code reads as follows:

Securities which have been issued in accordance with the law as it has been interpreted in the past should be valid obligations on which an electric railway is entitled to a fair return.

In substitution for it, I would suggest the following language:

"Shares of capital stock and evidences of debt which have been issued in accordance with the law, as it was interpreted at the time of issue, should be considered as valid, and on the total capitalization composed of evidences of debts (including net floating debt) and shares of stock, the company should be entitled to earn such returns as its contract for rendering service will permit, when the charge for such service is made specific in the contract. In the absence of a specific contract charge for service, the company should not be prevented, merely by the arbitrary use of public authority, from earning such returns on its legal capitalization as might have been legally contemplated from time to time when investments were made or debts incurred."

It will be observed that the word "obligation" has been stricken out. This, I think, follows from the fact that shares of stock are not obligations, but, on the other hand, they plainly were meant to be included in the term "securities." We have all come to use the latter term rather loosely, as standing for everything which represents the capital of a company. Such loose usage is quite excusable in many discussions, but it is out of place, it seems to me, in such a formal document as the Code of Principles.

It will be noted that a suggestion is made limiting the returns on legal capitalization to those that may have been "legally contemplated." This is the reason for that suggestion. It is (or it has been) possible in many states to issue legally capitalization which might be in excess of the investment by many hundreds of per cent. Thus, \$100,000 in cash, or cash values, might be legally capitalized at \$1,000,000 par value. Can it be said that stockholders in such a corporation, should, immediately after its organization, be "entitled to a fair return," on such capitalization?

Is this "legal capitalization" necessarily the same as the "fair capitalization" of Article V? Has not the mass of legislation, adjudication and discussion of the last twenty years created at least the beginnings of a new common-law rule, which would put the investor on notice that he would not be permitted to make a profit of 80 per cent or 100 per cent per annum, on his real investment, unless, perchance, it should flow from a specific (or fixed customary) service charge? And in such case, is it not true that such a profit would rest, not upon the basis of legal capitalization but upon the contract right to perform service on a given piece-work basis?

I have also thought it important to make a distinction, which does not appear in the Code of Principles, between the case of a company which, on the one hand, has a contract right and a contract obligation to perform service at a specific rate, and, on the other hand, a company which finds itself subject wholly to public authority in the matter of rates.

In the electric railway field it was thought that a majority, at least, of the franchises were, in fact, contracts for the performance of service at what may be called "piecemeal" rates. And it was thought that that rate was fixed in the contract.

There were, indeed, variations in the language of the

contracts concerning this point. In some cases, the doubt was great enough to justify, perhaps, some of the surprising decisions which have been made. On the other hand, a good many franchises still stand unattached, and probably unattachable, in the matter of a specific charge for service as being a contract right and obligation. That specific charge may be found too small for profit, but when it is large enough for profit, then even if the returns be considerably above average, they should in no way be disturbed unless by mutual consent. That is what the investor is "entitled" to—that is to say, to losses or to gains, as the contract happens to work out.

In the other case, namely that in which no specific service charge appears in the contract, and if there be no customary charge then ruling the field of operations, the investor must fall back upon the good faith of the public and upon the contemplation of law, that he is "entitled" to try for the usual returns to capital and that he is not to be forced into loss by arbitrary exercise of power in fixing rates.

If a company enters a field in which rates have long been fixed by custom, then the case is similar to that of the contract rate. The investor must lose—he is not "entitled" to win—if he guessed wrongly as to the profits derivable from a customary rate. That is the sound common-law rule. He is entitled to big returns, if things go well. He is not to be held to the "average" return. That average is made up of his good luck and his neighbors' bad luck, and it is, under another aspect, made up of his good luck today and his bad luck yesterday.

Invention has destroyed the force of custom in modern affairs. Hence our turmoils.

Ancient common law looked to custom for the fixation of rates. It declined to consider return to capital in any specific case. Nevertheless, underneath the customary rate, there must have been an implication of variable returns from very high to very low. One innkeeper might grow rich, another might grow poor. Differences of result were due to differences in management and to other conditions over which the innkeepers had no control.

In the long run, however, there must have been "a return to capital" in the inn business, substantially equivalent to that in other lines of industry. The particular innkeeper was not "entitled" to any particular return to capital, whether called "fair" or otherwise. He was entitled, while charging customary rates, to the presumption that he might grow rich or poor. He was not to be made poor by interference of the state in lowering the customary rates.

The novelty of modern methods in nearly all public utility work renders it very difficult to rest any case upon custom. But the presumption that even very high returns may occasionally be made, still existed as an implication in common law, when vast quantities of private money went into the development of public utilities.

It is this presumption which is threatened by the frequent use of the expression, "entitled to a fair return." The courts, when using that expression, have, for the most part, been engaged in preventing confiscation of property. The Supreme Court of the United States has gone from $\frac{1}{2}$ of 1 per cent to 8 per cent, under certain conditions, in an endeavor to establish return to capital as the definition or measure of the property which was threatened. As they have groped their way toward some understanding of the problem, they have always been handicapped by the natural desire to interfere as little as possible with legislative enactments.

At first they contented themselves by stating substan-

tially, as in the Munn case, that property was not taken unless the actual fee was transferred. In later cases they have seen that the property is valueless unless it can be used for making, or trying to make, an annual net profit, and that such profit is, in the last analysis, the measure of the value of the property.

Their recent decisions substantially establish the fact that a going concern has a property right, good against state intervention, to charge such rates as may yield 6, 7 or 8 per cent on the value arrived at by considering a number of elements. The decision is far from clear in respect to these elements.

The court has not recognized a right which was generally contemplated by investors fifty or sixty years ago, namely, that they might occasionally secure big profits, far beyond 8 per cent, as an off-set to occasional losses. It may be urged that practically this failure to recognize such a right has, in fact, through the power of the court, destroyed the right.

But we are now concerned in educating ourselves, the public, the legislative bodies and the courts, as to the true and necessary principles underlying such a treatment of public utilities as will continue to bring into existence new ventures and such as will preserve in old ventures the desirable qualities of private ownership. In view of the great steps forward, made by the Supreme Court itself, in its own education, it is no disrespect to authority that any citizen should urge views which, if adopted, would carry the Court still further.

Not only has invention destroyed substantially the force of custom for the determination of rates in the past hundred years but, in my opinion, it will continue to make so many changes in productive and distributive processes that we can no longer count upon this ancient guide to lead us through the mazes of the future.

Contracts for long periods at specific rates of service will also, in my opinion, gradually cease to be desired by public authorities. They may not even be wanted by investors in public utilities.

It seems to me, therefore, that new relations must be established in respect to the important matter of rates. I believe that the basis of that new relation will be "return to capital." And I believe, also, that this new basis must be made far more clear than it now is, before we can feel that we are working under a régime of law.

In trying to find a way out of the chaos which exists at present, it seems to me necessary to hold clearly before our minds just what the conditions are which are being changed or cast aside. That is the reason I feel we should refer in the code to the returns that must go to the industry as a whole, rather than those which go to individual companies, unless in the case of specific contract rates, or clear customary rates. The original language of the code, in Articles V and VI is not clear, it seems to me, as to this distinction. Hence the suggested change.

When we shall have emerged from the present difficulties, I believe we shall have statutes drawn which will express clearly the principle of a sliding scale return to capital. Such a statute would provide that specific sliding scale returns might be adopted, varying from case to case. Maximum and minimum rates of return to capital, with intermediate rates for varying periods and varying conditions, would appear in such contracts. In the general case, none of these returns to capital would be guaranteed.

The spirit of the contract would permit service rates to be controlled by the companies operating within the limits of the permitted returns to capital.

The same statute would provide such a sliding scale guidance for those cases in which public service might be undertaken without specific understandings as to return to capital. It would impose upon such cases lim-

itations of profit which the investor is supposed to contemplate, just as if to-day a loan should be made without specific interest rate, it might be presumed to carry the so-called legal rate of interest.

And the same statute would provide that, as nearly as possible, the principles thus enunciated for new enterprises should be applied in the solution of the difficulties presented by old enterprises. In this latter case, however, an extremely important consideration must always be held in view, namely, that of the market values of stocks and bonds during past periods, when such stocks and bonds had been permitted to be freely bought and sold throughout the world, on the assumption that the investment would be controlled by the old common law rule which gave to the investor the full profits of customary or contract service rates, and at the same time threw upon him losses resulting from the application of such rates.*

If by the words "fair returns," as they appear in the adjudicated cases, we could assume that in some cases unusually large returns would be authorized, then one need not fear the use of such an expression. The fact is, however, the continued use of the expression "entitled to a fair return," both in the briefs of attorneys representing established corporations and in the appeals of public prosecutors, is gradually crystallizing to a maximum of 8 per cent. That is the danger.

The principle to be preserved is this—that any industry, as a whole, must receive "fair returns, etc.—" or it will cease to exist. But within the industry, there will be occasional bankruptcies, balanced by bonanzas. Unless the bankruptcies be prevented, the bonanzas should be permitted.

Article VII of the code reads as follows:

The relation of adequate wages to efficient operation should always be recognized, but electric railways, being public servants regulated by public authorities, should be protected against excessive demands of labor and strikes.

I should make it read as follows:

"The relation of adequate wages to efficient operation should always be recognized. Electric railway companies being public servants, regulated by public authorities, should be protected from all forms of violence or intimidation during strikes."

It is apparent that one element considered important by those who drafted the code, is in my suggestion eliminated, viz., that of protection by the state from "excessive demands" and from strikes. I do not believe that any employer can be protected against excessive "demands" of labor. This clause, as written, seems to imply that the rate of wages paid by public utilities should be fixed by public authority.

But even more, it is further implied that the right to leave the employment of the company is denied to its employees, if they go out simultaneously and make what is known as a strike.

Of course, the converse of the proposition is, that they shall be forced to serve against their will. It is true that enforced service of citizens is required by all governments in military defense. It is equally true that enforced service, except for military defense and as a punishment for crime, is considered as contrary to all that modern political progress has assured us. Nobody knows better than I how serious, even how tragic, may be the result of strikes, yet I cannot approve any restrictions of personal liberty in the relation contemplated, except that which restrains an ex-employee, or anybody else, from violence or intimidation directed

*A statute expressing these views in legal form and drawn for application to interstate railway commerce, was presented by me several years ago to the Senate committee on interstate commerce. It appeared on page 94 of the ELECTRIC RAILWAY JOURNAL for July 20, 1912.

against an employer, whether an individual or a company.

We may make progress by the adoption of contracts for personal service, including a money penalty for failure to continue the service during an agreed period. In the case of such contracts, the protection which would be given by the state is only that which it must afford to all citizens in the enforcement of legal contracts freely made.

We should not forget that if the principle of submission of wages to public authority is adopted, it cannot consistently be restricted in application to the wages paid to motormen, conductors and others constituting the more numerous body of employees. It would be legitimately extended to the determination of all salaries paid, from that of the president to that of the sweeper. If commissioners are to stand between the stockholders and the demands of motormen, they may legitimately stand between the stockholders and officials of the company.

If, however, the commissioners are supposed to protect—not the stockholder—but the receipts of the company required for improving the service, then equally should they control big salaries as well as little salaries. The result would be a complete hierarchy of employees, who must look to the public authorities for fixing their compensation. This would be a long step towards public ownership.

Even if this step were not followed by others in the same direction, it would do much to paralyze the effectiveness of private ownership as we now understand the term. The subject is a large one. I content myself with expressing very positive views on the subject, without much argument.

Article VIII of the code reads as follows:

The principle of ownership of securities of local companies by centralized holding companies is economically sound for the reason that the securities of the latter have protection against the varying business conditions of a single locality or company and because money for construction and improvements can thus be more readily obtained.

The principle appearing in this article seems to me sound. However, for the word "because" I would substitute the word "hence." Furthermore, to be quite accurate, the last statement of this article should be extended to read as follows:

"—and hence money for construction and improvements can thus be more readily obtained, unless public authorities strike down occasional prosperity in an electric railway company to the low level of the most unprofitable among such enterprises."

It is well known that the opposition to holding companies rests chiefly on the idea that one locality is milked for the benefit of another. Put in other words, that means that in the present hectic temper of the public no locality is willing to see its own public utilities showing a prosperity above the average. Indeed, there are not a few critics who desire to depress every prosperous public utility to the lowest known level of mere existence. Should this sentiment become more general than it now is, it will make the last statement of this article unsound.

The fact which that statement intends to bring out is this: that of several companies whose stocks are all owned by a holding company, one may be prosperous and another unfortunate, and that the strength given by the prosperous company to the holding company's stock will permit money to be advanced to the weak concern. The investor is given a chance in a very simple way, through the purchase of one stock, to average his returns, which is the very essence of all invest-

ment, but if the average is to be made a maximum and no guaranty be given to support the bad cases, obviously a new low average is created and the whole scheme fails.

Article IX of the code reads as follows:

In the appraisal of an electric railway for the purpose of determining reasonable rates, all methods of valuation should have due consideration.

In my judgment there should be added to this article the following words:

"—but actual investment in cash or cash values, including profits invested, and average market values of bonds and stocks, during a period of years, should be given greater weight than valuations by other and more artificial methods."

Article X of the code is sound and requires practically no comment.

Since writing the above, I find that one of the speakers at the mid-winter convention, adverted to the probability of action by the Association looking to possible modifications in the code.

Although the letter above written expresses my own dissatisfaction with some portions of the code as it now stands, I venture to suggest, before formal action be taken in the matter of change, that endeavor be made to co-operate with other public utility associations, such as those of the gas, electric light, telephone and steam railway interests.

The latter industry, particularly by reason of its magnitude and by reason of the influence throughout the country of the Interstate Commerce Commission, is likely to affect very seriously the public utility policies in every state. These policies in the long run and in principle should be the same for all public utilities. Hence, it seems to me desirable that co-operation should be brought about in giving formal and public expression to the views of those who are conducting public utilities of all kinds.

OSCAR T. CROSBY.

Ohio Compensation Rulings

The Ohio Industrial Commission, in connection with the claim of Flora Hamilton for the death of her husband, has announced the following four principles on compensation of importance to electric interurban railways:

"1. Electric interurban railways and their employees engaged only in interstate commerce are subject to the provisions of the workmen's compensation act of 1913.

"2. Electric interurban railways and their employees engaged in intrastate and also in interstate and foreign commerce are subject to the provisions of the compensation act only to the extent that their mutual connection with intrastate commerce may and shall be clearly separable from interstate commerce, and then only when the railroad and its employees have filed written acceptances of the provisions of the act.

"3. There is no distinction between steam railroads and electric interurban railways so far as the application of the compensation act is concerned.

"4. An electric interurban railway company whose track lies wholly within the State, but which has traffic arrangements with other common carriers and accepts freight and passengers for transportation into other states, and which has filed its freight and passenger traffics with the Interstate Commerce Commission, is engaged in intrastate and also in interstate and foreign commerce."

Regulation for the Jitney Bus

Recent Developments Have Shown the Need for Controlling the Operation of Itinerant 5-Cent Bus Lines, and the Steps Taken in This Direction by Various Communities Are Outlined, with Brief Accounts of the Experiences Making Them Necessary

The sudden advent of the jitney bus in urban transportation has placed before the electric railway systems of the country a situation which obviously needs prompt attention. To this end it may be said that the policy of regulation for the new conveyances appears to have been generally accepted as a satisfactory solution by most communities that have taken the problem under serious consideration, and in many cases restrictive measures either have been or are about to be applied. Even in Los Angeles, where the jitney bus movement started and where the city's friendliness toward the auto bus has been demonstrated, the need for regulative measures has become obvious to many of the citizens.

ESSENTIALS OF JITNEY BUS ORDINANCE IN LOS ANGELES

As a result of this sentiment Mayor Rose of Los Angeles submitted on Feb. 8 an urgent request for imme-

meet schedule, carrying passengers upon running board, failure to pay claims for damages, changing routes without permission of Board, and running an insufficiently lighted car after dark.

CAMPAIGN FOR REGULATION IN PORTLAND, ORE.

Shortly after the jitney bus appeared in Portland the Portland Railway Light & Power Company, recognizing the need for regulation of the jitney competition with its railway lines, published two pamphlets, one of which explained the situation in detail to the company's employees, but copies were also available for the public. The text of this pamphlet appears in full on page 396 of this issue. The other pamphlet was addressed directly to the public and was generally distributed. It contained the following statements:

"Concerning Taxes—Nearly one million dollars! \$971,-836.06 per year, \$80,986.33 per month, \$2,662.50 per day, or 15½ per cent of its gross revenue was contributed in 1914 by the Portland Railway, Light & Power Company to federal, state, county and city governments for the mere privilege of doing business! Thus:

Taxes and licenses.....	\$649,762.16
Bridge tolls	61,464.00
Interest, depreciation and maintenance on street paving	260,609.90
Total	\$971,836.06

"Consider the annual charge for paving. The company is required under its franchise to pay for the paving along its tracks, to maintain this paving during its life and to renew it when it is worn out. The actual bare cost of the specific construction of this paving now in use amounts to the vast sum of \$1,737,399.33 which is 15½ per cent of Portland's total investment in street paving. This great sum does not include any allowance for overhead charges, for engineering, superintendence, etc., a very large amount in itself, which could be fairly included, but figuring only the actual specific construction cost, the company, on account of the street paving, must take from its revenues yearly: Interest at 6 per cent; maintenance at 3 per cent; depreciation at 6 per cent, or a total annual charge of 15 per cent of \$1,737,-399.33, equal to \$260,609.90 per annum.

"Excepting such paving charges which are levied against the company's realty, all paving assessments along the company's tracks are but a survival of the system of charges from the old horse car days when the motive power did wear out the paving, but, in these days, since the electric cars do not need or use the pavement, assessments for its construction, up-keep and renewal are in effect nothing more nor less than a governmental charge or franchise tax on the street car company.

"Do you believe in double taxation? Of the total taxes collected by the city and county for the operation, maintenance, bond interest, rentals and sinking funds, for all bridges used by the general public, crossing the Willamette River in this city, the pro-rata share of the taxes paid by the company apportioned to these purposes for 1914 was \$11,513. On top of this the company was required to pay \$61,464 for bridge tolls. Was any other firm, person or corporation in Portland required to pay a toll in addition to their regular tax for the privilege of using the bridges? Even forgetting the

PETITION.

TO THE HONORABLE MAYOR AND CITY COUNCIL OF THE CITY OF PORTLAND.

Whereas, there are now being operated on the streets of Portland, a number of auto busses and a number of smaller automobiles for the purpose of transporting passengers with the aim to give urban transportation service similar to that rendered by street cars, and

Whereas, such service to be of benefit to the citizens of the City of Portland should be conducted in a responsible manner along defined routes with definite schedules and with reasonable protection to the patrons of such service and the citizens of Portland, and

Whereas, the experience of other cities where similar auto busses and automobiles are operated has shown the imperative need of making such service responsible and reliable,

Therefore, we the undersigned residents and citizens of the City of Portland do hereby petition your Honorable Body

TO ENACT AN ORDINANCE requiring that such auto busses and smaller automobiles be permitted to operate ONLY under a FRANCHISE in order that they may be conducted in a responsible manner along properly defined routes with definite schedules and with reasonable protection to the patrons of such service and the citizens of the City of Portland

and, we further request that, in the interest of public health and safety, such ordinance carry with it the customary emergency clause and be made effective immediately from and after its passage and due publication

SIGNED:

NAME

ADDRESS

_____	_____
_____	_____
_____	_____

PETITION FOR REGULATION OF JITNEY SERVICE CIRCULATED IN PORTLAND, ORE.

diate regulation of the jitney bus traffic. His statement pointed out that the city of Denver had met the situation by passing an ordinance requiring each bus to take out a franchise, that San Francisco had under consideration a regulatory ordinance, and that Pasadena had already passed such a measure. He then outlined the following points which appeared to be essential for a satisfactory ordinance:

A proper definition distinguishing automobiles acting as public carriers from those engaged in delivery business. A proper form of application covering the name of the owner, make of the machine and the carrying capacity, the proposed route and the schedule. The vesting in the Public Utility Board of the right to pass upon all applications and to adjust them if the routes as scheduled are unsatisfactory, together with the right to change or modify routes when traffic conditions or public necessity, in the opinion of the Board, demand such action. An approved indemnity bond of not less than \$10,000 to accompany each application. A prohibition for carrying passengers on the running board, and a provision for uniform signs. Provision for the revocation of the license for failure to cover route and

tolls, did any other firm, person or corporation contribute as much to the expense of these bridges as this company?

"Over \$10,000 per month for the schools! Do you know that, of the total taxes paid by the utility company in 1914, \$120,110 was applied to the education of children in public schools in Portland? This is over \$10,000 per month or about \$550 per school day.

"Nearly \$1,500 per month for the fire department! Of the total general taxes paid by the company, \$17,720 per year was applied to the support of the fire department.

"Over \$1,000 per month for the police department! In the same manner, \$12,739 per year went to the support of the police department.

"Over \$555,000 a year from the street car system alone, or 18 per cent of total street car revenues! Of the huge sum of nearly \$1,000,000 charged the Portland Railway, Light & Power Company in 1914 for the privilege of doing business, about \$550,000 per year, \$45,800 per month, or over \$1,500 per day must be contributed by the city street car system. The average revenue per passenger carried (cash, commutation ticket and transfer passengers) for all of whom facilities have to be furnished, was 3.58 cents for the year 1914.

"Even omitting the cost of carrying them, consider how many passengers at the average fare must be carried to pay this immense charge! In round numbers—42,000 passengers per day, 1,275,000 passengers per month, 15,350,000 passengers per year.

"Also just figure for yourself how many passengers had to be carried during the year to help maintain the police department, the fire department, the public schools and the bridges. Furthermore, letter carriers and county employees are carried for several hundred thousand rides at compensation which is less than cost for the service.

"In conclusion, did you ever stop to think that during 1914, police and firemen and other city employees, enjoyed free transportation as required by our franchises to considerably more than 750,000 rides, which, at the usual ticket rate, would have cost the city for this service about \$33,750. Is not this additional tax?"

The effect of these two pamphlets had almost immediate results. The employees of the company, realizing that they would be directly affected by unrestricted jitney bus competition, prepared and circulated a petition to the Mayor and City Council. A reproduction of this is shown in an accompanying illustration. Last reports indicated that some 40,000 signatures would be on the petition when it was presented to the Council.

One of the complications arising in Portland is the general opinion that regulation over the jitney buses should be in the hands of the State Railroad Commission. The State Railroad Commission, however, can do nothing legally until the jitanes obtain franchises from the city. Two State bills are under consideration at the present time in Oregon, one of which plans to make the jitney subject to the same regulations as the street railways and the other provides for regulation of automobile common carriers outside of the city, placing them in the category with steam railroads. Another measure is at the present time under consideration by the State Senate requiring the issuance of a certificate of public convenience and necessity prior to the beginning of any new construction or exercising of franchise rights by public utilities. This also appears to affect the jitney situation.

It is interesting to note that in Portland the principal owners and drivers of jitney buses have formed a temporary organization and plan a permanent organization and a general system for the service throughout the city. Four citizens have already petitioned the City

Council for a franchise for a permanent jitney line. The applicants intend to establish routes to all parts of the city, running on schedule from seven in the morning to twelve at night, the fare being 5 cents. Waiting stations are planned for designated places, together with signs erected at proper points.

ORDINANCE IN BOISE, IDAHO

Jitney service in Boise City, Idaho, has been recently proposed by several promoters, but in every case it has been discouraged by an ordinance which was recently passed by the city council. This ordinance appears in full on page 397 of this issue. In Lewiston, Idaho, a peculiar situation has developed in connection with the jitney-bus craze. The city has at present no local street railway, but the inauguration of jitney service on Jan. 26 brought out a great deal of comment that was unfavorable. This attitude was emphasized by the possibility that, within a short time, an electric railway will be brought into the city of Lewiston and that the prospect of jitney competition would tend to discourage the promoters. Another interesting situation arising from the jitney in Lewiston was the statement of the operators of the jitney buses that the first day's operation had shown that the 5-cent rate could not be maintained and that consequently the fare for all routes would have to be raised to 10 cents.

JITNEY SERVICE IN ST. LOUIS

In St. Louis the introduction of the jitney has developed along unusual lines. An unincorporated organization has been formed by an individual who styles himself as president and general manager. The members act as chauffeurs of the cars, each chauffeur owning his own machine. Each chauffeur is supposed to pay to the general manager 5 per cent of his gross receipts.

Under these circumstances jitney service was inaugurated on Feb. 8. On the second day of operation seven cars were in use and amid considerable enthusiasm the president of the company reported a most satisfactory day. On the third day, however, two of the jitney buses fell by the wayside after counting up the day's receipts. Features of succeeding days' operation were the entrance of women chauffeurs, and the wave of indignation which arose because of the announced ban on negro passengers, anonymous communications from negroes being reported to have stated that, "Street cars are good enough for us anyhow." The jitanes remaining in service were all seriously overcrowded, five-passenger-machines carrying eight and ten persons on one trip, and one seven-passenger car having been reported to have carried eighteen passengers, of whom six stood on the running boards, while two sat on the housed canopy with their legs hanging over the shoulders of the passengers in the rear seat.

At the end of last week, the reports were that 2000 passengers were being carried daily by eleven automobiles and one thirty-passenger auto truck. The average daily earnings of the touring cars in operation are said to have been about \$10, the record for receipts reaching a maximum of \$13.50. This applied to a man driving a seven-passenger touring car.

A remark made by the promoter of one of the auto-bus lines in St. Louis provides an interesting insight into the mental attitude of the jitney-bus operator. The statement was that it was doubtful whether the jitney-bus could be made to pay on streets other than those upon which cars were run. The passengers who were waiting for street cars were those to whom the jitney-bus appealed, and they had to see the jitney in front of them before they would consider riding in one. It was doubtful whether they would seek another street to get a bus.

No provisions for regulation of the jitney service have been made as yet in St. Louis, and on Sunday last the fares were all raised to 10 cents for the day, rides being given to those looking for an outing at various parks. Contrary to experience in other cities no serious accidents to pedestrians have been reported from St. Louis, but the operators have already provided that damages from accidents are not to be assessed upon the jitney-bus organization as a whole.

MANY ACCIDENTS IN KANSAS CITY

The jitney appeared in Kansas City about the middle of February. The service was well received by the public, and the business has grown until they now have over 200 buses in service and there are all kinds of plans for special uses of jitney buses in the air as well as plans for new routes. In Kansas City the jitneys are organized under two non-incorporated companies, to which the bus operators pay weekly fees of \$1 and 50 cents respectively for arranging schedules and routes and preventing competition. Each organization has rented a waiting station in the downtown district past which all cars run.

Congestion is the notable feature of the situation at Kansas City, although as yet no definite means for regulating the service has been developed. A number of serious accidents have already occurred, and the first death caused by a jitney-bus took place on Feb. 7. There appears to be difficulty in placing insurance for jitney owners, as the insurance companies do not care to take the risk. The committee of the city council has asked the city counselor to draft an ordinance providing for the control of the cars and for the imposition of a reasonable tax.

During the past week numerous fines have been imposed on jitney drivers for violating traffic rules, and frequent hard-luck tales have thus been brought out. These are borne out by the report that the number of small automobiles in jitney service in Kansas City seems to be diminishing. However, many larger cars, chiefly trucks fitted with bodies capable of seating from twelve to eighteen passengers, have been recruited, and these have good custom during rush hours in fair weather. The managers of the jitney associations are admitting frankly that the small cars, at least, cannot be operated profitably except on definitely arranged schedules over routes of less than 2 miles. Several large passenger cars have assumed boulevard routes, one owner picking up passengers from several family hotels.

The "Kansas City Jitney Transportation Company" is now being organized, the trustee being W. H. Miller, who ran the first jitney and has been organizing the service at one of the jitney stations. An advertisement was published on Sunday, Feb. 14, stating that subscriptions for stock would be received.

The police have been attempting to regulate the jitney traffic, but owing to the absence of a restrictive ordinance the only recourse is arrest for violation of traffic rules. Judges of city courts are fining violators \$5 and \$10 for failure to stop behind a standing street car, for driving on the wrong side of the street, for blocking traffic by standing at street crossings, for fast driving and for failure to show licenses. The judges have declared that fines would soon be increased if frequent violations continued.

There have been at least two holdups of jitney drivers and passengers. In one case the robbers forced the driver to go to the State line, where \$7.85 was taken from him and \$1.75 from a passenger. Another case was that of a visitor to Kansas City, whose pockets were picked of \$75 and railroad tickets in a jitney. One jitney owner narrowly escaped arrest by federal officers.

He had a picture of a nickel painted on the side of his car but covered it after being warned that money must not be pictured.

JITNEY MEN OPPOSE SPOKANE REGULATION

Ever since the first of February the city of Spokane, Wash., has been in the throes of development of regulatory measures of the jitney bus. Numerous letters from citizens have been received from the City Council and four different ordinances have been under consideration. Among these is one that has been prepared by the jitney operators, who have combined and employed counsel to meet the issue of regulation.

The ordinance proposed by the jitney operators includes a flat-rate license tax ranging from \$25 for cars carrying five passengers or less, and \$75 for cars carrying ten or more passengers. No bond is provided for on the ground that the jitney men will voluntarily carry insurance to protect themselves and their patrons. In commenting on this at a recent hearing, the attorney for the jitney operators stated that a \$5,000 bond or even a \$2,000 bond would mean the practical exclusion of many men from the business, but how protection could be given without it was not explained in detail. Owing to the existence of the initiative-and-referendum law in the State of Washington, the jitney operators are talking about the use of a referendum to protect the interests of the jitney operators in case a drastic ordinance should be passed, with the expectation that the public would support the jitney buses.

In a recent hearing a great deal of stress was laid on the lack of protection in the car to women and girls. Other comments by citizens are "The jitneys run when they feel like it and only where the business is best." "Any old automobile will do for a jitney as long as it hangs together." "If barbers need an examination, jitney drivers certainly do." "The jitneys are no more than pirates, unless they are made to go as far as the street cars." "Do not let the jitneys pile in passengers like pigs. I have no sympathy for adult women who sit on men's laps, but I do not approve of this for young girls." One sarcastic citizen suggested that the jitneys should provide free rides for police and firemen and half fare for children.

COMPETITION WITH SAN FRANCISCO MUNICIPAL LINE

Notwithstanding the fact that the city of Oakland has passed a jitney ordinance as outlined in the *ELECTRIC RAILWAY JOURNAL* for Feb. 13, the city of San Francisco, just across the bay, took no action for a considerable period after the jitneys began to operate, regardless of the protests against them. On Feb. 6, however, the jitneys began to operate on Geary Street alongside of the municipal street-railway line, and this, according to press reports, has awakened the interest of the local authorities in the preparation of a jitney ordinance. When inquiries began to be made as to who was responsible for the invasion of the territory of the municipal line, the leaders of the local jitney-bus association pleaded not guilty with considerable vehemence. In consequence a rumor promptly started to the effect that the United Railroads of San Francisco were behind the scheme, with the idea of showing the city fathers how the jitney competition felt. According to the local newspapers, Charles N. Black, of the railroad company, unemotionally stated that he did not even know the jitneys were running on Geary Street. However, the Mayor of San Francisco is going to investigate the unfair competition with the city-owned railroad and will announce his findings later on.

Newspaper comments point to the fact that the jitney buses as at present conducted in San Francisco constitute an almost intolerable nuisance to all except those

who wish to ride in them, and that at present those who do not ride in the jitneys greatly outnumber those who do. It is said already that pedestrians are unable to cross Market Street in the congested district without taking grave risks of accident, thus bearing out the prophecy that transportation by jitney-bus on a large scale was a physical impossibility.

REGULATION BY COMPETITION IN JOPLIN, MO.

The Southwest Missouri Railroad, which operates the electric railways in Joplin, Mo., and adjacent cities, has suffered from the jitney-bus competition for some weeks without any prospects of relief by regulation of the new service. Therefore the organization of an auto-bus company to compete with the jitneys has been hit upon as a means for driving the latter out of business. This novel expedient has been fathered by the stockholders of the railway, although they are acting in their individual capacities and not in behalf of the railroad.

The new company already has bought four new auto-buses, each with a seating capacity of twenty passengers. All are of the latest and best type, and upon arrival from the factory they will be placed in service between Carthage and Jasper, Joplin and Neosho, and Galena and Baxter Springs. The four buses contracted for are said to be only a beginning, and as many more will be obtained as may be necessary to give adequate interurban service between the towns named or to supply the demand for service elsewhere if it should arise.

The citizens of the towns to which the new auto-bus service is to be given have been waiting for some time for the Southwest Missouri Railroad Company to extend its lines into their precincts, but for good reasons these extensions of the electric railway tracks have not been built. Now, however, the towns will have an interurban service by the use of gasoline propelled vehicles.

One of the promoters, in sardonic vein, states that two advantages in the proposed mode of transportation are: First, freedom from the cost of constructing and maintaining street paving. Second, the ability to flit into a new territory whenever regulation in the original one becomes unbearable.

MYSTERIOUS PLAN FOR REGULATION

In connection with the matter of jitney-bus regulation the following self-explanatory letter is of certain interest. It has, apparently, been sent to a large number of electric railways in the country:

"To the ——— & ——— Railway Company,
"Gentlemen:

"Conscious of the growing evil of the 'Jitney Bus' as a competitor of the Street Railway Companies, I have evolved a plan, which, in my judgment, if placed in operation, will practically, and perhaps completely, eliminate the 'Jitney Bus' as a competitor of your Street and Suburban Railways.

"My Plan is short, simple and comparatively inexpensive to put into operation, and will in no way disturb the present order of your management; and I hereby offer to communicate to you the Plan upon the execution of the enclosed agreement.

"My Plan is one which your Company can operate successfully without interference by State, City or County Authorities.

"Your prompt attention will be profitable to you.

"Yours truly,

"F. A. MARCHER."

Attached to the letter is a blank form for a formal agreement proposing, for a consideration, to put the recipient next to "a Plan which, if put into operation by the parties of the second part, will work greatly to their advantage in eliminating the jitney." The consideration appears to vary from \$5,000 down to \$50. It

is not known how many clients have been obtained, but no doubt the idea is a gem. Mr. Marcher is a Los Angeles jeweler.

Standard Boiler Code Approved

The American Society of Mechanical Engineers Has Adopted Universal Standard Specifications for the Construction of Steam Boilers

The American Society of Mechanical Engineers has placed its final stamp of approval upon the standard code for the design and construction of steam boilers which has been in course of preparation for the past three years. This, it is hoped, will become standard throughout the United States. Its general adoption will make it possible for manufacturers and the public to obtain from any manufacturer in any state a uniform and safe boiler. Its formulation has made possible the elimination of the necessity which exists at present for making a special design of boiler for each state in the Union, and owing to the fact that boilers built under the new code may be universally used the cost of manufacture will be materially reduced. Before this condition is reached, however, it will be necessary for five states, namely, Massachusetts, Ohio, Pennsylvania, Wisconsin and Indiana to amend their present laws so as to permit the use of the standard code. The laws existing in these states are so different from each other as to make conditions chaotic.

It is expected that immediate legislative action toward the legal adoption of the new code will be taken in many of the states in the country as the American Society of Mechanical Engineers has been advised in many cases that measures legalizing the use of the standard code are to be proposed at the present sessions of various state legislatures. This, in fact, accounts for the pressure which has been brought upon the American Society of Mechanical Engineers and the boiler-code committee to bring out at the earliest possible moment specifications in a form such that they could be used by the state legislatures.

The successful formulation of a single code which can be universally used has been due largely to the faithful and painstaking efforts of the boiler-code committee of the American Society of Mechanical Engineers. This has been composed of John A. Stevens, chairman; William H. Bohn, Rolla C. Carpenter, Richard Hammond, Charles L. Huston and Edward S. Miller. On the original committee were also H. C. Meinholtz and E. D. Meier, but both of these members died before the work of the committee was complete. During the last seven weeks the committee met daily including Saturdays and holidays, and would frequently work until midnight, in order to complete the code and to harmonize the necessities of the various interests involved. These included the manufacturers of steel and of tubes, the builders of boilers of various types, such as heating boilers, pressure boilers, and agricultural boilers, and the makers of safety valves and other classes of boiler equipment.

By instruction of the Council of the American Society of Mechanical Engineers, the code as now issued covers only the design, construction and materials entering into the boiler. Rules for inspection, for operation and for licensing operators have not been included at the present time. The society, as such, will have nothing to do with the work of getting the standard code adopted by the various state legislators, as that is obviously the province of the various governing bodies interested. It has not been thought consistent for the organization which has been interested in the

technical details of the code to concern itself with the making of the laws by which these details may be brought about as a universal standard.

It might be said at this time that the new specifications do not apply to boilers which are subject to federal inspection and control, including marine boilers, and boilers of locomotives and other self-propelled apparatus. The new code will be printed and ready for distribution within a few weeks.

Status of the Engineer

Noted Engineers, Executives and Educators Contribute to Important Symposium in New York on February 17

The Wednesday evening session of the third midwinter convention of the American Institute of Electrical Engineers was devoted to a symposium on the status of the engineer. Those contributing to the discussion were L. B. Stillwell, E. W. Rice, Jr., E. M. Herr, Alexander C. Humphreys, George F. Swain, H. G. Stott and J. J. Carty. The chairman of the meeting was President P. M. Lincoln.

Mr. Stillwell defined the character and reputation of the engineer and pointed out how the latter can be improved. He outlined what the engineering societies can do in this direction, particularly by more carefully selecting and grading their members and by enforcing their codes of ethics, expelling members who violate them. Joint committees of the engineering societies might also reach a decision for or against the licensing of engineers. Engineering societies can also assist in improving the status of the engineer by furnishing information to legislative bodies regarding broad economic policies.

Mr. Rice pointed out that honesty is a habit with the engineer, necessarily so because his work must stand the test of experience. He pointed out a new field for the engineer in politics. The House of Representatives and the Senate of the United States are largely made up of lawyers, 65 per cent in the former and 75 per cent in the latter, while there is only one engineer in both houses. He believed that the engineering fraternity should be represented not only in an advisory capacity but also in an administrative one.

Mr. Herr showed that engineering and the engineer must stand for progress and improvements. An important field in addition to others mentioned for the engineer is the commercial one. The handling of men is a most important part of his work. Mathematics, which forms a vital element of the engineer's training, unfits him for solving human problems. He must apply himself to solving these human problems and in doing so the reaction upon him will be favorable.

Dr. Humphreys stated that the sooner a young man gets the fundamentals of engineering and graduates into the school of experience the quicker will he become a real engineer. He should, of course, have more than the mathematics and science of engineering, but life is too short to study in college all that might be desired. Dr. Humphreys especially dwelt upon the work of engineers as public service commissioners. While he did not advocate commissions made up exclusively of engineers, he thought that an adequate representation of engineers should be the rule.

Prof. Swain contended that the engineer is recognized to the extent that he deserves. In analyzing the status of the engineer as a leader, he pointed out that this depends upon knowledge and personal qualities, of which the latter are more important. If the engineer does not lead it is largely because he lacks the necessary personal qualities. In Prof. Swain's opinion, engineers are adequately paid and recognized as

compared with other professional men. Engineering training as given does not attract the best type of men and it has a tendency to narrow the outlook of those who take it. The remedies for this condition are first to induce more able men to embrace the profession by pointing out to them its possibilities. Technical education should be influenced in the direction of providing broader training and giving skill in the use of English. The engineer should somehow be given a broader outlook upon engineering problems, as the great questions of the day are not mathematical but social.

Mr. Stott made a plea for the government engineer, who, in his opinion, does not receive proper recognition. The great public works performed under government supervision are due to engineers who are not adequately paid and who receive little fame for their endeavors. Taking up the subject of specializing, Mr. Stott showed that engineers must necessarily be divided into two classes: first, those who specialize and whose reward is in achievement in one or two lines; second, those who generalize and gradually pass from engineering to administrative work.

In closing the discussion, Mr. Carty showed that the engineer is one who can design machinery to produce results at an ultimate cost lower than is possible without it. A labor-saving machine is really a labor-making machine unless it produces this result, for while it may transfer the labor to remote parts of the economic system, the labor is there just the same.

Need of Regulation

W. W. Atterbury, vice-president in charge of operation of the Pennsylvania Railroad, in a recent address before the combined commercial organizations of Philadelphia, discussed the subject of regulation. Mr. Atterbury said that regulation heretofore has largely consigned itself to correcting transportation abuses. The evils are obvious, but so much attention has been paid to the pulling of the weeds in the transportation garden that the very important duty of cultivating and strengthening the growth of the healthy and useful plants has been neglected. In Mr. Atterbury's opinion, the great transportation machine of this country is found. It needs continued regulation, but the regulation must be competent and sympathetic. The most pronounced weakness of the present system is that it is incompetent. Laws are lightly passed by legislatures without any real knowledge of what is involved, and action is taken by commissions who have no full conception of the delicate mechanism they are handling, or of how the public interest may be finally affected by their lack of experience and training.

To overcome these defects, Mr. Atterbury made the following suggestions:

"A minority of the railroad commissioners of the states and nations should consist of men trained in the practical conduct of railroad affairs. All appointments should be for life or during good behavior, and the salary should be such as to attract the ablest brains in the country. These positions should be surrounded with such prestige and honor that any citizen would feel that he could serve his country and his fellowmen in no more exalted capacity than in representing the people in promoting, encouraging and regulating the development of its transportation agencies. The business men of the country, whose welfare is so intimately interdependent with the transportation system, represent the class of citizens from whom the initiative should come in putting a new spirit into the present system of regulation. Scientific management is needed in business but it is also needed in regulation or the latter must and will result in strangulation."

ANNUAL CONVENTION
SAN FRANCISCO
OCTOBER 4 TO 8, 1915

American Association News

ANNUAL CONVENTION
SAN FRANCISCO
OCTOBER 4 TO 8, 1915

Reports of Meetings of Committees on Rules, Engineering-Accounting and Passenger Traffic—Additional Details of First Manila Section Meeting—Manufacturers' Association Notes

COMMITTEE ON RULES

A meeting of the committee on rules was held in New York on Feb. 11, 1915. There were present W. H. Collins, chairman, Gloversville, N. Y.; Edward Dana, Boston; W. R. W. Griffin, East Liverpool, Ohio; S. W. Greenland, Fort Wayne, Ind.; C. E. Morgan, Jackson, Mich.; W. C. Callaghan, Helena, Mont.; and L. H. Palmer, New York. J. W. Brown, Newark, N. J., representing the committee on block signals, also attended the meeting.

The matter of indexing of rules of the city and interurban codes was first taken up and this was referred to Mr. Palmer to act in conjunction with Secretary Burritt. The rules covering markers and their location, which had been referred back to the committee by the 1914 convention, were then discussed at length, and a new rule regarding display of markers was adopted, providing greater flexibility in the character of signals than was the case in the rule proposed last year, yellow flags and unlighted marker lamps being permitted as alternatives to the usual green flags for day indications, and yellow as well as green lights at night. It was then decided unanimously to re-submit to the 1915 convention the three rules covering the display of classification signals that were submitted in the 1914 report to take the places respectively of present rules 105, 106 and 107.

In connection with a subsequent discussion as to the advisability of displaying flags by night as well as lights, it was decided to follow present customary practice on interurban railways, and to omit flags by night, lights only being displayed.

The matter of the use of the flagging rule on block signalled roads in cases where communication with the dispatcher could not be established, as referred to the committee by the 1914 convention, was then taken up. Mr. Collins read a number of replies to a letter that had been sent by the committee asking for opinions from electric railway operators. It was moved by Mr. Dana to appoint a sub-committee to confer with the block-signal committee regarding the modification of rule 554 now in the standard code of block signal rules. This sub-committee was instructed to draft a new form for the rule for the information of the block signal committee and to submit it by mail for the consideration of that committee. The sub-committee was instructed also to consider possible further modifications in all of the block signal rules. Chairman Collins appointed to this sub-committee Messrs. Palmer, Morgan and Greenland.

J. W. Brown of the committee on block signals then presented a statement from the block signal committee regarding the contactor signal rule No. 10, as submitted at last year's convention. This statement included letters from the signal manufacturers, whose opinions were divided. It was decided to send copies of the correspondence to the members of the newly-appointed sub-committee on block signal rules for their consideration and action on the matter.

Mr. Morgan then moved to re-submit at the next convention the modified form of present rule 159 that was proposed in the 1914 report of the rules committee. This was carried.

It was then decided to have published a statement that the rules committee was prepared to pass upon questions of interpretation of the standard rules that

might arise on the lines of member companies, in accordance with the resolution to this effect passed at the last convention.

The committee referred to Secretary Burritt the work of compiling and analyzing operating rules that have been established by the various state commissions and also asked him to report upon the number of railways that have adopted the standard rules of the association since the 1914 convention. The committee then took under advisement the request of one of the member companies to pass upon the scope of an order that had been issued on one of its lines to cover a specific train movement, and after discussion a detailed reply was formulated and submitted to Secretary Burritt for transmittal.

JOINT COMMITTEE ON ENGINEERING-ACCOUNTING

A meeting of this committee was held at the rooms of the Railroad Club of New York, 30 Church Street, on Feb. 5. Those present were C. R. Harte, New Haven, Conn., chairman; F. H. Sillick, New York, co-chairman; C. H. Clark, Cleveland, Ohio; M. W. Glover, Mobile, Ala.; C. H. Lahr, Akron, Ohio; R. J. S. Pigott, New York, and J. P. Ripley, New York. After general discussion to determine the best possible organization the following members were assigned as sub-committees to consider the subjects indicated: To draft a set of standard forms for use with the system recommended by the 1914 committee; J. P. Barnes, Rochester, N. Y., chairman, and Messrs. J. C. Collins, Rochester, N. Y., Lahr and Clark. To revise sub-division of operating maintenance accounts to meet the new Interstate Commerce Commission classifications; F. H. Sillick, New York, chairman; and Messrs. Harte, Ripley and H. A. Gidney, Boston, Mass. To develop a proper ledger for the maintenance of a continuous inventory; F. H. Sillick, chairman; and Messrs. Clark, Glover and Martin Schreiber, Newark, N. J. A general discussion on the broader phases of the subject followed the appointment of committees. The sub-committee on the continuous inventory ledger was scheduled to meet the following day and the other sub-committees were to meet on early dates.

COMMITTEE ON PASSENGER TRAFFIC

This committee, of which P. P. Crafts, Davenport, Iowa, is chairman, has sent out a form for collecting data on one-man car operation, on the effect of the use of automobiles on interurban and suburban passenger traffic and on the motor bus and trackless trolley. The last named does not include the so-called "jitney" bus, which is to be covered in another data sheet. More than fifty main topics are considered, some of these being divided into many sub-topics. The committee wishes full information concerning the extent of one-man car operation, the conditions under which such cars are operated and the results secured. The proposed analysis is very thorough and includes all factors even to details of car arrangement and alterations made in old cars when such were adapted to fit the new service. Opinions are requested as to the effect of the use of automobiles on passenger traffic with details of the methods followed in studying the situation. The motor bus and trackless

trolley situation is taken up to determine the effect on trolley lines of the use of these vehicles, especially as to whether the buses act as feeders or as competitors.

PUBLIC SERVICE COMPANY SECTION

The regular meeting of Company Section No. 2 was held in Newark on Feb. 18. In accordance with the program outlined in last week's issue, page 337, the topic of the meeting was electric railway promoting and financing. L. D. H. Gilmour, general solicitor of the company, summarized the history of New Jersey laws under which electric railways are incorporated and enumerated the steps involved in promoting and incorporating a project. He illustrated some of the difficulties of such work by relating several humorous personal experiences. He showed by census returns that, in northern New Jersey, Public Service serves a population of two millions and at the assured rate of growth due partly to nearness to New York, a good future is before the company.

H. C. Donecker, assistant general manager, prefaced his paper with an excellent summary of the benefits of company section activity to the men and their employers. He emphasized the Public Service motto, "Safety, Courtesy, Loyalty." He then contrasted old and new methods of corporation financing, defining clearly such terms as bond, stock, mortgage, car-trust certificate, discount, bonus, "water," etc., and concluded with an explanation of the details of the Board of Public Utilities' supervision of electric railway financing.

MANILA ELECTRIC RAILROAD & LIGHT COMPANY SECTION

In the issue of the ELECTRIC RAILWAY JOURNAL for Feb. 13, page 337, some details of the organization of section No. 5 were given. The first meeting, held on Dec. 15, was a great event in the community. The attendance was over 500 and the meeting was held in the roof garden on the Company's building, which compares favorably with any roof garden in New York.

L. L. Vincent, superintendent of electrical testing, presented a paper on "The Future of Electricity in the Philippines." He first outlined the history of the development of electric lighting and of the telephone and the telegraph, and then analyzed the conditions in the islands as they relate to the use of electricity. In his opinion there appears to be little prospect that the power business will be much more than a by-product of the lighting business for some time to come. He urged the development of the water powers, with government aid if necessary, as a factor in the economic independence of the country and showed the relation of this to electric railroading. He said also "that electrical transportation awaits that condition of intense commercial activity when a people has already amassed wealth, and can afford expensive machinery for applying it," implying thereby that the future of the electric railways in the Philippines will keep pace with the industrial growth of the country.

In closing the discussion C. N. Duffy, vice-president, outlined the relative status of railways, lighting and power in the United States and took a different point of view from that of Mr. Vincent with respect to the future of the local power business.

The executive committee has appointed the following chairmen of committees: Membership, F. J. Tew, superintendent of shops and carhouses; program, C. E. Haywood, superintendent of track; reception, Jerome Grindstaff, inspector transportation department.

MANUFACTURERS' ASSOCIATION

A committee consisting of W. F. Culler, chairman, E.

J. Clark, Edwin B. Meissner and A. S. Partridge, attended the National Foreign Trade Council Convention held recently in St. Louis. The chairman reported that Secretary McConnaughy's office would be furnished promptly with a report of the discussion on foreign trade conditions, to be filed for the use of members.

Another committee, consisting of C. C. Peirce and H. G. McConnaughy attended the third annual meeting of the Chamber of Commerce of the United States in Washington. They call attention particularly to the papers by the Argentine ambassador, Hon. R. S. Naon and Vice-President McRoberts of the National City Bank of New York. The former suggests to manufacturers the desirability of initiative in sending at least small cargoes to Argentina, and especially of their adapting themselves to the custom of not demanding payment on delivery. Mr. McRoberts made a clear statement regarding the practical possibilities of financial investments abroad, showing remarkable opportunities for American manufacturers. Full reports of this meeting will be sent to the members of the association.

COMMUNICATIONS

Important Factors in Steam Railway Electrification

PHILADELPHIA, PA., Feb. 5, 1915.

To the Editors:

Mr. Murray's presentation of the electrification problem, as abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 30, 1914, is most interesting, especially as figures are given for the various costs. These are likely to prevent any careless assumption that electrification should be introduced indiscriminately but that each problem must be studied in connection with its own environment.

Mr. Murray states that the success of electrification is entirely dependent upon density of traffic, but the writer thinks that uniformity of traffic is equally important, otherwise the power plant must be large enough to take care of the occasional "peak loads," and the average load factor may be so low that the savings in operation will be more than overcome by the excessive overhead charges. This was demonstrated several years ago in connection with the New York Central electrification, which showed a saving over steam operation, but if a greater variation in the load had entailed a power plant of twice the size, the economy of operation would have been in favor of steam locomotion.

In the discussion of this paper at the Franklin Institute meeting it was stated that the fuel comparison was made with the former saturated steam locomotives, so that modern superheater engines would probably use only one and one-half times as much coal as the electric power plant, instead of twice as much for the same power at the drawbar. This will very considerably affect the comparison.

In considering the cost of equipment and installation, it is stated that electric and steam locomotives for suburban service would cost about \$40,000 and \$15,000 respectively, and that for every electric engine purchased the railroad would be justified in making a capital investment of \$40,000 to cover cost of power plant and transmission equipment. As the latter depends largely upon the mileage operated, it is evident that a great difference due to environment would exist between a road, like the New Haven with about 1½ miles of track per locomotive, and another, such as the Northern Pacific with 4½ miles to each engine. In the latter case the capital investment per locomotive would be about 50 per cent greater than in the former case. Such an applica-

tion to terminal yards would be very costly, as the proportional mileage would be even greater.

In pleading for conservatism in these matters, Mr. Murray shows that he has a clear conception of the costs and difficulties in the matter of financing, and does not claim the unconditional advantages assumed a few years ago by some electrical experts, regardless of the local conditions and environment of the properties to be electrified.

GEORGE R. HENDERSON, Consulting Engineer.

Starting Resistance for Railway Motors

NEW YORK, Feb. 16, 1915.

To the Editors:

I have read the article by Professor A. M. Buck, appearing in the issue of the ELECTRIC RAILWAY JOURNAL for Feb. 13, 1915, page 330.

I find this study very interesting, especially the graphical solution, which gives a clear idea of how the IR drop subdivides itself between motor and external resistance and also shows the variation of the rather elusive counter-emf. A further merit of this study is that it explains clearly how to produce a good equivalent of the saturation curve, which is very seldom in the hands of the railway engineer not connected with the manufacturing concern. A glance at this substitute, which is defined as the "tractive effort per ampere" curve, reminds one of another very familiar curve, the usual speed characteristic curve as it would appear if turned upside down. In fact, it would be easy to demonstrate that if the efficiency of the motor were constant the ordinates of this curve would be proportional to the reciprocals of those of the speed curve. As it is, the variation of the efficiency, which is not very great between the ordinary current limits, alters somewhat the reciprocal relation.

The foregoing consideration is made to point out how this solution to determine the starting resistances, although absolutely different from mine published in the ELECTRIC RAILWAY JOURNAL of Dec. 26, 1914, has, however, some points in common with it. In Fig. 2 of Professor Buck's article the lines of voltage drop correspond to the speed lines in Fig. 6 of my article. Again, in his Fig. 2, we might consider the lines $A'B$, $B'C$, etc., to be corrections of the counter-emf corresponding to corrections in the speed factor in my construction.

As to the practical use of Professor Buck's method, the graphical solution as given is indeed of very simple character and general use, but it saves but a small part of the work required to reach the final determination of the resistances. In this problem the graphical solution is there to check up the final results and to give the first hint as to how the resistance steps are to be chosen. It would require good luck indeed to strike at once the values of resistance which would serve equally well for series and parallel. The fact is that, after having obtained a satisfactory arrangement either for series or for parallel only, we have first to calculate the resistances of the resistors per motor for the position considered, series or parallel, and then to check up to see if the resulting resistances per motor for the other position are acceptable. This operation will very likely have to be repeated. Hence, what we need is not only a simple graphical solution but also simple and quickly usable formulas connecting the data of the figure with the resistances which we wish to determine.

In my method I use $R = (\alpha - 1)r$, which is simple enough. In Professor Buck's method the graphical solution gives only voltage drops and counter-emfs, thus saving only part of the work to solve for the values of R in the formulas.

F. CASTIGLIONI.

The Sale of Scrap Metals

PITTSBURGH RAILWAYS COMPANY

PITTSBURGH, PA., Feb. 5, 1915.

To the Editors:

The article in your issue of Jan. 23, 1915, on the "Sales of Scrap Metals" is one which is of particular interest to me, and it seems is entitled to much thought and study by every one who handles such business for any company.

The article states that the average scrap value of copper and brass sold during a period of four years, ending 1911, was 20 cents per pound. There would seem to be some unusual condition surrounding the sale of scrap where such prices were paid, since the average price per pound of new electrolytic copper during the four years mentioned was \$.12985, New York, according to the statistics of a national authority. Your readers would undoubtedly be interested in knowing how such prices can be obtained.

The sale of scrap metals at regular intervals is equivalent to a practice by a steel mill or brass foundry of making its purchases of new or scrap metals at regular intervals during the year without regard for the market conditions. If the whole country were canvassed, I doubt whether it would be possible to find any concerns who would do such a thing.

The brains of the organization will be found studying the problem and taking advantage of the market to increase the profits. The scrap dealers make their living by taking advantage of the varying market conditions.

Even though the sale of scrap material is merely an incident to the operation of a transportation company, and inefficiency in this regard would not mean success or failure to the same extent as with a foundry, for instance, yet it is just as important for an electric railway to exercise the brains of its organization in handling such business and taking the profits.

We have observed that with some companies the sale of scrap materials is handled by one who is unfamiliar with the subject, who, himself, has no knowledge of the materials, how it can be assembled and graded to bring the best prices. Some companies large enough to have a considerable accumulation of scrap materials still adhere to the old-time practice of selling "mixed scrap"—meaning that no attempt is made to assort it according to the standard classifications, which specify the grading most convenient for the mills. Where it is not properly assorted it is usually impossible to sell to the mills. The scrap dealer who buys it grades as he loads it or ships the indiscriminate mass to his yard and grades it there. For all of which the company selling the scrap must pay in reduced prices.

There is such a diversity of practice, which is not wholly the result of peculiar local conditions, that it would be interesting to have a discussion through the columns of your journal on this important subject.

Many five-cent fares can be saved right at the scrap pile.

B. J. YUNGBLUTH, General Storekeeper.

[NOTE—In answer to the inquiry in Mr. Yungbluth's letter, Mr. Alexander says that the price of 20 cents in his article in the issue of Jan. 23, referred to copper scrap only.

He states that this was obtained as an average during a six months' period of reconstruction by a medium-sized electric railway in the year mentioned, owing to the high price of copper at that time. He says that the figure was given to indicate the desirability of being able to arrange and carry out sales quickly to take the advantage of good prices that might prevail temporarily.—Eds.]

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.)

Equipment Defects—Controller Reverse Drums and Interlocking Mechanism

BY C. W. SQUIER, E.E.

Reverse Drums.—The most common form of controller reverse drum consists of a wooden cylinder with the necessary copper contacts mounted on it and fastened with screws. Some of the later types of controller have reverse drums made of a molded insulating material and have the contacts molded in place. This is a much better construction as it does away with the trouble of loose contacts due to the working out of screws. The principal argument against its general adoption is that the entire drum has to be replaced whenever the contacts become excessively worn or burned. The wear on the reverse contacts is very small, however, due to the few operations of the reverse drum as compared with that of the main drum. Hence the contacts do not require frequent renewal. As the circuit is never opened on the reverse drum the only cause for burning of the contacts is insufficient pressure of the fingers for carrying the motor current or poor contact between the fingers and their contacts. By proper care of the fingers excessive burning will be prevented and the life of the molded reverse drum thus made equal to that of the wooden drum with less liability to short-circuits.

A type of reverse drum built up of insulating bushings fitted to a shaft and held in place by a clamping nut was developed several years ago. While this type has not come into general use, it has an advantage over the molded cylinder in that the contacts can be easily renewed without the necessity of replacing the complete drum, as the contacts consist of punchings clamped between the bushings.

Aside from contact troubles, the difficulties experienced with reverse drums are very few. The drums sometimes become loose on the shaft due to wear on the pins or drum but this is overcome by more frequent renewal, and short-circuits sometimes occur due to the accumulation of oil and dirt on the surface of the drum. Whenever a short-circuit does take place the drum is usually destroyed as no provision is made for opening the circuit on these drums.

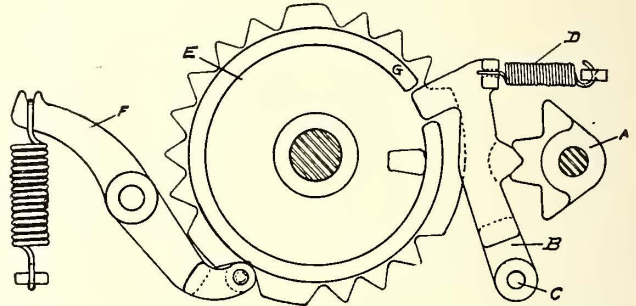
INTERLOCKING MECHANISM

Controller power and reverse drums are so interlocked that the reverse drum can be thrown only while the power drum is in the "off" position, and the power drum can not be operated while the reversed drum is in the "off" position. This interlocking prevents the opening of the motor circuit on the reverse drum, as it is necessary to shut off power by throwing the main drum to the "off" position before the reverse drum can be thrown.

One form of interlocking mechanism for a railway controller is shown in an accompanying illustration. The star wheel *A* is pinned to the reverse drum shaft, so that any movement of this drum operates the reverse pawl *B*, which is pivoted at *C* and held in contact with the reverse star wheel by the spring *D*. The main star wheel, which is shown at *E*, is pinned to the main

or power drum shaft. *F* is the main pawl, and its function is to make certain that the main drum is stopped only on the operating points of the controller, and not between notches, by the roller at the end of the pawl riding into the different notches of the star wheel. This insures a quick movement in passing from notch to notch and also enables the motorman to feel when he has the controller drum on the various points.

The mechanism as drawn shows a position with both the power and reverse drums in their "off" position. It is seen that the upper end of the reverse pawl *B* fits



DETAIL OF INTERLOCKING MECHANISM

into an opening in the rib *G* of the main star wheel to lock the main drum against turning. By throwing the reverse drum to either the "forward" or "reverse" position the pawl fits into a deeper notch of the reverse star wheel so that the end of the reverse pawl is withdrawn from the opening in the rib of the main star wheel, and the main drum can then be rotated. As soon as the main drum has been moved from its "off" position, however, the rib *G* on the main star wheel prevents the reverse pawl from moving far enough to permit throwing the reverse drum. The drum is then locked against turning.

TROUBLES WITH THE INTERLOCKING MECHANISM

The principal troubles experienced with the interlocking mechanism are broken pawl springs and loose star wheels. Most pawl springs break at the first turn from the end. This may be due to improper material or manufacture, or to the method used in installing the springs. The end loops of the springs should be made with a sufficient opening so that these loops may be readily hooked into the eye of the pawl or stationary post where this method of fastening is used. Where the end loops are entirely closed it is necessary to open them when the springs are installed. The usual practice is to open the loops with a pair of pliers or a screw driver, hook the end into the eye and then close the loop slightly again. This is liable to start a fracture in the spring which will ultimately cause it to break. All springs should be made with a large radius curve between the loop and the first turn as sharp bending at this point is often the cause of their breakage later.

When installing springs after the loop has been hooked into the eye, it is necessary to stretch the spring in order to fasten the other end. This is usually done by one of the following methods: By using a pair of

gas pliers around the spring, by gripping the loop with a pair of pliers, by using a screwdriver as a lever through the loop, by forcing a screwdriver between the turns of the spring or by using a wire or cord through the loop of the spring. Where the last method can be used, it is the best because it is least liable to injure the spring. Some controllers are so constructed, however, that it is next to impossible to install a spring without straining it.

In a number of cases, I have found that a slight change in the stationary spring post will permit easier and quicker installation of the springs. The practice of forcing the point of a screwdriver between the turns of the spring and then using this as a lever to stretch the spring is very bad. This is sure to force the turns apart, so that they will not close again, thus weakening the spring. The turns at this point suffer a severe strain as well.

I have seen controller men use a blow-torch to take the temper out of the springs to make them easier to install. They were also under the impression that it was the tension that caused the springs to break, and that by taking the temper out of them the troubles due to breaks would decrease. It is needless to say that such a spring is worthless in a short time because it takes a permanent set too readily. The best design of interlocking mechanism is one in which all the parts are carried on the controller cap plate, so that when this is removed the entire mechanism is open to inspection, and any necessary renewals can be made quickly and easily at the bench.

Car Life of Plain Curves

BY M. BERNARD, ASSISTANT ENGINEER WAY AND STRUCTURE DEPARTMENT BROOKLYN RAPID TRANSIT SYSTEM

Not many data seem to be published concerning the life of open-hearth steel rails in comparison with manganese steel rails located in curves. For this reason the following service study may be of interest to other way engineers.

The curves in question are located under the Brooklyn Bridge deck near Fulton and Tillary Streets, Brooklyn; the inner (east-bound) curve is at the foot of a 4.5 per cent grade while the outer (west-bound) curve is located practically in a horizontal plane.

EAST-BOUND PLAIN CURVE

Installed	Construction	Renewed	Life	Number of Cars
December, 1907	70 lb. A. S. C. E.	April, 1909	1 yr. 4 mos.	750,000

Running rail with guard of same section. Open-hearth steel. Estimated cost of 1907 installation, \$600.

RENEWAL OF EAST-BOUND PLAIN CURVE

Installed	Construction	Renewal	Life	Number of Cars
April, 1909	80 lb. A. S. C. E.	Probably July, 1915	6 yr. 3 mos.	3,525,000

Manganese steel double-web section for inner rail as shown in sketch. Open-hearth steel 80-lb. A. S. C. E. Running rail with bolted-on rolled guard for outer rail. Estimated cost of 1909 installation, \$1,600. Inside radius of middle portion of this curve, 37 ft. 7½ in.

WEST-BOUND PLAIN CURVE

Installed	Construction	Renewed	Life	Number of cars
December, 1907	70 lb. A. S. C. E.	June, 1911	3 yr. 6 mos.	1,290,000

Running rail with guard rail of same section. Open-hearth steel.

Installed	Construction	Renewal	Life	Number of Cars
June, 1911	80 lb. A. S. C. E.	Probably March, 1916	4 yr. 9 mos.	1,750,000

Open-hearth steel. Inside radius of the middle portion of curve, 47 ft. 7½ in.

The foregoing comparison will give an approximate idea of the relative values of weight of rail and kind of steel in curves. It shows also the influence of grade upon the life of curves.

Maintenance of Cars at Rome, Ga.

BY A. WADE, MASTER MECHANIC, ROME (GA.) RAILWAY & LIGHT COMPANY

We operate five equipments of 12-A motors, one 92-A, two 101-B, one GE 52, one GE 54, six GE 67 and four GE 219. All of these motors are mounted on single trucks, with cars averaging 11½ tons in weight. The data follow:

	1913	1914
Total car-miles	607,100	627,428
Total cost of maintenance of cars	\$8,592.78	\$8,176.48
Total maintenance of cars per car-mile, cents	1.465	1.303
Total cost of oil for cars and truck curves	\$153.61	\$151.97
Cost of oil per 1000 car-miles, cents	25.31	24.22
Average mileage made by 33-in. chilled iron car wheels	46,700	39,214
Average energy required to operate cars per ton-mile, watts	143.0	135.9
Derailments	56	33
Car failures	10	7

The low wheel mileage in 1914 was due to several broken axles, which prevented the wheels on such axles from being used up to the limit of their useful life.

In the item of "car failures" we have listed only the car failures that were serious enough to delay the schedule ten minutes or more.

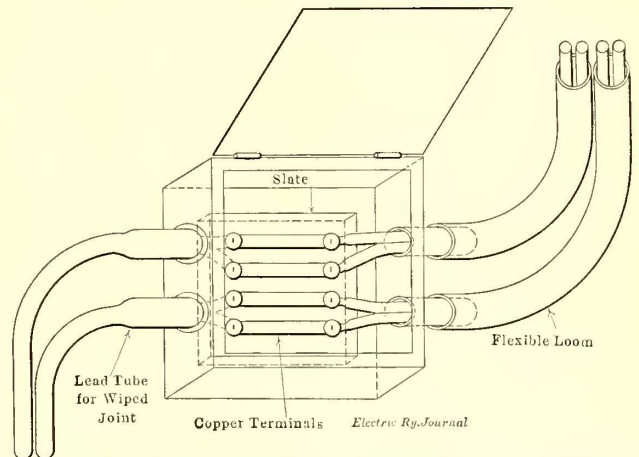
In the item of "average energy required to operate cars per ton-mile" we have metered, at the d. c. busbars at the power house, the entire kilowatt hours required to operate the motors, heaters, interior lighting, arc headlights, and we have also included the line losses.

A Home-Made Junction Box

BY J. G. KOPPEL, ELECTRICAL SUPERINTENDENT OF BRIDGES, SAULT STE. MARIE, MICH.

The accompanying illustration shows a home-made junction box, installed between paper-insulated, lead-covered and extra flexible rubber-insulated loomed cables.

A short time ago a steam drive for a drawbridge



JUNCTION BOX INSTALLED ON CENTER PIER OF DRAWBRIDGE TO CONNECT STRAIGHT RUN AND FLEXIBLE CABLES

was replaced by an electric motor. The cables for the motor energy supply were installed underground in clay ducts and the ends were run up the center pier of the bridge. From the base of this center pier a coil of extra flexible, rubber-insulated and loomed cable was run, so arranged that when the draw swings out the coil will unwind, and when the draw swings in the coil will rewind. The problem, however, was to find a suitable junction box which would permit the lead-covered cables to stay in place permanently while the flexible cables could be disconnected after due wear without breaking a costly wiped joint.

Several catalogs were examined for a suitable pot-head but without success, because the clearance between the steel and the masonry was too small to permit the use of a standard pothead. The problem was solved by making a steel box with a hinged and rubber-gasketed cover into which was placed a slate slab cut from an old switchboard and drilled for four copper terminals, with thumbscrews on each end of the terminal. On one end of the box two lead sheaves were soldered to take the lead-covered cables and to make a wiped joint, while the other end of the box was fitted with two iron-pipe nipples to take the loomed cables. Lugs were put on the cable ends and secured to the terminals, after which the box was filled with hot ozite compound. The job was finished by coating the outside of the box with weatherproof paint.

Maintenance Costs—Reducing Handling of Equipment and Departmental Co-operation

BY H. A. LEONHAUSER, ASSISTANT SUPERINTENDENT ROLLING STOCK AND SHOPS UNITED RAILWAYS & ELECTRIC COMPANY, BALTIMORE, MD.

Much has been said and published in the past two or three years in regard to maintenance costs of railway equipments, while but little has been published as to the enormous saving that could be effected by proper schedule speeds, proper car spacing, proper handling of equipment by the platform men, especially the motormen, and proper co-operation of the several departments; namely, transportation, power and overhead line, maintenance of way and purchasing.

The operating department as a rule endeavors to bring its receipts per car-mile up to the highest standard. In order to accomplish this it generally does three things: first, reduces the running time, which, of course, means greater speed; second, reduces the lay-overs, and third, lengthens the headway, which means increased capacity and weight of car. The first means that the equipment is called upon to withstand conditions for which it was not designed; namely, the improper handling by the operator; the second and third mean the overloading of the motors, axles, springs, etc., thereby increasing the maintenance costs decidedly, to say nothing of the possibilities of increasing the troubles of the claim department as well as loss of revenue due to the inability of the conductor to collect all fares.

There is not the slightest doubt in the minds of those who are in charge, or those who have studied maintenance costs, that a saving of at least 25 per cent can be effected by the proper schedule speed, spacing, and, above all, the proper and careful handling of the equipment while in service. There is a great difference in motormen. Some take an interest in the equipment generally, which means not only an enormous saving but adds much to the safety and comfort of the riding public, while others do not take the proper care and interest. It is the men in the latter class who are responsible for many failures, delays and increased costs generally. It is not uncommon to see a motorman operating a car with the controller on the proper running notch either in series or in parallel with the brakes applied. If we stop to analyze this particular "stunt" to find out what it means we can readily see without the slightest doubt how it increases the maintenance costs.

IMPROPER CONTROLLER MANIPULATION WITH BRAKES ON

First, improper controller operation with brakes on means the overloading of the motors. This causes a decided rise in temperature, which means deterioration of the insulation and consequent burn-outs of armature

and field coils, burning off of leads, and the flashing at the brushes, which frequently extends to the motor frame, melting a portion of the brush-holder as well as the spring. The last trouble leads in many instances to controller explosions which, in turn, add to the troubles of the claim department. Further unnecessary and frequent blowing of the circuit breaker increases the maintenance costs of that part of the equipment and also disturbs, even if it does not frighten, the passengers. In cutting out the controller a much heavier current is broken, and when we consider how often a controller is cut out in a day (to say nothing of a year) we can readily understand how this cutting out increases the cost due to excessive burning of the fingers, tips, contact plates and arc dividers. These troubles also lead more or less to controller explosions.

If the motorman dwells on the resistance points under the conditions aforesaid the resistors reach a red heat in a few moments, causing the mica tubes to break down and the grids to warp; the same result applies particularly to grades without the brakes applied. It is far better on steep grades to bring the car to a stop and then start up with the controller on the series notch or running point, rather than to cut in and out continually. The latter action not only makes resistance defective in time but is severe on gears and pinions.

Second, the application of the brakes with the power on means the grinding away of brakeshoes and wheels. Both are very expensive items, wheels especially so. It has been my good fortune, as well as duty, to inspect all worn-out wheels in this city for many years. It is appalling to one who has had years of experience in the inspection of cast-iron car wheels to see so many relegated to the scrap heap, when they should have given approximately from four to six months' further service; or in other words from 12,000 to 20,000 miles more.

RUNNING OVER SPECIAL WORK

Third: "Run slow through switches, curves and over crossings" is a splendid rule. What does this rule mean? It means that we would have very few broken or bent trolley poles, bent trolley wheels, broken or torn-off trolley boards, and last but not least, damaged hoods. What does it mean to the overhead line department, and still more, what does it mean to the maintenance of way department? In so far as the latter department is concerned, the passing or running over crossings or special work soon hammers them out of shape, bringing or diverting the trouble again to the car equipment, resulting in bent axles and chipped and broken flanges. Passing or running through switches too rapidly very often causes the rear wheels or truck to jump the switch. This generally means considerable damage and expense to the equipment, to say nothing of the possibility of disabling the car by breaking off motor leads, etc., or of bending the brake rods.

CORRECT USE OF AIR BRAKES

Further, the proper and careful handling of air brakes means a great reduction in maintenance costs to those in charge of the equipment. An air brake is really a luxury and should be looked upon as such by all motormen. To stop an ordinary 42,000-lb semi-convertible car in city service under average rail conditions, two applications, or two movements of the valve, are sufficient. Yet in many cases motormen make from four to six applications, thereby wasting from 50 per cent to 60 per cent of the air. This increases the maintenance considerably, due to the grinding in, or scraping, of the valve parts. In short, wasting air means increased energy consumption, as well as increased maintenance costs for the electrical and mechanical parts of the compressor, for the governor, brake cylinder, brake levers, rods, pins,

wheels and shoes. One more point is the heavy shock that is transmitted to the transom bars by failure to exhaust the air to make a smooth and even stop. This adds appreciably to the maintenance account, to say nothing of the inconvenience to passengers, especially to those who are standing.

FLAT WHEELS

The question of flat wheels is another item that is directly in the hands of the motormen as one which not only increases maintenance costs decidedly, but also brings into play the wheel grinder with costly carborundum wheels and expensive energy or truing shoes, to say nothing of rail corrugations. Another point which should be kept before the motormen is that flat wheels not only pound and loosen bolts, but are detrimental to the equipment generally. They also lead to complaints from the public, and officials of the company know where these complaints generally end.

STORMS

Operating and drifting through water slowly and carefully again depends upon the judgment of the motorman. Lamps should be turned on at the beginning of an electrical storm. The spinning of the wheels during a snow storm may be avoided by the proper feeding of the controller as well as the use of a little sand at the right time.

DAMAGES

Motormen as a rule believe that the angle-iron bumper will stand all sorts of abuse, simply because it is called a bumper. When they bring cars into the carhouse, either during the day or night, they strike the bumper of the car ahead, bending both. This practice is very bad indeed, as the platform knees which support the bumper are generally bolted to the crossing and side sills by one bolt passing through each knee. The heavy bolts which pass through the end sills simply carry the platform. There should be a strict rule demanding that a small space must always be left between bumpers.

In passing vehicles, panels frequently are damaged. What the motorman terms a scratch in reality means the removal and replacement of three or four panels, together with their painting, striping, lettering and numbering. All of this spells a large sum.

Grab-handles of both open and closed cars are frequently knocked loose in passing vehicles, but at times this fact is not reported promptly, which, aside from the repair charges, makes trouble for the claim department. Passing over stones and other foreign substances causes the breakage of gear cases, with possible derailments and long delays. The motormen should be instructed to stop the car and remove the stone or foreign substance.

MOTORMEN'S DAILY REPORT

It is of the utmost importance to the mechanical department that the motormen should turn in reports properly and carefully marked covering any and all defects, promptly for each and every car that they operate at any time.

INSTRUCTIONS TO MOTORMEN

The writer does not believe in trying to crowd a lot of "stuff" into the heads of motormen. On the contrary, he believes that they should be taught a few, and only a few essential things; namely,

1. Safety first.
2. Cutting out the defective motor or motors and doing it properly.
3. The right way of placing the coupling link and pin in order to make proper, safe and quick coupling.
4. Proper braking.
5. To know when wheels are sliding or revolving.

6. To use sand on a "bad" rail while wheels are revolving in making a stop.

7. To cut in and out the controller as little as possible.

8. To drift as much as possible and use the brakes as little as possible, and to use the reverse only to avoid an accident.

DEPARTMENTAL CO-OPERATION

The writer is a firm believer in the old adage, "People living in glass houses should not throw stones." Therefore he will go after the rolling stock and shops department first.

It is of the first importance to design a car that will properly meet the requirements of city service and appeal to the public. The writer has always maintained that the single-truck car is the only car for city service, and that a modern, comfortable car body of the pay-within semi-convertible type seating forty-two people would earn the largest dividends. Let us see from the following comparison whether this statement is correct:

SINGLE-TRUCK CAR (SEMI-CONVERTIBLE)	DOUBLE-TRUCK CAR (SEMI-CONVERTIBLE)
Cost, approximately... \$2,700	Cost, approximately... \$5,200
Seating capacity..... 42	Seating capacity..... 42
Weight, approximately, pounds 22,000	Weight, approximately, pounds 42,200
Trucks 1	Trucks 2
Wheels 4	Wheels 8
Axles 2	Axles 4
Journal bearings 4	Journal bearings 8
Journal boxes 4	Journal boxes 8
Brakeshoes 4	Brakeshoes 8
Gears 2	Gears 4
Pinions 2	Pinions 4
Motors 2	Motors 4
Trolley base 1	Trolley bases 2

In addition to the foregoing we must consider that the differences in the design of the controllers and in the number of brake levers and brake parts also favor the single-truck car most decidedly. Again the difference in energy consumption, feeder distribution, the pounding of crossings, maintenance of all special track work, etc., must also be taken into account. Other items may also be added. Finally, when it is considered that a car runs nineteen hours on an average all-day schedule and that for fifteen of those hours a single-truck car would carry all of the passengers without inconvenience, leaving a few extra single-truck trippers to take care of the rush-hour surplus, it is only fair to conclude that the single-truck car eventually will replace the double-truck car for city service. In fact, the writer can see no other answer, since both labor and material have increased steadily for the past twelve years, while the nickel must carry people further than ever.

POWER AND OVERHEAD LINE DEPARTMENT

Increases in rolling stock costs in a great many instances are brought about by high voltage playing havoc with the older types of equipment, and picking the "bugs" out of modern equipments, especially at or near substations. Numerous brush-holder troubles and controller explosions have been due to this cause. On the other hand, low voltages lead to the heating of the motors and compressors, the burning of the governor contacts and to low air pressure, which is followed by bad braking.

The failures and damages due to bad alignment of the trolley wire or slack wire and malleable-iron frogs are as follows: Badly bent and twisted trolley poles, broken hoods, and trolley boards torn from the roof of car. In many instances the use of a malleable-iron frog is responsible for pitted wheels. Such wheels arc, causing the burning of the trolley wire and the early scrapping of the wheel itself.

MAINTENANCE OF WAY DEPARTMENT

Having had the opportunity of inspecting and passing on all worn-out or defective wheels for the past

ten to twelve years in our city, I have reached the conclusion that a girder-grooved rail is very expensive from the standpoint of both cast-iron and steel wheels, owing to the fact that it causes very irregular flange wear. Cast-iron wheels particularly are frequently relegated to the scrap heap for this reason. Loose and broken crossings, as well as loose switches, are responsible for many chipped flanges, especially on pilot wheels, and are liable to cause derailments which lead to damages to the electric equipment, car body and brake rigging generally. In both instances the mileage of the wheel is greatly reduced. Broken tie-rods and badly-worn crossings, especially steam railroad crossings, are responsible for many bent axles; the former are responsible for the sudden swerving of the car, especially a single-truck car; the latter are due to the hard jolt. The flat, square flanges caused by badly-worn rail necessitate the removal of the wheels while they still possess plenty of chill and mileage. Badly-worn rail also leads to the rapid destruction of both bodies and trucks.

PURCHASING DEPARTMENT

The purchasing department can be of invaluable assistance to the rolling stock and shops department by keeping in close touch with the superintendent of that department and his assistants. This is absolutely essential for the following reasons: To combine quality with price; to inform it about the performance of the material that has been purchased; to maintain at all times an adequate stock of repair parts; to promote better deliveries. It is also absolutely necessary that reliable, intelligent men should be selected to assist the storekeeper to keep up a

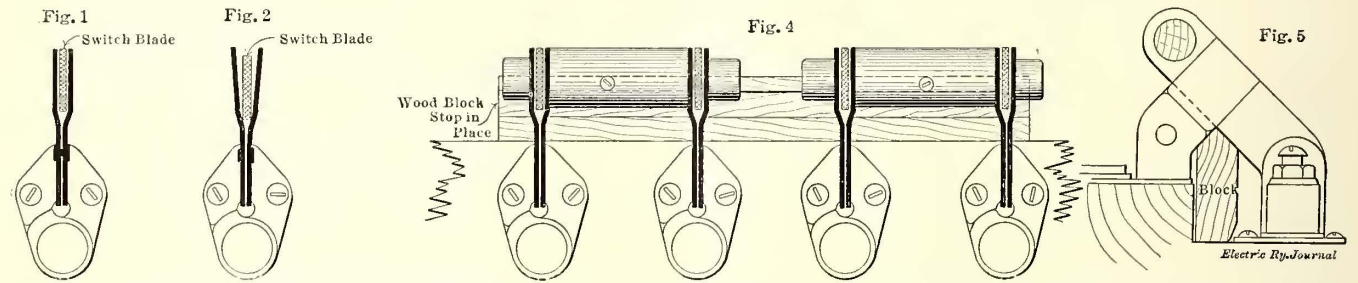
the co-operation of the heads of all departments and employees generally. He earnestly hopes that he has not offended anyone; not even our own gray-haired, congenial purchasing agent, who has caused him on numerous occasions to warm up considerably under the collar.

Block to Protect Switch Blades of Type K Controllers

BY R. H. PARSONS, ELECTRICAL FOREMAN

The later patterns of Type K controllers are fitted with motor cut-out switches constructed of two metal strips riveted together, replacing the older ones which were cast solid of bronze or similar composition.

After many of the common controller troubles have been eliminated by redesign, special care, etc., it will be found that a large number of controllers still give trouble from failures caused by burning or poor contact of the cut-out switches. Perhaps some careless shopman has allowed the car to go out with the blade bent or the clips out of position. Again, the motorman, in a hurry to make time, imagines that he has a grounded motor because his circuit breaker is blowing. So he cuts out first one and then the other switch, hoping to overcome the trouble. Sometimes he replaces the switches properly but often he leaves them in only partly



FIGS. 1 AND 2—PERFECT AND IMPERFECT CONTACT OF SWITCH BLADES. (ELEVATION 45 DEG. TO HORIZONTAL); FIGS. 3 AND 4—WOOD BLOCK SWITCH LEVER STOP IN PLACE; FIG. 5, APPLICATION OF BLOCK

regular and legitimate stock of all standard supplies. To be out of supplies means very often the shopping of the car or cars, or else their temporary retention in service before going to the shops. Then the cost of renewing or replacing the part or parts is much higher because the difficulties have increased. Volumes could be written on this subject, but the fact still remains that in order to assist the rolling stock and shops department to operate economically it is necessary for the purchasing department to bear in mind the following:

1. Have reliable and intelligent help.
2. Eliminate the stories "just out," or "it has been shipped," etc.
3. Get the best at the best price.
4. Secure prompt deliveries (no fake promises).
5. Keep up your stock and save us from losing our religion.

CONCLUSION

The writer has tried to show in a very brief manner how maintenance costs of car equipment can be reduced, aside from the rolling stock and shops department, by

or else uses his controller handle to drive them down hard, with the result shown in Fig. 2 instead of retaining the correct position shown in Fig. 1. The usual consequence is a poor contact which heats up the switch and melts the solder from the wires at their connections back of the terminal board.

To overcome this trouble a block has been designed constructed as shown in Figs. 3 and 4 and applied as shown in Fig. 5. This block is screwed to the terminal board under the switch blade, in which position it so limits the travel of the blade that the blade cannot be forced down to spread the contacts.

The block is made of well-seasoned hardwood and is fitted accurately. After finishing the block smoothly, it is treated like controller boards, as described by the writer in the issue of Jan. 2, 1915. The block illustrated is used in a K-27 controller. Its dimensions, of course, vary according to the type of controller used.

The Southwestern Electrical & Gas Association has increased its active membership to 125 public utilities in Texas. Its membership now includes every interurban line in the State and all but two of the street railways.

Pennsylvania Locomotive on Turntable at Panama-Pacific Exposition

One of the mammoth exhibits to be made at the Panama-Pacific Exposition will undoubtedly be that of the Westinghouse Electric & Manufacturing Company. This exhibit will include one of the Pennsylvania Railroad locomotives mounted on a turntable.

The location of the turntable is under the center of the dome of the immense transportation building at the junction of the two main aisles. The turntable is 65 ft. long, and, including the locomotive, weighs 440,000 lb. The height of the track is 12 ft. above the floor, and steel ties are used, a new type of construction for this class of work. By means of a 10 hp., three-phase, 220-volt motor the turntable is caused to revolve at a rate of once in three minutes, thus giving the crowds in each end of the building different views of the locomotive. The rotation, which can be reversed, is under the control of an operator in a booth nearby.

An unusual method of collecting the current for lighting the locomotive is employed. This was designed by the Westinghouse engineers and involves bringing the leads up through the center bearings to collector rings, thus obviating the use of third-rail shoes or trolleys. The locomotive is arranged and lighted to permit visitors to pass through it and inspect the equipment. It is clamped to the turntable by means of steel bands to prevent any possibility of its becoming dislodged.

This locomotive is said to be the largest in the world in passenger service. It consists of two units and weighs 156 tons, and is the first side-rod gearless locomotive ever placed in service. It has two motors having a total capacity of 4000 hp, and Westinghouse unit switch control equipment of the HBF type, which has made the phenomenal record of 99,549 miles per train minute delay due to power control failure. Locomotives of this type haul 12,000,000 passengers annually over the electrified terminal of the Pennsylvania Railroad from Harrison, N. J., to Pennsylvania Station, New York City. These locomotives are capable of attaining a speed of 60 m.p.h. with full load.

OTHER EXHIBITS

In addition to the locomotive, the newly-developed Types PK and HL control for railway motors will be shown in operation. These control equipments will operate motor racks equipped with 40-hp motors. The PK control operating head can be applied to any standard Type K controller.

A complete line of commutating-pole railway motors, including box and split frame types for various voltages from 600 to 1500, will also be shown, and in addition a preliminary sample of the new pressed steel railway motor.

Portable Fault Localizer

A portable fault localizer, for quickly locating a ground on a power cable, is now being marketed by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. The position of a ground is read directly off the dial in terms of per cent of length of defective cable. It is an application of the wheatstone bridge with all the necessary apparatus contained in one

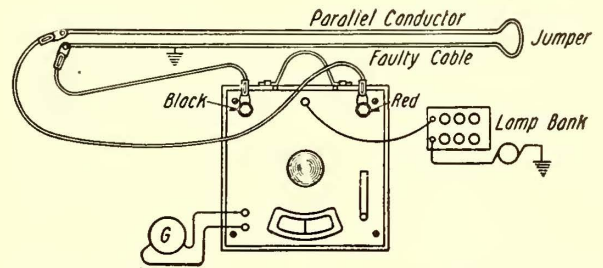
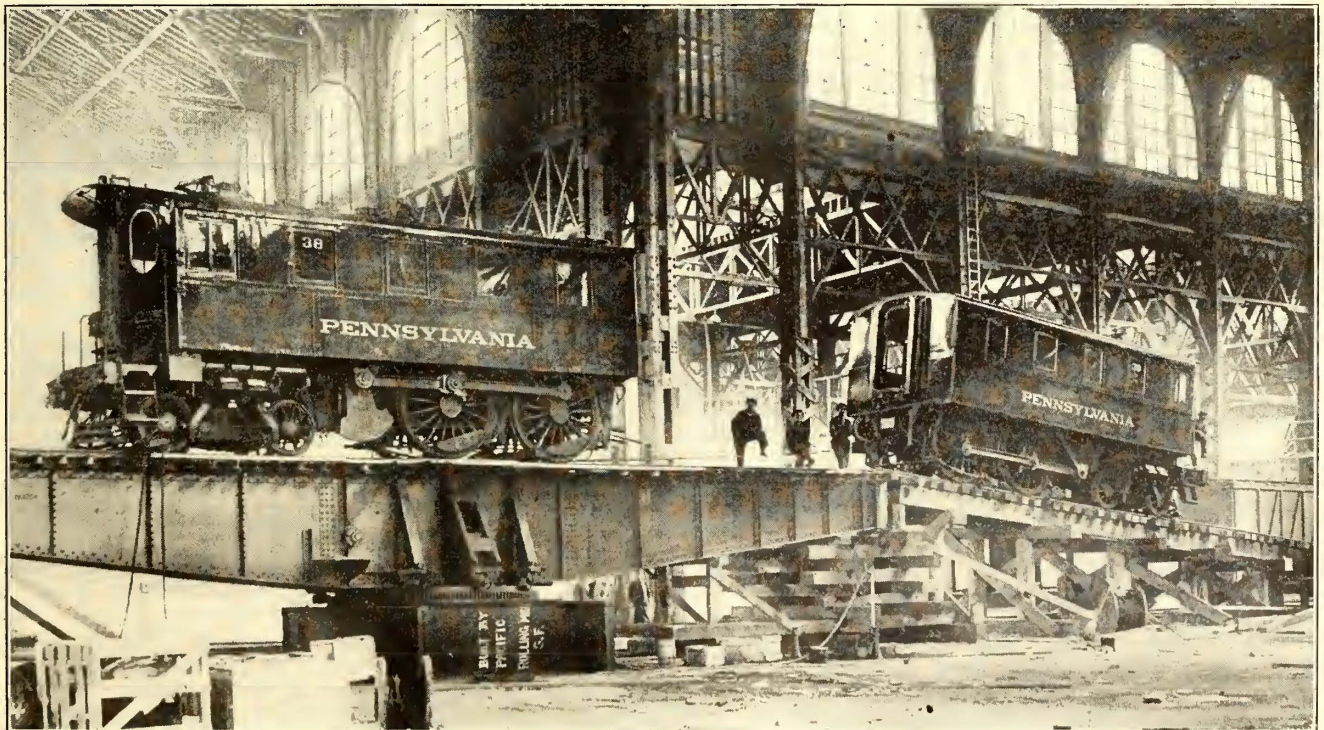


DIAGRAM OF CONNECTIONS FOR PORTABLE FAULT LOCALIZER

portable case wired for connection to the circuit to be tested. Its use assumes that the cable is grounded at only one point and that a parallel conductor of the same length and resistance as the faulty cable is available.

After proper connections are made, a dial on the instrument is revolved by means of a knob in the middle of the localizer until the galvanometer shows no deflec-



PENNSYLVANIA LOCOMOTIVE EXHIBIT AT PANAMA-PACIFIC EXPOSITION UNDER WAY

tion when the key is closed. The reading of the meter then gives the percentage of length of the feeder from the point where the test is being made to the location of the ground, assuming the total length of the feeder to be 100 per cent; the red scale indicating that the ground is on the conductor connected to the binding post marked red, and the black scale indicating to the binding post marked "Black." Direct current only is used in these tests.

The fault localizer consists of a polished wooden case which contains all the parts necessary for the test except the source of direct-current supply and the leads to the cables. Two styles are furnished, one containing a galvanometer and the other for use with a separate galvanometer. The variable resistance arms consist of two loops of low resistance wire attached to the side of a revolving disk, upon which the dial is attached, so that contact is easily made from two brushes attached to the case and connected to the galvanometer terminals. As the disk is revolved the point of contact between the brushes and the resistance loops is thus varied, as in the slide-wire bridge. The dial is calibrated in percentage of the length of the conductor tested, so that the reading is direct.

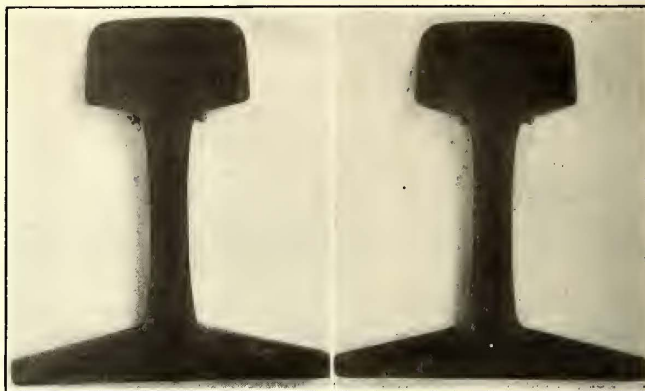
The galvanometer is highly sensitive, having a "unipivot" bearing which does not have to be leveled to take readings. It can be used for general testing wherever a portable galvanometer of its sensibility is desirable, and can easily be removed from the case when this is desired. It has a resistance of 5 ohms, full scale reading 0.00036 amp, and sensibility 0.00001 amp per division.

A Test of Vanadium Rails

Two 100-ton heats of vanadium steel for rails were recently made for the Delaware, Lackawanna & Western Railroad by the Pennsylvania Steel Company, the rails being rolled to the railroad's 105-lb. section. These heats were made according to the standard composition that was being regularly furnished to the railroad, excepting for the addition of vanadium and the reduction of from 0.10 per cent to 0.15 per cent in the carbon. The vanadium rails were required to meet the same drop test requirements as to deflection and ductility

ultimate strength. The vanadium rails also showed greater hardness. With the increased strength and hardness, they showed the same deflection under the first blow of the drop test and slightly better ductility than the carbon-steel rails.

The following table gives minimum figures obtained



RAIL TEST—ETCHED SECTIONS OF VANADIUM RAILS FOR DELAWARE, LACKAWANNA & WESTERN RAILROAD

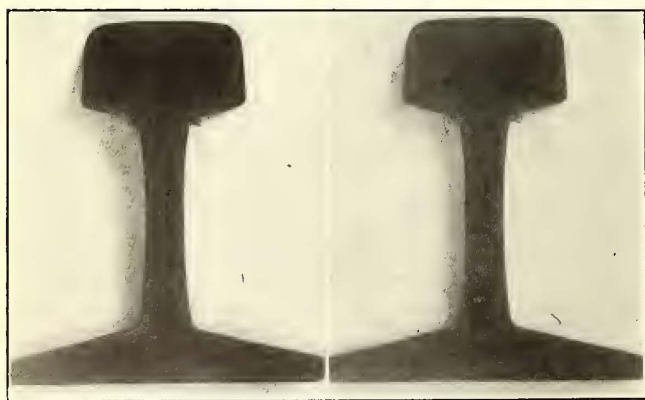
from test pieces in eight different locations in the rails from each of the heats:

	Vanadium	Carbon
Elastic limit	80,000 lb.	56,000 lb.
Tensile strength	137,000 lb.	126,000 lb.
Elongation in 2 in.	9 per cent	9 per cent
Reduction in area	14 per cent	13 per cent
Hardness (Brinell)	277	255

The drop tests were made with a 2240-lb. tup falling from a height of 19 ft. These showed deflection that were, in all cases except one, within 8 per cent of 1 in. after the first blow, and between 1.8 in. and 2.0 in. after the second blow. Two vanadium rails out of six in the drop test broke at the third blow.

Vending Machine for Cars of Two Pennsylvania Electric Lines

The Wilkes-Barre & Hazleton Electric Railway and the Lehigh Traction Company, Hazleton, Pa., have lately installed on their cars a penny-in-the-slot vending machine furnished by Scott E. Drum, Hazleton, Pa. These machines are of the compact design necessary for



RAIL TEST—ETCHED SECTIONS OF CARBON-STEEL RAILS FOR DELAWARE, LACKAWANNA & WESTERN RAILROAD

that are prescribed in the standard specifications of the Delaware, Lackawanna & Western Railroad, which call for a minimum and maximum deflection for the first blow.

The tests showed that, although the vanadium rails were from 10 points to 15 points lower in carbon than the standard rails rolled by the Pennsylvania Steel Company, they had about 40 per cent higher elastic limit, or useful strength, combined with increased tensile or



CAR VENDING MACHINES AS INSTALLED FOR PENNSYLVANIA ELECTRIC RAILWAYS

car service, their dimensions being only 24 in. high, 3 in. wide and 2 3/4 in. deep. To install, the back of the machine is first attached with four screws to panels between the windows. Then the front is locked on to this back. The front has an attractive French beveled plate mirror 7 in. long and 2 in. wide, set in a frame of German silver. The machine is of metal and the finish is in mahogany. The machine is arranged to return the coin in case the article desired is out of stock.

News of Electric Railways

NEW YORK COMMISSION INVESTIGATION

A Summary Is Presented of Testimony by Commissioners Wood, Cram and Williams

Both Robert Colgate Wood and J. Sergeant Cram of the Public Service Commission for the First District of New York were the witnesses before the Legislature's investigating committee on Feb. 10. Mr. Wood was examined first. He would want to consult the legal advisor of the commission before he could state finally whether or not he believed complaints against officers of public service corporations should be turned over to the District Attorney with prison sentences if convicted of misdemeanors. He did not know that the orders of the commission were being violated by the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company until the transit bureau had brought them to his attention in December. He had spoken to Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, about the alleged violations in New York and Mr. Hedley had promised to remedy the matter.

Mr. Cram said he seldom used a city automobile before he hurt his leg, about a year ago. Thereafter the car was sent to bring him to commission meetings which otherwise he might not have been able to attend. In contradistinction to Chairman McCall of the commission Mr. Cram said three commissioners could do the work if competent men were secured. The sum of \$15,000, the salary paid to each commissioner, was large, but New York was an expensive place in which to live, and really competent men could make much more money in private business. To have a really effective commission there should be a fixed tenure of office and the commission should not be made the buffet of politics. As to whether the commission was efficient Mr. Cram said that if he were asked questions he would answer. The committee could not compel him to express opinions. Mr. Cram, who is a lawyer, did not read the public service commission law the same as counsel for the committee. He kept no track of the time he spent at the commission meetings. He stayed until his work was done. The meetings of the commission were a joke. He said: "They called it a meeting of the committee of the whole. That consisted in passing judgment first and holding a hearing afterwards." He let the disposal of informal complaints to the staff, which he understood was efficient. The companies always tried to obey orders, but at times could not. The difficulty about penalty actions was that "intent" to disobey orders could seldom be shown. The companies were not "habitual lawbreakers."

At the session of the committee on Feb. 11, both Commissioners Williams and Wood were questioned in regard to the recent subway signal award. This contract was approved by Commissioners Williams, Cram and Wood. Three years ago Commissioner Wood and the president of one of the signal companies which had sought to retain him called on Chairman Willcox of the commission in regard to the signals, but they decided that it was too early to arrange details. Mr. Wood dropped the matter there and had not seen the president of the company for two and one-half years until he called regarding the new contract. Suits for infringement of patents had been threatened. He did not delay matters. At the end he was convinced by the attorneys for the Brooklyn Transit Company that a bond would cover any liability for patent litigation.

Commissioner Cram was questioned at length in regard to the operations of the New York & Queens County Railway. Colonel Hayward, counsel for the committee, read into the records a statement of the ownership of stock of the New York & Queens County Railway by the Interborough Rapid Transit Company and a comparison of the cost of operation of the power plant, cost of power purchased and yearly deficit of the New York & Queens County Railway for the years ended June 30, 1904, to June 30, 1913, inclusive.

On Feb. 13 Commissioner Williams entered an emphatic protest against the proposal to take from the commission the work of constructing the new subways and to hand it

over to the Board of Estimate. Mr. Williams said that it was immaterial to him whether or not he stayed on the commission. He had done his duty, but he did not want to see a law destroyed that was so well thought of by Governor Hughes. It would be well if some means could be devised by which complaints could be disposed of more expeditiously than at present, but he denied that the informal complaints to which the committee had called attention were typical of those which were presented to the commission. Not enough had been said at the hearings about what the commission had accomplished. He intended to prepare a statement for the committee in which the work of the commission and its achievements would be set forth in detail. At the hearing on Feb. 15 Mr. Williams was questioned more particularly in regard to the adequacy of the service furnished by the Brooklyn Rapid Transit Company. The witness indulged his propensity to make speeches rather than to reply direct to questions, and the members of the committee criticised him for this. The question of more cars for the Brooklyn Rapid Transit Company was traced from its inception in July, 1911, in case No. 1438, which came up before Commissioner McCarroll. Colonel Hayward reviewed briefly the hearings, many of which were adjourned without any testimony having been taken.

The New York *Evening Post* of Feb. 12 contained an interview with Senator Thompson, chairman of the joint committee conducting the investigation, in which that gentleman was quoted as saying that the committee had made up its mind to give the State a law about the constitutionality of which there will be no question. He said the committee would be at work two weeks longer and that it would call members of the Interstate Commerce Commission.

FUTURE PLANS OF NEW HAVEN RAILROAD

The directors of the New York, New Haven & Hartford Railroad on Feb. 16 announced the plans for future operation as recently authorized by the board. These plans, which follow closely the decree of the United States Circuit Court entered last October, have been submitted to the Public Service Commission of Massachusetts for approval. They pledge the company to concentrate attention hereafter on the railroad property itself, to wind up as soon as practicable all its connections with subsidiaries not directly affecting the prosperity of the main line properties and not to acquire any new properties. The Housatonic Power Company will be sold with the exception of the undeveloped water rights of the Housatonic River, which will be necessary to provide power for the electrified division between New York and New Haven. The large real estate holdings along the New York, Westchester & Boston Railway held in the name of the Millbrook Company, will be sold as soon as proper prices can be obtained. The New York, Westchester & Boston Railway itself will continue to be under the operation of the New Haven company, the directors now intending to develop the territory in the belief that the line will become a paying investment. In the meantime, the company is to be consolidated with the Westchester Northern Railroad, a company which was formed in 1912 with the intention of building an extension to the New York, Westchester & Boston Railway from White Plains to Danbury, Conn. No construction work has yet been undertaken on this proposed extension.

THE CINCINNATI FRANCHISE

The Federated Improvement Association on Feb. 11 adopted a resolution to the effect that the organization will, under certain conditions, relinquish its opposition to the franchise granted the Cincinnati, Newport & Covington Street Railway by the city of Cincinnati. Three changes in the franchise are desired by this organization, namely, that the company agree to remove its tracks from any street in the city that may be wanted for the use of the interurban loop system, that it will never charge as fare between any two points in Cincinnati an amount greater than is

charged by the Cincinnati Traction Company, and that if at any time the Cincinnati Traction Company decides to operate its cars by other means than the overhead trolley, it will adopt the same means. The ordinance would have to go back to Council for these amendments. This company has already accepted the franchise offered it and filed a bond of \$25,000 to insure that its terms will be observed. In addition, it has notified the Council in writing that it will change its route to accommodate the interurban loop plan, if that becomes necessary.

On Feb. 17 Polk Lafoon, secretary of the Cincinnati, Newport & Covington Street Railway, sent a communication to the association in which he pointed out the unreasonableness of re-submitting the ordinance to the City Council in order to avoid the expense of an election, because the organization is not in position to prevent a referendum vote on the amendments, after they are made, and the expense would be incurred any way. The number of signatures this organization secured to its petitions was 714, while Mr. Bigelow's organizations secured 10,276, and the number filed for a special election was 30,960. He assured the organization that the city would have the right to use the streets on which the company's franchise is granted for the rapid transit interurban loop, if it so desired and that competition would keep the rate of fare as low as that charged by the Cincinnati Traction Company. As to the change in mechanical equipment, he said no determination could be reached without knowing what such a change involved, but he did not anticipate any trouble in that direction.

The Council at Dayton, Ky., has adopted a resolution asking the officials of Covington to take steps to appeal the case in which the United States District Court recently decided that the South Covington & Cincinnati Street Railway owns a perpetual franchise in the streets of Covington.

NEW YORK INSURANCE LEGISLATION

The votes cast by four Republican Senators, all from Brooklyn, prevented the passage in the Senate on Feb. 17 of the Sage bill making an emergency appropriation of \$425,000 for the Workmen's Compensation Commission and carrying a provision which authorized the direct settlement of compensation claims between employers or insurance carriers and injured workmen.

Superintendent of Insurance Frank Hasbrouck in his report to the Legislature, speaking of workmen's compensation, indorses the main features of the New York law, but says that it should be amended in certain particulars. He advocates that the forty-two groups be eliminated and the benefits extended to cover practically all employments. Another feature which should be corrected, he says, is the cumbersome method prescribed for settling claims. The four methods of insurance provided by the law are indorsed as affording healthy competition based upon service to the public. It is suggested that all employers be required by law to keep accurate payroll records for insurance purposes.

ANOTHER BOND ORDINANCE AT TOLEDO

On the evening of Feb. 13, an ordinance was introduced into the City Council of Toledo, Ohio, providing for a bond issue of \$4,000,000, the proceeds to be used in acquiring the light, power, heat and artificial gas properties of the Toledo Railways & Light Company, under the provisions of the initiated municipal ownership ordinance, passed on Aug. 4, 1914. The ordinance was prepared by City Solicitor Thurstin and is similar to the one he introduced some time ago relating to the railroad properties of the company. The bonds are to run for twenty years and draw 5 per cent interest. Under the ordinance the rate for service is to be fixed by the Public Utilities Commission of Ohio or any other body that may be empowered to look after such duties. A maximum of 6 cents per kw.-hr. is provided for energy and 65 cents per thousand feet for artificial gas. The measure has been referred to the committee of the whole.

The same evening a resolution was introduced fixing the rate to be charged by the Toledo, Bowling Green & Southern Traction Company at 5 cents for carrying passengers from all parks and boulevards into the city. This is meant to cover certain lands the city has purchased for park purposes about 1 mile south of the southern city limits.

NEW JERSEY UTILITIES LEAGUE

The New Jersey Utilities League has been formed for the purpose of keeping its members informed of the introduction and progress of legislation affecting them. The formation of the league was due primarily to the introduction of a recent bill providing for certain taxation of franchises of public utility corporations in addition to the franchise and other taxes which they now pay. Many representatives of public utilities appeared at a hearing on this bill scheduled for last week, and as a result the hearing was postponed to Feb. 23.

There are more than 225 public utilities in the State, few of which have taken interest in legislative matters. The result was that the utilities and the public failed to realize that there were so many varied interests and companies. The league will unify these interests and enable them to work together to furnish correct information to the public and the legislators. A permanent bureau with headquarters probably in Trenton, where the Public Utilities Commission has offices, may be provided in the near future. The Public Service Corporation has become a member of the league. The officers of the league for the coming year are: President, John A. Riggins, New Jersey Northern Gas Company, Camden; secretary, W. H. Roth, 112 North Broad Street, Philadelphia, Pa. An executive committee has been appointed to look after the details.

INDIANA LEGISLATURE

The following new bills have been introduced in the House: a bill providing that interurban or street railways place tracks in the middle of the highways for a distance of 1 mile from the corporate limits of towns having a population of from 30,000 to 58,000; a bill providing that the franchises of all public service corporations be submitted to the state board of tax commissioners for assessment for taxation; a bill providing a fine of \$100 to \$500 for railroads carrying into or from point to point in the state intoxicating liquors, when such are to be sold in "dry" territory, and providing that packages must be labeled to proper consignee and as to nature of contents; a bill providing that traction companies operating more than 18 miles of track must maintain two toilet rooms in each car; a bill providing that public service companies giving service by measured rates shall not fix any minimum charge; an amendment providing that where a railroad intersects a person's land and takes property by condemnation, the owner shall have the right to construct driveways across the right-of-way; amendment to the public utility commission law curtailing the powers of the public service commission by giving municipalities direct control of utilities, the right to order joint use of utility systems, city authorities the right to regulate mergers, leases and sales of public utilities, cities the right to issue franchises for duplication of public utility service, and further provides that cities may decide if indeterminate permits are to be issued; a bill providing a maximum fare of 1½ cents a mile for adult passengers and ½ cent for persons five to twelve years of age on interurban railways, with the right to carry 150 lb. of baggage.

The following new bills have been introduced in the Senate: a bill providing that all street cars in cities of the third class shall be equipped with double trucks and air brakes; a workmen's compensation bill making it optional whether the state insurance feature or other proposal for liability insurance is chosen by the employer; a bill amending the public utility commission law by more fully defining the terms "unjust discrimination" in service; a bill providing that no public service company shall receive a franchise unless a petition showing that public convenience and necessity demand such a franchise has been filed with the public service commission; a bill amending the public utility commission law by eliminating the clause which requires all officers of public service corporations to be bona fide residents of Indiana, and extending the time when indeterminate permits may be taken by public utilities; a bill amending the public utility commission act to permit railroad companies to give employees passes where such employees are holding public office.

The Fleming bill making certain provisions for the ventilation of street and interurban railway cars has been killed in the Senate.

RAPID TRANSIT PLANS IN PHILADELPHIA

A. Merritt Taylor, director of city transit, Philadelphia, submitted to the Select and Common Councils of that city on Feb. 11 a special report on rapid transit development for Philadelphia in accordance with the resolution adopted by Councils on Feb. 4. This report contained a complete list of the subway, elevated and surface lines contemplated to be constructed under plans recommended by the department of city transit, with the cost of each. In his communication to Councils, Mr. Taylor requested that the finance committee report out the ordinances provided for the holding of the special election to authorize an increase in the city's indebtedness to the extent of at least \$6,000,000 to provide money for beginning the transit development, and that the ordinance be passed by Councils without delay in order that the election might be held and the \$6,000,000 be appropriated and the designating ordinances passed before the summer adjournment, so that actual construction of the high-speed lines could be commenced on July 1. He said that it would not be necessary to vote more than \$6,000,000 of the transit loan until after the constitutional amendment had been voted on by the people in November.

The matter came up before Councils on Feb. 18. On that day a transit ordinance was introduced by John P. Connelly, chairman of the committee on finance, differing from the plans proposed by Mr. Taylor. The *Philadelphia Public Ledger* said in its issue of Feb. 19 that the Connelly bill in part was based upon a "joker" ordinance introduced several months ago by Peter E. Costello, an organization leader. The report from Mr. Taylor in regard to the transit plan was meanwhile referred by Councils to the joint committee on street railways and finance.

The *Philadelphia Public Ledger* said editorially on Feb. 19: "The people of Philadelphia have yet to be heard from. They are in no mood to be trifled with, and this proposition is worse than trifling. They have a right to know under whose inspiration this scheme of the finance committee's was concocted, and what special interests it was intended to serve. This mutilated program would perpetuate conditions the escape from which is the whole purpose of the struggle for the last two years. Who inspired the change, and what are the ends sought to be accomplished by such a betrayal of the city's rights and needs?"

OHIO LEGISLATION

Electric and steam railway interests are opposing two bills introduced in the Ohio Legislature by Senator Pink, of Hamilton County, which make proof of an accident in which any one is injured or property damaged prima facie evidence that the car or train was improperly handled at the time. The railway men say that the bills rob the railways of any possible defense in case of accidents.

Somewhat akin to these bills is one introduced by Representative Terrell, of Cuyahoga County, which would establish the doctrine of comparative negligence in connection with cases in which street cars, automobiles, wagons and other vehicles are involved. This bill would make it mandatory that the degree of carelessness of all parties be established and that damages be awarded on that basis.

The Senate committee on public utilities heard arguments on Feb. 10 on the Winans bill, which gives the Public Utilities Commission the right to suspend railroad, railway and other public service rates for a certain time after their promulgation and places the burden of proof as to their reasonableness on the companies.

The Cleveland branch of the Amalgamated Association of Street & Electric Railway Employees arranged to send five members to Columbus on Feb. 18 to attend the hearing on the bill that defines the number of hours in each day that employees shall work and fixes other conditions. This bill, intended primarily to benefit the men in Cleveland, will apply to the entire state.

THE CINCINNATI APPRAISAL

The three members of the Ohio Public Utilities Commission went to Cincinnati on Feb. 12 to begin work on determining the value of the property of the Cincinnati Traction Company. They were accompanied by L. G. White, the electrical engineer of the department, and Lawrence K. Langdon, its attorney. Theodore Mayer and L. R.

Smith, real estate experts, stated that they had already appraised the property at the request of the company and had filed their report in which the total value, irrespective of buildings, assemblage, continuity values, cost of acquiring and surveys, was \$589,107. Mr. Mayer said the gross cost of the property including leases, commissions, percentage and surveys was \$878,613. The "Somers system" was used in reaching the valuation placed on the property. Walter Draper, vice-president of the company, testified as to the cost of the property and its present condition.

L. F. Huntington, another local real estate man, testified that the cost of consents secured from property owners along the various routes, in his opinion, was about 54 cents per front foot. On this basis the total cost of consents to the company would have been \$609,609, as the trackage in the city is estimated at 1,111,000 ft. A. L. Drum, building expert, and Bert Baldwin, electrical engineer, testified as to the value of superceded property, much of which had been abandoned before its useful life was spent, due largely to improvements made in equipment for transportation. The total given for this item was \$2,277,995. The most costly property to be thus abandoned were horse cars, cable cars, steel rails that were unfitted for electric cars, inclined planes, cost of street repairing due to changing rails, etc. Mr. Baldwin, who was engineer for the Cincinnati Street Railway when horse and cable cars were used, said that the practice of the city was to require the company to do much more in the way of repaving than it should have done and that this often worked a hardship.

The members of the commission visited the properties of the company on the following day in company with W. Kesley Schoepf, president, and Walter Draper, vice-president. They will take the information secured from the men who testified, experts employed by the company, and the statements that have been filed by the company, from which a tentative valuation will be fixed. Then there will be hearings during which disputed points will be argued and further detail added, if necessary.

New California Road Opened.—The Monticeto Railroad has placed its new line in Los Angeles in operation. The road is 2.4 miles long.

New Line in Alabama.—The line of the Birmingham-Tuscaloosa Railway & Utilities Company in Tuscaloosa has been placed in operation.

Municipal Railway Bonds for Pekin.—Arrangements have been concluded between the city of Pekin, Ill., and Counselman & Company, New York, N. Y., under which that company will take the \$48,000 of bonds voted by the citizens of Pekin last year for the reconstruction and rehabilitation of the local railway line in Pekin as a municipal undertaking.

Need for Signals on New York Elevated.—Clifton W. Wilder, electrical engineer for the Public Service Commission for the First District of New York, has reported to the commission that the accident on the Ninth Avenue elevated line of the Manhattan Railway on Feb. 6 demonstrates the necessity for some form of protective signals on the local and the express tracks on all elevated structures.

Fender Test in Toronto.—As a result of the conference on safety devices, held by representatives of the Toronto Railway with the Ontario Railway Board on Feb. 12 instructions have been issued by the board for the company to try out a new style of fender on its new cars. Engineer Royce of the board and an engineer of the railway have been instructed to report later on the experiment.

Hearing on School Fare Bill.—The bill providing for a half-fare for school children in New York State was opposed at a hearing before the railroads committee of the Senate and Assembly on Feb. 16 by the Interborough Rapid Transit Company on the ground that such action would constitute an infringement of the franchise by the Legislature. Representatives of the Brooklyn Rapid Transit Company and of the International Railway, Buffalo, opposed the bill on the ground that it constituted discriminatory legislation in that it favored school children as against minors who were forced to work for a living.

Kansas City Extensions.—The board of control of Kansas City, Mo., has made formal recommendations for improvements of service, which are now in the hands of John M.

Egan, president of the Metropolitan Street Railway. Among the items was the suggestion that the \$250,000 of improvements provided for in the franchise ordinance should be met by the building of 3 miles of single track, Prospect, 48 to 71; 1 mile of single track, along the south side of Swope Park; 1¼ miles of single track, Twelfth, eastward from Jackson. If the city wants these extensions now, and President Egan decides for them, the city will probably ask Judge Hook to authorize the issuance of certificates.

Bills Before Texas Legislature.—The interurban railway interests of Texas are opposing the bill which Senator Darwin has introduced in the Senate providing for placing interurban lines under the jurisdiction of the State Railroad Commission. At a hearing on the measure before the Senate committee on internal improvements representatives of practically all of the existing interurban railways as well as those which are in course of promotion appeared and argued against the proposition. The committee made a majority adverse report on the bill, but a minority report was also signed which will bring the measure upon the floor of the Senate for consideration. Senator Robbins has introduced a bill providing for the creation of a public utility commission which shall have jurisdiction over municipal public utility plants.

Toronto Improvement Order.—One Feb. 9 representatives of the city of Toronto, Ont., and the Toronto Railway appeared before the Ontario Railway & Municipal Board in connection with the issuing of a formal order by the board based upon the judgment rendered last fall. Mr. Osler, counsel for the company, urged inability on the part of the company to secure money to comply with the recommendations of the board and asked for an extension of time after July 1 for building the Ossington Avenue line, completing the fifty new cars and finishing the 13 miles of new track required. The appeal regarding the 13 miles of line was favorably received by Chairman McIntyre. By the board's order, the railway will have until July 1 to finish this work. No extension was granted for the other work. If the company finds that it cannot finish the cars and the Ossington Avenue line within the time fixed the board must be convinced of the company's inability to finance them.

Opposition to Full Crew Laws.—The railroads of the States of Pennsylvania and New Jersey have begun in the newspapers an advertising campaign to obtain the repeal of full crew acts in those States. Daniel Willard, the president of the Baltimore & Ohio Railroad; Samuel Rea, president of the Pennsylvania Railroad; Theodore Voorhees, president of the Philadelphia & Reading, and R. L. O'Donnell, chairman of the executive committee of the Associated Railroads of Pennsylvania and New Jersey, have issued "an open, square, above-board, direct appeal to the intelligence and judgment of the people." The advertisement says that the official figures show that for the three-year period prior to the enactment of the law in Pennsylvania the total number of employees and passengers killed was 10,186. Since the law became operative that figure has been increased to 10,372 persons. The extra man on each train, representing \$3,000,000 yearly, means an expenditure that could have been spent for 200 steel coaches, 80 locomotives, 67,000 tons of rails, 65 grade crossings or 800 miles of track.

Labor Bills in Ohio.—Representative Bohm, Cleveland, is the author of a bill that makes it compulsory on employers to see that their employees work only six days out of each week. Representative Smith's bill, requiring that conductors and motormen on street and electric railway cars be provided with dust-proof compartments, has been approved for passage by the committee that considered it. The penalty for violation is from \$25 to \$100. Representative Ott. Hamilton, has introduced a new section to the statute that limits the hours of work for railroad men. It applies especially to street and interurban men and provides in the first place that no car shall be placed in the hands of a motorman and a conductor unless they shall have had an experience of at least fifteen days under the guidance of men who have had as much as two years' experience on the line on which they are students. The men shall not be permitted to work more than nine out of any consecutive eleven hours in any twenty-four-hour day and they must have thirteen hours off-duty. Fines for viola-

tion of this provision range from \$100 to \$500 for each car each day. A bill by Representative King, of Hocking County, makes an agreement between employers and laborers a personal and not a property right, and denies the right to issue an injunction in cases where labor contracts are violated but where no irreparable loss or damage is about to occur. An application for an injunction must contain a detailed statement of the property rights in jeopardy. Another bill by the same author provides that all street and interurban cars shall be provided with air-brakes, the rigging of the brakeshoe to be attached to the journal beam of the truck and, also, that an adequate sanding device be furnished. It is required that 50 per cent of the cars in the State be thus equipped before Jan. 1, 1916, and the remainder within twelve months after that date. No penalty is attached.

PROGRAMS OF ASSOCIATION MEETINGS

Arkansas Association of Public Utility Operators

At a meeting of the executive committee of the Arkansas Association of Public Utility Operators, held at the office of the Little Rock Railway & Electric Company on Feb. 9, May 11, 12 and 13 were fixed as the dates for the 1915 meeting of the association. The meeting will be at Little Rock, with headquarters at the Marion Hotel.

Central Electric Railway Association

The following program has been announced for the annual meeting of the Central Electric Railway Association to be held on Feb. 25 and 26 at the Hotel Severn, Indianapolis: Feb. 25

Address by Joseph E. Bell, Mayor of Indianapolis.

Address by C. Loomis Allen, president of the American Electric Railway Association.

Paper, "Is the Handling of Free Baggage a Traffic Error," by C. J. Laney, traffic manager of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.

Address by Samuel M. Ralston, Governor of Indiana.

Address by Charles C. Peirce, vice-president of the American Electric Railway Manufacturers' Association.

Address by Thomas Duncan, chairman of the Public Service Commission of Indiana.

Feb. 26

Address, "Safety," by Dana Webster, inspector for the accident and liability department of the Ætna Life Insurance Company, Indianapolis, Ind.

Annual report of the secretary and treasurer.

Annual address of E. F. Schneider, president of the Central Electric Railway Association.

Report of the nominating committee and the election of officers.

New York Electric Railway Association

The New York Electric Railway Association will hold its twentieth quarterly meeting at the Fort William Henry Hotel, Lake George, N. Y., Tuesday and Wednesday, March 2 and 3. The meeting will be opened with an informal dinner at 8 o'clock on the evening of Tuesday, March 2, after which there will be several addresses by distinguished guests. There will be one business session of the association. This will be held at 10 a. m. on the following day, Wednesday, March 3. At this meeting the following program of subjects will be presented for discussion:

"What the New York Electric Railway Association Could Do for Me." This subject will be considered in three-minute written discussions by all members.

"Collection and Registration of City and Interurban Fares." Introductory paper by James E. Hewes, general manager of the Albany Southern Railroad, Albany, N. Y., followed by three-minute written discussions by the members.

"What Constitutes Good and Sufficient Maintenance?" Introductory paper by James P. Barnes, general manager of the Buffalo, Lockport & Rochester Railway, followed by three-minute written discussions by the members.

Applications for hotel accommodations should be made to Albert Thieriot, manager of the Fort William Henry Hotel, Lake George, N. Y.

Financial and Corporate

SECURITIES FOR NEW CONSTRUCTION

More Than \$8,000,000 of New Securities Authorized for Electric Railway Construction Purposes in New York in 1914

According to information obtained through the Division of Capitalization of the Public Service Commission for the Second District of New York, the amounts of new securities authorized for steam and electric railway new construction in New York State during 1914 and for other purposes were as follows:

Purpose	Steam	Electric	Total
New construction	\$14,739,767	\$5,163,650	\$19,903,417
Payment of current liabilities incurred for new construction	90,065,000	2,965,750	93,030,750
Total	\$104,804,767	\$8,129,400	\$112,934,167
Refunding and acquisition of constructed properties	72,525,000	2,447,000	74,972,000
Acquisition of capital stock		888,000	888,000
Grand total	\$177,329,767	\$11,464,400	\$188,794,167

The foregoing figures were difficult of compilation on account of the feature of discount on securities and the fact that not infrequently an amount of bonds is authorized, the proceeds of which are slightly more or considerably less than sufficient to cover the purposes toward which the proceeds are to be applied. With such complications eliminated as far as possible, the figures may be taken to show the amount of new money authorized for construction during the year. Of the total of \$188,794,167 authorized for all purposes, an amount of \$112,934,167 or 59.8 per cent was for new construction. Of this sum \$19,903,417 or 17.6 per cent was purely for subsequent new construction, while \$93,030,750 or 82.4 per cent was for the payment of current liabilities already incurred for new construction.

Of the total of \$112,934,167 for all new construction, \$8,129,400 or 7.2 per cent was authorized to electric railways and \$104,804,767 or 92.8 per cent to steam railroads. As just between the steam and electric railway totals, the steam railroad securities for new construction were 12.9 times as large in amount as the similar electric railway securities, but it must be remembered that the previously existing steam railroad capitalization was about 13.4 times as great as the electric railway capitalization. On the basis of the approximate \$3,124,511,870 of steam railroad capitalization, the rate of increase for new construction was 3.3 per cent, while on the \$225,053,330 of electric railway capitalization the corresponding increase was 3.6 per cent. It is interesting to note, too, that of the \$104,804,767 for steam railroads only 14.0 per cent was authorized for new construction not yet undertaken, while in the face of the depression of 1914 the electric railways secured the authorization of 63.5 per cent of all the construction securities for absolutely new work.

All the computations to which reference has been made do not contain any figures for securities authorized by the Public Service Commission for the First District in New York City. If these and the city's expenditures of \$2,000,000 a month for the new subway system could be included, the new construction of electric railways in New York State during 1914 would appear even better.

ELECTRIC BOND & SHARE CAPITAL INCREASE

The stockholders of the Electric Bond & Share Company, New York, at the annual meeting on Feb. 17 elected William Darbee and G. E. Claffin as directors to succeed Benjamin Strong, Jr., and R. Treat Paine. A special meeting of stockholders was subsequently held and an increase in the company's capital stock from \$10,000,000 to \$16,000,000 was approved. Of the additional stock \$3,000,000 is common and \$3,000,000 6 per cent preferred. It was announced that part of the newly authorized preferred stock will soon be offered to stockholders for subscription at par, and also that at the same time the General Electric Company is expected to take an equal amount of the new common stock for cash at its par value.

ANNUAL REPORTS

British Columbia Electric Railway, Ltd.

The statement of income, profit and loss of the British Columbia Electric Railway, Ltd., Vancouver, B. C., for the year ended June 30, 1914, follows:

Income	£560,150
Registration fees, etc.	424
Total	£560,574
Renewals, maintenance	£149,921
Office rent, salaries, etc.	7,367
Directors' fees and percentage	5,994
Trustees fees	881
Capital amortization	2,455
Total	£166,618
Balance	£393,956
Add:	
Balance from previous year	9,515
Transferal from reserve	10,000
Total	£413,475
Deduct:	
Interest on debentures	£132,991
Dividends already paid	216,000
Total	£348,991
Balance available for distribution	£64,484
Dividend declared on deferred ordinary stock	57,600
Balance carried forward for year	£6,884

The report states that the showing in the fiscal year was not of such a satisfactory character as that made in the past, and that, in order to maintain the usual dividend, it was necessary to supplement the profit by a transfer of £10,000 from the reserve. The earnings in the early part of the year were adversely affected by the prevailing conditions, but the depression of trade in Canada became accentuated as the year advanced and rigid economy was necessary to achieve the results shown. The large employers of labor in British Columbia were temporarily forced to postpone all new work, and there was a decrease in the population of Vancouver and the neighboring districts of approximately 20,000 inhabitants and consequently a decrease of more than 8,500,000 in the number of passengers carried during the year. It is believed, however, that the halt in the development of the province will in the end result in more stable conditions. The amount expended for capital account during the year was £530,103, but until more prosperous times further expenditures will be limited to absolute necessities. The company paid 5 per cent on its cumulative perpetual preference stock for the year, 6 per cent on its preferred ordinary stock and 8 per cent on its deferred ordinary stock. The directors state, however, that on account of the European war the revival in trade may be greatly retarded and there may be a drastic reduction in future dividends.

The J. G. Brill Company

The total combined output of the five plants owned and operated by The J. G. Brill Company for the year ended Dec. 31, 1914, amounted in sales value to \$4,903,511. In only two other years, 1908 and 1909, have the sales fallen below the \$5,000,000 mark. In 1907 and 1913 they ran more than \$9,000,000, and from 1910 to 1912 inclusive the amount ranged from about \$5,871,000 to \$7,842,000.

The combined profit from operations for the year was \$313,106, after charging against current earnings \$158,475 expended for repairs and maintenance. From this profit there was set aside in the reserve for depreciation \$154,222, making the total reserve now \$1,601,312. The net profit for the year was therefore \$158,884. Instead of the regular quarterly 1 1/4 per cent preferred dividend in November, the company paid 1 per cent, making the dividend total for the year \$286,250. This with sundry adjustments brought the accumulated surplus of the company down from \$1,535,417 to \$1,368,370.

During the year the company strengthened the position of its liquid assets in face of the depressed conditions and reports as of Dec. 31, 1914, as its only current liability \$220,348 of accounts in course of payment. In other years this item has ranged from \$700,000 to \$900,000. On the asset side, cash stands at \$633,893 as compared with about \$400,000 one and two years ago. Material, raw and in

process of manufacture, and bills and accounts receivable by their reduction in size indicate conversion into still more liquid assets. On Feb. 6, 1915, the combined orders of the plants in process of execution amounted to \$1,147,100.

As regards the present outlook, the annual report of the company says:

"It is difficult at this time to form an estimate of the outlook for business in 1915. While general business conditions have improved and seem to be improving, it must be uncertain, in view of the extraordinary causes which brought about and which serve to continue the present depression, when a condition will be reached which will make it not only necessary, but possible as well, for the railways to purchase equipment, in what may be considered from past experience, normal amounts."

"BUY IT NOW" MOVEMENT

Various Steam Railroad Presidents Follow Out Principles of This Movement by Contributing Large Purchases

Advices received from C. C. Rosewater, chairman of the national "Buy It Now" campaign committee, indicate that tangible results most gratifying in character are being received by the committee. Steam railroads in particular have been sending news of large orders for equipment and supplies. D. Willard, president Baltimore & Ohio Railroad, states that his company recently placed an order for 2000 new freight cars, the first order for equipment in more than a year. This order was made in spite of the fact that the company has now more equipment than is needed under existing conditions. According to S. M. Felton, president Chicago Great Western Railroad, the company has already purchased \$385,000 of material in anticipation of its requirements for the next six months and year, and is just about to enter into contracts for \$200,000 of additional material covering the year's requirements. W. A. Gardner, president Chicago & Northwestern Railroad, states that the approval of the board of directors has been secured for the purchase of about \$1,500,000 of material for which the company will solicit bids in the very near future. As an indication of what the New York Central Lines are doing, A. H. Smith, president, advises the committee that orders have been placed for 4500 tons of steel rails and that it is hoped to buy more shortly for use during 1915. The company recently bought eighteen engines and is now receiving 7000 freight cars purchased some time ago. W. H. Myers, vice-president Pennsylvania Railroad, states that the company has already asked for proposals for 150,000 tons of steel rails for 1915, and also for 17,000 tons of structural steel and 1200 tons of reinforcing steel. Communications from other railroad presidents contain no actual notices of material purchased but promises of co-operation.

Aurora, Elgin & Chicago Railroad, Wheaton, Ill.—The Aurora, Elgin & Chicago Railroad has received authority from the Illinois Public Utilities Commission to issue \$800,000 of collateral trust securities. It is reported that the collateral indenture has not yet been prepared, and no attempt has yet been made to sell the securities.

Binghamton (N. Y.) Railway.—At the annual meeting of the Binghamton Railway on Feb. 15, the following officers were elected: President, F. L. Fuller; vice-president, R. W. Day; vice-president and general manager, C. S. Banghart; secretary, W. H. Hecox; treasurer, E. M. White, and assistant treasurer, H. I. Jackson. The following members now constitute the board of directors: F. L. Fuller, R. W. Day, C. S. Banghart, A. J. Parsons, T. J. Keenan, W. H. Hecox, W. L. Connell, F. W. Ogden, C. R. Bedford, George E. Green and G. T. Rogers.

Chicago (Ill.) Elevated Railways.—The National City Bank, New York, is offering at the market price, to yield about 5.75 per cent, first mortgage 4½ per cent gold bonds of the South Side Elevated Railroad, dated July 1, 1904, and due on July 1, 1924. The amount of these bonds authorized and outstanding is \$8,000,000. They are redeemable at 105 and interest on any interest date on three months' notice.

Federal Light & Traction Company, New York, N. Y.—John Dunhill has been elected a director of the Federal Light & Traction Company to succeed Samuel McRoberts.

Georgia Railway & Power Company, Atlanta, Ga.—Lewis Lillie, treasurer United Gas Improvement Company, has been elected a member of the board of directors of the Georgia Railway & Power Company.

Glendale & Montrose Railway, Los Angeles, Cal.—The Glendale & Montrose Railway Company has filed an application with the Railroad Commission of California requesting authority to increase its capital stock from \$25,000 to \$250,000. The company further asks for authority to issue to J. Frank Walters, its president and the owner of all the now outstanding stock, stock of the new issue in such amount as the commission shall find to represent the total cost of the railway's property at the time of the hearing of the application. The company proposes to use the balance of this stock for such additions and extensions and improvements as may be subsequently authorized by the commission. The company also filed a supplemental application asking that the authority previously granted to issue \$200,000 of bonds be set aside, since it has found it impossible to sell these bonds now owing to the existing financial conditions.

Grand Rapids (Mich.) Railway.—Frank I. Silliman, Jr., Philadelphia, and Bert C. Cobb, New York, have been elected directors of the Grand Rapids Railway to succeed C. M. Clark and A. G. Hodenpyl. Louis J. De Lamarter was elected treasurer to succeed George L. Estabrook, resigned, the office of treasurer thus being added to that of secretary. S. E. Wolff was elected assistant secretary-treasurer.

Gray's Harbor Railway & Light Company, Aberdeen, Wash.—E. N. Sanderson, New York, has been elected president of the Gray's Harbor Railway & Light Company to succeed W. J. Patterson. F. G. Foster has been chosen a director of the company.

Humboldt Transit Company, Eureka, Cal.—The Railroad Commission of California has issued an order authorizing the Humboldt Transit Company to issue to the First National Bank of Eureka a promissory note for \$20,000, to be secured by pledge of \$40,000 of first mortgage 5 per cent bonds. This note, which will be executed by the Transit Company and William Butterworth as joint makers, is to take the place of a similar note of like amount previously issued by the company.

Interborough-Metropolitan Company, New York, N. Y.—The United States Circuit Court of Appeals on Feb. 10 affirmed the decision of Judge Hough of the Federal District Court, dismissing two suits brought by the Continental Securities Company, of which Clarence Venner is the head, to have the Interborough-Metropolitan Company declared an illegal monopoly and to set aside a mortgage covering \$55,000,000 of bonds given to the Morton Trust Company as trustee. The court stated that even if the Interborough-Metropolitan Company were a monopoly, the Continental Securities Company had no cause of complaint about the condition of the Interborough Rapid Transit Company stock as a result of the merger. In the matter of the mortgage, the court stated that the questions involved had become academic by reason of the subsequent payment of the mortgage.

Interborough Rapid Transit Company, New York, N. Y.—The National City Bank, New York, is offering for sale at 97½ and interest, to yield 5.11 per cent, first and refunding mortgage 5 per cent gold bonds of the Interborough Rapid Transit Company, dated Jan. 1, 1913, and due on Jan. 1, 1966. Of the authorized amount of \$300,000,000 of these bonds, \$98,658,000 are outstanding. They are redeemable at 110 and interest on any interest date, as a whole or in blocks of not less than \$500,000 or in any amount for the sinking fund. It is estimated that it will be necessary to issue about \$160,000,000 of these bonds to provide for the commitments of the Interborough Rapid Transit Company under its subway contracts with the city.

Jacksonville (Fla.) Traction Company.—With reference to the recent passing of the usual Feb. 1 dividend on the \$1,000,000 of common stock of the Jacksonville Traction Company, as noted in the ELECTRIC RAILWAY JOURNAL of Jan. 30, Hardy Croom, local manager of the company, states that the action is a result of the decrease in the company's earnings and the public improvements which the company has heretofore been required by law to put into effect,

and also the large amount of work that it now has on hand and intends to complete during 1915. Mr. Croom states that the majority of the inhabitants of Jacksonville are entirely in accord with the company in its efforts to give service in proportion to the patronage it is receiving, and that as business continues to grow better, conditions will go back to what they were before the present period of depression.

London (Eng.) Underground Railways.—The secretary of the London Underground Railways has officially announced that subject to confirmation of the respective dividend announcements for owned stock and also to the final audit of its accounts, the revenues of the company will be sufficient to pay full interest to Dec. 31, 1914, on its 6 per cent first cumulative income debenture stock and on its 6 per cent income bonds and leave about £35,000 to carry forward.

Long Island Railroad, New York, N. Y.—Dick Brothers & Company, New York, have issued another circular to the stockholders of the Long Island Railroad requesting proxies for the annual meeting on April 13. They express dissatisfaction with the present management and say: "We are willing to conduct a campaign against the present management at our own expense as we are the largest minority stockholders, owning and controlling 11,000 shares which we have held for many years, and all we ask is your moral support." A previous reference to the call for proxies was made in the *ELECTRIC RAILWAY JOURNAL* of Feb. 6.

Massachusetts Electric Companies, Boston, Mass.—It is reported that the Massachusetts Electric Companies will proceed at this time with the refunding of \$3,100,000 of 5 per cent notes maturing on May 1, and for this purpose will issue \$300,000,000 of 5 per cent three-year notes to be dated April 1. The new notes, like the maturing obligations, will be a collateral issue, secured by a deposit of a majority of the common stock of the Bay State Street Railway.

Minneapolis & Northern Railway, Minneapolis, Minn.—W. C. Leary, judge of the District Court for the Fourth Judicial District of Minnesota, on Feb. 1 issued an order that the creditors of the Minneapolis & Northern Railway, the Minnesota Loan & Trust Company as former receiver and F. H. Hunter as present receiver, should all appear before the court on Feb. 6 and show cause why an order should not be granted requiring the receiver to surrender all the railway property to the trustees, W. P. Veitch, L. H. Bolduc, H. F. Balch, M. H. Coolidge and C. T. Bratnaber. At the same time an order was issued for creditors to show reason why the receiver should not deliver to the McKean Motor Car Company the locomotive and two motor cars now used by him in the operation of the railway. Mr. Hunter's application for the dissolution of the receivership was noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 23.

Municipal Tramways Trust, Adelaide, Australia.—According to the report of the Municipal Tramways Trust for the two years ended July 31, 1914, the revenue account for the electric traction system showed gross earnings for the year ended July 31, 1913, of £310,240 and for the year ended July 31, 1914, £328,809. For the first year the total operating expenses amounted to £207,318, giving an excess of income over expenses of £102,922. The operating ratio for the year was 66.82 per cent. The total operating expenses for the second year amounted to £202,503, the excess of income over expenses being £125,365. The operating ratio for this year amounted to 61.58 per cent. During the two years £150,899 was advanced by His Majesty's Treasury on construction account. A sum of £36,877 was added to the reserve for renewals, this sum being 2½ per cent on the capital cost of the renewable parts of the line already opened, plus interest. An amount of 1 per cent of the total receipts, or £6,713, was placed to the credit of the accident reserve. During the period 1993 third party accidents occurred, 697 affecting the general public and 1296 the passengers.

New York Municipal Railway Corporation, Brooklyn, N. Y.—Eugene N. Foss was on Feb. 4 elected a director of the New York Municipal Railway Corporation to succeed A. N. Brady, deceased.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—At the recent annual meeting of the Oakland, Antioch & East-

ern Railway, Henry T. Scott was elected a member of the board of directors to succeed H. J. Sutherland.

Pacific Power & Light Company, Astoria, Ore.—The Pacific Power & Light Company has sold to William A. Read & Company and White, Weld & Company, New York, \$1,052,000 of first mortgage 5 per cent bonds, due 1930, and has sold to a syndicate headed by White, Weld & Company 5000 shares of 7 per cent cumulative preferred stock. The bonds have practically all been resold privately by the bankers. These sales bring the amount of bonds outstanding up to \$7,001,000 and the amount of preferred stock up to \$2,500,000. This company operates electric railways in Astoria and controls the Walla Walla Valley Railway.

Philadelphia (Pa.) Railways.—The gross earnings of the Philadelphia Railways for the year 1914 were \$99,402 as compared to \$100,157 for 1913, and the operating expenses \$74,015 as compared to \$82,694, giving net earnings \$25,387 and \$17,463, respectively. Bond interest remained the same at \$20,000, other interest increased from \$843 to \$1,106 and taxes from \$2,082 to \$2,217. The result, therefore, was a surplus of \$2,064 for 1914 as compared to a deficit of \$5,462 for 1913. For 1914 a charge of \$4,000 for depreciation was included in operating expenses.

Riverside, Rialto & Pacific Railroad, Riverside, Cal.—The Riverside, Rialto & Pacific Railroad has been authorized to issue 3000 shares of capital stock and \$200,000 of 2½-year promissory notes bearing interest at 6½ per cent per annum in exchange for the property of the formerly sole-owned Crescent City Railway. The change in the legal form of the latter company was noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 30. W. J. Bohon, general manager of the company, has issued a report denying that the Riverside, Rialto & Pacific Railroad will be taken over by the Pacific Electric Railway. According to Mr. Bohon, there may be a traffic agreement between the two companies, but the former company will continue to be operated separately.

San Joaquin Light & Power Corporation, Bakersfield, Cal.—The San Joaquin Light & Power Corporation recently filed an application with the Railroad Commission of California, requesting authority to issue a new series of first and refunding mortgage bonds, to be known as series "C" and to bear interest at 6 per cent per annum. The company now has outstanding \$2,924,000 of series "B" 5 per cent bonds, and it is proposed to allow the holders to exchange these bonds for the new series "C" bonds upon payment of a premium of \$100 per bond. The company also has \$1,523,000 of series "B" bonds in its treasury, which it wishes to cancel and replace by bonds of the new series. In addition, the company requests authority to issue \$136,000 of the series "C" bonds outright.

Springfield & Xenia Railway, Springfield, Ohio.—The gross and net earnings of the Springfield & Xenia Railway for 1914 were less than in 1913, on account of the fact that in 1913 the earnings were larger by virtue of the company with its connections at Xenia being the only line open between Springfield and Dayton during the flood. The net earnings for 1914, however, exceeded those of 1912 or any previous year by about 20 per cent. The company paid dividends of 5 per cent on its preferred stock and 3 per cent on its common stock.

United Traction Company, Pittsburgh, Pa.—The protective committee of preferred stockholders of the United Traction Company has received a letter from the Philadelphia Company, stating that the latter in connection with the Pittsburgh Railways will give due consideration to suggestions made by the committee's counsel regarding the non-payment of the semi-annual preferred dividends due in January. The Pittsburgh Railways, which is controlled by the Philadelphia Company, operates the United Traction Company by lease. The letter also said that for the purpose of considering the dividend question a special committee has been formed, consisting of James D. Callery, president United Traction Company and Pittsburgh Railways; Mason B. Starring, president United Railways Investment Company, and George S. Davison, a practical street railway man. The protective committee has received deposits of between 15,000 and 20,000 shares out of a total of 60,000 outstanding, in response to the call noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 13.

United Railways of St. Louis, St. Louis, Mo.—James Atkins, Breckenridge Jones and C. A. Tilles have been elected directors of the United Railways of St. Louis to succeed A. C. Einstein and Frederick J. Kinsella, and Robert McCulloch, deceased. Richard McCulloch has been elected president to succeed his father. The Mississippi Valley Trust Company and Alheimer & Rawlings Investment Company are offering for sale at 99 and interest, to yield 5.15 per cent, an unsold balance of \$200,000 of first mortgage 5 per cent gold bonds of the St. Louis & Suburban Railway, a constituent company of the United Railways of St. Louis. The bonds are now a closed first mortgage on the main line of the former company.

Virginia Railway & Power Company, Richmond, Va.—The New York Stock Exchange has listed an additional \$32,000 of first and refunding mortgage 5 per cent bonds of the Virginia Railway & Power Company, making the total amount listed \$12,285,000.

Warren, Brookfield & Spencer Street Railway, Boston, Mass.—According to a direct communication from Thomas T. Robinson, receiver of the Warren, Brookfield & Spencer Street Railway, the Massachusetts Supreme Court on Feb. 10 issued a decree fixing \$50,000 as the upset price for the property at the adjourned sale to be held on March 11. It is understood that the property will be purchased by a committee representing the bondholders, and that a new corporation will be organized in the interest of the bondholders to take over and operate the property. Previous items regarding the attempted foreclosure sale of this property for \$150,000 appeared in the ELECTRIC RAILWAY JOURNAL of May 2, June 2, July 25, Aug. 15 and Sept. 12, 1914.

DIVIDENDS DECLARED

American Railways, Philadelphia, Pa., quarterly, 1¼ per cent, common.

Columbus Railway & Light Company, Columbus, Ohio, 75 cents.

Middle West Utilities Company, Chicago, Ill., quarterly, 1½ per cent, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.						
Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus	
1m., Dec., '14	\$172,658	*\$143,817	\$28,841	\$2,989	\$25,852	
1 " " '13	168,957	*148,938	20,018	347	19,671	
6 " " '14	1,097,376	*924,647	172,729	21,681	151,048	
6 " " '13	1,137,190	*915,396	221,794	2,082	219,712	
BATON ROUGE (LA.) ELECTRIC COMPANY						
1m., Dec., '14	\$17,128	*\$9,524	\$7,604	\$2,053	\$5,551	
1 " " '13	16,386	*9,541	6,845	2,100	4,745	
12 " " '14	178,825	*114,279	64,546	25,024	39,522	
12 " " '13	163,128	*102,342	60,747	24,775	35,972	
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
1m., Dec., '14	\$8,071	*\$8,091	\$20	\$1,145	†\$1,165	
1 " " '13	7,639	*7,836	147	1,079	†1,228	
12 " " '14	121,757	*101,749	20,007	13,141	6,866	
12 " " '13	124,403	*98,728	25,676	13,044	12,632	
CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.						
1m., Dec., '14	\$29,794	*\$18,778	\$11,017	\$6,694	\$4,323	
1 " " '13	36,169	*17,633	18,537	6,367	12,170	
12 " " '14	349,894	*211,119	138,774	76,779	61,995	
12 " " '13	380,952	*209,953	170,999	72,913	98,086	
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						
1m., Dec., '14	\$227,665	*\$131,530	\$96,135	\$51,115	†\$49,069	
1 " " '13	219,869	*151,702	68,167	46,110	‡20,420	
3 " " '14	643,122	*373,798	269,324	152,687	†121,540	
3 " " '13	623,392	*401,288	222,104	138,703	†79,800	
HOUGHTON (MICH.) COUNTY TRACTION COMPANY						
1m., Dec., '14	\$21,486	*\$13,823	\$7,663	\$5,605	\$2,058	
1 " " '13	24,833	*15,450	9,383	5,610	3,773	
12 " " '14	276,633	*178,857	97,776	67,063	30,713	
12 " " '13	296,853	*180,260	116,593	67,592	49,001	
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.						
1m., Dec., '14	\$29,461	*\$16,527	\$12,934	\$7,699	\$5,235	
1 " " '13	29,523	*16,630	12,893	7,707	5,186	
12 " " '14	303,515	*194,084	109,431	91,431	18,000	
12 " " '13	296,565	*194,091	102,474	89,964	12,510	
TAMPA (FLA.) ELECTRIC COMPANY						
1m., Dec., '14	\$85,501	*\$42,327	\$43,174	\$4,423	\$38,751	
1 " " '13	83,107	*49,386	33,722	5,059	28,663	
12 " " '14	981,000	*520,078	460,923	54,489	406,434	
12 " " '13	844,941	*466,499	378,442	55,749	322,693	

*Includes taxes. †Deficit. ‡Includes other income.

Traffic and Transportation

PORTLAND COMPANY ON "JITNEY" BUS

Statement Made Public at Portland, Ore., on Feb. 1 Published in Full

The full text of a statement in regard to the "jitney" bus made to its employees under date of Feb. 1 by the Portland Railway, Light & Power Company, Portland, Ore., follows:

"The advent of the 'jitney' bus in competition with our street car service has created a condition fraught with serious menace to the welfare of the company and its employees and, by reason of the important position occupied by the Portland Railway, Light & Power Company in the affairs of Portland, there are possibilities of far reaching consequences affecting disastrously the prosperity and progress of the city itself.

"For your information and also to assist you in meeting the arguments of others, this circular has been prepared for distribution among yourselves and others whom you believe are interested.

"First of all, it should be remembered that a distinction should be drawn between the auto bus and the 'jitney' car. The former, the name of which is self-explanatory, may have a legitimate field in urban or suburban transportation of both passengers and freight, but just what this field may be, we are not yet certain, but we do know that auto bus companies have failed in Philadelphia, Indianapolis, Pittsburgh, St. Louis, New Haven, Dallas, Los Angeles, and nearly all other American cities where they have been tried. So far, we know of but one auto bus company which has made a reasonable success in urban transportation, and that is the company charging a 10-cent fare operating on Fifth Avenue, New York, a street without a car line and of very dense and heavy traffic. The 'jitney' car service, however, by which is meant the transportation of passengers in small automobiles in direct competition with street car systems and with the auto bus, can never be organized into a systematic service even approximating reliability. Let us see why this is so.

"In the first place it probably needs no argument to demonstrate that new or nearly new automobiles cannot be profitably employed in this service. Indeed, those who are familiar with automobile costs and operating expenses know that even with the second-hand car, despite its small investment charge, the margin remaining above operating costs, exclusive of the driver's compensation, is generally so small except in the districts of dense population and short hauls, that it would constitute not a very attractive wage for the driver. The Seattle *Post-Intelligencer* of Jan. 24, 1915, published the report of the chief engineer of the Public Service Commission of Washington, certainly a disinterested body, showing that the average earnings of the 'jitney' driver is only 23 cents an hour.

"Unfortunately, alike for the 'jitney' operator, as well as for yourselves, for the company and indeed all concerned, excepting perhaps the vendors of second-hand automobiles and supplies, the 'jitney' in the beginning shows an apparent though fictitious profit, and it usually takes several months before the misled 'jitney' operator realizes that his fancied profits are, after all, only imaginary. Hence, much time may elapse before all the prospective 'jitney' operators realize, by sad experience, this phase of 'jitney' service, but in the meantime very considerable harm and damage may be done to the city, to the citizens, including yourselves, and to the street railway.

"Since the 'jitney' service must then be confined to very low priced or second-hand cars, it seems very doubtful that any responsible business man or group of business men, would put a considerable investment in apparatus bordering upon junk for so important a venture as a system of transportation, and even if a speculative individual or group were willing to provide the necessary equipment, they would be faced at once by the problems of how to collect and conserve the revenues. Manifestly, they would find it impossible to gather together a number of trained, reliable operatives such as are found in organized transportation service. Certainly, it would take a time approximating that of the street railways whose men have been years in ac-

quiring their training and experience, which includes physical examination for which a high standard has been set, also extended training and instruction before the applicant is allowed to operate a car and thereafter, constant instruction by men long experienced and with considerable ability in transportation service.

"Assuming, however, that a number of 'jitney' operators had been secured, a little reflection will make clear that the system in vogue on street cars and auto busses of paying the operators a fixed hourly or daily wage and having them turn in their revenue checked by registers or other mechanical devices is out of the question in 'jitney' service. But one other method apparently is possible, and that is to allow the operators to retain the earnings of their 'jitney' cars but pay to the would-be organizer a flat sum daily, weekly, or at other periods as agreed, in consideration of the organizer's work of planning routes, schedules and perhaps supplying collective insurance.

"Having got that far and having assigned the 'jitney' operators to routes, let us consider the individual whose run is at hours not convenient to him or whose line is in thin territory with relatively much smaller revenue possible, or the combination of both, and figure for yourself how long he will stay there. As shown by the experience in all the cities where the service is operated, the 'jitneys' will inevitably gravitate to the thickly settled, short haul districts with the natural consequence of dissatisfaction on the part of the 'jitney' drivers already in that territory. And when to this is added a number of independent operators, responsible to no one but themselves as to choice of routes and time of operation, the inevitable result is confusion and irresponsibility and all efforts at organization must fail and each operator then becomes a free lance. Such has been the experience of all the cities at present afflicted with the 'jitney.'

"In Los Angeles, for example, nearly all the 'jitney' drivers aimed to be in the downtown district at the same time to pick up and carry away homeward-bound loads. This resulted in enormous traffic congestion against which have been recorded strong protests by the fire department, the police department, the Chamber of Commerce, the Merchants & Manufacturers Association, the Mayor, the improvement clubs, the realty board, and finally the mothers of the city have taken up the cudgels against the 'jitney.'

"The Los Angeles *Times*, under date of Dec. 29, 1914, makes the statement that accidents have increased 60 per cent since the advent of the 'jitney' in that city. The Seattle *Post-Intelligencer*, under date of Jan. 17, 1915, reported nine automobile accidents in that city, of which seven involved 'jitneys.'

"In some of the California cities the serious menace of the 'jitneys' from the standpoint of morality has aroused the women of those cities to take urgent action to safeguard girls and young children against the evils which have followed in their wake. Numerous items in the press cite instances of insult and mistreatment to girls in crowded 'jitneys.' In Los Angeles, fake 'jitneys' are held responsible for the disappearance of several young women, while in Berkeley two co-eds narrowly escaped such experience. Indeed, it is asserted that questionable resorts are sending out 'jitneys' operated by women as well as by men.

"Some of the above instances are specifically mentioned in the Los Angeles *Examiner*, Jan. 9, 1915; San Francisco *Chronicle*, Jan. 21, 1915; Los Angeles *Times*, Jan. 24, 1915.

"In the southern cities where the street car companies found it necessary to curtail the car service because of the 'jitney,' the adverse effect upon the patrons and the business interests of the outlying districts brought home to these people at once the serious result of the continuance of irresponsible 'jitney' service.

"The 'jitney' has but two things to offer as advantages. The first is novelty, which will soon wear off. The second is somewhat higher speed. As against these are so many disadvantages and evils, such as utter irresponsibility, increase of accidents, of serious menace to morality, lesser convenience, lesser service and lack of transfers as compared with the street car systems, depreciation of business and property interests, that there can be no valid objection to any reasonable and legitimate movement to subject the 'jitney' to proper municipal regulation.

"A number of California cities have enacted ordinances regulating the 'jitney,' among them Venice, Long Beach, Pasadena, Los Angeles, Oakland, Fresno.

"In Los Angeles, where a flat 5-cent fare, without commutation rates is charged, the railway cited statistics to the effect that

"For every nickel collected in fares more than 3 cents is expended directly for labor in this city. On the remaining 2 cents at least 1 cent goes for taxes, license, street improvements and material, four-fifths of the whole is returned whence it came, to benefit the people of Los Angeles. The remaining fifth takes care of the interest charges on the bonded indebtedness, and as many of the bonds are owned in California, a share of this last fifth also remains here.

"In contrast to this showing is the 5-cent fare paid to the 'jitney' bus driver. Four-fifths of this sum must go for gasoline, oil, rubber tires and to pay for the machines, for few of them are owned outright by the men operating them. It is a direct reversal of conditions. In the latter case 4 cents in 5 goes out of the city; in so far as the street cars are concerned, that same proportion in the nickel stays here.'

"The above quotation is from the Mayor's message to the City Council and will hold substantially true in nearly every American city of similar class."

EFFECTIVE, "JITNEY" ORDINANCE

Full Text of "Jitney" Regulatory Ordinance Passed and Approved in Boise

An ordinance passed by the City Council of Boise, Idaho, regulating the "jitney" had up to Feb. 12 acted effectively as a deterrent to the starting of "jitney" service in that city previously planned. This ordinance as passed follows in full:

"An ordinance making it unlawful for any person, firm, association of persons, or corporation, either as principal, officer, agent or employee, to use or occupy any street, alley, or other public place in Boise City, Idaho, with any automobile or other vehicle whatever for the carriage of persons for hire, and operating for the purpose of affording a means of local street transportation similar to that ordinarily afforded by street railways by indiscriminately accepting and discharging such persons as may offer themselves for transportation along the way or course on which it is used or operated or may be running, without first obtaining a license from Boise City; providing for the giving of indemnity as security to the public; providing for the filing of the designation of the route intended to be traveled by such vehicles; providing regulations for the conducting of such business; prescribing a penalty for the violation thereof; and repealing all ordinances and parts of ordinances in conflict therewith. Be it ordained by the Mayor and Council of Boise City, Idaho:

"SEC. 1. It shall be unlawful for any person, firm, association of persons or corporation either as principal, agent or employee, to use or occupy any street, alley or other public place within the corporate limits of Boise City, Idaho, with any automobile or vehicle whatever for the carriage of persons for hire, and operating for the purpose of affording a means of local street transportation similar to that ordinarily afforded by street railways, by indiscriminately accepting and discharging such persons as may offer themselves for transportation along the way or course on which it is used or operated or may be running, without first obtaining a license from Boise City, Idaho.

"SEC. 2. Any person, firm, association of persons or corporation shall, before receiving a license for carrying on the business defined by this ordinance, file with the city clerk a map of its designated route, showing the streets, alleys and public places upon which it is intended to operate, together with the operating schedule or headway to be maintained, the number of cars or vehicles to be operated, with the tariff of fares to be charged for such service. Before granting a license the Council shall approve or modify, and approve as modified, any such route, operating schedule or headway, and tariff of fares; and the acceptance of such license shall be deemed an agreement

by any such person, firm, association of persons or corporation to operate its cars over the route upon the schedule or headway, and for the fares; and for failure so to do the license which may be in force shall be subject to revocation.

"SEC. 3. Every person, firm, association of persons or corporation shall pay to the city clerk of said city the sum of \$75 per annum in advance as a license for any automobile or vehicle carrying not to exceed five passengers; from five to ten passengers, the sum of \$100, and from ten to twenty passengers, the sum of \$150; before it shall be lawful for any such automobile or vehicle to engage in the business herein defined.

"SEC. 4. Every person, firm, association of persons or corporation shall provide and file with the city clerk an indemnity bond in the sum of ten thousand (\$10,000) dollars for the operation of not to exceed two automobiles or vehicles, and when it is desired to operate more than two such vehicles an indemnity bond shall be filed in the sum of twenty thousand (\$20,000) dollars; and it shall be the duty of the clerk to present such security to the Council at its first meeting, and such security shall be acceptable to and approved by the Council before it shall be lawful to operate any such automobile or vehicle in conducting the business herein defined; and it shall be and is hereby made the duty of any person, firm, association of persons or corporation engaging in the business herein defined to keep and maintain such indemnity bond at the amounts herein specified, during the whole time of their operation; and such bond or indemnity shall be conditioned to the effect that in the event of any person or property being injured or damaged by negligence or carelessness in the operation of any automobile or vehicle owned or operated by the person, firm, association of persons or corporation filing such indemnity, the person so injured in his person or property shall have a right of action thereon, and such bond shall not be void upon first recovery, but may be sued upon and recovered upon from time to time until the full penalty thereof is exhausted.

"SEC. 5. It shall be unlawful for any person, firm, association of persons, or corporation, to allow, permit or cause any automobile or other vehicle used in the business herein defined to be operated by any person other than one over twenty-one years of age, skilled in the art of driving automobiles, and having a sufficient knowledge of the English language to carry on an intelligent conversation. The names of such operators shall be registered with the chief of police, and he shall report to the Council the names of any operators who are not qualified under this section, or the operation of any such automobile or vehicle by any person whose name is not so registered, and any violations by any such operators of the traffic ordinance of Boise City; and the Council may, if they find any such operator unqualified, or that any such violation of the traffic ordinances has been committed by any such operator, take the action prescribed by the following section.

"SEC. 6. All applications for licenses required in the business defined by this ordinance shall be made to the Council of said city, and no license shall be granted unless in the opinion of the Council the applicants shall meet all the requirements of this ordinance; and it shall be deemed and considered a part of such license that the Council reserves the right to suspend, cancel or revoke the same for any infraction of the traffic ordinances of said city, or when in the judgment of the Council it shall be to the best interest of the public that such license be suspended, cancelled or revoked.

"SEC. 7. Any person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof in the police court of Boise City, Idaho, shall be fined in any sum not less than \$25 nor more than \$100. And every day's violation of this ordinance by any one automobile or vehicle shall constitute a separate and distinct offense.

"SEC. 8. That all ordinances and party ordinances of the city of Boise in conflict herewith be and the same are hereby repealed.

"SEC. 9. This ordinance shall be in force and take effect within a period of ten days after its passage, approval and publication."

PRESIDENT LILIENTHAL TALKS

Describes His Experiences After Assuming Presidency of the United Railroads, San Francisco

An interview with Jesse W. Lilienthal, president of the United Railroads, San Francisco, Cal., appeared in the *New York Evening Post* of Feb. 10. The interview was particularly interesting in the light that it shed on the conditions imposed by Mr. Lilienthal when he assumed office with the company. The work that Mr. Lilienthal has done for the company and men under him in connection with instituting pensions for them, arranging a plan under which they may own their own homes, releasing them from the machinations of the money lenders and otherwise bettering their conditions has been reviewed from time to time by the *ELECTRIC RAILWAY JOURNAL*. In connection with other matters Mr. Lilienthal said in part:

"One day about a year and a half ago I received a brief telegram from New York asking me if I would accept the presidency of the United Railroads. If you had received a message of somewhat the same nature from the Czar of Russia, and I presume you do not know him, you would not have been more surprised than I was. After realizing what it meant, I said to myself: 'I'll have to go off into a corner alone and think this thing over.'

"There wasn't any political or corporation position that I wanted then or that I want now. My income from my practice as a lawyer was sufficient for myself and my family, and I was satisfied with the quiet life I was leading. The offer, however, tempted me, for I saw the possibilities of running a public-service corporation that would stand as a pattern.

"After talking with my friends and naming certain conditions, I accepted the position. The conditions were that I was to have, without any question, a free hand in the management and operation of the company. Interests owning a majority of the stock actually turned their proxies over to me, and I selected and elected my own board of directors. The list is made up entirely of San Francisco men, who are generally recognized in their own city for character, intelligence, and experience.

"After electing my own board I immediately issued a public statement to the effect that I was going to try to give good service, that I was going to take care of my employees, and that it was up to the public to let me know when anything was wrong. I merely asked the public over my own name to give me a chance to correct anything that was wrong; to come to me and let me know, personally. In that same statement I announced that the United Railroads, as long as I remained president, would keep out of politics. It was stated further that if the company ever undertook to influence public opinion it would do so openly and over the name of the company.

"I made it my business to go to dances and sociables given by our men, and I come in contact with them daily while they are in service, and while they are using our recreation and reading-rooms, and to get in touch with them in another way we publish a magazine for employees only. What we are driving at there is to establish a kind of family relation. In articles I write for that magazine regularly I talk things over with the men, and ask them to come in to see me when they have anything of interest or importance to discuss. And when they come I do not turn them over to my secretary or some other official; I see them myself.

"I am not trying to become a railroad magnate, nor am I trying to make money. I am getting old, and all I am trying to do to polish off the end of my life is to set an example with labor that will be followed by some other public service corporations.

"While we are competitors with the municipal railway lines in San Francisco we do not have any trouble with the city. We told the city officials publicly long ago that we would build lines wherever they were needed, and we do. We do not build lines that will not pay; we said that while such lines are wanted, the work should be done by the city and charged to an account fund, much as would be done in maintaining or building a hospital in the interest of the general public."

THE BOSTON SAFETY RECORD

Boston Elevated Railway Advertises Its Award of the Brady Medal

The Boston (Mass.) Elevated Railway, to which was awarded the Anthony N. Brady gold medal by the American Museum of Safety, had a full-page advertisement in the Boston papers of Feb. 12 calling attention to its being awarded the medal and to the record made by the company in safeguarding the lives of its passengers and employees during the year ended June 30, 1914, in which not a single passenger was killed as a result of the negligence of the company or its employees and not a single fatal accident occurred on the elevated or subway trains. The entire passenger traffic during this period averaged more than 1,500,000 passengers a day. The company announced that the advertisement was prepared and paid for by it in the belief that it was the most effectual method of bringing to the attention of the public the facts related, in the expectation that it would lead to still better results for all. The company said that the remarkable record which had been established was made possible through the combined efforts of the company, the public, the safety campaign committee of the Chamber of Commerce, and, particularly, the splendid response made by the employees in their efforts toward the saving of life and preventing injury. In making its acknowledgment to the public the company said:

"For the distinction which comes to our community and the Boston Elevated Railway, the company desires to make public and grateful acknowledgment to its patrons, school and all other public authorities, the Boston Chamber of Commerce, business concerns, parents, newspapers, and especially to its employees for their co-operation in making a reality the words 'Safety First.'"

M. C. Brush, second vice-president of the company, had the following notice posted in all the carhouses and power houses of the company:

"I wish to thank all the employees of the bureau of transportation for their sincere co-operation and efforts in helping to make such a record in the prevention of accidents as to have warranted the selection of this company for first place by the Brady Memorial Jury. It should be a thought of great satisfaction to each and every one who through his or her thoughtfulness has helped to prevent needless injury and suffering, and I sincerely trust that you will earnestly try to continue your efforts and so improve that our combined record may be still better the coming year."

CHICAGO LOOP TRACK CAPACITY REACHED

While a witness before the Illinois Public Utilities Commission, L. A. Busby, president of the Chicago Surface Lines, stated that the lack of track capacity rather than the lack of cars accounted for the congestion during the rush hours in the Chicago down-town loop. He stated that on occasions 20 per cent of the cars on a line entering the loop were idle during the rush hours, because they were unable to move more than a car length at a time owing to the interference of cross-traffic at street intersections. Summing up, Mr. Busby stated that it was impracticable to put any more cars into the loop on the existing tracks.

Mr. Busby also furnished other interesting information. He stated that the Chicago Surface Lines averaged 3,060,000 passengers a day, including cash, transfers and free rides. The ratio of cash fares to total rides was approximately 50 per cent. Fully 80 per cent of the local passenger traffic was on the surface lines. The number of cars operated varied from 2700 to 2740 each day. The surface lines operated 902 miles of track and employed approximately 7150 motormen and conductors, and about 4000 other employees. Mr. Busby offered as the most important suggestion for remedying the existing congested conditions during the rush-hour period an initial subway system built approximately along the lines suggested by Bion J. Arnold more than a year ago. Other suggestions included universal transfers, the elimination of team traffic from the street railway tracks, the turning back of cars outside of the congested district, the electrification and through routing of steam suburban lines and the adoption of trail-car operation. It would be feasible to use trailers now and they would help materially to reduce congestion.

Complaints in Legal Form.—The International Railway, Buffalo, N. Y., announces it will no longer consider complaints regarding service, etc., unless they are made in legal manner and sworn to before a notary public.

How to Avoid Catching Cold.—The Brooklyn (N. Y.) Rapid Transit Company has issued employees' bulletin No. 12, dated Jan. 15, in which advice in regard to how to avoid catching colds is given by Edward T. Gibson, physician in charge of the medical inspection bureau of the company.

Service in Dayton.—On Jan. 20 the public utilities commission of the Greater Dayton Association decided to forward suggestions submitted to it for the improvement of the street railway service to the Presidents' & Managers' Association, composed of the heads of the various local electric railways.

One-Man Operation on New York Road.—The Putnam & Westchester Traction Company, Peekskill, N. Y., has adapted the one-man principle to its line from Peekskill to Mohegan Lake. The cars are of single-truck design and no changes were made in them other than the erection of a stanchion to hold a fare box.

Fare Change of New York State Railways.—The Fonda, Johnstown & Gloversville Railroad has been eliminated from the list of carriers over whose lines interchangeable coupon ticket books, sold by the New York State Railways, will be accepted for transportation. The change is effective on March 1, 1915, and applies only to books sold on and after that date.

"Car Full" Signs for Toronto.—The Ontario Railway & Municipal Board has approved the plan of the Toronto Railway for limiting the capacity of its cars. When the company's by-law becomes effective, probably in the spring, the accommodation of each car will be limited to its seating capacity and a number standing equal to 50 per cent of the seating capacity. When that point is reached the conductor will post a sign declaring the car full.

I. C. C. Indianapolis-Louisville Case.—The Interstate Commerce Commission has fixed Feb. 23 as the date for hearing the case of the Board of Trade of Louisville, Ky., against the Indianapolis, Columbus & Southern Traction Company and other lines, concerning the division of earnings on through business among the electric railways operating between Louisville and Indianapolis. The hearing will take place in Indianapolis before Examiner Fleming.

Matters Before Maine Commission.—Several petitions regarding electric railway service have been filed with the newly formed Maine Public Utilities Commission. The citizens of Saco ask for an extension of the 5-cent fare on the Saco Division of the Portland Railroad, from Saco to the Scarboro line. Employees of the car shops of the Maine Central Railroad at Waterville have petitioned the commission for better electric railway service between Waterville and Fairfield.

New Pittsburgh Transfers.—A new transfer system will soon be placed in operation by the Pittsburgh Railways in exchange for rights and privileges to be granted by Council, such as use of the new Point bridge, turnouts and switches in downtown streets, it is unofficially announced. The report followed numerous conferences between J. D. Callery, president, and P. N. Jones, general manager of the company, with Mayor Joseph G. Armstrong, members of Council and the city's legal department.

Wireless an Aid to Traffic.—On February 13 the Cleveland & Buffalo Transit Company completed arrangements with the Cleveland Railway through which the railway will be notified by wireless each morning of the number of passengers on the steamer bound for Cleveland. The steamer company will use the new East Ninth Street piers during the coming summer and cars will always be parked on the loop at the foot of that street to take care of the traffic when the boat lands.

Freight Ordinance in Pittsburgh.—The Pittsburgh Chamber of Commerce has adopted a resolution directing its municipal affairs committee to prepare an ordinance to legalize the hauling of light freight by street railways. Dr. J. P. Shaw, who made the motion, asserted that this is now being done illegally. The Legislature in 1907 passed an act permitting street railways to haul light freight, but

provided that an acceptance ordinance must be adopted by the Councils. Dr. Shaw claimed that this has never been done.

Plan to Suppress "Jay Walkers" in New York.—The Mayor's central committee on street traffic and safety at its session at Police Headquarters in New York on Feb. 15 indorsed the plan to forbid persons on foot to cross congested streets except at corners and at street crossings in the middle of long blocks. The crossing in the middle of long blocks will be designated by painted lines, according to this plan. Whether the regulation must be enacted by the Aldermen or by the Legislature was left for the Police Commissioner to decide.

Discussion on Massachusetts Workmen's Compensation Act.—At the regular monthly meeting of the Massachusetts Street Railway Association in Boston on Feb. 10, H. R. Bygrave, of the Frankford General Insurance Company, discussed the effect of the Massachusetts Workman's Compensation Act since its passage about three years ago. The cost of this compensation has risen from \$1,500,000 for 1913 to an estimated total of \$3,500,000 for 1915. The Industrial Accident Board has found in the employee's favor in 80 per cent of the cases brought before it.

B. R. T. Objects to a New Line Order.—The Brooklyn (N. Y.) Rapid Transit Company has served notice on the Public Service Commission for the First District of New York that it will not obey the commission's order of Feb. 9 calling for the operation of a new surface car route from Meeker Avenue across Newtown Creek and over the Williamsburg Bridge to Manhattan, with suitable connections with the Lorimer Street line to provide for transfers. The company contends that the commission has no power to make the order; that it has no authority to order changes in the Lorimer Street line which will necessitate abandoning cars; that there is no demand by the public for the change, and that the extension is unreasonable because of the expense it would involve.

Chicago Questions Authority of Utilities Body.—A demand by Berwyn, a suburb of Chicago, for a 5-cent fare to Chicago with all transfer privileges, in a hearing before the Illinois Public Utilities Commission, raised for the first time the question of the authority of the commission to regulate contract ordinances with transportation companies. The commission's authority was questioned by an attorney representing the Chicago City Railway in enumerating his objections to granting the demands of Berwyn. Assistant corporation counsel for the city of Chicago objected that as the constitution of the State gave the city exclusive control over the operation of its street railways, neither the Legislature nor any agency created by the Legislature could impair or contravene such rights.

Campaigning for Increased Passenger Rates.—Application has been made in Illinois by the Middle West steam railroads for an increase in the passenger rates from 2 cents to 2½ cents a mile. Presidents and other officials of eleven railroads operating in this State have called upon Governor Dunne and requested his co-operation. The Governor favors a full and fair hearing before the Legislature, but has warned that in view of the fact that the 2-cent rate has been in force eight years without a protest, the representatives of the steam roads will have to satisfy the Legislature that the present 2-cent rate is unfair and unremunerative. In the meantime the railroad officials are requesting the public through commercial organizations or at public hearings to express themselves favorably on the question of increased passenger rates.

Kentucky "Jim Crow" Law Upheld.—Violation of the "Jim Crow" law by the Louisville & Interurban Railroad was made basis of a suit for damages just heard in the Circuit Court at Louisville, Ky., and resulted in peremptory instructions that the jury find for the plaintiff. Judge W. H. Field, before whom the case was brought, held that the "Jim Crow" law is applicable to interurban railroads with a mileage greater than 29 miles, saying that the Interstate Commerce Commission had upheld the validity of the State act requiring separate compartments for the white and the colored passengers, and that under the law the plaintiff was entitled to damages. He so instructed the jury, pointing out that the award must not be in excess of \$2,500 and the jury returned a verdict of \$30 in favor of the plaintiff.

Personal Mention

Mr. S. E. Wolff has been elected assistant secretary-treasurer of the Grand Rapids (Mich.) Railway.

Mr. E. N. Sanderson, New York, has been elected president of the Gray's Harbor Railway & Light Company, Aberdeen, Wash., to succeed Mr. W. J. Patterson.

Mr. Howard Walker has been appointed district superintendent of District "C" of the Ohio Service Company, with office at Cambridge, Ohio, to succeed Mr. W. S. Hayes.

Mr. L. J. DeLamarter, secretary of the Grand Rapids (Mich.) Railway, has been elected to the additional office of treasurer of the company to succeed Mr. G. L. Estabrook, resigned.

Mr. Daniel W. Reese, formerly in the mechanical department of the Philadelphia & Reading Railroad, has been appointed as master mechanic of the Reading Transit & Light Company, Reading, Pa., succeeding Mr. John L. Gould, recently resigned.

Mr. G. L. Estabrook has resigned as treasurer and assistant secretary of the Grand Rapids (Mich.) Railway. He is succeeded as treasurer by Mr. L. J. DeLamarter, secretary of the company, and as assistant secretary by Mr. S. E. Wolff.

Mr. Edward J. Carroll, who is in charge of the electric railway operated in Shanghai, China, is on a visit to the United States. He was in Berlin when war was declared. He expects to leave from San Francisco shortly for Nagasaki, Japan.

Mr. W. L. Palmer, who resigned recently as claim agent for the Illinois Northern Utilities Company at Dixon, Ill., will not become connected with the Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind., as announced previously.

Mr. W. H. Hazlitt has resigned as purchasing agent of the British Columbia Electric Railway, Vancouver, B. C., after a service of fifteen years, and Mr. C. A. Lee, formerly connected with the engineering staff of the company, has been appointed to fill the vacancy.

Mr. A. E. Beck, who has been connected with the legal department of the British Columbia Electric Railway, Vancouver, B. C., for seven years as claim agent, has resigned. The duties of the office will hereafter be carried out under the direction of Mr. V. Laursen, the company's permanent counsel.

Mr. Allen Purvis, manager of the interurban lines of the British Columbia Electric Railway, Vancouver, B. C., has resigned. The interurban lines will hereafter be operated under the direction of Mr. W. G. Murrin, general superintendent. The work of the various divisions will be carried out by division superintendents as heretofore.

Mr. Robert M. Feustel, chief engineer of the State Public Utilities Commission of Illinois, has tendered his resignation to the commission to take effect on March 1. Mr. Feustel is a member of the firm of Sloan, Huddle, Feustel & Freeman, consulting engineers of Madison, Wis., and was formerly assisting chief engineer of the Railroad Commission of Wisconsin. His withdrawal at this time is for the purpose of resuming his consulting engineering practice with the above firm, which practice he temporarily relinquished in order to organize the engineering department for the Illinois Commission. During the last year the organization of the engineering staff has been effected, rules establishing standards of service for various types of utility properties have been prepared for the commission's adoption, and the general method of collecting data for rate making cases has been outlined, which latter information the commission will issue in pamphlet form in the near future. It is understood that the commission has not as yet determined upon the successor to Mr. Feustel.

Mr. Walter N. Cargill, for the last four years a member of the engineering staff of the Stone & Webster Engineering Corporation, Boston, Mass., will sever his connection with the Stone & Webster organization on April 1, 1915, to become superintendent of power and lines of the Rhode Island Company, with headquarters at Providence, R. I. Mr. Cargill is a native of Liberty, Maine, and was graduated in

1900 from the University of Maine in the electrical engineering course. He immediately joined the staff of the Lynn & Boston Street Railway, with duties in the motive power department. In 1903 he was appointed superintendent of power stations, with headquarters at Lynn, Mass., and for eight years was in charge of the design, construction and operating features of the ten generating plants of what is now the northern portion of the Bay State Street Railway system. Joining the Stone & Webster forces in 1911, Mr. Cargill devoted his attention chiefly to the mechanical side of power plant work, including reports and appraisals. He is a member of the New England Street Railway Club, the American Society of Mechanical Engineers, and is an associate member of the American Institute of Electrical Engineers.

OBITUARY

George W. Risser, associated with former Governor Haskell of Oklahoma in the promotion of the People's Electric Railway at Muskogee, is dead.

Robert A. Balfour, banker, broker, and who, with his brother, James G. Balfour, held much stock of the Union Traction Company, Philadelphia, Pa., died on Feb. 11 at his home in Germantown. He was forty-eight years old. Mr. Balfour was born in Rockdale, Delaware County, and came to Philadelphia with his father, Alexander Balfour, when a child. The elder Balfour died twelve years ago, and following his death Robert A. was elected a director in the Union Company to fill his father's place.

Charles H. Ladd, who for the last three years had charge, as superintendent, of the work done by the Stone & Webster Engineering Corporation, Boston, Mass., in El Paso, Tex., is dead. Mr. Ladd was graduated from Harvard University, in a scientific course, in 1900. After serving with various steam railroads, he entered the employ of the Houston (Tex.) Electric Company in 1905 as engineer of track and overhead lines. In 1906 he entered the service of the Stone & Webster Engineering Corporation and spent about a year as engineer of construction in connection with the rebuilding of track for the city lines in Houston. In 1907 he was transferred to Fort Worth as superintendent of construction. After two years spent in Arizona Mr. Ladd returned to the Stone & Webster organization at El Paso in the capacity previously mentioned.

D. G. Hamilton, for more than ten years president of the Chicago (Ill.) City Railway, now included in the system of the Chicago Surface Lines, died on Feb. 16 at his home in Chicago. Mr. Hamilton was born in Chicago seventy-three years ago. He received the degrees of A.B. and A.M. from De Pauw University and was graduated from Douglas University in 1867. He was president of the Anglo-American Land & Claim Association in Texas in 1890, and from 1889 to 1899 was president of the National Railway Company, the predecessor of the present United Railways of St. Louis. He was also president of the Texas & Central Mexican Railway. At the time of his death, he was resident director in Chicago of the Union Mutual Life Insurance Company of Maine, a member of the Chicago Historical Society, trustee of De Pauw University, a member of the Knights Templar and a Thirty-second Degree Mason. He belonged to the Chicago and the Union League Clubs.

H. Ward Leonard, electrical engineer and inventor, died suddenly of apoplexy on Feb. 18 as he was about to attend the annual banquet of the American Institute of Electrical Engineers. After graduation from the Massachusetts Institute of Technology in the early eighties, Mr. Leonard at the age of twenty-three became associated with the Edison interests, first with Mr. Edison personally and then in the installation and operation of Edison plants. In 1889 he was appointed general manager of the light and power department of the Edison Electric Manufacturing Company in New York and later of the Edison General Electric Company. In 1891 he established an independent manufacturing business, still operating as the Ward-Leonard Electric Company at Bronxville, N. Y. Mr. Leonard's inventions have been principally in the direction of systems of motor control, which were designed first for elevator service but later were adapted to railway locomotive use. Several electric locomotives in Switzerland and France have been equipped with this system.

Construction News

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

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

RECENT INCORPORATIONS

***Riverside, Rialto & Pacific Railroad, Riverside, Cal.**—Incorporated in California as a successor company to the Crescent City Railway Company. This incorporation means nothing more than that the Crescent City Railway has changed its name. There is no change in the management. This line, when it was built from Riverside to Crestmore, was incorporated. Since it was extended to Bloomington and Rialto it has operated without being incorporated. Capital stock, \$500,000. Directors: William G. Henshaw, Tyler Henshaw, Henry Chickering and William Lees, Oakland, and William Metcalf, Piedmont, San Francisco. Headquarters of the company are at San Francisco.

***West Sacramento Electric Company, Sacramento, Cal.**—Incorporated in California to build electric railways and other public utilities in Sacramento. Capital stock, \$100,000. Incorporators: Benjamin P. Lienthal, San Francisco; Herbert W. Furlong, Pleasanton; William Berlitz, San Francisco, and T. T. C. Gregory, Suisun.

FRANCHISES

Pocatello, Idaho.—J. D. Browning has given the certificate of necessity and convenience for an electric railway in Pocatello over to J. R. Munn, who is asking for a franchise to build this line. The proposition is now before the Council. [E. R. J., Oct. 24, '15.]

Henderson, Ky.—The Henderson Traction Company has asked the Council for a franchise in Henderson. This is part of a plan to build an extension from Henderson to Owensboro.

Henderson, Ky.—The Evansville, Henderson & Owensboro Traction Company has asked the Council for a franchise in Henderson.

Greenfield, Mass.—The Connecticut Valley Street Railway has asked the Council for a franchise to extend its tracks along Silver Street in Greenfield.

Leominster, Mass.—The Worcester Consolidated Street Railway has asked the Council for a franchise in Leominster.

Salem, Mass.—Officials of the Bay State Street Railway have assured Mayor O'Keefe of Salem that they will soon build a loop line through the Castle Hill district. A franchise for the line was secured twenty years ago.

Kansas City, Mo.—The Metropolitan Street Railway has received a franchise from the Council to double-track its line on Sixty-seventh Street from Swope Parkway to Elmwood Avenue in Kansas City.

Geneva, N. Y.—The Geneva & Auburn Railway has asked the Council for a franchise to double-track its line on Exchange Street from Seneca Street to Lewis Street in Geneva.

Toronto, Ont.—The Humber Valley Electric Railway has asked the Ontario Legislature for an indefinite extension of time on its franchise in which to begin to build its electric railway through the Humber Valley from Lambton to the mouth of the Humber River and along the shore to Sunnyside. [E. R. J., Mar. 29, '13.]

Portland, Ore.—The City Dock Commission has approved the amended franchise of the United Railways, permitting the company to establish its electric lines in Stark Street and in Twelfth Street, between Burnside and Stark Streets, in Portland. The City Commissioners have approved the ordinance.

Philadelphia, Pa.—The Philadelphia Rapid Transit Company has received the approval of the Public Service Commission for a franchise granted by the Philadelphia Council for the right to extend its tracks on Leland Street in Philadelphia.

Marshall, Tex.—The Texas-Louisiana Traction Company has asked the Council for a franchise in Marshall. A. B. Blevins, Jefferson, president. [E. R. J., Jan. 23, '15.]

TRACK AND ROADWAY

Pacific Electric Railway, Los Angeles, Cal.—The extension to Corona has been completed by this company and will be placed in operation at once.

San Francisco (Cal.) Municipal Railway.—The Utilities Committee has advised the city engineer to proceed with the preparation of plans for the municipal railway across Golden Gate Park, the cost of which is estimated at \$200,000. This amount is to be taken out of Geary Street Railway earnings. The line across the park is to be sunken and the crossings will be bridged over. The cost will be \$50,000 more than for level construction.

San Rafael & San Anselmo Valley Railway, San Rafael, Cal.—This railway project has been abandoned by order of the Railroad Commission. About 5 miles of the line between San Rafael and Fairfax had been surveyed. E. S. Rake, San Rafael, president. [E. R. J., Nov. 21, '15.]

Connecticut Company, Bridgeport, Conn.—Plans are being made to begin work within the next few weeks on an extension from Stratford Avenue down Hollister Avenue and along the Lordship road to a point at Lordship Manor near the Stratford lighthouse. Arrangements for the construction of five bridges along the right-of-way have been completed and work on the structures will begin at once.

Palm Beach & Everglades Railway, West Palm Beach, Fla.—The 40-mile railway to be constructed between West Palm Beach and Lake Okeechobee will be operated by steam and not by electricity. H. G. Geer, West Palm Beach, vice-president. [E. R. J., Feb. 13, '15.]

Southern Illinois & St. Louis Railway, Harrisburg, Ill.—It is announced that this company has awarded contracts for the construction of electric lines to connect Harrisburg, Marion, West Frankfort and Benton. Work will soon be begun. [E. R. J., Nov. 21, '14.]

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.—Contracts for grading have been awarded and work has been begun by this company on its line from Bonner Springs to Lawrence.

Union Traction Company, Coffeyville, Kan.—Plans are being considered by this company for an extension to Pryor, Okla. It would probably follow the old Oklahoma and Cherokee Central grade from Nowata to Pryor.

Boston (Mass.) Elevated Railway.—Plans are being made by this company to build at once the extension on the viaduct from Summer Street to Commonwealth Pier, then branch off to the Fish Pier in Boston.

Connecticut Valley Street Railway, Greenfield, Mass.—Plans are being made by this company to extend its tracks in Greenfield.

Detroit (Mich.) Railway.—This company has placed in operation its extension of the Crosstown line to Thirty-fourth Street and West Warren Avenue in Detroit. This line will connect the Crosstown line and Junction Avenue belt lines in Detroit.

Minneapolis & Central Minnesota Railway, Minneapolis, Minn.—Plans are being considered by this company to build a line between Little Falls and Pierz. E. G. Potter, 433 Andrews Building, Minneapolis, president. [E. R. J., Jan. 2, '15.]

United Railways Company of St. Louis, St. Louis, Mo.—Plans are being contemplated by this company for an extension of its Fourth Street line in St. Louis through the Lafayette Park district.

International Railway, Buffalo, N. Y.—E. G. Connette, president of this company, has announced that plans are being made to double-track the West Utica Street line on Ferry Street in Buffalo.

Yonkers (N. Y.) Railroad.—Early in the spring this company will complete the double tracking of the Park Avenue line in Yonkers by laying a double track from Ashburton Avenue to the terminal at Roberts Avenue, a distance of about 1½ miles. At the same time the company will double track the Mount Vernon line on Yonkers Avenue from Sherwood Park to Wilbur Street. A special layout is also to be laid at Nepperhan Avenue and New Main Street. According to general manager Leslie Sutherland the remaining single track portion of the railway will be

double tracked as rapidly as the company's finances will admit.

Newbern-Ghent Street Railway, Newbern, N. C.—Plans are being made by this company to extend its lines in Newbern. Among the improvements planned will be a line from the Union Depot along Queen Street and Metcalf Street to New Street where it will connect with its present track which extends to the Norfolk Southern Railroad tracks in Riverside. It is also planned to extend the line in Riverside to Duffytown and through Reizenstein. These improvements will mean an expenditure of about \$40,000.

Ohio Electric Railway, Cincinnati, Ohio.—This company has awarded a contract to H. C. Wolff, Chillicothe, Ohio, for 200,000 ties.

Cleveland (Ohio) Railway.—Plans have been made by this company for the renewal of 21 miles of track this year. It is said that 5 miles of track in addition should be re-surfaced. Within a short time this will be brought to the attention of the City Council. The largest section of track renewal contemplated is on Cedar Avenue between East Seventieth Street and Fairmont Boulevard. Short sections on many of the other lines have been selected for improvement.

Youngstown & Southern Railway, Youngstown, Ohio.—David Tod, receiver for this railway, states that the line will be double-tracked from Youngstown to Southern Park. He will petition the court to this effect soon and expects the request to be granted. A complete plan of reorganization for Youngstown & Southern Railway affairs is also under way.

***Tulsa, Okla.**—Surveys and preliminary arrangements for an electric interurban line between Collinsville and Tulsa are being made. The line will connect a number of towns between Nowata and Tulsa. No names are yet given of those interested in the project.

Aylmer, Ont.—A by-law will be submitted to the ratepayers to guarantee the bonds of the proposed hydro-radial line from Tillsonburg to London, by way of Brownsville, Springfield, Aylmer, Lyons, Belmont, Westminster and the London & Port Stanley line to London.

Wentworth Street Incline Railway, Hamilton, Ont.—The steam system of operation of this railway has been replaced by hydro-electric power supplied by the municipality of Hamilton. A storage battery has also been installed for emergency purposes. [E. R. J., Dec. 26, '14.]

Ottawa & St. Lawrence Electric Railway, Ottawa, Ont.—Work on the Perth to Smith's Falls section of this railway will be begun in the spring.

West Stayton Power & Railway Company, Stayton, Ore.—Plans are being considered by this company to begin work in the spring on this proposed electric railway between Salem and East Stayton. E. O. Stafter is interested. [E. R. J., Aug. 30, '13.]

Lehigh Valley Transit Company, Allentown, Pa.—It is reported that this company expects to lay a new double-track between South Bethlehem and Hellertown, Pa. Surveyors are at work laying out a proposed electric line between Richlandtown and Hellertown. It is rumored that this company is behind the project. It is also reported that the company plans to build a short route for a fast line between Bethlehem and Philadelphia. Resurveys are now being made over what is known as the old North Pennsylvania route.

Lansdowne, Pa.—It is announced that plans are under way for the construction of an electric railway from Lansdowne Avenue and Baltimore Avenue in Lansdowne to East Lansdowne and Cardington, connecting with the Sixty-second Street and Spruce Street line of the Philadelphia Rapid Transit. It is reported that this line is to be leased by the Philadelphia Rapid Transit Company.

Pittsburgh, Pa.—John W. Reid, Colona, Pa., Edward Thomas and others, of Monaca, Pa., have incorporated with \$250,000 capital and will soon ask for a franchise to build an electric line to make direct connections between East Liverpool, Ohio, and Pittsburgh. They propose to construct a line from Monaca to Aliquippa, where a connection will be made with the Woodlawn & Southern Railway and from another connection, near South Heights, on through to Cor-

aopolis, Pa., where the Pittsburgh Railways system will be met.

Kingsport, Tenn.—It is reported that work is to begin at an early date on the proposed electric railway from Kingsport to Newport. An office building has been rented in Greenville by those interested in the project. [E. R. J., Jan. 2, '15.]

Corpus Christi Street & Interurban Railway, Corpus Christi, Tex.—This company is asked to consider plans for an extension of Third Street from Buford Avenue to Starr Street in Corpus Christi.

Gulf & Pecos Valley Railway, Lufkin, Tex.—As soon as financial arrangements can be arranged this company plans to build its 120-mile railway from Sabine Lake to Lufkin. R. B. Bledsoe, Lufkin, president, and the P. A. McCarthy & Sons Company, Lufkin, Tex., chief engineers. [E. R. J., Dec. 27, '13.]

Pier Railway, Port Arthur, Tex.—Work will be begun by this company about March 1 on its proposed line from the center of the city of Port Arthur at Procter Street and Austin Avenue to the end of the causeway on the pleasure piers in Port Arthur. [E. R. J., Oct. 5, '14.]

Southwestern Traction Company, Temple, Tex.—An extension between Cleburne and Ballinger is being contemplated by this company in the near future. There is a possibility of the proposed line being extended as far as San Angelo.

Ogden, Logan & Idaho Railway, Ogden, Utah.—After considering the matter for several months, directors of this company have definitely decided to build the Brigham City-Wellsville extension of the Idaho line by way of Collinston, Utah. The proposed route of the electric line extension follows closely the old route of the Utah Northern Railroad, crossing the divide into Cache County at Summit. Much of the material for this link of the railway, as well as that portion from Smithfield north to Preston, Idaho, has already been ordered and work on both portions of the extension will be rushed during the coming summer. It is believed by the officials of the company that the entire line from Ogden to Preston will be ready for operation by next fall. This will mean a continuous electric line between Provo, Utah and Preston, Idaho.

***Radford, Va.**—Plans are being made to build an electric railway between Floyd, Willis and Radford. About \$500 has been subscribed by citizens of Radford. Among those interested are T. W. Simpson, John L. Vaughan, Shawsville, and W. J. Phillips, Willis.

Marietta-Parkersburg Interurban Company, Parkersburg, W. Va.—Within the next few months this company plans to begin work on its proposed 14-mile electric line to connect Parkersburg, Belpre and Marietta via the new bridge over the Ohio River between Parkersburg and Belpre. It is planned to use 90-lb. T rails. H. H. Archer, Parkersburg, is interested. [E. R. J., Jan. 19, '15.]

Sheboygan Railway & Electric Company, Sheboygan, Wis.—An extension to Elkhart Lake, Kiel, New Holstein and Chilton will soon be built by this company.

SHOPS AND BUILDINGS

Little Rock Railway & Electric Company, Little Rock, Ark.—Work has been begun by this company remodeling the building at 417 Main Street, Little Rock, to be occupied by the company's commercial department and salesrooms. The general office will remain at the present quarters, 115 West Fourth Street, Little Rock.

Gray's Harbor Railway & Light Company, Aberdeen, Wash.—Plans are being made by this company to move its offices from the present location in the Hicks Building to the corner of Eighth Street and K Street in Hoquiam.

POWER HOUSES AND SUBSTATIONS

Quincy (Ill.) Railway.—A new circulating pump, of 2400 gallons per minute capacity, is being installed in the power house of this company in Quincy.

Cleveland (Ohio) Railway.—The purchase of turbine generators for utilizing exhaust steam is under consideration by this company. A contract for supplying steam with the Cleveland Salt Works expires on July 1 and the question as to renewal must be decided soon.

Manufactures and Supplies

ROLLING STOCK

Columbia (S. C.) Railway, Gas & Electric Company is building six double-truck cars in its own shops.

Caldwell (Idaho) Traction Company will probably purchase during 1915 one passenger car and one substation.

Scranton & Binghamton Traction Company, Scranton, Pa., expects to purchase four new cars for its new extension.

Willapa Electric Company, Raymond, Wash., will order in 1915 one motor express car about 30 ft. in length, single-truck and of wood construction.

Metropolitan Street Railway, Kansas City Mo., noted in the ELECTRIC RAILWAY JOURNAL of Feb. 6, 1915, as expecting to purchase fifty new cars, has ordered this equipment from the American Car Company. Brill trucks are specified.

TRADE NOTES

Westinghouse Traction Brake Company, New York, N. Y., has received an order to equip with automatic air brakes the interurban cars recently ordered by the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo.

Lee H. Parker, for several years electric railway engineer with the Stone & Webster Engineering Corporation, Boston, Mass., has become president of the Spray Engineering Company, with headquarters at 93 Federal Street, Boston.

Union Switch & Signal Company, Swissvale, Pa., has received an order from the Northern Texas Traction Company to install six miles of T. D. B. signals on its Fort Worth-Dallas line between Boundary and Mountain Creek Spur.

C. W. Rhoades, formerly assistant sales manager in the railway department of Valentine & Company, Chicago, Ill., has been appointed railway representative of the Kay & Ess Company, Dayton, Ohio, in the territory included in the Mississippi River Valley.

Railway Appliances Company, Chicago, Ill., of which the entire capital stock was owned by Percival Manchester, has been sold to C. F. Quincy, president of the Q & C Company, Chicago, Ill. The business of the Railway Appliances Company will in the future be operated by, and in the name of, the Q & C Company.

Louis O. Duclos, for fifteen years sales manager of the Massachusetts Chemical Company, is about to enter into business for himself with headquarters in Boston. Mr. Duclos has developed a full line of insulating varnishes and friction tape, which he will market to electric railway repair shops, dealers and electrical contractors.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., announces the removal of the offices of its newly organized automobile equipment department from East Pittsburgh to Shadyside Station, Pittsburgh, Pa., where they will be located in the works devoted exclusively to the manufacture of Westinghouse automobile equipments.

Wasson Engineering & Supply Company, Milwaukee, Wis., has received an order to equip with its air-retrieving trolley bases all the cars on the new Kalamazoo-Grand Rapids line of the Michigan Railway, as well as the Grand Rapids, Holland & Chicago Railway, the former being a 2400-volt third-rail and trolley line and the latter a 1200-volt trolley line.

Coil Manufacturing & Repair Company, Cleveland, Ohio, which recently purchased the plant of the Cleveland Coil & Manufacturing Company, has enlisted the services of R. P. Pascoe, formerly manager of the latter company, succeeding Mr. Kuehle, recently resigned. Mr. Pascoe was formerly connected with the Van Dorn & Dutton interests as superintendent of their electric department.

Standard Underground Cable Company, Pittsburgh, Pa., has appointed A. B. Saurman, for the past twelve years Pacific Coast manager for this company, as southeastern manager, succeeding the late T. E. Hughes, with headquarters in Philadelphia. John P. Bell, for the past eight years assistant secretary and treasurer of the company, will succeed Mr. Saurman as Pacific Coast manager.

Prepayment Car Sales Company, New York, N. Y., has instructed its attorneys to carry its case against the Orange County Traction Company to the United States Supreme Court for review. The decision in this case in the United States Circuit Court of Appeals for the Second Circuit was mentioned on page 195 of the issue of this paper for Jan. 23. The company's case against Douglas Robinson as receiver of the Metropolitan Street Railway, mentioned in the same article, is handed down for retrial.

Cole, Ives & Davidson, New York, N. Y., is the name of a new engineering firm with offices at 61 Broadway, formed by the partnership of William W. Cole, 43 Exchange Place, and Arthur S. Ives and Rolland A. Davidson, composing the firm of Ives & Davidson, 84 William Street. Especial attention will be given to investigations and reports for financial interests, inventories and valuations of public utility or industrial properties and design. Installation or management of power plants of all descriptions.

O. C. Hirtzel severed his connection with the Westinghouse Electric & Manufacturing Company, February 1, and is now engaged in forming a corporation at North East, Pa., with a capital of \$100,000, for the manufacture of street railway supplies, repair parts, drop forgings, etc. Mr. Hirtzel has been with the Westinghouse Company since 1912 as railway supply specialist of the detail and supply department at East Pittsburgh. Prior to that he was treasurer and manager of the Eureka Company, formerly the Eureka Tempered Copper Works, since the formation of that corporation nearly twenty years ago. The factory site has been selected at North East and as soon as the new organization is perfected up-to-date new buildings will be constructed. The new plant is expected to be in operation about July 1, 1915. The name of the new company has not yet been decided upon, but it is expected that an announcement regarding this will be made shortly.

Anthony J. Bemis, who has opened an office as consulting engineer in electric railway and lighting work at 39 South LaSalle Street, Chicago, has had a varied experience in the field of utility engineering, construction and operation. In 1898 Mr. Bemis joined the Stone & Webster organization as manager of their Maine properties, later becoming manager of the Breton & Plymouth Railway for two years. Another year was spent as manager of the Cape Breton Electric Company. From 1903 to 1905 Mr. Bemis represented the Stone & Webster properties at Savannah, Ga.; Jacksonville, Fla.; Columbus, Ga., and Tampa, Fla. In 1905 he was appointed general manager of the Grand Rapids-Muskegon Power Company, Grand Rapids, Mich., in charge of construction and operation. In 1909 Mr. Bemis joined the staff of the J. G. White & Company, acting for a time as general manager of the Oklahoma (Okla.) Railway. In 1912 he became engineer in charge of construction and operation for Elston, Clifford & Company, utility operators, Chicago, supervising construction of plants at Vicksburg, Miss., and Mineral Point, Wis. Mr. Bemis will retain his present connection with the Elston-Clifford company, but will devote his consulting engineering practice to reports, investigations and valuations of utility properties and advice on operating and commercial problems in connection with electric utilities.

Harry M. Hope, assistant engineering manager, Stone & Webster Engineering Corporation, Boston, Mass., will open an office for consulting electrical and mechanical engineering on March 1, 1915, in the Oliver Building, 141 Milk Street, Boston. Mr. Hope was educated in the grammar and manual training schools of Muskegon, Mich., and at Northwestern University and the Lewis Institute of Technology. During his grammar school course he had about one and one-half years' experience with the Muskegon Traction & Lighting Company. After installing a number of small electric lighting plants in Michigan he entered the testing laboratory of the Chicago Edison Company in 1902, being transferred in 1903 to the engineering department as draftsman in charge of the high-tension features of the Fisk Street station. During about five months of this time Mr. Hope also operated substations of the company. From 1904 to 1907 he was electrical engineer of the North Shore Electric Company, Chicago, and in June of the latter year he joined the staff of the Stone & Webster Engineering Cor-

poration at Boston, becoming assistant engineering manager in 1911. Since taking up his duties with Stone & Webster Mr. Hope has been in charge of the design of transmission lines, substations and the electrical equipment of generating plants in many parts of the country and has made many investigations and reports on electric lighting, railway, hydroelectric and industrial properties.

ADVERTISING LITERATURE

Union Electric Company, Pittsburgh, Pa., has issued a price list of its Washington fir cross-arms for shipment from Pittsburgh stock.

American Oil Pump & Tank Company, Cincinnati, Ohio, issued a catalog describing its self-measuring and non-measuring oil pumps and tank outfits for paint, oil, varnishes, turpentine, lubricating oils, etc. Bulletins Nos. 201, 202 and 203 describe storage systems for these oils.

Esterline Company, Indianapolis, Ind., has issued a reprint of a description which appeared in the *ELECTRIC RAILWAY JOURNAL* of Jan. 16, 1915, of successful tests of the penetrating yet non-blinding qualities of this company's "Golden Glow" lamps, held on the lines of the Mobile Light & Railroad Company, which resulted in an order for ninety-two SM-95 headlights.

Ohmer Fare Register Company, Dayton, Ohio, has issued a reprint of an article written by B. F. Williams, a well-known educator of Des Moines, Iowa, entitled "Elements that Build for Better Business." The principles of correct relations between employer and employee laid down in the article are said by the company to be especially applicable to its fare register system.

Henry L. Doherty & Company, New York, N. Y., has issued a 14-page booklet calling attention to the present opportunity for investment and unusually attractive rates of income. It is stated that bonds and notes of public utility properties with stable and increasing earnings may be acquired at prices to yield from 4½ to 7¾ per cent. Among the specific issues described are included the first mortgage 5 per cent bonds of the St. Joseph & Savannah Interurban Railway, St. Joseph, Mo., the first mortgage 5 per cent bonds of the City Light & Traction Company, Sedalia, Mo., and the five-year 7 per cent convertible notes of the Cities Service Company, New York.

Bowman, Cost & Company, St. Louis, Mo., have issued "The Investor's Almanac" for 1915. The book contains more than 150 pages and is handsomely illustrated. "The Blue-book of American Investment," as the almanac has been called, treats of every feature of business economics and finance, with particular relation to the safety of American securities. This year's edition contains specially contributed articles from such financial authorities as Lawrence Chamberlain, Festus J. Wade and Louis Guenther. The tenor of these articles is optimistic. Mr. Chamberlain looks for an appreciation in security prices in the ensuing six months, Mr. Wade expects beneficial results from the Federal reserve system and advocates greater consideration for the railroads, and Mr. Guenther concludes that the wheels of industry will soon start to whirr with unwonted regularity.

NEW PUBLICATION

The Future of the Working Classes. By Roger W. Babson; Babson's Statistical Organization, Boston. 76 pages. \$1.

This little book is really a treatise on the subject of the value of education to the working classes. The first section treats of the relations of labor and capital, and the second discusses the economic strife between three nations now at war—England, France and Germany. The writer's conclusions in the latter section, however, were based on peace conditions. The closing section offers the evidence which has led Mr. Babson to conclude that the working classes can become prosperous only through education. He deplores the fact that no part of the nation's educational system is devoted to alleviating strikes through training youths in the fundamentals of character and economic intelligence. It is recommended that those interested in the future of the working classes look to education rather than to arbitration and the courts.