

Electric Railway Journal

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No. 7

IT'S A POOR RULE—

A brief note in this issue reports that a British Columbia railway has asked what is apparently a permanent arbitration board for permission to reduce wages 15 per cent. This occasions surprise for the same reason that while we should give scant attention to the report that a dog had bitten a man, a report that a man had bitten a dog would be news of the highest order. But why not? If wages are to be raised on the application of employees because business is good and the cost of living high, why should not railway employers seek to reduce wages when, as is set forth in the Vancouver case, business is depressed. reduction in wages is general and the cost of living is going down? Of course, in an "arbitration" such as that by which the Chicago strike was ended, evidence on such issues has no particular weight. But if we are to depend upon arbitration as a means of adjusting wages it is just as reasonable to propose it as a means of lowering wages, when the employer thinks they should be lowered, as it is for employees to seek arbitration as a means of increasing wages. It would have a very healthy effect on public opinion if there were more offers to submit proposals to reduce wages to impartial adjudication—but preferably not to an "arbitration" in which a mayor with his eye on the labor vote has the deciding voice.

PROFIT AND LOSS SHARING

The acclaim accorded the prospect of a profit-sharing system for the employees of the Wilkes-Barre (Pa.) railways seems to have been wasted, for the Board of Arbitration, as announced elsewhere in this issue, is now to be reconvened to determine whether it erred in its recent award. According to the union representatives, the basic agreement did not authorize the board to fix any profit-sharing plan, and the award has never been signed. This state of the case merely shows the opposition of many men to assume any part of the risk and responsibility which partnership in any business enterprise entails. In taking this attitude, any individual and any body of men are entirely within their rights. Some people are so constituted that they prefer to get the money returns for their work at regular intervals in a pay envelope. Others are willing to take a risk for a possible larger reward. Each plan has its advocates and its advantages, but it is unreasonable for a man to demand as a right and in addition to his wages a share in the profits of a concern when he is unwilling to accept a share in the losses. A partnership plan, having for its basis an equitable division of future increased earnings between company and employee, works out in

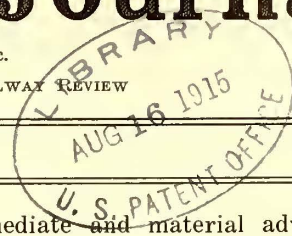
theory to the immediate and material advantage of both employer and employee, especially in an industry where the latter comes into direct contact with the patrons. But the question arises, would the average employee be willing to divide the future losses as well as the future profits? In practice, and taking the average man, we believe he would not. Until partnership agreements meet the stress of such negative circumstances, their real potency as a solution of labor difficulties will not be fairly established.

CUMULATIVE VOTING IS DESIRABLE

In the great potpourri of proposals that have been placed before the New York constitutional convention, there is one deserving more attention than it has heretofore attracted. We refer to the plan of compelling corporations to adopt cumulative voting at stockholders' meetings for the election of directors. Under this practice each share of stock has as many votes as the number of directors to be elected, and the votes may be scattered among the nominees or concentrated on one or more as desired, with the result that the majority stockholders are not able to elect all the board of directors, the minority securing at least a representation. We believe that this method is an ingenious and praiseworthy way of conducting corporate elections so as to conserve the rights of minority stockholders and ameliorate the abuse of directorships. Under the usual American custom, the controlling stockholders elect not merely the majority but all of the directors, and the minority stockholders are often left unrepresented and powerless. To offset such an evil English companies very commonly limit by a graduated scale the number of votes allowed to one stockholder, the restriction falling most heavily on the largest stockholders. On account of the possibility of a man splitting up his holdings, however, this practice is not so desirable or effective as the cumulative plan adopted by some corporations in this country.

PRACTICE CONSERVATIVE AND JUST

The cumulative plan is not a radical one but a conservative protection of the rights of minority stockholders. There is no more justice in saying that minority stockholders should be content under government by a majority board than in propounding the preposterous idea that upon the election of a Republican or Democratic President all legislative and executive bodies throughout the country should be changed so as to conform *in toto* with the political status of the elected candidate. Minority representation is peculiarly an American right, and it is not shunned by intelligent



majorities. There are, of course, some objections to such representation in corporate affairs, such as the possibility of the election of persons without standing as directors, but it would be a safe wager that the average minority director could be as valuable an asset as the average overestimated and uninterested director-in-name-only. The disadvantages of the practice are certainly more than offset by the much greater advantages. Whether it should be secured by constitutional amendment, however, may be debatable. We do not favor the clogging of State constitutions with multitudinous details that would better be left to corporate by-laws and legislative enactments, but in this particular case we feel that the reluctance of corporate majorities to provide for cumulative voting in the by-laws and of legislatures to intervene in protection of minority stockholders rather urges constitutional provision for the plan. The State of Pennsylvania has satisfactorily handled this question in its fundamental law.

STARTING RESISTANCE OF ELECTRIC CARS

In starting cars, particularly in city service, the principal resistance is due to inertia rather than friction. The force required to overcome acceleration resistance is practically 100 lb. per ton per mile per hour per second, including a 10 per cent allowance for spinning the armatures. That is to say, at the ordinary rate of $1\frac{1}{2}$ m.p.h.p.s. a tractive effort of 150 lb. per ton is required. Compared with this, the starting friction is small, but it becomes relatively more important as the rate of acceleration is reduced.

There are indications of increasing interest in car friction at low speeds as greater attention is directed to the reduction of energy consumption. There are numerous formulas, with curves based thereon, which indicate a minimum resistance at zero speed, although this condition is known not to exist. The fact is that these formulas are based upon data obtained at ordinary running speeds, and the constant term which they all contain is correct only under the conditions of the experiments. It is misleading, therefore, to plot curves from these formulas down to zero speed. This fact is referred to in the recently issued sixth annual report of the Board of Supervising Engineers, Chicago Traction, page 425, where we read: "None of the empirical curves for free-running train resistance recognizes the fact that the resistance during acceleration is considerably greater than indicated by this curve, * * * that the curve of resistance is very high at the start, minimum at a moderate speed, rising with increasing wind resistance at higher speed." The board's engineers use $22\frac{1}{2}$ lb. per ton for their calculations of train resistance during acceleration of city cars, or nearly double the free-running resistance.

To quote another specific case: On page 239 of the issue of the *ELECTRIC RAILWAY JOURNAL* for Aug. 7 are given the results of friction tests made on a 13-ton car by the Third Avenue Railway in New York. The resistance falls from 18 lb. per ton at zero speed to about $4\frac{1}{4}$ lb. at 11 m.p.h., rising to $5\frac{2}{3}$ lb. at 30 m.p.h.,

the average between zero speed and 15 m.p.h. being slightly more than $6\frac{1}{2}$ lb. The ratio of the maximum to the minimum was, therefore, $4\frac{1}{4}:1$ and of the average to the minimum about $1\frac{1}{2}:1$.

Elsewhere in this issue are given some results of starting-resistance tests made upon the Purdue University test car during the past year. The values obtained are quite high because this car is not in constant use, but they should be useful for comparison among themselves and with the results of free-running resistance tests described in the issue of the *ELECTRIC RAILWAY JOURNAL* for Aug. 15, 1914, page 304.

All of these examples indicate that the familiar "friction of rest" plays a part in acceleration resistance. Fortunately, lubrication improves rapidly as speed increases, and the energy loss represented by the excess of resistance at low speed is not serious. At the same time more exact information on starting resistance is greatly desired. The condition is thus stated in the Chicago report: "The great diversity of opinion and results among various investigators suggests the necessity for further analysis, especially differentiating between train resistance during acceleration and during free running."

THE DETROIT SITUATION

Within a few weeks the people of Detroit will decide whether or not they want to purchase and operate the surface lines of the city, beginning Jan. 1, 1916. The outcome of the forthcoming plebiscite is forecasted by the vote taken in 1913 when there was created the Board of Street Railway Commissioners, empowered to negotiate for the purchase of the city lines. Various articles in this paper have described how the city is to acquire these lines at a price fixed by the Wayne County Circuit Court. Thirty days after a vote favorable to the purchase has been taken and suit begun by the city to compel performance of the purchase contract, the company must surrender its property, the profits from operation thereafter going to the city.

This situation is suggestive of what may happen in any city where franchises expire and there arises simultaneously a demand for municipal ownership. Obviously under such circumstances the city has the whip hand in negotiations that may be undertaken to acquire the property, and about all the owners of it can do is to protect themselves against confiscation. The fact that good service has been rendered and exceptionally low fares charged will not save a railway system from municipalization—if Detroit is to be taken as a ruling precedent.

It is true that the vote has not been cast, but the atmosphere is one in which a vote favorable to purchase by the city is most likely. Out of eleven men interviewed in Detroit ten agreed that the service was good and the rates low; that there was no reason for municipalization except the "feeling that the city ought to own its car lines." This feeling has been actively promoted by the most widely-read Detroit newspaper and a number of leading citizens. If Detroit does buy

the urban lines it will be done not on the basis of reason but as the outcome of a "feeling." Against an influence of this kind the exercise of reason is helpless.

If reason entered into the transaction the city's experience with its municipal paving plant would have a bearing upon the transaction, for without allowing anything for overhead, profit or a guarantee, the city cannot compete with private contractors in laying pavements. It nevertheless is drifting into municipalization of a much more complicated and difficult business. As to the lessons to be gathered from the experience of other cities in the electric railway business, those engaged in the industry and familiar with the results of municipal ownership and operation will be surprised to learn from the columns of the newspapers already referred to that municipalization is uniformly successful—in fact, a blessing wherever tried. The articles written by correspondents dispatched to various parts of Canada and the United States to investigate the subject prove this to be true.

So why argue about it? If the people want it or think they want it, they are going to have it. Those who have built up the Detroit system and have given not only good but enlightened and progressive service, and at the same time reduced fares to a minimum, have at least this satisfaction, that municipalization will not come about as a consequence of their errors but as a result of an artificially created sentiment, opposition to which would only have increased its intensity.

CORPORATION AND PUBLIC MORALITY

As a result of a persistent campaign, with Righteousness on its banner and the usual conglomeration of human motives in the hearts of its leaders, the idea has been widely spread that the conduct of corporations is on a lower moral plane than that where walks the average man, and immeasurably below the plane from which, in a rarified atmosphere of virtue, our rulers dispense a government guided by supreme wisdom, strict justice and a constant regard for moral values. This is what we are told, and it has been reiterated so frequently and so loudly that many of us have come to believe it. But it isn't true.

What "franchise grabber" has ever duplicated our performance in seizing the Panama Canal zone? The justification of this act or its condemnation is not to the point so far as this discussion goes; the point is that there was no general public disapproval of the government's act. Nor was there any considerable disapprobation heard when it was proposed to tear up the scrap of paper upon which the Clayton-Bulwer treaty was written and discriminate as to toll charges in favor of our shipping. Where was our enlightened moral sense when these things were going on? This question is pertinent because we are told that it is a wave of moral ideas that has swept men in the mass and governments in particular to the safe if shifty sands of probity and left the corporations struggling in the breakers of their own iniquity.

No rebate-taking corporation or discriminating rail-

road has ever duplicated the performance of the government in the parcel-post business. It has ruined two express companies and has the others struggling to preserve their existence. In accomplishing this the government has not merely accepted rebates; it has demanded and received free transportation for the greater part of the parcel post. There has been some sympathy for the railroads in this connection, but has anyone observed a moral revulsion against the unfairness of the government, the postmaster-general or the committees of Congress having this matter in charge? Seemingly the public is willing to accept the position of *particeps criminis* and enjoy participation in the ill-gotten gains secured by cheap parcel-post rates. We are glad to see, however, that the railroads are planning to seek justice in the courts. Last month seven of the principal railroads in New England filed claims for various sums ranging from \$4,424,713 down and making a total of \$10,880,865 on the plea that they have been wrongfully deprived of their property by governmental act.

The latest example of governmental disregard of property rights is the order issued by the Secretary of the Treasury, effective on Aug. 16, that all public money and securities be transported by mail instead of express. This is said to be a "reform" by which the government, by means of its frank, will save money. In other words, the government will let the railroads worry about the increased weight, the extra precautionary measures needed and the higher costs. If the transmission of this matter by the mails is desirable, the order to put it in force would have come with better grace if it had awaited the decision of the Court of Claims on the recent petition of the seven New England railroads, which involved as one of its counts the enforced carriage of gold as mail of the fourth class "in violation of law and without compensation to carriers."

The "you-are-another" argument never proved anything. It is not the purpose to employ it here. The purpose is to show that our governments do things so unmoral that no corporation would dream of doing them and that the public, far from condemning these things, frequently applauds them and in no case refuses to profit by them.

This is convincing evidence to reasonable minds that our government is, to say the least, no better than those whom it is supposed to instruct in good morals and to keep in the paths of rectitude. It suggests that the existence of new and higher moral standards is largely a myth so far as the general public is concerned; for of what value is "moral consciousness" if it remains awake only for its own profit and sleeps while the other fellow is being deprived of his rights? By all means let us have the highest standards of conduct for everybody, but let us not deceive ourselves into the belief that morality means the crucifixion of one class for acts which are approved or condoned if performed by another class. We are not likely in this way to maintain high standards in any part of the social organization or greatly to impress the supposedly unregenerate with the enormity of their crimes.

Route Signs for Surface Cars

Description of Novelties in Car Signs in Several Different Cities—Development of Route Numbers in Place of Destination Signs—Car-Diversion Signs in Boston

The importance of keeping the riding public informed as to street-car routes has, of course, been recognized at all times. In the early days of the street railway industry, when even the smallest cities had a half-dozen railways, cars were identified not only by their colors but by very elaborate lettering on the sides of the car showing the terminals and all intermediate places of importance. Some cars even carried elaborate paintings of the "moving van" school of art. As the small systems were consolidated, the scheme of colors for identification was abandoned, and the signs were reduced to the simple route indications still in common practice in this country. The principal departures in the East from this standard practice are found in Philadelphia and Buffalo.

The signs in those cities were the outcome of the development of the near-side car when a special study was made of car signs in this country and abroad. As

that it is not found necessary to refer to the schedule of the line, since the headway in large American cities is much shorter than on most of the European routes and since cars are operated during a longer period of the day.

In Philadelphia each line is indicated by a separate number. Experience has shown that a distinctive numeral is the simplest method of designating a street car route, not only because it is easily remembered but because it lends itself most readily to display as a large illuminated sign on the front of a car, which can be easily distinguished as the car approaches.

Auxiliary to this route number sign, the destination toward which the car is moving is indicated immediately beneath the route number. A recent refinement in this sign system is a red band or signal which can be dropped into place by the motorman so that it shows diagonally



ROUTE SIGNS—ILLUMINATED ROOF SIGN USED ON PITTSBURGH CARS

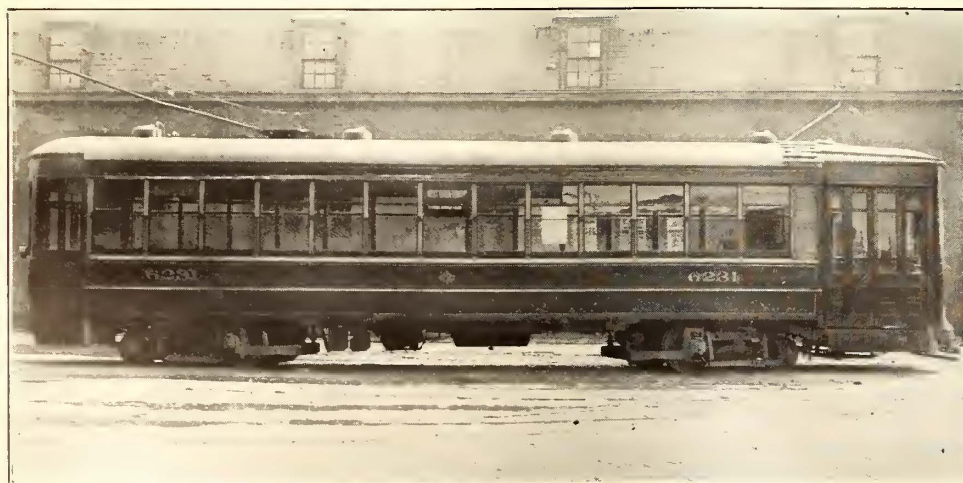


ROUTE SIGNS—LOS ANGELES FRONT-END SIGN WITH ROUTE AND CAR NUMBER

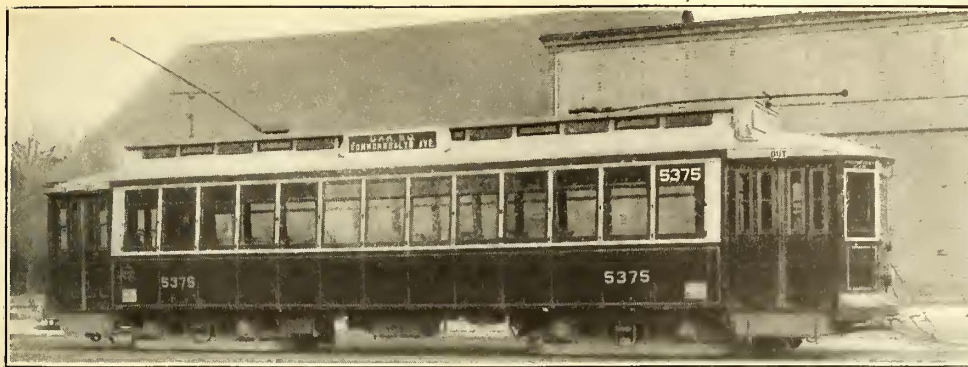
a result a system was developed in the belief that it includes the best features of European practice, namely, a simple outside sign which can be seen by a passenger at a great distance, and a long descriptive sign posted inside the car, usually over the archway, where it can be read at leisure. The departure from the European practice is that the letter or initial sign is carried in the vestibule window instead of being placed on top of the hood, and the roof has no long, wooden signs. The inside sign is like those used abroad with the exception

across the illuminated route number on the front of the car. This signal is used whenever the car is destined to turn "short" of the full route or is scheduled to go into the depot before reaching the end of the trip. The object is to call the attention of prospective passengers to the fact that the car is carrying a "short" destination sign, so that they may avoid boarding a car which is designated to turn before reaching the through terminal.

The name of the line and the route number are also



ROUTE SIGNS—VIEW OF INTERNATIONAL RAILWAY CAR, SHOWING LOCATION OF SIDE AND FRONT SIGNS



ROUTE SIGNS — FRONT AND SIDE SIGNS USED IN BOSTON

shown on both sides of the car in the panels immediately forward of the first window, the theory of this location being that passengers can thus get more particulars just as they are preparing to enter the car than they can get from the route number. For the further information of the public, a descriptive sign showing the route number and the names of the streets traversed is displayed inside the car in the arch at the forward end.

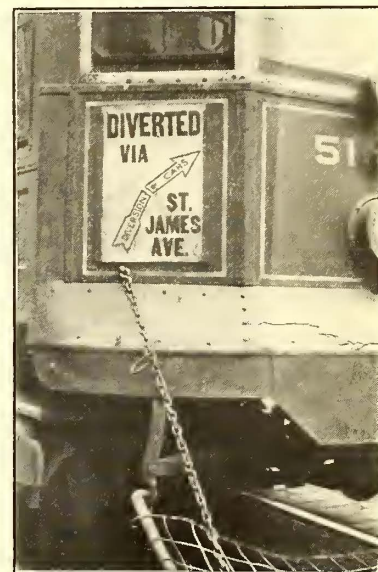
In Buffalo much the same system is used except that a side sign is carried below the eaves in the middle of the car. The front signs invariably indicate the names of the route, and the side signs indicate the routing. For example: the name "West Utica" shown in the accompanying illustrations indicates the name of that particular line. The side sign, "West Utica-Ferry," indicates the general route of that line.

Numbered route signs are a feature of the Pacific Coast electric railways. It is stated that the presence of large numbers of strangers is customary in the west coast cities, and it is much easier to explain to them the method of reaching a given point in a city by giving the number of a route than by repeating a combination of names. The use of the number also relieves regular passengers from reading more than one sign and in addition makes possible a very large indication. Illuminated interior signs, furnished both with ground glass having the number painted thereon and with perforated metal plates, are widely used, the advantage of the latter being

that when a change in route is made the metal plate may be shifted with less danger of breakage than one made of glass.

One of the illustrations on page 260 shows a novel route sign used in Pittsburgh. This is made of sheet metal with a hinged top of wood, the numbers showing white on a black background and being illuminated at night by interior lamps. The signs are mounted on the roofs of the cars, one being located near each end, facing toward the end of the car.

A novel illuminated end destination sign is manufactured by the Los Angeles Railway Corporation for its city cars. The case is of No. 24 gage galvanized iron, stiffened with two $\frac{3}{8}$ -in. x 1-in. iron bars and supported by cast end brackets. "Hunter" sign cloth with soft copper edges is

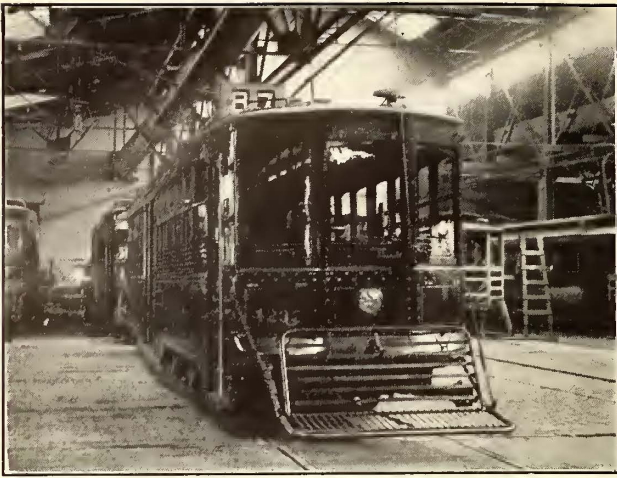


ROUTE SIGNS—CAR-DIVERSION SIGN USED IN BOSTON

used. This keeps the curtain straight and prevents the annoyance of raveling on edges. The cloth is 55½ in. wide and 40 ft. long, and the block letters are 5 in. high. The present number of names used is fifty-four, and there is sufficient spare cloth for seventeen additional



ROUTE SIGNS—PHILADELPHIA SYSTEM—THE VIEW AT THE LEFT SHOWS AN INTERIOR SIGN; THE VIEW AT THE RIGHT SHOWS ROUTE NUMBER AND LINE ON SIDE PANEL AND ROUTE NUMBER AND DESTINATION ON FRONT WINDOW



ROUTE SIGNS—VIEW SHOWING LOCATION ON CAR OF PITTSBURGH ROUTE SIGN

names. The car number is shown at the lower left-hand side of the sign. It is $2\frac{3}{8}$ in. high and is painted directly on the glass. The run number appears at the lower right-hand side of the sign, is 3 in. high and is made on two separate strips of cloth. One strip, $3\frac{1}{2}$ in. wide by 7 ft. long, carries numbers from 0 to 9, and the other strip, $3\frac{1}{2}$ in. wide by 9 ft. long, carries numbers from 1 to 20, thus giving a range of numbers from 1 to 200. The sign is illuminated by three inside 16-cp lamps, which are connected by wires running through $\frac{1}{2}$ -in. gas-pipe supports. The extreme dimensions of the sign are 16 in. x 11 in. x 5 ft. $3\frac{1}{2}$ in., and it is reported that the sign may be read distinctly one block away during the day or night. The cost of construction, ready to be installed on the car, is \$23.75.

Standard surface car route signs on the Boston Elevated Railway are numbered according to a system by which the number of the division is indicated by the first figure and the number of the route by the two right-hand figures. Thus, the meaning of the number 942 is Route 42 in Division 9. The standard end sign is $5\frac{1}{2}$ ft. long by 11 in. high and contains a possible set-up of about twenty-three routes and destinations.



ROUTE SIGNS — PERFORATED METAL SIGN USED BY THE UNITED RAILROADS OF SAN FRANCISCO

In the latest equipment the sign box is built into the monitor, as illustrated. The Boston Elevated Railway also employs on its surface lines a system of car-diversion signs which is of great convenience to the public when normal routes are altered. An illustration on page 261 shows one of these signs used on lines of cars which ordinarily traverse Boylston Street between Exeter and Arlington Streets, but were diverted on account of subway construction. The diversion signs are 14 in. wide by 21 in. high, and are printed on pink paper inserted in tin clips attached to the dash. The main feature is a broken arrow calling attention to the change of route and the name of the thoroughfare temporarily traversed in place of the normal route. The arrow is $1\frac{1}{2}$ in. wide. In some cases these signs are used in pairs at each end of the car, when the diversion involves more than one important street.

Diversions or the establishment of new routes are explained by the Twin City Rapid Transit Company in advertisements published in the daily papers. Such advertisements are used in connection with the company's regular advertising of special features along its line, such as parks and other pleasure resorts. In Topeka, Kan., also the changes in routing or schedules are advertised in the daily papers. However, it is found here that the press generally considers the matter of schedule or route changes to be of sufficient importance for classification as "news." Topeka also advertises special events on its lines, and states in these notices where cars are to be found when an occasion such as a concert warrants storing a number of extra cars to take care of the rush of traffic at its conclusion.

Fire Insurance

The Writer Describes the Three Kinds of Insurance Companies and Gives Suggestions as to Forms of Policies

BY W. H. FORSE, JR., SECRETARY AND TREASURER UNION TRACTION COMPANY OF INDIANA

The Association of Lloyds, with offices in London, insures ships and cargoes on every sea. The organization is more than 200 years old and still clings to its ancient custom of tolling a bell and crying the name of a vessel which has been lost. It is said that when news was received in the Lloyd's board room, of the loss of the German cruiser Emden which had sunk numerous British vessels, the members of the association drowned out the noise of the tolling bell in applause. The Emden had destroyed so many ships and cargoes insured by the Lloyds that its removal was a distinct relief to the brokers who were carrying marine risks.

Within recent years the Lloyds Association has extended its activities to embrace risks of almost every conceivable description. The underwriting members of the association deposit securities to guarantee their engagements, and when a ship or other risk is offered for insurance, each member indicates the amount he will underwrite, the insurance being effected as soon as the amount has been made up. The members generally act in groups through an agent, and there may be fifty to 100 or more underwriters to one policy, not all of whom assume the same percentage of the risk. Each underwriter under such a policy deposits with the committee of Lloyds a policy of insurance against his insolvency, in a form approved by the committee.

In the year 1913 the Brooklyn Rapid Transit Company transferred about \$22,000,000 of its fire insurance from companies represented by the New York Fire Insurance Exchange to the Lloyds of London, thereby sav-

ing about \$27,000 a year in premiums. This action was taken, according to President Timothy S. Williams of the transit company, because the rate of premium had been arbitrarily raised from 34.7 to 62.3 per \$100 by the exchange representing the companies which had been carrying the insurance. In 1914 the transit company again placed its insurance with American stock companies. It was stated at the time the insurance was placed with Lloyds that the Brooklyn Rapid Transit Company had for some years been accumulating an insurance fund which then aggregated \$600,000, and it was hoped that the company would eventually carry all its own insurance.

Within the past two years, Lloyds of London has written a few policies for American electric railways, indemnifying them for sums which they shall be required to pay persons, not employees, as compensation for injury or damage arising out of accidents caused by or growing out of the operation of the cars of the railways. It is expressly stipulated in these policies that Lloyd's shall be liable only for an accident whose total cost is more than \$20,000, and then only up to \$100,000 for such accidents. In other words, if a company has an accident causing the payment of damage claims to the amount of any sum less than \$20,000 it is not insured; if the claims paid amount to \$20,100, Lloyds will pay \$100; if the accident costs \$120,000 or more Lloyds will pay \$100,000, the amount of excess over \$20,000. This is specific insurance against an extraordinary casualty, and as such is written at a much lower rate than a policy which insures the carrier against any and all accidents.

The premium for insurance against bodily accident which the ordinary individual carries is written at a high rate because it includes provision for minor accidents and partial disability, which are by far the most numerous; on the same principle the insurance company must charge a prohibitive rate if it takes all the risk of public liability of the railway. The Lloyd's plan, which is mentioned, corresponds, in a sense, to the payment of the capital amount only under an ordinary accident policy, and as such is correspondingly cheap.

FACTORY MUTUAL AND STOCK COMPANIES

Factory mutual fire insurance was originated by Zachariah Allen, a prominent manufacturer of Providence, R. I., eighty years ago, and the policy always followed has been to conduct a business without purpose of profit but based on recognizing and encouraging apparatus and organization for fire prevention. When the automatic sprinkler was invented, almost its sole encouragement during the first decade was found in the factory mutual risks, and to-day the risks insured in factory mutuals are almost without exception equipped with automatic sprinklers.

The six senior companies associated in the office of the Manufacturers' Mutual Fire Insurance Company had at the end of 1914 almost \$888,000,000 of fire insurance in force. These companies have reduced the cost of insurance from 84 cents per \$100 in 1835 to 5.9 cents per \$100 in 1914, notwithstanding they suffered in the year 1914 the heaviest loss in their history.

The factory mutuals have not confined their protection to textile mills or to factories. They are at the present time carrying insurance on carhouses and other properties of electric railways. When such buildings are equipped with automatic and other devices designed to prevent and extinguish fires, arrangements can be made with the factory mutuals to carry the insurance at rates which are exceedingly reasonable. In cases where the sprinklered risks are a goodly percentage

of the amount of property insured, the factory mutuals have in very rare instances agreed to write the sprinklered buildings in their own association and to underwrite the unsprinklered portions in the "old line" or stock companies. The stock companies will usually meet the competition of rates on sprinklered properties made by the factory mutuals, and competition of this sort, at living rates, is good for the industry.

A very large percentage of the total fire insurance written in the United States is carried in "stock" companies with stockholders incorporated to engage in the insurance business for profit. There are about 200 American stock companies and about fifty foreign companies with American branches writing fire insurance with assets ranging from a few hundred thousand dollars to more than \$20,000,000 each.

FORMS OF POLICIES AND TENDENCIES OF PREMIUMS

It is customary for the insurance company to demand the insertion of a "co-insurance" clause in return for a concession in the rate which is charged. The insertion of such a clause compels the assured to carry a stated percentage of insurance to value or, in the absence of such insurance, to carry a portion of the risk, thus acting as co-insurer of his own property. These percentages commonly range from 80 per cent to 100 per cent, the latter percentage being applied to rolling stock, because it is considered, of all electric railway property, to be that which is most subject to destruction by fire. It is necessary, when a loss occurs under a blanket form item, to make an inventory of appraisal of all the damaged and undamaged property under that item in order to be certain the proper percentage of insurance has been carried. If the item is rolling stock, for instance, this is objectionable on the score of inconvenience and the possibility of differences of opinion regarding values. The form should contain a provision to the effect that an inventory or appraisal is not necessary or required when the loss does not exceed a certain percentage (say 5 per cent) of the total amount insured under that item. This is very convenient and obviates the necessity of making an inventory or appraisal after the majority of rolling stock fire losses. Its inclusion, if insisted upon, will save considerable inconvenience and expense to the insured.

It is encouraging to note that because of the constant improvement in construction standards, in wiring specifications and in fire-protective devices, the premium rates of electric railways tend downward. The premiums paid by the Chicago City Railway Company were reduced from \$2.22 in July, 1905, to 68 cents in October, 1907, and 48 cents per \$100 of insurance in November, 1909. The Public Service Corporation of New Jersey in December, 1914, carried \$29,000,000 of insurance at 35.4 cents, which was a decrease from 38.3 cents in 1913 and 44 cents in 1912. In June, 1914, the Philadelphia Rapid Transit Company took out policies of insurance aggregating \$23,000,000 for three years to June, 1917, which was written at the annual rate of 25 cents per \$100. There had been previous reductions from 50 cents in 1911 to 45 cents in 1912 and 35 cents in 1913.

Deliveries have been begun on the 478 all-steel car bodies with which the Interborough Rapid Transit Company is replacing all the composite bodies in its subway system. The shipments will probably be completed before the end of the year. The bodies will be the same as the latest type of all-steel bodies in service in the subway. The new bodies will be equipped in the railway shops with trucks, wiring and control. New controllers will be applied.

Ironing Out the Wrinkles

The "Wrinkles" to Which the Author Refers Are the Annoyances, Fancied or Real, Felt by Passengers—
Examples Are Given, with an Account of the Methods by Which
the Company "Irons" These Wrinkles Out

BY A. W. WARNOCK, GENERAL PASSENGER AGENT TWIN CITY LINES, MINNEAPOLIS AND ST. PAUL

Wrinkles are always annoying. They tend to disturb peace of mind, they indicate wrong conditions, and they are always an economic waste even though they may be unavoidable. Wrinkles are only another name, in the transportation business, for complaints. Executives the country over are busy these days ironing out the wrinkles and, to continue the metaphor, endeavoring to keep the fabric smooth.

What are the general basic causes for complaint on the part of patrons as far as street railway trainmen are concerned? Undoubtedly there are some standard mistakes that trainmen the country over make every day with resulting trouble to the employing companies. As years have gone by, we have been interested to list the causes that have come under our observation.

First, there is the general fault of incivility on the part of employees, and that sweeping charge can easily cover a multitude of offenses. If all employees were civil and used good judgment under all circumstances, most of the other complaints would vanish. Then comes the collection of cash fares, disputes over the amount of money paid by the passenger and the change returned by the conductor, the collection of fare twice from persons not sitting together for whom fares have already been paid by some other member of the party, as well as the familiar one, sometimes anonymous, that the passenger did not see the conductor ring up his fare or that of others. Then there is the complaint of the passenger who, in payment for his fare, tenders a bill of large denomination which the conductor is unable to change.

Transfers are a fruitful source of complaint. We all know the passenger who complains because the conductor did not give him a transfer, usually because he refused to accept the transfer when it was offered. Transfers that are not valid make much trouble, and the reason for non-acceptance is as likely to be the fault of the passenger as of the conductor. Perhaps the passenger has used his transfer as a stop-over ticket and still feels that he has a right to continue his ride on it. A transfer that is mispunched as to time or direction, exposing the passenger to trouble with the second conductor, is a mistake clearly attributable to the conductor. While a conductor may issue a mutilated transfer to a passenger, the chances usually are that when such a transfer is tendered to the second conductor, it was the passenger's fault in the way he took care of the transfer, or rather the way he did not take care of it after it was given to him. Companies have always reasonably required that transfers should be used at regularly designated transfer points, so that when passengers get on at the wrong place by walking some distance away from the transfer point, maybe to do some errand, another complaint is sure to arise.

The responsibility for mistakes in change usually may be divided evenly between the passenger and the conductor. There are passengers who are sure they received short change. Others are sure that the bad coin they got was given to them by a conductor, while other passengers object strenuously if they do not receive

exactly the kind of change they ask for. One passenger wants nothing but paper money, while another wants nothing but quarters or half dollars, and if they do not receive exactly what they request they feel that the conductor should be severely reprimanded.

Other passengers complain because conductors allow disorder on cars, intoxicated persons, whether objectionable or not to passengers, as well as spitting and smoking in cars. While there may be ordinances against spitting, nevertheless, passengers may do so surreptitiously. Some passengers feel that the conductor should have spitters arrested, even though the conductor did not see them commit the offense. The same principle applies to smoking, which is permitted in many cities under certain circumstances.

It is proverbial that many passengers (usually women) have easy consciences as to the age of children in their charge, and while conductors may properly put questions, the average passenger resents strenuously the implication thereof, asserting that the child should not pay fare and that doubting the child's age is an insult. Other passengers of the genus "butt-in" who are not inconvenienced themselves complain because they see children, for whom fares have not been paid, occupying seats. The refusal of a conductor to allow a baby go-cart to be taken on a car starts more trouble. This is a privilege that may be allowed if the go-carts are of a certain size and type. It is hard to argue with a parent that there is a difference in baby carriages. One woman contends plausibly that, if her neighbor is allowed to carry a go-cart of collapsible shape, there is no reason why she should not take a perambulator aboard with her.

Watches do not always agree, yet many a passenger who has missed his car is sure the train crew wilfully left the terminal ahead of time and want the men laid off for a week, particularly in view of the fact that the passenger says he "gives the road 20 cents a day." Just as though we gave him nothing in return!

We all know that it is a difficult matter to have conductors use tact in seeing that the seats are properly occupied. No matter how gently they may hint that passengers move over, resentment is likely. The passenger who is looking out to regulate the company's business feels sure it is easy for the conductor to see that all of the seats are properly filled and that no passenger plays the rôle of car-hog to the inconvenience of his neighbor.

If all our conductors had good carrying voices and were never distracted from such a duty, how our patrons would appreciate it if they would always call the names of streets or stations clearly! As we know, that is a feature of service that is not always well done, and so the man looking for trouble has another grievance.

A passenger may get on a car without knowing where the car is going, and if he finds he is on the wrong car he will complain with vigor that the signs on the car were not only set wrong in the first place but were changed en route in the second place. Sometimes such a mistake is made by a conductor, but more often the

passenger has only himself to blame for not making sure that he was getting on the proper car.

Companies generally take great pains to restore lost articles to their owners, so some passengers take it for granted, when they do not recover their articles, that they have been taken by the conductor. A man is sure he left the article on the car and, because he has not been able to find it, that the conductor must be in possession. How often have well-meaning persons maintained that such and such a conductor is dishonest without any evidence on which to base such a charge! Only recently we had a case where a woman was positive that she had lost a well-filled purse on a car, that the conductor was the only man on the car when she got off and that he had her property. She was a woman of high character, and her assertion necessarily was taken seriously. We had a careful check made. The conductor stoutly maintained that he was innocent. Three days elapsed and, to the credit of the woman be it said, she came to the office and frankly admitted that she had not lost the purse in the car at all but had left it at home on her dressing table. Passengers often think it unjust not to be allowed to reclaim their articles from conductors without the articles going through the lost article department, providing they meet the car on its return trip and know that the article has been found. They do not stop to think that when they get off they ceased to be passengers and that it is the duty of the company to have the property go through authorized hands, only with the idea of restoring it to its proper owner.

We all wish to make good transfer connections between lines that intersect, but in rush hours it is impossible to hold cars any considerable time to do so. When a passenger misses connections because one car does not wait for the other, he rarely stops to think that a wait of several seconds means delaying a large number of other passengers.

Some passengers blame us if they get on wrong cars either as to route or direction. They do not seem to think it necessary to ask a question or two to make sure that they are getting on the car they need. Others, regardless of the comfort of fellow passengers, open or shut windows in inclement weather to suit their own convenience, and conductors are held responsible for such lack of consideration. Timid passengers are positive that cars run too fast and make serious charges against trainmen of reckless operation. Trainmen forget to throw off bundles of newspapers, and then complaints come from those for whom such service is rendered.

The failure of motormen to stop cars to take on passengers, to stop exactly on crosswalks, at station platforms, or when bell signal is given for the next stop, opens up other avenues of trouble. Perhaps the car has a heavy load and cannot take on more passengers; perhaps the rails are slippery and the car may slide by the crosswalks or the station platform; or perhaps the signal bell, like any mechanical contrivance, has suddenly got out of working order so that the signal bell in the motorman's cab does not ring. The passenger is likely to feel that the motorman has wilfully inconvenienced him.

General criticism of service is perennial. Insufficient service and interrupted service, no matter what the cause, are sure to bring down a shower of protests. Is there ever a time when everybody feels that he is getting sufficient service and that conditions are entirely satisfactory? Sometimes we are inclined to question whether that happy condition can be realized, and in our pessimistic moments we feel that nothing we are doing is being done properly.

In the early days of street railways, patrons were not captious about the distance between stops, but every street railway to-day is besieged with applications for new stops. Every passenger seems to feel that he must be carried to his doorstep. He can see no fairness in the idea that regularly opened streets are not sufficient stops to take care of the public.

Some patrons have a cold-air monomania, while others are warm-air crazy. What a difficult matter it is to have cars ventilated and heated to the satisfaction of all! When one considers the odors clinging to many passengers, is it any wonder that sometimes, particularly in the winter time, the air does not resemble a fresh rose? Persons with soiled, wet clothing, working men with the smell of their toil on their garments, as well as sick persons exuding an unhealthy fragrance, seriously vitiate the air in any car, no matter how efficient the ventilating system may be. While we may be doing the best we can to supply efficient service in that respect, nevertheless there are passengers who feel that if they could look after the heating and ventilating of equipment it would be done much better. The passenger who is sure that Car No. 8003 has a flat wheel is numerous, and the one who declares the brake on Car No. 7008 is particularly and peculiarly noisy, has many following in his train. Sometimes, by the way, both complaints are true.

There is just complaint from passengers when they see employees in uniform occupying seats to the exclusion of cash-paying passengers. There are those who feel that they should be permitted to carry their dogs or cats a few blocks on cars and that the rule forbidding it infringes on their rights as free-born American citizens.

Perhaps you will think of other causes for criticism and will feel that the above list is incomplete. Perhaps it is incomplete, but we are inclined to the opinion that all matters of criticism will readily classify themselves under one of these headings, if not under the general heading of incivility. So many folks have been insulted, humiliated, abused and on most occasions because of trivial errors on our part which might have been avoided.

With such causes for criticism, what is the best way to meet the complaining passenger and iron out the particular wrinkle he brings?

ANSWERING COMPLAINTS

For a long time we have made a practice of advertising for complaints in frequent newspaper advertisements, and in a card displayed in every car we always have a foot line in large type reading as follows:

"Complaints and Suggestions Always Receive Prompt, Courteous Attention."

We believe the policy expressed in that line carefully carried out will do more to make good will than can be easily estimated. Furthermore, we do everything in our power to back up such a promise with faithful performance and make good in that policy in every practicable way. It has worked and is working to our great satisfaction.

To carry out such a policy it is necessary to have strong faith in human nature and to entertain the feeling that the average passenger is as responsive to good treatment and is as desirous to be fair as we are. In the executive offices of a large mercantile establishment the writer remembers to have seen this motto: "The Customer Is Always Right." That is a principle which can certainly be applied by transportation companies to the hundreds of minor complaints. Of course, such a principle would be disastrous if followed in the claim department, but in the present article we are discuss-

TWIN CITY LINES—CASH FARES AND TRANSFERS

Please try to provide yourself with small change—a dollar or under—with which to pay your fare. It is physically impossible for conductors to carry enough silver conveniently to break many bills or gold coins. Conductors are frequently obliged, when large bills or coins are offered, to give passengers small and bulky change, often to the annoyance of the recipient. If the passenger will exercise a little forethought, not only to see that he has money for his fare, but that it is not of large denomination, he will escape change annoyances.

Ask for and see that you receive your transfer when you pay your fare. While the conductor is supposed to offer a transfer to the passenger when he collects the fare, there is also a responsibility resting upon the passenger to see that he gets his transfer. Conductors are permitted to issue transfers only at the time of receiving fare. This is the convenient system used in all large cities and it is designed particularly for the benefit of patrons. It disposes of the entire fare transaction at the one time. Remember to get your transfer!

Be sure to tell the conductor to what line you desire to transfer, so that he may punch your transfer correctly. Always bear this in mind, and you will be better served.

Do you know the general conditions under which transfers are issued? Have you ever read the few paragraphs on the back of a transfer, stating the general privileges extended by the Company to you?

We reprint here the information borne on the back of our transfers. It is easily understood. If any of these conditions are not quite clear to you, we will be pleased to make them so on request, and will gladly furnish any other transfer information you desire.

In all cases of dispute regarding cash fares or transfers, passengers are requested to pay conductor's claim and report the facts for prompt adjustment. Patrons will appreciate that conductors are governed by rules which they are not authorized to change. Necessarily they must be guided by rather rigid rules in such matters. A passenger can depend upon it that we will always make right any overcharge or adjust any fare troubles he has had. Compliance with this suggestion of bringing all such matters to our attention, without controversy with the conductor, will save you annoyance.

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ing the average complaint, which has no farther-reaching effect than that it may continue to irritate the passenger who has had the experience in such a way that he will tell his story to many persons and harbor a grudge against the company. In the aggregate such grudges work serious detriment.

Lincoln contended that yielding larger things to which one could show no more than equal right, and yielding lesser ones though clearly one's own, was the best way to avoid a quarrel, and our experience would lead us to believe that making all reasonable concessions to patrons not only irons out the wrinkles but is the best way to make friends.

Take the matter of making change. A passenger claims that the conductor said that he received only a nickel, whereas the passenger says he gave him a quarter. The old-time method of handling a complaint of that kind was to take the matter up first with the conductor and let the passenger wait a while. The conductor, of course, says he was right. After great delay perhaps the matter was settled as the passenger desired, but with no thanks on his part. Why would it not have been better to have accepted the passenger's word at the outset and handed him back 20 cents at once, or whatever was the disputed amount of money, usually not large? We have settled hundreds and hundreds of cases of this kind, and it has been our experience that the amount of money in dispute would not average over 35 cents in each case. We never had a "repeater," despite the possible charge that we were easy and could be worked, all of which shows the honesty of the average passenger. Every time we have settled we have pleased the passenger. Scores of appreciative letters have come to us after such incidents.

A passenger claims that he himself, his wife, or some member of his family received discourteous treatment at the hands of a conductor. Why not admit to the passenger that the conductor was wrong and that he will be checked at once, even though results may show, when the matter is investigated, that the conductor was not entirely to blame? The law's delays have never

been any more aggravating than the delay a passenger experiences if he puts in a complaint as to some injustice which he thinks has not received the attention it deserves. Delayed apologies never do the same good that apologies do directly after the trouble. That's human nature. Making apologies in a straightforward way does anybody good.

We are all striving for the good will of our patrons. It is our sincere intention to give our patrons the very best possible service under all circumstances, and we want the friendly support of the people who give us their nickels every day. Perhaps some patrons bring us complaints that are amusing or unfair, but nevertheless the executive who receives the complaints, whether from the person direct, by letter or by telephone, should exercise good humor, kindness and sympathy to the complainant in such a way as to mollify him. Take his point of view. Never become embittered and never resent hotly any charges made. There is not one occasion in ten thousand when we can afford to lose our tempers, although undoubtedly we all fall short of that standard. Losing tempers has done much to cause hostility to "big business." There's nothing gained by riding a high horse.

Long-winded arguments over trivial points do not convince, they only irritate and annoy, and after such an argument the patron, who may have become angry, leaves with hatred rankling in his breast, whereas with tactful treatment he might have left with the kindest feelings toward the company. It is not always possible to win over everybody, and we all regret when a patron comes in wrought up over some trifling matter and it is impossible to iron out his wrinkle, try as hard as we may. To the credit of human nature we believe that such cases are exceptional. The average case can be handled in the manner suggested and an enemy turned into a friend, with the resulting corollary of a liability being turned into an asset. We believe that the average kicker can be turned into a staunch supporter if he sees that our disposition is to treat him fairly. Ignorance of conditions is the reason why many find fault. If you can explain to him, talk or write to him, you will find the average passenger disposed to be fair and reasonable.

The average suggestion for the improvement of service received from patrons may be impracticable, but once in a while we have received a good suggestion, and its adoption has meant a step forward in serving the

TWIN CITY LINES—GENERAL SUGGESTIONS

Many patrons, desiring to assist us in giving good service and for the comfort of all, have suggested that we remind passengers to help abate the following nuisances, some of which are against health:

Do not bring dead or smoldering cigars into a Car.

Do not spit in any part of a Car. The law forbids this practice, and in the interest of health, comfort and cleanliness you are asked to comply with this sanitary regulation.

Do not deposit nutshells, fruit skins, papers or other litter in any part of the Car.

We desire to keep our Cars in a clean and sanitary condition and we are employing every means to do so. To achieve this result we must have the co-operation of passengers.

Be sure that you get on the right Car. Sometimes a passenger will get on a Short Line Car, taking it for granted that he is getting on a Long Line Car, and then later finds, to his inconvenience, that he is not being carried to his destination. It is always best to be sure that the Car you are boarding is the one you need. Look at the signs the Car carries.

Do not occupy more than one seat. If a passenger will extend the courtesy of "moving over" for others, he will find other passengers more disposed to extend a like courtesy to him. We are sure that a little consideration also extended to the conductor will inspire him to a much higher quality of service.

Some writer has wisely said: "There is no place in which the Golden Rule can be so effectually employed or will pay such large dividends, both as to one's relations with the Car employees and fellow passengers, as on a modern Street Car."

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TWIN CITY LINES—STREET CAR DELAYS

Delays to Minneapolis Street Car Service on Thursday, April 15, were as follows:

An automobile broken down on the track at Laurel Ave. and Ash St., held the Bryn Mawr line at that point 66 minutes from 9:35 a.m.

The Snelling-Minnehaha line was held 20 minutes from 2:15 p.m. by a fire at Bates Ave. and 7th St., St. Paul.

On account of trolley wire being torn down at Virginia and Como Aves., St. Paul, by a grading machine, the Como-Harriet line was delayed 17 minutes. This gap in the service reached Central Ave. and 4th St. S.E. at 2:41 p.m. from which point the station filled in for the delayed cars.

As the result of sand and water on the track at Como and Bedford Aves., St. Paul, the Como-Harriet line was held at that point 32 minutes from 5:25 p.m.

Complaints and Suggestions Always Receive Prompt, Courteous Attention.

A. W. Warnock, General Passenger Agent.
Telephones—Main 4580—Center 3134.

ADVERTISEMENT USED BY TWIN CITY LINES

public. We acknowledge with gratitude having received many good ideas from patrons in answer to the invitation we extend to send in suggestions as well as complaints. Of course, we have received hundreds of half-baked, amusing ideas, but given in such evident good faith that the smile was repressed. Perhaps the blue ribbon suggestion of this class was given to us recently by a very tall, thin gentleman wearing bushy side whiskers and wearing his hair brushed back, as George Ade said, "like a sea lion." He wanted to sell hot coffee, sandwiches and "sinkers" from a little counter to be installed on the rear platform of each car. He said that such a quick lunch service would make us very popular with those who had hurried off without their meals and would be a boon to husbands whose wives were away on vacations. He also pointed out that it would be rather sociable to see a carload of passengers munching sandwiches and drinking hot coffee together!

In the past year we have printed many newspaper advertisements with the idea of taking patrons into our confidence and of asking their co-operation to reduce the little frictions between them and our conductors. The gist of some of these advertisements, with the text as printed in the papers, is given herewith. Perhaps they may be suggestive to JOURNAL readers.

"Safety First" is good, but "Safety and Courtesy First" is better, and we believe that is the general watchword all along the line in electric railway circles to-day. We all want our trainmen to live up to our highest ideals as to proper treatment of passengers. No matter how hard these men may try to perform their duties efficiently, there is bound to be a crop of dissatisfied passengers. Our work is to get after the dissatisfied passengers, no matter whether they are right or wrong, try to get their point of view, try to straighten out their difficulties, and do everything reasonable to show them that we want to serve them well. It is the best and most sensible policy to pursue in building up a good feeling in the community which we serve.

Engineering Congresses at San Francisco

More Than A Quarter of the Enrollment for the International Engineering Congress Is Foreign

The ten days from Sept. 16 to Sept. 25 will be devoted to engineering congresses in San Francisco. The largest four engineering societies will hold separate conventions on Sept. 16 and 17, the A. S. C. E. at the St. Francis Hotel, the A. S. M. E. at the Native Sons' Hall, the A. I. M. E. at the Hotel Bellevue and the A. I. E. E. at the Civic Center Auditorium. Sept. 18 and 19 will be given up to excursions and Sept. 20-25 to the International Engineering Congress.

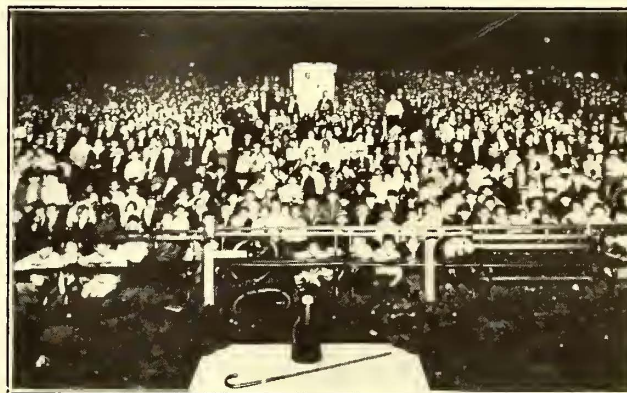
On July 12, 1915, 2927 members were enrolled for the International Congress, the membership of the five participating societies being represented as follows: American Society of Civil Engineers, 780, or 10.1 per cent; American Society of Mechanical Engineers, 454, or 7.4 per cent; American Institute of Electrical Engineers, 393, or 5.1 per cent; American Institute of Mining Engineers, 320, or 6.4 per cent; Society of Naval Architects & Marine Engineers, 69, or 8.3 per cent. The foreign membership is 27 per cent of the total enrollment. California leads the States with 466 members, New York comes next with 446, Pennsylvania has 176, Illinois 111, and Massachusetts 88. Among the foreign enrollments are: Canada, 106; Great Britain, 91; Germany, 59; France, 58; Japan, 54; Australia, 41, and Brazil, 40. Official delegates have been appointed by Switzerland, China and the Royal Institute of Engineers of the Netherlands.

On July 12, 1915, 192 papers had been received, distributed as follows:

| | | | |
|-------------|----|--------------|----|
| Vol. 1..... | 20 | Vol. 7..... | 9 |
| Vol. 2..... | 21 | Vol. 8..... | 11 |
| Vol. 3..... | 16 | Vol. 9..... | 27 |
| Vol. 4..... | 19 | Vol. 10..... | 22 |
| Vol. 5..... | 18 | Vol. 11..... | 7 |
| Vol. 6..... | 22 | | |

Mr. Brownell Continues Popular Safety Lectures

An account of the safety educational work of H. L. Brownell, safety inspector Chicago Surface Lines, by means of moving picture lectures in parks and schools, was contained in the ELECTRIC RAILWAY JOURNAL of April 17, 1915. Evidence that this safety work, which Mr. Brownell has conducted regularly for the third summer in the Chicago parks, cannot be classed as



AUDIENCE AT A SAFETY LECTURE IN LINCOLN PARK, CHICAGO

being merely of the spasmodic "brass band" variety is well shown by the accompanying flashlight photograph of part of an audience of 10,000 persons who gathered to hear him. The photograph was taken from the marble grandstand in Lincoln Park.

In connection with his safety work Mr. Brownell has recently issued a pamphlet entitled, "Safety for You and I," which contains a series of safety instructions, divided into three parts; instructions for small children, instructions for older children and those for grown-ups.

In a recruiting campaign inaugurated in Toronto during July one of the Toronto Railway cars was utilized. It was decorated with bunting, and bore a destination sign of Berlin and signs of various sorts to induce men to enlist.

Scientific Coasting at Oakland

Even with Faster Schedules, Coasting Has Increased from an Average of 15 Per Cent to 34 Per Cent and Energy Consumption Has Decreased Materially

During the early part of the year 1913, the San Francisco-Oakland Terminal Railways installed for trial use ten Rico coasting recorders, enough to equip completely all cars on its West Eighth Street line at Oakland.

For seven weeks before the trial, weekly records were made of total kilowatt-hours, of kilowatt-hours due to propulsion alone (average lighting hours and number of heating units being known), total car-miles, total car-miles of coasting clock cars alone and total passengers. Similar records were made weekly during the four-weeks' test period, from May 24 to June 21, and for four weeks following the test period. The three sets of observations gave these significant results: Before the recorders were installed the energy consumption per car-mile averaged 3.31 kw.-hr., or 174 watt-hours per ton-mile, and coasting was but 7.84 per cent, although it may be added that the coasting average for the system as a whole was about 15 per cent.

With the inauguration of the coasting clocks and instruction service on the cars the percentage of coasting rose to 27.60 per cent, and for the week ending the test the coasting was 41.70 per cent. The result is reflected in the averages of 35.34 per cent coasting, 2.5 kw.-hr. per car-mile and 131 watt-hours per ton-mile shown in the accompanying graph, the whole meaning a saving of 24.5 per cent in energy.

The need for the continued use of recorders and a regular follow-up system was quickly demonstrated in the period after the coasting recorders had been removed. During these four weeks the energy requirements rose from 118 watt-hours per ton-mile to 157 watt-hours, so that for the last week of the period the energy saving over the original conditions was but 9.3 per cent.

Appreciable savings in brakeshoe wear were also made on the same line. Thus between April 13 and May 6, 1913, before the use of coasting clocks, five cars

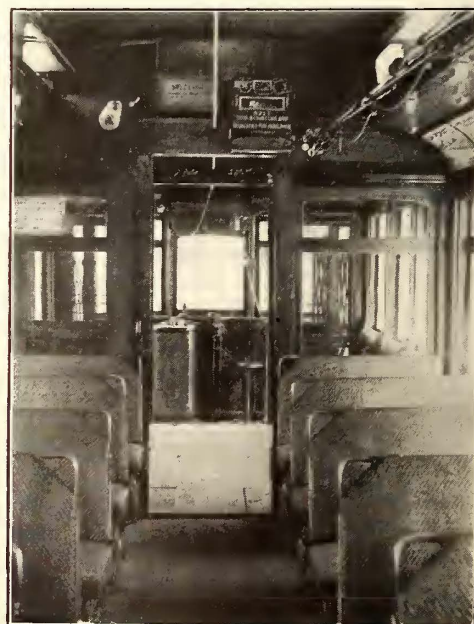
averaged 22.4 lb. wear per 1000 miles; whereas four cars of the same type and in the same service, but equipped with coasting recorders, averaged only 13.5 lb. wear per 1000 miles between June 11 and June 22, 1913—a saving of 39.7 per cent. The money value of the brakeshoe saving was estimated at 3 cents per pound, which for 65 per cent wear of the shoes worked out at a saving of \$5,256 a year on the basis of 35,000 car-miles or 480 lb. shoe wear per day.

As the result of these tests on the West Eighth Street line, the company placed an order for 350 coasting recorders, enough to cover all the city and high-speed suburban lines. All cars were so equipped by May 31, 1914.

RECORDS AND FOLLOW-UP WORK

All records are in the hands of the efficiency department, which was organized originally as the coasting department when the clocks were installed; however, since November, 1914, the department has borne its present title. Its work, which is under the direction of U. S. Sliter, now embraces also traffic counts and analyses (including jitneys), transfer checking, cost of operating specific services and accident analyses.

The coasting tape records as taken from the clock show in order the number of the car, which is also that of the clock; the coasting minutes record, and the number of the motorman, an "E" being added to indicate an extra. In adding coasting time, a horizontal line is drawn across the tape for every hour, the number of coasting minutes being written in the hour space formed by the horizontal lines. This is done for convenience in making additions at the office of the efficiency department. The envelope for holding the tape differs from others in not bearing time-clock stamps. Instead the envelope carries the detail story of each run, including not only time on and off but also a record of all layovers and delays. Any delays exceeding three



OAKLAND COASTING—MAIN ROOM OF EFFICIENCY DEPARTMENT, SHOWING ADDING MACHINES AND OTHER EQUIPMENT; LOCATION OF RECORDER OVER BULKHEAD OF CAR

TABLE I—SAN FRANCISCO-OAKLAND TERMINAL RAILWAYS—SUMMARY SHEET OF TEST

| Before Test Period | | | | | | | | | |
|-------------------------------------|---------------|-------------------------|-----------------|--|------------------|----------------------|-------------------------|--------------------|------------------|
| Date | Total Kw.-hr. | Kw.-hr. Less Deductions | Total Car-Miles | Total "Rico" Car-Miles Metered Section | Total Passengers | Kw.-hr. per Car-Mile | Watt-hours per Ton-Mile | Coasting, per Cent | Saving, per Cent |
| Feb. 22.... | 10,593 | 10,168.20 | 3,312.30 | 3,123.65 | 39,581 | 3.25 | 171 | 7.84 | .. |
| March 1.... | 14,973 | 14,402.86 | 4,687.90 | 4,420.90 | 55,585 | 3.26 | 171 | 7.84 | .. |
| March 8.... | 15,700 | 15,144.25 | 4,687.90 | 4,420.90 | 59,678 | 3.42 | 179 | 7.84 | .. |
| March 15.... | 15,795 | 15,260.32 | 4,687.90 | 4,420.90 | 58,986 | 3.45 | 181 | 7.84 | .. |
| March 22.... | 14,875 | 14,362.20 | 4,687.90 | 4,420.90 | 59,694 | 3.25 | 170 | 7.84 | .. |
| March 29.... | 14,880 | 14,382.45 | 4,713.24 | 4,444.80 | 58,921 | 3.24 | 170 | 7.84 | .. |
| April 5..... | 15,090 | 14,617.25 | 4,687.90 | 4,420.90 | 57,279 | 3.31 | 174 | 7.84 | .. |
| Total and Average... | 101,906 | 98,337.53 | 31,465.04 | 29,672.95 | 389,724 | 3.31 | 174 | 7.84 | .. |
| Test Period | | | | | | | | | |
| May 24.... | 3,660 | 3,541.80 | 1,393.70 | 1,314.32 | 17,135 | 2.69 | 141 | 27.60 | 18.7 |
| May 31.... | 12,350 | 11,297.00 | 4,687.90 | 4,222.90 | 59,417 | 2.68 | 140 | 27.30 | 19.0 |
| June 7..... | 11,910 | 11,508.00 | 4,687.90 | 4,410.66 | 56,996 | 2.61 | 137 | 33.80 | 21.1 |
| June 14.... | 11,040 | 10,683.60 | 4,687.90 | 4,420.90 | 58,760 | 2.42 | 127 | 39.30 | 26.7 |
| June 21.... | 10,260 | 9,898.20 | 4,687.90 | 4,420.90 | 57,969 | 2.24 | 118 | 41.70 | 32.3 |
| Total and average... | 49,220 | 46,929.60 | 20,145.30 | 18,789.68 | 250,277 | 2.50 | 131 | 35.34 | 24.5 |
| After Test Period—Recorders Removed | | | | | | | | | |
| June 28.... | 12,840 | 12,478.20 | 4,687.90 | 4,420.90 | 56,168 | 2.82 | 148 | .. | 14.8 |
| July 5..... | 13,060 | 12,698.20 | 4,687.90 | 4,420.90 | 58,505 | 2.87 | 151 | .. | 13.3 |
| July 12.... | 13,150 | 12,795.20 | 4,590.16 | 4,328.73 | 55,023 | 2.95 | 155 | .. | 10.9 |
| July 19.... | 13,350 | 12,995.20 | 4,590.16 | 4,328.73 | 57,913 | 3.00 | 157 | .. | 9.3 |

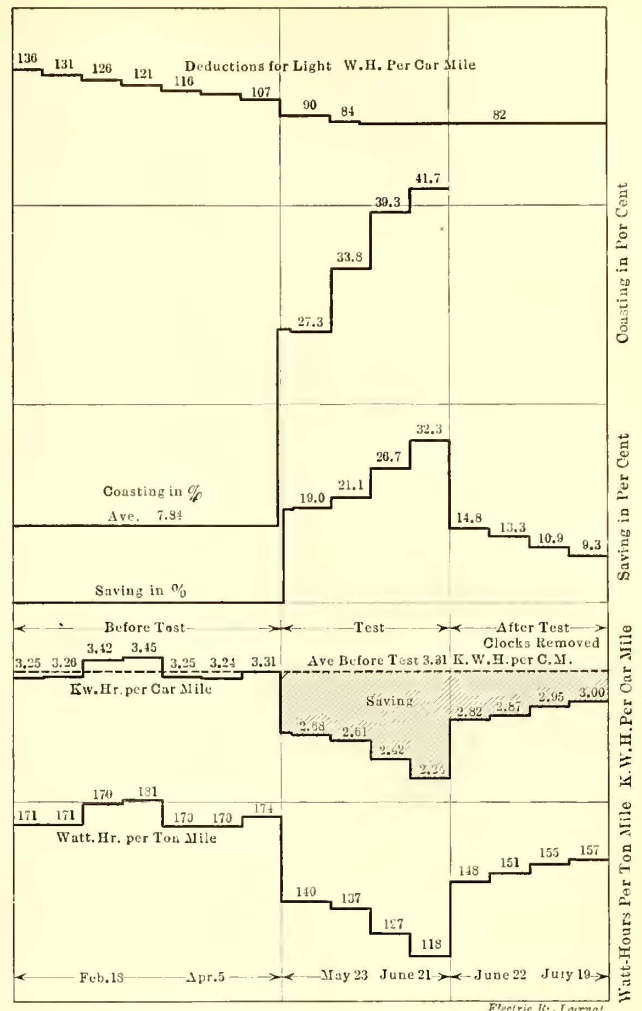
minutes are taken into account in calculating the percentage of coasting minutes.

The records as taken from the coasting recorders are turned in daily to the district and division superintendents for inspection and they in turn forward them to the efficiency department. Coasting percentages are then computed by means of Burroughs listing and non-listing machines and a comptometer. These calculations are first made on a semi-monthly basis, line for line, but divided according to regulars and extras. These semi-monthly lists are posted conspicuously at the district and division headquarters concerned. Monthly lists are made up to show what percentage of men are making certain coasting records. These lists also show the record of the preceding month. Other monthly records are worked up into graphs which compare the northern, eastern, central and western districts of the traction division, also the Key division, according to their coasting averages and according to the average coasting on the system as a whole. Another set of graphs shows the coasting percentages and the average number of passengers carried per diem plotted against watt-hours per ton-mile and kilowatt-hours per car-mile.

Men whose coasting records are low are placed in the charge of a coasting instructor, who devotes an entire day to the delinquent. If necessary the treatment is repeated two or three times. On these occasions the motorman and conductor check the instructor to see that he is making all the time points correctly. The very next day the motorman is likely to do just as well as the instructor, and if he fails to keep this up it is evident that his backsliding is due to the fact that he is paying less attention to the refinements of operation. Generally speaking, about 90 per cent of the men have

TABLE II—SAN FRANCISCO-OAKLAND TERMINAL RAILWAYS—BRAKESHOE WEAR TEST

| Without Coasting Clocks | | | | | | | | |
|-------------------------|----------------|---------|----------------|---------|-----------------------|---------|----------------------|----------------------------|
| Car Number | Pounds Applied | Date | Pounds Removed | Date | Pounds Worn from Shoe | Mileage | Miles per Pound Wear | Pounds Wear per 1000 Miles |
| 354 | 180 | 4-13-13 | 112.5 | 5-6-13 | 67.5 | 3,595 | 53.2 | 18.42 |
| 360 | 207 | 4-13-13 | 149.0 | 5-6-13 | 58.0 | 3,087 | 53.2 | 18.42 |
| 403 | 180 | 4-13-13 | 135.0 | 5-6-13 | 45.0 | 1,576 | 35.0 | 28.55 |
| 405 | 180 | 4-13-13 | 128.0 | 5-6-13 | 52.0 | 2,263 | 43.5 | 22.98 |
| 410 | 180 | 4-13-13 | 100.5 | 5-6-13 | 79.5 | 2,966 | 37.5 | 26.65 |
| Total..... | 927 | | 625.0 | | 302.0 | 13,487 | 44.6 | 22.40 |
| With Coasting Clocks | | | | | | | | |
| 351 | 180 | 6-13-13 | 167.0 | 6-22-13 | 13.0 | 1,077 | 82.8 | 12.06 |
| 352 | 180 | 6-14-13 | 171.5 | 6-22-13 | 8.5 | 508 | 59.7 | 16.73 |
| 354 | 180 | 6-11-13 | 160.5 | 6-22-13 | 19.5 | 1,336 | 68.5 | 14.58 |
| 355 | 180 | 6-12-13 | 167.0 | 6-22-13 | 13.0 | 1,074 | 82.6 | 12.10 |
| Total..... | 720 | | 666.0 | | 54.0 | 3,995 | 74.0 | 13.50 |



OAKLAND COASTING—GRAPH DERIVED FROM COASTING TESTS AS DETAILED IN LOG SHEET

been thoroughly educated to the meaning of efficient coasting. Should a man prove incorrigible after repeated instruction, but be satisfactory otherwise, he is disciplined by being placed on the extra list or treated as a recruit motorman. Naturally an experienced motorman does not care to be seen in the rôle of a student who has to learn his lessons all over again. So far it has not been necessary to discharge one man because of poor coasting alone.

The progressive improvement in coasting is shown not only by the figures quoted, but by the fact that some 400 motormen are kept up to high coasting pitch with the aid of but one instructor. At first two coasting teachers were constantly engaged.

A large number of men had the impression that the best coasting records were to be obtained by allowing the car speed to die down and then jerking the controller handle over for a short spurt and so on repeatedly. Of course, this mode of operation is disagreeable to passengers, and it does not produce the best coasting records. The men are taught that the best results are

TABLE III—SAN FRANCISCO-OAKLAND TERMINAL RAILWAYS—CLASSIFICATION OF COASTING SKILL OF MOTORMEN

| Coasting Percentage | PER CENT OF MOTORMEN ON | | | | PER CENT MOTORMEN ON TRACTION DIVISION | |
|---------------------|-------------------------|------------------|-------------------|------------------|--|-----------------------|
| | Central District | Western District | Northern District | Eastern District | Period Ending May 31 | Period Ending June 15 |
| 20 to 25 | 2.3 | 4.0 | 0.0 | 2.0 | 4.11 | 2.41 |
| 25 to 30 | 23.4 | 20.2 | 6.8 | 5.1 | 22.60 | 17.10 |
| 30 to 35 | 43.0 | 36.4 | 43.2 | 31.3 | 36.76 | 39.04 |
| 35 to 40 | 21.0 | 26.3 | 31.8 | 31.3 | 23.97 | 25.44 |
| 40 to 45 | 7.0 | 6.1 | 13.7 | 18.2 | 9.13 | 9.87 |
| 45 to 50 | 3.3 | 7.0 | 4.5 | 9.1 | 2.74 | 5.48 |
| 50 or Over | 0.0 | 0.0 | 0.0 | 3.0 | 0.69 | 0.66 |

secured by accelerating and braking to maintain a uniform rate of speed and by anticipating stops so that the car will do part of the braking.

Hitherto the low and high-coasting men have met separately to discuss their records, but now joint meetings are held. A number of the high men have freely undertaken to show others how they obtain their records. The degree of coasting still shown by the men is presented in the accompanying classification by percentages.

COASTING BOGIES

Reference has already been made to the subdivision of coasting records by lines and classes of men. To afford a still fairer basis of comparison, the coasting instructor began about April 1, 1915, to work up a bogie or standard for each line instead of determining standards from the work of all men. In one instance the visit of the instructor on a certain line to make this determination spurred on the local motormen to improve their average coasting 5 per cent. This improvement was made within the two weeks that the instructor was making the tests.

Should a time-table be changed, the instructor rides all over the line again to establish a new standard if that appears necessary. However, the fact that there is often room for a little more efficiency appears from individual cases of time-table change. For example, when the running time between Oakland and Berkeley was cut from thirty-five minutes to thirty minutes, the coasting percentage showed a decrease until the instructor demonstrated that it was still possible to maintain the same ratio.

For certain reasons on another occasion the most rigid adherence to schedules was desired and this fact

gave some of the men the impression that they would have to do less coasting. The result of this wrong impression appears clearly in the graph showing the record of the Key division. In this case energy consumption went up from 3.25 kw.-hr. to 3.65 kw.-hr. per car-mile as the coasting went down from 42.8 per cent to 37 per cent between September, 1914, and January, 1915. To correct this condition a special coasting campaign was inaugurated and the instructor found that even with 40 per cent coasting the schedule could readily be maintained. The coasting on the Key division now averages 40 per cent or better.

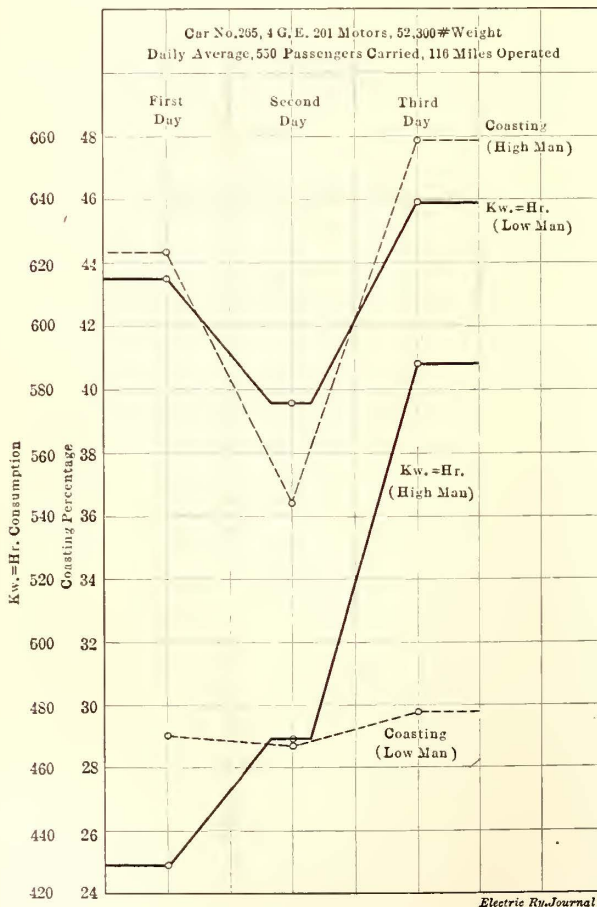
In making coasting tests on the Key division, the instructor operated one-half of his time during the rush period. All delays incidental to operation were included in running time. A statement showing the result of these tests under date of May 17, 1915, gave the following standards for these lines:

| Line | Per Cent | Line | Per Cent |
|----------------------------|----------|----------------------|----------|
| Berkeley | 34.40 | Twelfth Street | 51.98 |
| Piedmont | 36.27 | Claremont | 40.39 |
| Twenty-second Street | 36.33 | Northbrae | 44.50 |
| Average | | | 40.07 |

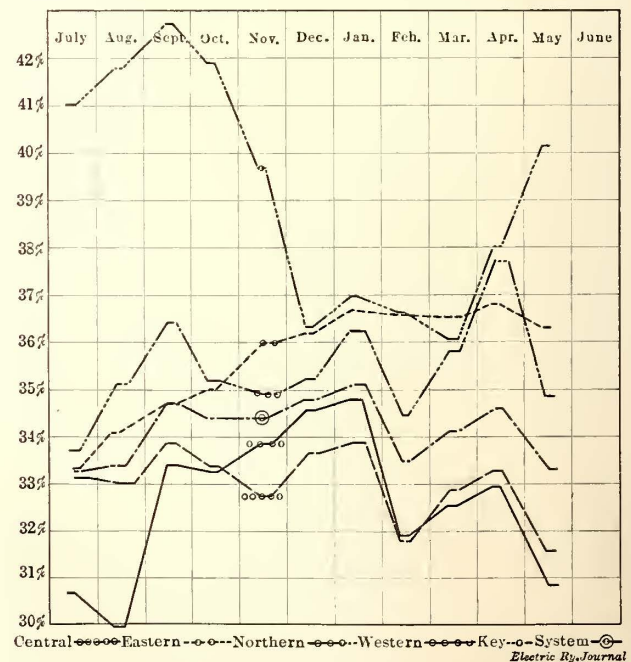
Although the company has maintained careful analyses of accidents by divisions, it did not begin until recently to check against the coasting records those accidents, like collisions and thrown passengers, which might be promoted by a too eager desire to coast. As yet there is no evidence to show that increased coasting has added to the number of accidents. It has been observed, however, that following the semi-annual selection of runs, accidents tend to go up until the men who have changed are accustomed to new conditions.

MAINTENANCE RECORDS

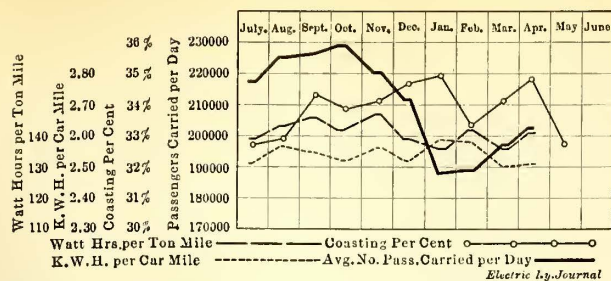
Clock troubles are recorded on a defect sheet similar to that shown on page 1200 of the June 26 issue. This sheet was devised by the Railway Improvement Company. During the first four months of 1915 the failures of clock mechanisms were respectively 30, 28, 31, and 20. Failures of printing mechanisms were 30, 23, 22 and 19, and other failures were 24, 27, 33 and 28. The average number of troubles per car per month were 0.248, 0.231, 0.254 and 0.198. One of the earlier



OAKLAND COASTING—THREE-DAY TEST SHOWING RESULT IN ENERGY CONSUMPTION OF HIGH COASTING AS COMPARED WITH LOW COASTING PERCENTAGE



OAKLAND COASTING—COMPARATIVE COASTING RECORD GRAPHS OF VARIOUS DISTRICTS OF THE TRACTION DIVISION AND OF THE KEY DIVISION



OAKLAND COASTING—RECORD OF TRACTION DIVISION WITH RELATION BETWEEN COASTING AND ENERGY CONSUMPTION

sources of trouble was in the piston and contact plates. This has been overcome largely by substituting grease for oil in the motorman's valve. Formerly, the oil from this valve would be blown through the air pipe into the relay box, thus causing poor contact in the armature. Another trouble, that of dirty mechanism causing slow clocks, was due to the entrance of dust into the clocks by way of the paper chute. However, this is not allowed to interfere with operation to any appreciable extent. Clocks reported slow are checked during a trial coasting period by means of a stop watch.

CHECKING WITH WATT-HOUR METERS

One feature in the education of the trainmen was the publication of the results of a three-day test when a low-coasting and a high-coasting motorman were checked by means of watt-hour meters. This test demonstrated conclusively that the man who did the most coasting was using the least energy, and that low coasters consume power to the value of \$1 to \$2 a day more than high coasters, even when energy is figured at but $1\frac{1}{8}$ cents per kilowatt-hour. The test, its results, and its purpose were placed before the trainmen in the following circular posted Nov. 11, 1914:

"To All Concerned:

"In order to determine the exact amount of power consumed by a motorman with a low-coasting record as compared with a man with a high-coasting record, we have caused a test to be made for a period of three days on the northern district. We have taken the same car, same run, which has made practically the same number of miles and handled the same number of people.

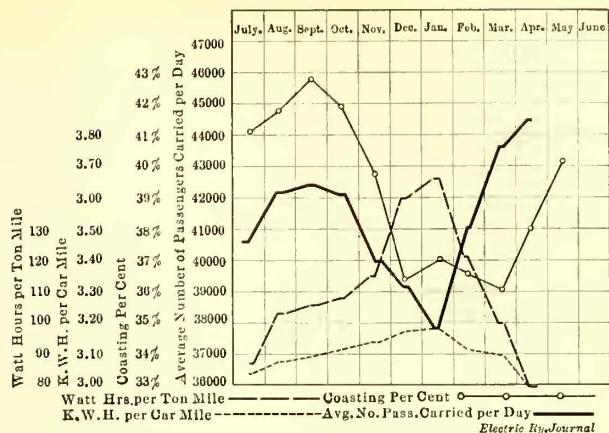
"We are posting these figures in order that the employees may study the results and be convinced beyond a question of doubt that the cost of power consumed in operating a car depends entirely upon the coasting record made, showing a three-days' test on Run No. 17, Richmond line, with a coasting record of 29.1 per cent.

| | Coasting Per Cent | Kw.-hr. | Passengers | Miles | Cash |
|------------|-------------------|---------|------------|--------|---------|
| First day | 29.0 | 615 | 598 | 116.16 | \$33.40 |
| Second day | 28.7 | 576 | 592 | 116.16 | 33.15 |
| Third day | 29.8 | 639 | 496 | 116.16 | 27.80 |
| Total | 87.5 | 1830 | 1686 | 348.48 | \$94.35 |
| Average | 29.1 | 610 | 562 | 116.16 | 31.45 |

"Showing a three-days' test on Run No. 17, Richmond line, with a record of 42.9 per cent.

| | Coasting Per Cent | Kw.-hr. | Passengers | Miles | Cash |
|------------|-------------------|---------|------------|--------|---------|
| First day | 44.3 | 423 | 589 | 116.16 | \$33.85 |
| Second day | 36.4 | 469 | 472 | 116.16 | 26.95 |
| Third day | 47.9 | 588 | 509 | 116.16 | 30.10 |
| Total | 128.6 | 1486 | 1560 | 348.48 | \$90.90 |
| Average | 42.9 | 495 | 526 | 116.16 | 30.30 |

"You will note that the man coasting 42.9 per cent of the time only consumes an average of 495 kw.-hr. as compared with the man coasting 29.1 per cent, consuming an average of 610 kw.-hr., making a difference of 115 kw.-hr. in favor of the man with the high-coasting record.



OAKLAND COASTING—RECORD OF KEY DIVISION WITH RELATION BETWEEN COASTING AND ENERGY CONSUMPTION

"Figuring the cost of the power at $1\frac{1}{8}$ cents per kilowatt-hour we find that the man with the low-coasting record costs \$1.29 more for power on a run of nine hours and twenty minutes, making an average of 116 miles per day, than the man with the high-coasting record. The average power consumed by the low man was 5.26 kw.-hr. per mile. The average power consumed by the high-coasting-record man was 4.25 kw.-hr. per mile.

"This shows that the high-coasting man operates his car under practically the same conditions as the low-coasting man with 0.991 kw.-hr. less per mile, or a little over 1 cent less per mile.

"Employees who read this bulletin and give a few seconds' thought will readily understand why this company is anxious to increase the coasting records of the low men. The low men are consuming too much power and costing all the way from \$1 to \$2 per run more for power than the high-coasting men.

"Your hearty co-operation is earnestly solicited. Men whose records are low are requested to give their full time and attention—concentrating their minds on the operation of their cars and increase their records.

(Signed)

"J. P. POTTER,

Superintendent of Transportation."

The result of the test described is also embodied in the graph reproduced on the opposite page.

CONCLUSION

The company, in viewing the advantages of its car recorders, naturally is gratified at the savings obtained. But it is still more gratified by the fact that the proper use of such devices produces better men. From an attitude of skepticism, the men have been converted to see in the recorder a device which makes their work lighter and more interesting in many ways.

Jovian Convention in Chicago

The thirteenth annual convention of the Jovian Order will be held at the Hotel Sherman, Chicago, Ill., Oct. 13, 14 and 15. The program outlined includes a reception and dance on the evening of Oct. 12. On Oct. 13 there will be a business session in the morning, luncheon as guests of business associations of Chicago, an outing trip in the afternoon and an elaborate pageant and entertainment in the evening. On Oct. 14 there will be a business session in the morning, degree team competition in the afternoon and the annual rejuvenation in the evening. On Oct. 15 there will be a business session in the morning, closing session and election of fourteenth congress in the afternoon and banquet in the evening.

Car Service Inspection in Seattle

Methods Followed by the Department of Public Utilities in Checking Car Loading and Blanks Used for Recording Data Are Described

BY J. W. MC CLOY, CAR SERVICE INSPECTOR DEPARTMENT OF PUBLIC UTILITIES, SEATTLE, WASH.

Practically all of the street railway franchise ordinances granted in Seattle contain the clause providing that cars shall be run over the various lines at such reasonable intervals between 6 a. m. and 12 o'clock midnight as the City Council may from time to time prescribe by ordinance. This, apparently, put within easy grasp of the Council the matter of adjusting street railway schedules to suit the public convenience, but in practice the authority so conferred was found difficult of enforcement from the fact that the Council had no adequate means at its disposal of determining just what a reasonable service would be. Furthermore, the obvious impossibility of a legislative body like a city council successfully attempting to assume so purely a managerial function as schedule making will be readily appreciated by those familiar with the constantly fluctuating demands of street railway service in a large city.

From time to time numerous and frequent complaints were made of the service, general and in particular, and although no serious attempts were ever made by the Council to assert its prerogative it was evident that some means of exercising the city's regulatory functions must be devised.

In April, 1908, the responsibility for the enforcement of franchise obligations was more clearly defined in an amendment to the city charter authorizing the appointment by the mayor of a superintendent of public utilities, and in perfecting the organization of the department thus created provision was made for the appointment of an inspector of car service.

The Alaska-Yukon-Pacific Exposition was held in Seattle during the summer of 1909, and realizing that abnormal travel conditions would be the rule during this event, the department confined its activities to service and equipment inspection of a general nature, and it was not until early in the following year that the problem of determining a standard of reasonable car service was seriously taken up. At the very outset a difficulty in the shape of an almost total lack of precedent presented itself. As far as could be learned there were no American cities where a definite standard of loading was prescribed or followed, and it was not thought advisable, in view of the excessive overcrowding which had characterized the travel on certain of the local lines and which had come to be looked upon as part of the regular order of things in all large American cities, to attempt to insist upon the standards of the municipally-owned European tramway systems. There arose the doubt as to what constituted excessive overcrowding, where the line was to be drawn between good service and bad, what the traveling public had the right to expect, and what the limit of good service was which would still permit the operating companies to make a reasonable return upon their investments. Such data as could be gathered from reports on traffic conditions in Eastern cities were of little value from the fact that the standard of loading was usually found to be higher than was deemed desirable to establish in Seattle.

Consequently it devolved upon the Department of Public Utilities to pioneer in the field of traffic regulation, and as a preliminary thereto an extended series of passenger checks was taken, covering particularly

the hours of heaviest travel and extending over a period of several months. In this manner data were secured from which it was possible to determine with a fair degree of accuracy the average number of passengers carried into and out of the downtown delivery district on each line and group of lines during the so-called rush hours. The department was then in a position to determine the characteristics of travel of the various lines and to make a critical analysis of the service.

The evening rush-hour period was interpreted to include that interval between 5 p. m. and 6.30 p. m. when the cars of the various lines were passing the points of maximum load on the way out of the downtown delivery district; the morning rush period varied considerably according to the class of patronage served, and different classifications were made to suit the varying characteristics of the different lines.

It was early decided to make no attempt to limit individual car loads but simply to prescribe a certain standard of service which would extend over the entire rush-hour period. Analysis of the service checks had shown that of the total number of passengers carried past the points of maximum load during the evening rush-hour period the number obliged to stand ranged all the way from 10 per cent on certain lines to as high as 45 per cent on others, with a number of routes on which the total number of seats furnished actually outnumbered the passengers carried. After careful consideration it was finally decided to fix the allowable overload at 25 per cent, in other words, to require a service which would supply sufficient cars on all of the most heavily traveled lines to provide seats for at least 75 per cent of the total number of passengers which would, under normal conditions, be carried past the points of maximum load. The inability to provide such a service on a certain few lines owing to physical conditions, such as grades, insufficient trackage, etc., was recognized, but in all its general particulars this idea has been followed ever since and, while refusing officially to recognize this principle as a standard, the largest of the local operating companies has tacitly agreed to accept the figures of the Department of Public Utilities and to increase its service whenever it can conclusively be shown that a maximum overload in excess of 25 per cent consistently exists.

How closely this standard of service has been observed can be gaged by the fact that prior to the December, 1914, holiday season the principal electric car lines of Seattle were on the average week-day evening between 5 p. m. and 6.30 p. m. hauling out of the downtown business district an average total of about 27,500 passengers, of whom 20,635, or just a fraction more than 75 per cent, secured seats.

The jitney invasion reached Seattle about the middle of December, 1914, and within six weeks had assumed such proportions as to reduce the street car travel by nearly 20 per cent, thus upsetting for the time being all of our carefully prepared statistics. In the face of this decrease in business the operating companies have continued to run practically the same service as before with the result that the percentage of passengers obliged to stand has been very materially reduced on all lines. Within the last few weeks, however, condi-

tions from a street railway standpoint have improved, and there is every evidence that within a short time the jitney bus, owing to regulative legislation and the pressure of the economic law, will have ceased to cut much of a figure in the local field of urban transportation.

As a general rule in securing traffic data all lines passing the point of maximum load are checked simultaneously, an actual count, in so far as it is possible, being made of the passengers. This is a practice which comes easily with experience, as the checkers are familiar with the seating capacity of the cars and have only to count the standing passengers in order to obtain very accurate results. From these data a report is made up on a form provided for this purpose showing the car number, time at which it passes the point of observation, the interval between cars, and the number of passengers. This is further summarized so as to show the average interval, weather condition, cars in service, total number of passengers, total number of seats and, finally, the percentage of passengers obliged to stand. Those lines which serve the same contiguous territory are grouped in preparing these reports.

Portions of a typical form used for recording these data are shown in the accompanying table. The group of lines reported is the Westport Avenue lines, of which there are six. After leaving the business district these six lines follow the same tracks for about 2 miles to the point where check is taken. From that point the lines pair off, serving various of Seattle's northern suburbs. The Union Street Loop, from which the Phinney Avenue and Green Lake cars, marked (X), are operated, is located about $\frac{3}{4}$ mile from the depot loop, the downtown terminus of all the lines. It is the intention to have these Union Street loop cars pull out immediately ahead of the through cars as they arrive at Union Street and pick up all passengers from that point out. In theory about one-half of the traffic originates beyond the Union Street loops. The summary shows how well this theory works out in actual practice.

This method of presenting the traffic count is preferred to the more generally practiced scheme of using a graphic chart for a number of reasons. To begin with, the numerical statement is considered more convincing and accurate, both in showing the load and the interval than any system which involves the use of the graphic curve. By showing the car number a definite record is made which is useful in the event of a dispute and also establishes the seating capacity. As many as six lines, all operating into the same general territory, can be shown on one form, and the effect of the travel on one line on the travel on another traversing and serving adjacent territory can be noted. Another advantage of the typewritten report is that duplicate copies can be made as desired. Duplicates of all traffic counts are furnished to the transportation department of the Puget Sound Traction, Light & Power Company, operating the majority of the Seattle lines, and the company's operating officials will testify to their value in assisting in the study of traffic conditions whereon to establish schedules.

Care is taken not to jump at conclusions or to follow first impressions in recommending improvements in the service. Whenever a check shows a certain line to be overcrowded an endeavor is made to ascertain the reason therefor. If the overload is an unusual occurrence on this line it is usually found that there is some extraordinary condition, not apt to be repeated, which is responsible. If, however, subsequent checks show a frequently recurring overload with no apparent cause excepting increase in travel, this line is closely studied for several weeks, and if the overload seems likely to

| CITY OF SEATTLE | | | | | | | | | |
|---|-------------------------|-----------|----------|----|---|----|--|----|------|
| DEPARTMENT OF PUBLIC UTILITIES | | | | | | | | | |
| CAR SERVICE | | | | | | | | | |
| Route, Westlake Avenue Lines. Taken at Westlake Avenue & Stone Way | | | | | | | Date, June 22nd, 1914. Weather, Pleasant. By Hadeen. | | |
| Car | Route | Out-bound | Interval | | | | | | Load |
| 547 | Fremont-Ballard..... | 4:37 | p.m. | | | | | | 53 |
| 592 | Meridian Avenue..... | 4:38 | | | | | | 36 | |
| 525 | Phinney Avenue..... | 4:39 | | | | | | 63 | |
| 581 | Wallingford Avenue..... | 4:42 | | | | | | 29 | |
| 560 | Green Lake..... | 4:43 | | | | | | 37 | |
| 571 | West Woodland..... | 4:44 | | | | | | 37 | |
| 587 | Phinney Avenue..... | 4:45 | | | 6 | | | 59 | |
| 599 | Meridian Avenue..... | 4:46 | | | 8 | | | 47 | |
| 540 | Fremont-Ballard..... | 4:47 | 10 | | | | | 41 | |
| 709 | Green Lake..... | 4:49 | | | | | 6 | 42 | |
| 530 | Phinney Avenue..... | 4:50 | | | 5 | | | 44 | |
| 552 | Wallingford Avenue..... | 4:54 | | | | 12 | | 61 | |
| 539 | Phinney Avenue..... | 4:56 | | | 6 | | | 73 | |
| 565 | West Woodland..... | 4:57 | | | | | 13 | 43 | |
| 708X | Green Lake..... | 4:58 | | | | | 9 | 51 | |
| 597 | Meridian Avenue..... | 5:00 | | | | | | 61 | |
| 541 | Fremont-Ballard..... | 5:00 | 4 | 14 | | | | 55 | |
| 710 | Green Lake..... | 5:01 | | | | | 3 | 35 | |
| 535 | Wallingford Avenue..... | 5:02 | | | | 8 | | 45 | |
| 585 | Phinney Avenue..... | 5:05 | | | 9 | | | 98 | |
| 707X | Green Lake..... | 5:06 | | | | | 5 | 38 | |
| 586 | Wallingford Avenue..... | 6:26 | p.m. | | | 7 | | 55 | |
| 540 | Fremont-Ballard..... | 6:27 | | 3 | | | | 55 | |
| 548 | West Woodland..... | 6:28 | | | | | 6 | 40 | |
| 535 | Wallingford Avenue..... | 6:28 | | | | 2 | | 66 | |
| 553X | Green Lake..... | 6:29 | | | | | 5 | 67 | |
| 589 | Meridian Avenue..... | 6:30 | | | 7 | | | 70 | |
| 704 | Green Lake..... | 6:30 | | | | | 1 | 74 | |
| 527 | Wallingford Avenue..... | 6:30 | | | | 2 | | 45 | |
| 583X | Phinney Avenue..... | 6:32 | | | 7 | | | 90 | |
| 585 | Phinney Avenue..... | 6:33 | | | 1 | | | 79 | |
| 692 | Meridian Avenue..... | 6:34 | | 4 | | | | 48 | |
| 555 | Green Lake..... | 6:36 | | | | | 6 | 56 | |
| 541 | Fremont-Ballard..... | 6:38 | | | | | | 87 | |
| 529 | Wallingford Avenue..... | 6:38 | 11 | | | 8 | | 56 | |
| 563 | West Woodland..... | 6:39 | | | | | 11 | 37 | |
| 542X | Phinney Avenue..... | 6:41 | | | 8 | | | 66 | |
| 557 | Phinney Avenue..... | 6:42 | | | 1 | | | 61 | |
| 703 | Green Lake..... | 6:43 | | | | | 7 | 80 | |
| 598 | Meridian Avenue..... | 6:44 | | 10 | | | | 71 | |

| SUMMARY 5 P.M. TO 6.45 P.M. | | | | | |
|-----------------------------|-----------------------------|-----------------|------------------|-------------|-------------------|
| | Average Interval in Minutes | Cars in Service | Total Passengers | Total Seats | Per Cent Standing |
| Wallingford Avenue..... | 7½ | 11 | 905 | 672 | 26 |
| Meridian Avenue..... | 7 | 12 | 1093 | 868 | 21 |
| Fremont-Ballard..... | 7 | 14 | 998 | 720 | 28 |
| Phinney Avenue..... | 3½ | 25 | 1995 | 1506 | 25 |
| West Woodland..... | 11 | 7 | 605 | 480 | 20 |
| Green Lake..... | 4½ | 17 | 1592 | 1332 | 16 |

Fifty-two per cent of the Phinney Avenue cars operated from the depot loop carrying 53 per cent of the passengers. Sixty-three per cent of the Green Lake cars operated from the depot loop carrying 64 per cent of the passengers. Cars marked thus (X) operated from the Union Street loop.

SERVICE AND EQUIPMENT INSPECTOR.

FORM USED FOR RECORDING CAR LOADING AND SERVICE,
DEPARTMENT OF PUBLIC UTILITIES, SEATTLE

continue a demand is made for more service. The department is frequently able to point out that, while more service is needed during certain periods, a slight change in the schedule, using the cars to a better advantage, will afford the necessary relief without the necessity of adding more cars.

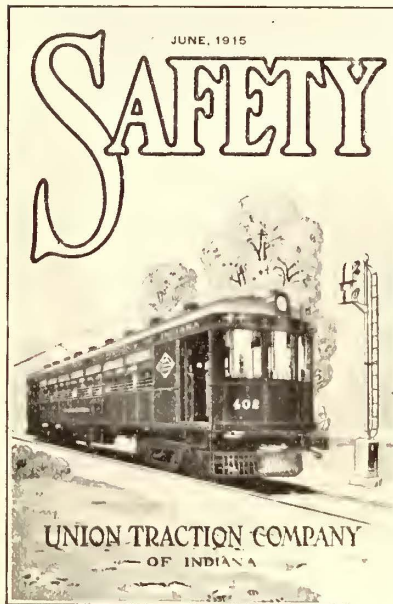
Early in the study of car-service inspection it became apparent that the one thing above all others to be sought for in the operation of the cars was regularity. It was very evident that an irregular headway resulted in the excessive overcrowding of certain trips, while others immediately following would scarcely have their seats filled. It has therefore been the aim of the Department of Public Utilities to assist by every means possible in securing an uninterrupted operation of the cars. To this end several ordinances have been passed making it a misdemeanor for teamsters or others willfully or carelessly to interfere with the expeditious operation of the cars. While conditions are still far from being entirely satisfactory in this respect, substantial progress has been made and better results are looked for in the future.

Union Traction Safety Magazine

The Author Tells How the Publication of This Magazine Has Been of Assistance to the Various Safety Committees

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

Demand for an organ of communication among the company's employees to improve esprit de corps and encourage enthusiasm in the safety movement was met by publishing the Union Traction Company of Indiana's magazine *Safety*. The first issue of this magazine appeared in April and contained twelve pages, including the cover. The Union Traction Company has one of the



FRONT COVER OF SAFETY MAGAZINE

oldest safety organizations in the country, having been organized in May, 1912, and the safety magazine is really an outgrowth of the demand for closer relations between the various local safety committees. The headquarters of these committees are established at five terminals on this company's lines and each committee consists of sixteen members. These members are taken from all departments of the road and serve for a period of six months. Each committee holds monthly

meetings, and the chairman and secretary of the local committees meet with the general board once each month. The general board is composed of all department heads, who serve permanently.

At the March meeting of the general safety board it was decided that an organ of communication among the employees devoted to the subject of safety and other matters of common interest was necessary. Accordingly the claim adjuster, who was secretary of the board, was appointed editor, and plans were immediately perfected so that the first issue of *Safety* appeared early in April. Interest in the safety movement has been kept up from the beginning, but through the medium of the magazine additional enthusiasm among employees has been encouraged.

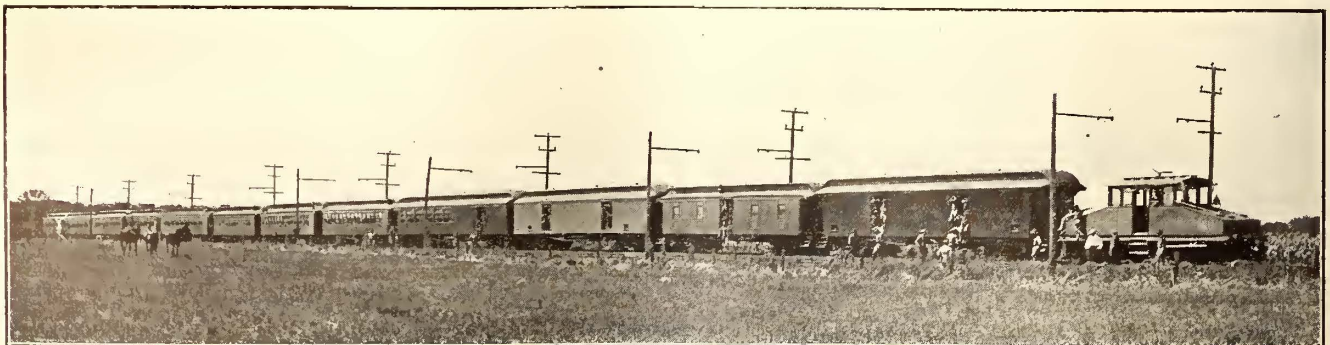
All articles are furnished by department heads and employees generally, and every article deals with some phase of the safety movement or welfare work, directly or indirectly. Each issue is well illustrated, particular attention being given to portraits and biographies of old and faithful employees and the local safety boards. The editor being the secretary of the general safety board is in close contact with the work of the local as well as the general organizations. The magazine is distributed free to all employees through department heads, and the expense of its issuance has been amply justified by the increased interest in safety and welfare work.

Handling Troop Trains in Iowa

Inter Urban Railway of Des Moines Meets Severe Test in Carrying Troops from Their Various Headquarters to the State Encampment

Recently the electrical equipment and the transportation department of the Inter Urban Railway of Des Moines, Iowa, were put to a severe test when it was called upon to move 3500 Iowa troops over a section of its line. The troops arrived in cars containing fifty or sixty men, or in trains containing from 200 to 500 men. The contract to move them from the steam road connection to the place of encampment was obtained only by the transportation department's agreeing to move troops as fast as they arrived. Consequently all trains were special and during the period the troops were being transported regular service, which provides for a one-hour-and-fifteen-minute schedule, was operated without any delays. At the steam road connection considerable time was consumed in transferring the men and their baggage. The total time required, however, to move the 3500 men and their baggage was five hours. The troops were handled in trains of from one to twelve cars each and the movement from the connection to the place of encampment was 25 miles.

In connection with the handling of these troops it is interesting to note that one train of twelve steam road passenger cars arrived at the connection. To eliminate transferring, the entire train was delivered to the electric road. One of the company's electric engines was coupled to this train and moved it over the road and up grades averaging about 1 per cent without delaying regular service. A view of this train and the electric engine is shown in the accompanying illustration. On the return trip at the close of the encampment, the same electric locomotive moved a train of fourteen cars, and the maximum ascending grade in this direction was 3 per cent. These electric engines are equipped with four GE-207-D, 110-hp., 600-1200-volt motors and Type M control. The total weight of the locomotive is about 55 tons and the effective tractive effort at 160 amp. input is 3700 lb.



VIEW OF TWELVE-CAR TROOP TRAIN, DES MOINES INTERURBAN RAILWAY

COMMUNICATIONS

Contact System Nomenclature

McHENRY & MURRAY, ENGINEERS

NEW HAVEN, CONN., Aug. 10, 1915.

To the Editors:

Referring to the editorial on "New Technical Terms in Heavy Electric Traction," which appeared in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 7, I would offer the following suggestions regarding conductors and collectors in electric railway service:

Classification of Elements of Contact System.

Contact Conductors

Contact wire.

Contact rail—"Third-rail."

Contact Collectors

Contact trolleys—"Trolleys."

Contact rollers.

Contact shoes—"Sliders."

Contact shoes may be further classified under—

"Engine shoes."

"Motor-car shoes."

"Pantagraph shoes."

The suggested classification at least has the merit of uniformity.

The term "trolley wire" is certainly inapplicable when sliding shoes are used for making contact, and the term "contact wire" which may be more generally applied and is in common use upon the New Haven system, seems to be altogether better. It is improbable, however, that the suggested terms "contact rail" and "contact trolleys" will displace the older and better established names "third-rail" and "trolleys." The trolley-wheel form of contact is so narrowly limited to this particular use as to make unnecessary a further descriptive prefix, but it is believed that the term "contact shoes" will be considered preferable to the term "sliders" and will secure universal acceptance.

The writer confesses to a prejudice in favor of the older form of spelling "pantagraph," as preferred by the lexicographers.

E. H. McHENRY.

Nominal Rating of Railway Motors

GENERAL ELECTRIC COMPANY

SCHENECTADY, N. Y., Aug. 6, 1915.

To the Editors:

Now that the committee on standards of the American Institute of Electrical Engineers has reached a decision on the subject of rating railway substation machinery, and has issued the new rules, I wish to express my belief that the committee acted most wisely in retaining in the rules the so-called "nominal rating" for railway apparatus. One of the strongest reasons for retaining this rating, in my mind, is the fact that the nominal rating, involving the two-hour overload after a continuous run, has been in general use in this country for many years, is well understood by railway engineers and operating men generally, and has been entirely satisfactory in the vast majority of cases. The proposition to eliminate this form of rating and substitute a single continuous rating has, so far as I know, arisen within the institute and not from any general dissatisfaction with the existing rating.

I most thoroughly indorse the excellent work of the standards committee of the institute and sympathize heartily with their attitude as respects the simplification of ratings. At the same time I have been much impressed with the opportunity for the institute to

solidify and extend its prestige in the railway industry generally by recognizing in its standardization rules the established good practice in the art.

It is a debatable question as to how far the institute should endeavor to create new engineering methods through the medium of its standardization rules. I think that we should assume a progressive attitude in formulating these rules, but it is not the medium through which we should endeavor to create radically new engineering practices. The open forum of the institute is the proper place to present and discuss new ideas, theories and practices. The standardization rules, it seems to me, should be the crystallization of the best practice of the times, with the supreme object of receiving general approval and adoption in practical work.

There are many situations in which the continuous rating is preferable and, if the general practice can in course of time be brought around to the exclusive use of the continuous rating, it will be most appropriate for the institute to then discontinue the recognition of the nominal rating. The rules as issued recognize either the flat, continuous rating or the nominal rating, and in this respect, as in substantially all other essential matters, appeal to me as being in excellent practical shape and should be left unchanged for a considerable period so they may be digested and assimilated into the regular commercial channels of the industry.

W. A. Del Mar, in his communication printed on page 21 of the issue of the ELECTRIC RAILWAY JOURNAL for July 3, advocates the continuous rating to the exclusion of the nominal rating, but at the same time proposes that a special specification be prepared for every individual case in which there would appear not only the continuous rating, which represents the energy-dissipating ability of the machine, but also some expression representing the thermal capacity. It is entirely conceivable that for every situation there is an ideal relation between continuous capacity, short-time capacity and momentary capacity, and it is also possible with complete knowledge of the railway service to express these different requirements in a specification in each individual case. Railway engineers who are familiar with the industry will realize, however, that this would be practically very difficult if not impossible. The capacity of railway motors for rolling stock is determined in this way, but this is a relatively simple problem as compared to a similar method for substation apparatus because the load or duty on railway motors is not subject to a great deal of change after the initial determination. If it were possible to specify the exact railway service and exactly to match the service requirements as to continuous and overload capacity when the substations were installed, the requirements undoubtedly would be modified so radically, as the business of the railway company increased or when its lines were extended, as to make the apparatus unfit unless a large factor of safety were applied in the first instance. It would, moreover, be manifestly very undesirable to impose upon the manufacturers the great variety of converter, generator and transformer specifications that such a scheme would entail. This would tend to make all machines special and vitally affect the cost and deliveries. The attempt to use such an ideal scheme would in a short time, I believe, evolve a general rating which would probably be expressed in terms very similar to, if not identical with, the present nominal rating, which does take care of continuous capacity, short-time overload capacity and momentary maximum capacity.

While the present nominal rating may not accurately represent the duty in every particular case it does in a

general way define those characteristics of the apparatus which are important and makes it possible to compare different machines in a way that represents their ability to meet the service for which they are intended.

G. H. HILL, Assistant Engineer,
Railway and Traction Department.

Girder and High T-Rail Renewals

DETROIT, MICH., Aug. 7, 1915.

To the Editors:

The article on girder and high T-rail renewals in the *ELECTRIC RAILWAY JOURNAL* of July 31 was of unusual interest. One year ago my assistants and I wrote letters to the chief or maintenance engineers of steam roads with whom we were acquainted and asked for the limit of wear, or the life of rails, in their practice. On these roads the traffic and management differ widely. Extracts from the answers to our letters follow:

Union Pacific.—“On main track, on main lines, the wear on the head of 80-lb. and 90-lb. A.S.C.E. and A.R.A. open-hearth rail when released is seldom more than $\frac{1}{8}$ in. At this time it has carried 100,000,000 tons of traffic, but there are many other factors, such as threatened breaking down of the head, excessive batter at joints and the development of defects of various kinds in increasing number as the rail gets older. On tangents, the wear on the side of the head is usually a negligible quantity.”

M. K. & T.—“In main-line service using 75-lb. A.S.C.E. sections, the limit of wear is not more than $\frac{1}{4}$ in., or about 15 per cent of head area.”

Missouri Pacific.—“On main lines we allow from 4 16-in. to 5 16-in. vertical rail head-wear, by measurement directly over the inside line of the web. On branch lines, 6 16-in. wear is permitted.”

Rock Island.—“Have considered that when 10 per cent of the rail, or 25 per cent to 30 per cent of the head area, is worn, the rail should be scrapped. This may not be definite but is representative.”

A. T. & S. F.—“We generally replace main-line tangent A.S.C.E. rails when they are worn about $\frac{1}{4}$ in. from flange wear.”

Michigan Central.—“In most cases, main-line rail is not renewed on account of a worn head, its life being generally determined by the battering of the ends at joints. Our rail-saw foreman advises that $\frac{7}{64}$ in. is the average amount that our 100-lb. rails, taken from the main track, are worn down when they are turned in for sawing before relaying on branch lines.”

Grand Trunk.—“We permit our 70-lb. to 90-lb. rails to wear on the heads about $\frac{1}{8}$ in. before removing them from main lines to side tracks.”

In the appraisal of electric railway properties, the railographs of the actual wear of the rail head show the following:

On interurban lines in high-speed service, the wear at the flange side of the rail head is as great and is as important as the wear on the top of the rail head. Flange wear at the middle of the rail is usually greater than at the ends.

On city lines in low-speed service with standard 7-in., 91-lb. T-rail and welded joints, the wear on the head of the rail is much greater than the gage side, therefore wear on the head of the rail determines the life. In a comparison on the basis of service, a rail which is well worn may be safe for low-speed service and not safe for high-speed service.

In a comparison on the basis of height of rail, a careful examination of 7-in. and 9-in. rails with continuous joints and with about the same sectional area in the base and in the head and under the same traffic shows

that the surface bend, caused by low joints, is much less in the 7-in. than in the 9-in. rail. The reason for this is not clear to the writer although it is the usual cause for renewals.

The wear of rail heads is not proportional to years of wear but to car traffic, particularly since automobiles have become common for trucking. Data are much needed on the number of million tons of ordinary double-truck car traffic which will wear out the rail head of common 7-in., 91-lb. T-rail, when laid with welded joints.

The writer, after making thousands of railographs and after long experience in track construction and renewals and in track appraisals, holds to the following:

1. Rail heads of modern 7-in., 91-lb. T-rail with welded joints, laid on broken stone or on concrete ballast, on tangent level track, can be worn to 50 per cent of the rail-head area with safety.

2. Common concrete ballast with 8 in. of concrete surrounding the ties, in paved streets, lasts twice as long as the rail.

3. Common oak ties buried in concrete, on paved streets, will last thirty to thirty-six years.

4. Economy of operation demands that advantage be taken of the above three facts in planning future renewal of rails, ballast and ties.

EDWARD P. BURCH, Consulting Engineer.

Hand-Brake Pressures

OFFICE OF ALBERT S. RICHEY, ELECTRIC RAILWAY
ENGINEER

WORCESTER, MASS., July 29, 1915.

To the Editors:

One may be led astray in trying to compare the formulas corresponding to Figs. 3 and 1 in the instructive and valuable article by Mr. Horne on page 67 of the *ELECTRIC RAILWAY JOURNAL* for July 10, 1915, in the manner suggested in that article. The following study gives a comparison of the total available truck-rod tensions resulting from a given hand-brake rod tension applied to each of the systems illustrated by Figs. 1 and

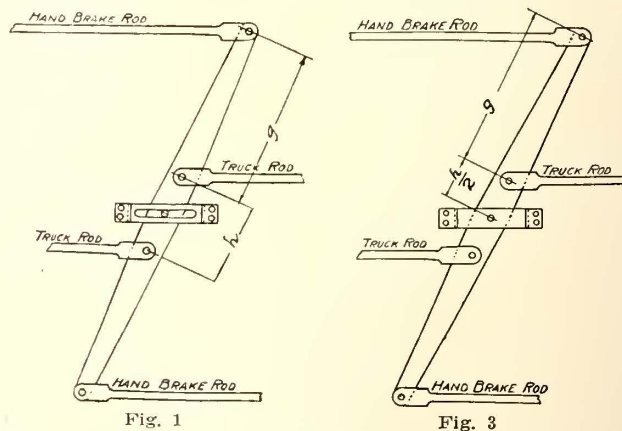


Fig. 1
Fig. 3
BRAKE RIGGINGS WITH FLOATING AND PIVOTED LEVERS
RESPECTIVELY

3, respectively. In the original article the ratio between the length h and the length g in Fig. 3 is one-half the ratio of h to g in Fig. 1. The distances between the truck rods and between the hand-brake rod and the truck rods are respectively the same in both figures. Therefore, if the two systems are to be compared, it is necessary to give the lengths their true values. To accomplish this it is convenient to express the length h in Fig. 3 in terms of h in Fig. 1. This gives the true value $h/2$, which should be instead of h in connection

with Fig. 3. This has been indicated on the accompanying drawings reproduced from the article but with the change suggested.

If now the hand-brake rod tension X be applied to the system shown by Fig. 3, we have the equation of equilibrium

$$X \left(g + \frac{h}{2} \right) = P_f \left(\frac{h}{2} \right) + P_r \left(\frac{h}{2} \right) \quad (1)$$

from which the sum of the tensions in the truck rods is

$$P_f + P_r = \frac{X (2g + h)}{h} \quad (2)$$

Considering now the system shown by Fig. 1. The tension X in the hand-brake rod will give the tension in the front truck rod

$$P_f = \frac{Xg}{h} \quad (3)$$

and in the rear truck rod

$$P_r = \frac{X(g + h)}{h} \quad (4)$$

Adding equations (3) and (4), the sum of the tensions in the front and rear truck rods is

$$P_f + P_r = \frac{Xg}{h} + \frac{X(g + h)}{h} \quad (5)$$

$$= \frac{X(2g + h)}{h} \quad (6)$$

The right-hand members of equations (6) and (2) are equal, therefore a given tension applied to the hand-brake rod will produce the same total truck-rod tension in the systems shown by Figs. 3 and 1.

WILLIAM C. GREENOUGH.

[NOTE.—A copy of Mr. Greenough's letter was sent to Mr. Horne, who replied as below.—EDS.]

LORD MANUFACTURING COMPANY

NEW YORK, Aug. 12, 1915.

To the Editors:

I think that Mr. Greenough's points are very well taken and that perhaps my explanation of the formulas might have been more clearly set forth. However, the data contained in the article referred to are absolutely correct, but I find upon going over the entire matter that my illustrations may have been somewhat misleading, and I am sure it was the illustrations that led Mr. Greenough astray when perusing the article.

The figures illustrating the article were taken from the Lord Manufacturing Company's "Hand-Brake Bulletin" and, as the illustrations were on different pages of the bulletin, it was not noted that the dimension h shown in Figs. 1 and 3 was not made to the same scale. Assuming that the dimension h is equal for both of the types of brake rigging shown, the formulas contained in the article on hand-brake pressures will be found to be correct.

L. W. HORNE, General Manager.

Safety Commission at Portland, Ore.

Portland, Ore., has one of the most representative "safety" commissions in this country. The chairman is H. P. Coffin, an active member of the Automobile Club of Portland and an indefatigable worker for safety. The other members are as follows: B. F. Boynton, claim agent Portland Railway, Light & Power Company; John T. Moore, captain of police and chairman of the bureau of the city in charge of traffic; B. F. Dowell, chief of the fire department; Jay Stevens, fire marshal, who has personally delivered a number of lectures during the past year to the school children on safety; H. E.

Thomas, city editor *Oregonian*; R. L. Withrow, *Evening Telegram*; Marshall N. Dana, *Oregon Daily Journal*; L. R. Alderman, superintendent of schools; A. S. Kirkpatrick, city traffic engineer, who has installed about 500 warning signs in various parts of the city, drawing the attention of the drivers of vehicles to conditions ahead; Guy Talbot, president Pacific Power & Light Company; F. L. Burkhalter, general superintendent at Portland of the Southern Pacific Railway and chairman of the committee of safety in transportation; A. M. Churchill, a prominent attorney, and A. H. Averill, a well-known merchant.

Southern California Committees

The southern California committees, the headquarters of which are 794 Pacific Electric Building, Los Angeles, are getting together on a plan of entertainment for the delegates of the American and Manufacturers' Associations to the convention. While no definite plans for entertainment have yet been made, the general plans have been discussed and the following organization is in charge: General chairman, J. McMillan, Pacific Electric Railway; secretary-treasurer, K. E. Van Kuran, Westinghouse Electric & Manufacturing Company, and the following committee chairmen: Finance, Paul Shoup, Pacific Electric Railway; San Diego entertainment, B. M. Warner, San Diego Electric Railway; reception, Seymour Swarts, Great Western Smelting & Refining Company; publicity, D. W. Pontius, Pacific Electric Railway; program, R. H. Husbands, Pierson-Roeding Company; club courtesies, C. A. Henderson, Los Angeles Railway; transportation, A. W. Arlin, General Electric Company; barbecue and music, L. O. Lieber, Los Angeles Railway; evening entertainment, S. I. Wailles, manufacturers' agent; Catalina trip, F. F. Small, Pacific Electric Railway, and San Francisco registration, H. H. Hale, Galena Signal Oil Company.

There is very great interest in the coming of the visitors in Los Angeles, Pasadena and San Diego. The southern California railway men are also planning for a special train to San Francisco, with provision for the comfort and convenience of the delegates from this section.

Joint Order by New York Commissions

For the first time in the history of the Public Service Commissions of New York State a joint order was adopted during the week ended Aug. 7 at a joint meeting of the two commissions. Commissioner J. Sergeant Cram acted as chairman of the commission for the First District, while Chairman Seymour Van Santvoord was presiding for the second district. The joint order provides for the removal of grade crossings and other obstructions on the lines of the New York & Harlem Railroad (New York Central) and the New York, New Haven & Hartford Railroad near 241st Street in The Bronx. It also orders a shifting of the tracks and the construction of a viaduct to carry the street, so that present dangerous and inconvenient conditions will be done away with and the full effect of recent grade-crossing improvements in Mount Vernon will be enjoyed. Mount Vernon is in the second district, and the improvements there were ordered some time ago by the second district commission, but owing to conditions in New York City, just south of the Mount Vernon line, the new highway there could not be used until a connection from the New York City end was provided, and the joint order adopted during the week is to bring about the completion of the improvement on the New York City side.

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.)

Trolley Wheels of 10-In. Diameter

BY F. A. MILLER, SUPERINTENDENT POWER AND EQUIPMENT
OAKLAND, ANTIOCH & EASTERN RAILWAY

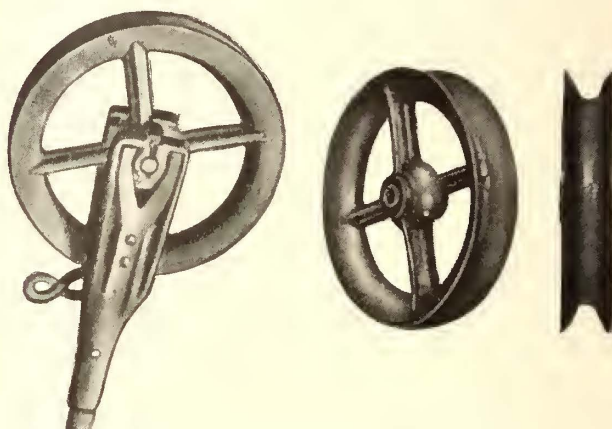
On Sept. 3, 1913, the Oakland, Antioch & Eastern Railway commenced to operate trains between Oakland and Sacramento, Cal., a distance of 85 miles. This distance is covered in from two hours and forty-five minutes to three hours; from nine to eleven minutes of this time is taken by the train ferry, 38 miles from Oakland. Direct current at 1200 volts is used, and each motor car is equipped with four 120-hp. motors, Westinghouse Type 322-E, two trolleys of the ordinary type and a pantograph collector for operation over the lines of the San Francisco-Oakland Terminal Railways. Figs. 1 and 2 show the appearance of the cars with trolley up over the pantograph and with the trolley down and the pantograph up.

The trolley wheel first in use was the No. 4 Kalamazoo. This size gave trouble at the very start. During September and October more than 50 per cent of delays due to car defects were caused by trolley wheels and poles. While trains were crossing on the ferry the trolley wheels would be changed, and in the case of limited trains they had to be changed again at Sacramento. Even then many wheels were lost because the arcing was so severe that the pins would be burnt off. Of course, the wheels became very rough. In particular, where the old type of overhead construction was used, they would jump off the trolley wire a great deal, damaging the overhead, bending trolley poles and causing other trouble common to trolley operation.

On Oct. 2, 1913, the first of the 10-in. trolley wheels was placed in service on car No. 1011. This was exactly like the No. 4 Kalamazoo except for the larger diameter. A trolley harp of the Kalamazoo type was made to take this large wheel. The same contact springs, washers, bushing and $\frac{5}{8}$ -in. pin were used as for the No. 4 wheel, so that if the large wheel should be lost on the road the small one could be installed. Up to Nov. 6, 1913, Car No. 1011 had made more than 5200 miles and it was evident from an inspection at that time that the bushing would outwear the wheel. Other wheels installed have a similar history. Since

Nov. 1, 1913, trolleys and trolley poles have caused 5 per cent of the delays chargeable to car defects, and at present a trolley defect is almost unknown.

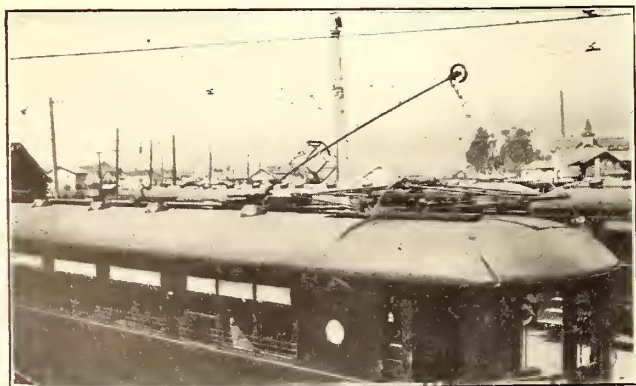
Fig. 3 shows a 10-in. wheel and harp. Figs. 4 and 5 show a 10-in. wheel which has been worn through after the car on which it had been installed had run 5600 miles. The bushing shows very little sign of wear. The wheel weighs $10\frac{1}{2}$ lb. and operates on a tension of 35 lb. 21 ft. above the rail; the harp is made of manganese



A 10-IN. TROLLEY WHEEL—FIGS. 3, 4 AND 5—THE 10-IN. WHEEL NEW AND AFTER 5600 MILES OF SERVICE

bronze. The price of the wheel is \$3.20 f.o.b. Oakland complete with bushing, and the price of the harp is \$1.20. The ordinary car oil used to lubricate the wheels seems to be of just about the right consistency for this work. The most noticeable difference in the operation of these two sizes of wheel is the absence of arcing with the larger one. The wheels have a very smooth appearance after having made the mileage stated, and present operating conditions show an average life of 6500 trolley-wheel miles.

At the present time bus lines have been installed so that one trolley can supply more than one motor car, and one trolley is used on five-car trains consisting of two motor cars and three trailers on a maximum grade



A 10-IN. TROLLEY WHEEL—FIG. 1—WHEEL UP FOR O. A. & E. SERVICE AND PANTOGRAPH DOWN



A 10-IN. TROLLEY WHEEL—FIG. 2—PANTOGRAPH UP FOR KEY-ROUTE SECTION AND WHEEL DOWN

of 4.6 per cent. Under these conditions one wheel collects as high as 900 amp. continuously for thirty minutes and 450 amp. continuously for one and one-half hours, there being no noticeable heating until 1200 amp. has been reached.

Train Resistance of Electric Cars at Starting

BY D. D. EWING, ASSISTANT PROFESSOR OF ELECTRICAL ENGINEERING PURDUE UNIVERSITY, LAFAYETTE, IND.

A vast amount of experimental work has been done and much has been published on the general subject of train resistance. There is not, however, a great deal of published material available on the subject of train resistance of electric cars at starting. Some interesting data on the subject have been obtained during the past year by means of the Purdue University test car which has the dimensions and equipment, as shown in Table I.

As this car is not in regular service it is, no doubt, "stiffer" than one which works the usual daily mileage, and the starting-resistance values obtained are higher than those to be ordinarily expected. The tests are to be continued on cars in regular service. The results of the present tests are of interest for comparison with running resistance for the same car and with such few starting resistance data as are available.

To determine the effect of track characteristics on starting resistance, tests were made on sections of track having different characteristics. These characteristics are tabulated in Table II.

The average super-elevation of the outer rail of track "C" was $3\frac{1}{8}$ in. The minus sign before the per cent grade for track "C" indicates that the grade was a descending one for forward motion of the car. The alignment of the rails was good but not first class.

Two different methods of determination were used. In the first, or current-tractive effort method, the starting resistance was determined by measuring the motor current that was just sufficient to perceptibly move the car and then, from the performance curves of the motors, finding the tractive effort which corresponded with this current. The motor performance curves had been determined in a previous test. In making the starting resistance tests the motor current was increased very gradually until the car started to move, by decreasing the resistance of a water rheostat which was connected in series with the motors.

In the second method the external force applied at the drawbar, which was just sufficient to start the car, was measured by a traction dynamometer. This force was applied by means of a windlass. The dynamometer

used was calibrated by checking its readings against those of an Olsen testing machine.

In both methods of determination the car was moved alternately forward and backward over the test sections of track. As the current or force was always a maximum the instant before the car started to move, in taking readings it was only necessary to note the maximum current or force exerted during the starting period.

A summary of the test data is given in Table III.

The tests were not all made on the same day, but they were made under similar weather conditions and, as may be seen in the column of Table III headed, "Air Temperature," the temperature of the air for the different tests was approximately the same.

Two different bearing conditions are recorded in Table III. In all of the tests the wheels were turned over a sufficient number of times to insure a film of lubricant between bearing materials, but in the third group of tests the car was operated for a sufficient length of time to bring the bearings up to the condition which they might be expected to have after an extended run.

Under the heading, "Total Applied Force," the minimum and maximum observed values as well as the average of the observed values are recorded. The variations in the applied force seemed to be caused largely by faults in the rail alignment, the minimum values obtaining when the car was started with one or more wheels moving down into a depression and the maximum values obtaining when the wheels were moved out of the depression. The great majority of the observations gave results which were very close to the calculated average.

The force in pounds per ton of car weight was calculated by dividing the total applied force by the weight of the car.

The figures in the last column of Table III were found by taking the arithmetical average of the averages for forward and backward motion of the car.

Comparing the results obtained by the two methods it will be noted that the results agree very well for straight level track. In general, for the data which are comparable, the dynamometer method gave slightly higher values than the current-tractive effort method. This is as it should be, since the tractive effort which was read from the motor performance curves was computed from the torque of the motor as measured at the motor shaft, and, therefore, did not include the tractive effort necessary to overcome the motor journal and brush friction.

Some measurements were made with the dynamometer with the car on track "C," but they were not very satisfactory as it was difficult to keep the direction of

TABLE I—DIMENSIONS AND EQUIPMENT OF TEST CAR

| | |
|--------------------------------------|--|
| Weight | 27 tons (approx.) |
| Length over bumpers | 43 ft. 4 in. |
| Distance between truck centers | 20 ft. 11 in. |
| Length of rigid wheelbase | 6 ft. 1 in. |
| Diameter of wheels | 33 in. |
| Trucks | Brill No. 27 |
| Motor equipment | .4 Westinghouse No. 56 motors, gear ratio, 24:58 |
| Wheel gage | A. E. R. A. Standard |

TABLE II—TRACK CHARACTERISTICS

| Track Section | Ballast | Tie Spacing, In. | Average Grade, Per Cent | Average Degrees Curvature |
|----------------------|---------------------|------------------|-------------------------|---------------------------|
| A | Concrete | 24 | 0.00 | 0.00 |
| B | Dirt (well settled) | 24 | 0.00 | 0.00 |
| C | Cinders | 20 | -0.25 | 17.50 |
| Weight of rail | | | | 60 lb. |

TABLE III—SUMMARY OF DATA

| Method | Number of Observations | Track Section | Direction of Motion | Air Temperature | Condition Bearings | Total Applied Force | | | Force, Pounds per Ton | | | Force, Pounds per Ton Average Both Directions |
|------------------|------------------------|---------------|---------------------|-----------------|--------------------|---------------------|------|------|-----------------------|------|------|---|
| | | | | | | Min. | Avg. | Max. | Min. | Avg. | Max. | |
| Current-tractive | 47 | "A" | Forward | 72 | Cold | 660 | 990 | 1190 | 25 | 37 | 44 | 38 |
| Current-tractive | 59 | "A" | Backward | 72 | Cold | 740 | 1060 | 1340 | 27 | 39 | 42 | |
| Dynamometer | 106 | "A" | Forward | 75 | Cold | 840 | 1050 | 1320 | 31 | 39 | 49 | 39.5 |
| Dynamometer | 60 | "A" | Backward | 65 | Cold | 840 | 1070 | 1350 | 31 | 40 | 50 | |
| Current-tractive | 9 | "A" | Forward | 72 | Warm | 760 | 860 | 1000 | 28 | 32 | 37 | 36 |
| Current-tractive | 27 | "A" | Backward | 72 | Warm | 790 | 1100 | 1300 | 29 | 41 | 48 | |
| Current-tractive | 20 | "B" | Forward | 70 | Cold | 860 | 1020 | 1200 | 32 | 38 | 44 | 38.5 |
| Current-tractive | 20 | "B" | Backward | 70 | Cold | 940 | 1060 | 1400 | 35 | 39 | 52 | |
| Dynamometer | 50 | "B" | Forward | 70 | Cold | 800 | 1100 | 1480 | 30 | 41 | 54 | 40.5 |
| Dynamometer | 50 | "B" | Backward | 70 | Cold | 800 | 1070 | 1120 | 30 | 40 | 42 | |
| Current-tractive | 20 | "C" | Forward | 70 | Cold | 900 | 1200 | 1580 | 33 | 44 | 58 | 47 |
| Current-tractive | 20 | "C" | Backward | 70 | Cold | 1150 | 1340 | 1540 | 43 | 50 | 57 | |

the moving force parallel to the car axis and so they were not recorded in the summary. However, the data thus secured seemed to indicate that on curved track the dynamometer method gave lower values of starting force than the current-tractive effort method, although the values of starting force thus secured were, as might be expected, higher than for straight track. The fact that with driven wheels on a curve there is greater tendency for the wheels to climb the outer rail than with trailing wheels may explain the reason for the lower values of starting force secured with the dynamometer method in the curved-track tests. With the exception of the second group of dynamometer tests the results indicate that a larger starting force was required for the backward direction of car motion than for the forward direction. No satisfactory explanation was found for this difference. If the current-tractive effort method only had given such results the difference might have been attributed to the motor-brush settings. As far as the past history of the car is concerned, it has been operated as much in one direction as in the other and therefore unequal wear of the gearing as a cause for the difference seems to be out of the question.

With the bearings warm, the average value of the starting force for both directions of car motion was lower than for bearings cold, other conditions being similar. Also the average value for the starting force in the backward direction was slightly higher than for the same direction of car motion over the same track with bearings cold. The difference is not great, however, and as fewer observations were taken with the bearings warm there is greater chance of the difference being due to observational errors.

The dirt ballast of track "B" was well settled and as the ground was dry the track was almost as rigid as track "A." Both methods of determination gave slightly larger starting forces for track "B" than for track "A."

The grade of track "C" caused a greater difference between the starting forces for forward and backward car motion than was found in the other two track sections. The effect of grade averages out, however, if the average force for both directions is found. As shown in the last column this average force is 9 lb. per ton greater than was found by the current-tractive effort method for straight, level, rigid track. This difference is partly due to the curve and partly to the ballast, as the cinders used in ballasting the curve made a roadbed which was somewhat elastic. With the data in hand it is not possible to separate the above difference into its components. Comparing the average results, both directions, secured by the current-tractive effort method on tracks "B" and "C," the train resistance of the car on track "C" is 8.5 lb. per ton greater than on track "B." It is quite probable that a small part of this difference is due to the difference in ballast, but the greater part of it is due to the track curvature. If it all be charged to the account of curvature the curve resistance would be $8.5/17.5$ or 0.48 lb. per ton per degree, a figure which compares favorably with that used by many engineers for curve resistance.

Of the two methods of determination employed, the current-tractive effort method was by far the most convenient in its application. On curves it gives values of starting force which are higher than those given by the dynamometer, but these values more nearly correspond with the actual conditions for motor cars while the dynamometer values would be more nearly correct for trail cars.

As was pointed out in a preceding paragraph, the force necessary to start a car is greater than that neces-

sary to keep it moving. A number of tests showed that a force of approximately 600 lb., or 22 lb. per ton of car weight, was necessary to keep the car moving perceptibly on track "A," while Table III shows that an average force of 1060 lb. was required to start the car. Of course, part of the force necessary to start the car was required to accelerate it and its rotating parts but, as the rate of acceleration was very low, the accelerating component of the starting force was small.

Previous tests have shown that for track conditions a little below average, the train resistance of this car is about $12\frac{1}{2}$ lb. per ton at 5 m.p.h., and 22.5 lb. per ton at 20 m.p.h. (ELECTRIC RAILWAY JOURNAL, Aug. 15, 1914, page 304). Its train resistance when just perceptibly moving is, therefore, equal to that at 20 m.p.h., approximately double that at 5 m.p.h. and one-half that which obtains at the instant of starting.

Briefly summarized the results show that for the particular car used and conditions of test:

The force necessary to start the car on straight track is about 40 lb. per ton.

The starting force is slightly less on a rigid roadbed than on an elastic one, but the difference is not great.

The curve resistance at starting is between 0.4 lb. and 0.5 lb. per ton per degree of curve, for curves of fairly long radius.

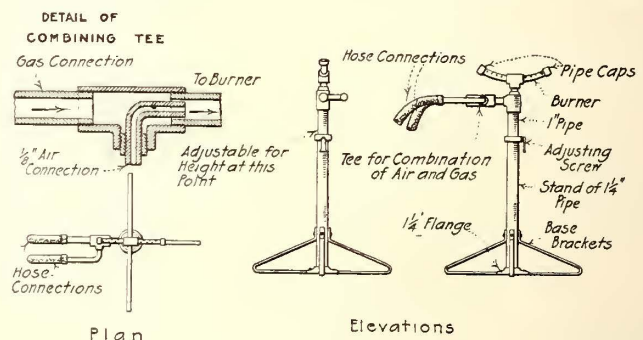
On straight level track the current-tractive effort method and dynamometer method give results which agree very well.

The tests described were carried out as thesis work by C. L. Lett and M. V. Kroft, under the writer's direction.

Gas Heater for Commutators

BY R. H. PARSONS, ELECTRICAL FOREMAN

To obtain the best results in soldering armature coil leads into the commutator bars, the latter should be preheated by means other than the soldering iron. The accompanying illustrations show a simple torch for this purpose, which operates with gas and compressed air and heats about one quarter of the commutator bars at a time. In operation it is placed underneath the commutator, thus heating one side while soldering is being



CONSTRUCTION OF GAS HEATER FOR COMMUTATORS

done on the other. As the heater consists chiefly of pipe and pipe fittings, it can be made easily in any shop.

The standard is a piece of $1\frac{1}{4}$ -in. pipe about 14 in. long, to the bottom of which is screwed an ordinary $1\frac{1}{4}$ -in. pipe floor flange. Brackets made of $\frac{1}{4}$ -in. x 1-in. flat iron are attached to the bottom of the standard extending in four directions and forming a stable base. On the top of the standard is shrunk a $\frac{3}{4}$ -in. x $\frac{3}{4}$ -in. ring for the purpose of holding the thread of an adjusting screw. The torch or burner consists of two pieces of $\frac{1}{2}$ -in. pipe bent in the arc of a circle to conform to

the circumference of the commutator. It has a number of $\frac{1}{8}$ -in. holes bored in the top for the exit of gas and air, which have been combined in the combining tee.

The torch is supported on a 1-in. pipe which slides in the standard, being clamped thereto by means of a set screw. This arrangement permits of adjustment of the height of the torch.

The combining tee is the most important part of the torch, but is very simple, consisting of a $\frac{1}{2}$ -in. tee fitting, to the middle outlet of which is connected a $\frac{1}{8}$ -in. nipple, bushed to fit the $\frac{1}{2}$ -in. thread in the tee and extended well into the larger tee which forms a part of the torch support. The air nipple is made in the form of a nozzle, blowing straight ahead, in order to draw the gas along with it rather than to blow it back. This is necessary as the gas is let in at a low pressure.

The cocks which control the flow of gas and air are mounted on the wall so that there will be no more pressure than necessary on the air hose and gas hose. These must be of good material, light and flexible. In operating the torch the gas must be lighted first after having been turned on in nearly full volume. The air is then turned on and the pressure increased until all of the yellow flame disappears, as the blue flame gives the greatest heat.

The torch has been found useful not only in soldering but also in assembling and tightening commutators when repairing them. The large electrical companies recommend the application of heat for this purpose.

Dispenser for Drinking Water

BY R. W. PALMER, MANAGER CLEVELAND & ERIE RAILWAY, GIRARD, PA.

This company recently decided to equip all of its cars with water dispensers similar to the one shown in the accompanying illustrations. This decision was reached because the general conditions as they exist in connection with the supply of drinking water are far from satisfactory. In this day and age of the "public-be-pleased" policy, it has seemed to the writer that the very important duty of supplying the traveling public with pure drinking water has been overlooked by many interurban and steam railroads. Most up-to-date interurban cars are equipped with water tanks for this purpose and these tanks are filled and iced when the cars are first placed in service, but it is not surprising that the traveling public does not use the water drawn from the coolers as there is every reason to believe that it is not fit to drink. It is a common sight, where trains are being made up and there is a layover of sufficient length, to observe a car cleaner armed with a dirty hose climb to the top of a coach and after removing the cover of the water tank ram the hose, dirt and all, into the cooler to replenish the supply of "pure" drinking water which must, by law, be dispensed in sanitary drinking cups. After the necessary amount of water has been run in, the hose is removed and a second car cleaner fills the remaining space with ice as dirty as the hose.

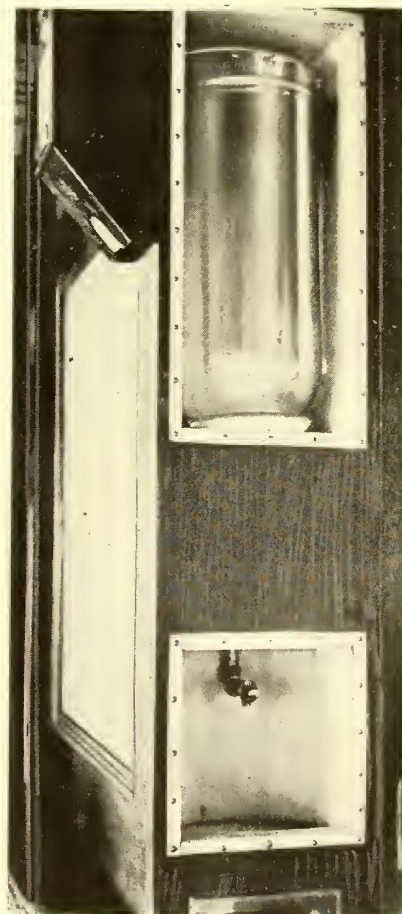
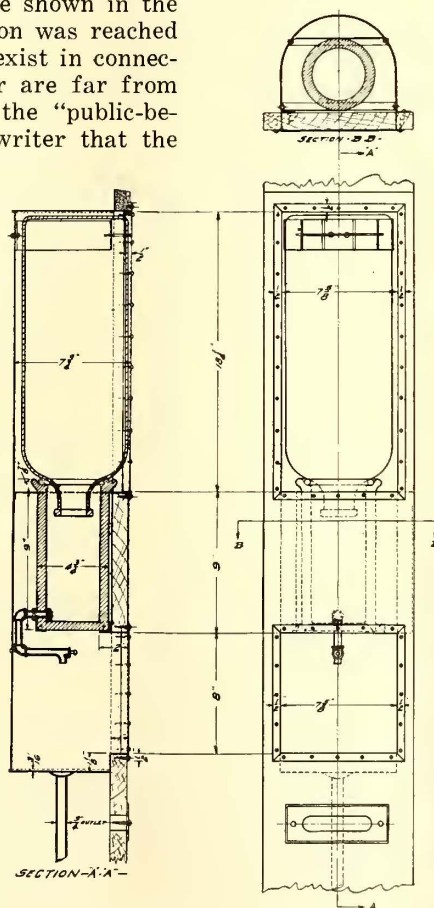
Those who are fortunate enough to witness the tank-filling process

promptly decide to forego the pleasure of quenching their thirst until the car or train has arrived at the end of the journey.

To overcome the objectionable features referred to, this company is supplying water from inverted glass bottles supported on porcelain jars. Fresh bottles of water are placed in the cars each morning and replaced during the day as required, and once each week the jars are thoroughly cleaned. The water is supplied from a spring located in the company's park and, as this water is analyzed periodically, the public can feel reasonably sure that pure water is being supplied. On account of the limited space available in the toilet rooms, which were already built in the cars, no arrangement has been made for icing, and so far the absence of ice has not been found objectionable. However, this can be taken care of by inclosing the porcelain jars in receptacles for holding ice, and such would be an ideal arrangement where a space of about 12 in. square to 13 in. square is available.

Free-cup dispensers are supplied and, since the cars were equipped with water in August, 1914, a total of 30,000 cups have been used, indicating the demand for service of this kind. The sanitary cups, including the printing on both sides, cost \$1.40 per thousand, which expense is more than offset by the advertising that is obtained.

For the primary purpose of building up a freight business for the railway company, directors and officers of the company have organized a separate company to promote the sale of the spring water in Erie, Pa., and Conneaut, Ohio. On the water dispenser is some lettering stating the kind of water that is being dispensed, and this acts as an advertisement for the water company.

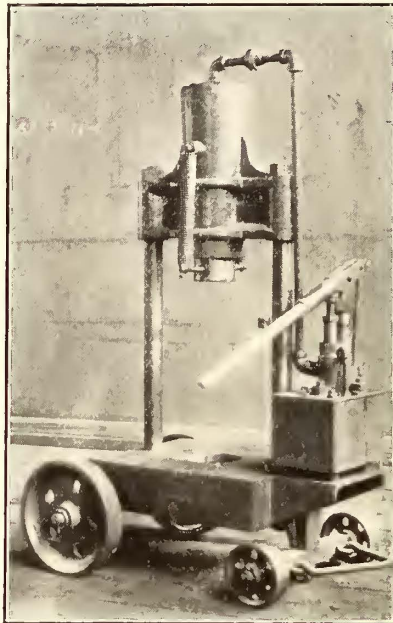


CLEVELAND & ERIE RAILWAY SANITARY WATER DISPENSER

Hydraulic Press for Bearing and Bushing Changes

BY E. L. STEPHENS, MASTER MECHANIC LOS ANGELES (CAL.) RAILWAY

A small hydraulic press of 15 tons capacity has been designed and built by the Los Angeles Railway. The press illustrated herewith was designed for pressing armature bearings in and out of the housing, and the same press is now used in various maintenance repairs,



LOS ANGELES HYDRAULIC PRESS FOR BEARING AND BUSHING CHANGES

such as rebushing trolley base stands, trolley wheels, broaching of controllers and air-brake handles, and in handling many removable parts where bushings and pins are applied under pressure.

For this press there is also an attachment used for pulling and driving pinions, which has given excellent results.

United States Consul William J. Grace at Aden says that an electric railway between the various parts of Aden—Tawahi, Maala, Crater and Shaikh Othman—would undoubtedly pay well upon the comparatively small capital required for its installation. Mr. Grace says that not only could it carry passengers between these places, but also freight from Tawahi and Crater to the wharves at Maala.

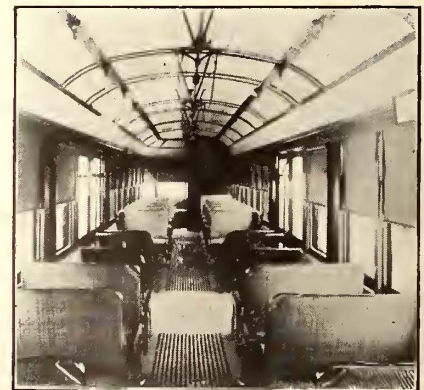
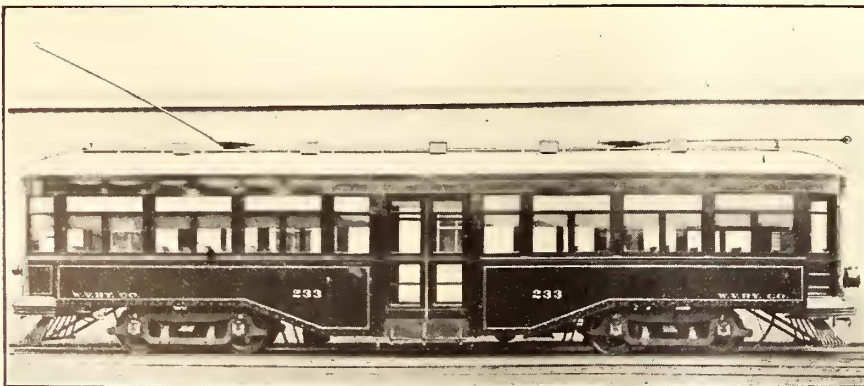
Center-Entrance Cars for Suburban Service

The Washington-Virginia Railway recently placed in service five new center-entrance, all-steel cars, for operation on the Mt. Vernon and Falls Church divisions of the system. The design was adopted because of the large tourist travel that exists on these lines in uncertain numbers during the mid-day hours the year round, as well as a heavy suburban commuter traffic during the morning and evening hours, these conditions creating a traffic problem of unusual difficulty. The company's lines extend from the business section of Washington, D. C., through the historic counties of Alexandria and Fairfax, and form the means of transportation to Mt. Vernon, the home of George Washington, which is maintained in the same state as it was when occupied by him. Service is furnished to Alexandria City, Arlington National Cemetery, Fort Myer and through Falls Church to Fairfax Court House. To the many points of historic interest en route several hundred thousand persons come each year to pay homage to past history, and it was to carry such pilgrims as these, together with the caring for the steadily increasing number of suburban commuters, that the lines were built.

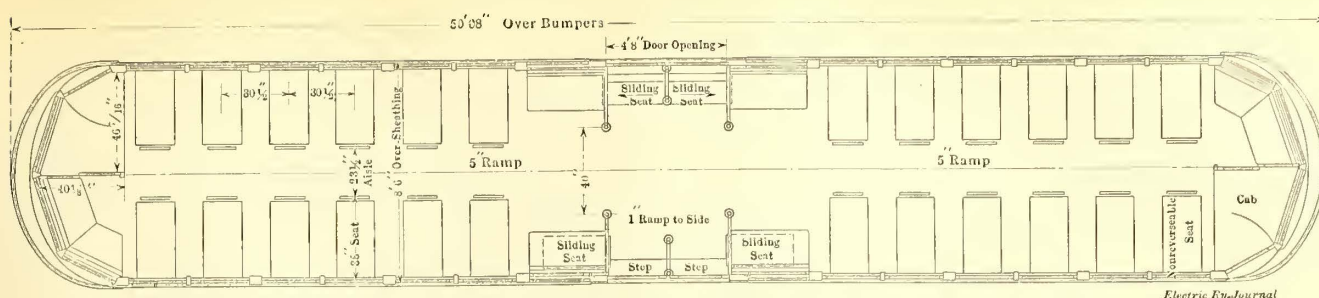
The traffic conditions encountered on one division at present necessitate the operation of two-car trains (motor and trailer), with a combined seating capacity of 104 and weighing 37 tons total, for handling the rush-hour traffic. During the mid-day and late evening, one fifty-two-seat car weighing 25 tons is insufficient and two fifty-two-seat cars are too much. The traffic encountered on the other division is handled by single forty-four-seat cars, weighing 22 tons each, which are insufficient during the rush hours, unless a large number of units are operated, but which are ample to handle the traffic during the mid-day and late evening. In order to meet all these conditions the new cars were designed with a seating capacity of sixty-four, thereby giving a flexibility of equipment suitable to the needs on both divisions and reducing the number of units that have to be operated. The use of a center entrance permitted this large seating capacity without excessive car length or weight, so that its incorporation in the design was an obvious step.

CAR BODIES

The new car bodies, which were built by the Southern Car Company, High Point, N. C., are all-steel, except the inside trim which is of cherry with a natural finish, and Agasote headlining with a white-enamel finish. A feature worthy of mention in connection with the center entrance is the elimination of the ob-



EXTERIOR AND INTERIOR VIEWS OF CENTER-ENTRANCE CAR FOR SUBURBAN SERVICE



SEATING PLAN OF WASHINGTON-VIRGINIA RAILWAY CAR

jectionable well at the center, a 5-in. longitudinal ramp in the floor permitting the use of 34-in. wheels without excessive step heights. One stationary step and one folding step are installed, making three steps to platform level, respectively 13½ in., 12½ in. and 9 in. high. The upper step leaves a 6-in. opening along the doorway, but this is entirely covered over at the blind side of the car by sliding seats, which are concealed under the longitudinal seats adjacent to the door openings when not in use. To secure observation facilities for passengers and a maximum seating capacity the motorman's cab has been made to occupy only one-half of the vestibule, the balance of the space at the ends being utilized for bulkhead seats. The seats are rattan covered and are supplied with aisle arm rests, cherry finish, and sanitary porcelain enamel grab handles. They are 38 in. wide and in general are transverse, with Hale & Kilburn reversible backs.

A table of the general dimensions of the car follows:

| | |
|--|--------------|
| Length over bumpers..... | 50 ft. 8 in. |
| Length over vestibule sheathing..... | 49 ft. 4 in. |
| Length between bolster centers..... | 28 ft. |
| Width over all..... | 8 ft. 9 in. |
| Height from top of rail to top of trolley plank..... | 12 ft. ¼ in. |
| Wheelbase of trucks..... | 6 ft. 1 in. |
| Weight complete..... | 58,000 lb. |

The company's system of fare and ticket collection necessitated a door-opening device that would be under the conductor's control from any point within the car. This reduces to a minimum the time lost in opening and closing the doors, which are electro-pneumatically controlled but which are provided with hand control at the entrance for use in case of failure of the electric device. This control has a safety lock whereby the doors cannot be opened while the car is in motion nor can the car be started while the doors are open, the position of the door being indicated in the motorman's cab by means of signal lights.

The cars are heated by means of twenty electric heaters with thermostat control, these being distributed under the cross-seats. The passenger push-button buzzer system which operates from trolley voltage, together with the heating and door control system, was furnished by the Consolidated Car Heating Company. Ventilation is provided by ten Railway Utilities suction ventilators.

The straps for the conductor's signal bell, register rod and door control are suspended from the headlining by means of brackets run on the longitudinal center line of the car. The curtains are double covered Pantasote, fitted with Curtain Supply Company's inclosed groove-type fixtures. All windows are protected with outside-hung diamond-mesh guard and the upper sash are provided with plain pressed prism plate glass, Pullman style. The lighting layout provides for five circuits with five 23-watt Mazda lamps, each set on the perpendicular line over a seat. All auxiliary apparatus, switches and fuses are inclosed in

an insulated steel cabinet that is located in the motorman's cab.

The trucks are the Standard Motor Truck Company's make, with Association standard axles and rolled-steel 34-in. wheels with 3½-in. treads and 7/8-in. flanges. The Westinghouse Air-Brake Company's type S.M.E. brake apparatus with type D.I.F. compressor, designed for continuous running, is installed, together with a pneumatic slack adjuster. The Sterling ratchet-type hand brake, with Pittsburgh drop handle, is provided.

The well-known H.L. electro-pneumatic control, providing for double-end and train operation, with a specially-designed electro-pneumatic circuit changer was supplied by the Westinghouse Electric & Manufacturing Company. The circuit changer was introduced because the cars have to run on the underground, metallic-return circuit over the streets of Washington, D. C., and on the rail or ground-return circuit outside of the city limits. Formerly, when going from one circuit to the other the change was effected by means of a double-pole, double-throw knife switch which was located in the motorman's cab, and as all current for every device on the car passed through this switch, it necessitated careful manipulation on the part of the motorman or else severe arcs would develop and cause considerable damage. All such circuits have now been removed from the platform, and a like function is performed with considerable saving in time and increased reliability by the adoption of the electro-pneumatic circuit changer, which, together with all other heavy current-circuit apparatus, is suspended from the under side of the car and is manipulated by means of low-voltage remote control from the motorman's cab. All control apparatus is interlocked to prevent current from getting to the motors before the reverser and circuit changer are in the desired positions, and the master controller has to be in the "off" position before the overload trip relay or the circuit breaker can be closed.

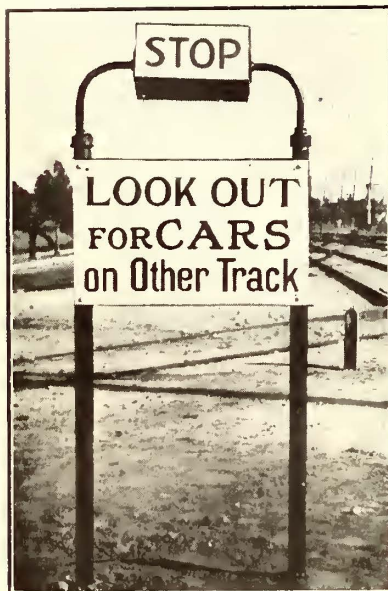
The motors are the No. 306-C-A, box-frame type, which embodies all of the well-known features of the Westinghouse design, including strap-wound, asbestos-ribbon, impregnated field coils, thoroughly secured against vibration by means of heavy springs. The commutator mica is undercut 3/64 in. and extends beyond the commutator bar 1/8 in. to prevent short circuits or other trouble arising from foreign matter accumulating at this point. All armature coils are reinforced at the ends of armature coil slots to prevent rupture of insulation. The gears are the Nuttall Company's BP grade with 22:62 ratio. The Standard oil and waste method of lubrication is used on all bearings. Maximum protection against lightning for all apparatus is secured by K condenser-type arresters with choke coils.

The general plan of the above cars was designed by E. W. King, general manager, and C. A. S. Sinclair,

chief engineer of the Washington-Virginia Railway. The cars were built by the Southern Car Company at High Point, N. C., under the joint supervision of the railway engineer, and J. W. Rich, superintendent Washington-Virginia Railway.

A New Illuminated Warning Sign

The Pacific Electric Railway, Los Angeles, Cal., has designed and constructed an unusual type of warning



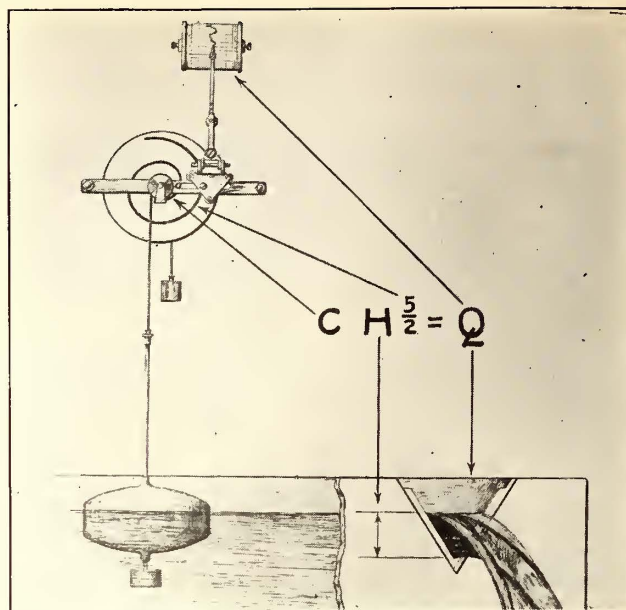
ILLUMINATED WARNING SIGN

light being reflected downward upon the sign. The wires which feed this light are run underground from the station a short distance away, and up through the hollow pipes which serve as supports for the sign.

Measuring Boiler Feed Water

The demand for an accurate continuous record of the weight of water evaporated by the boilers of every power station has led naturally to the development of the flow recorder, and one of these devices, which is illustrated herewith, is now regularly supplied with the Cochrane feed-water heater that is manufactured by the Harrison Safety Boiler Works, Philadelphia, Pa. This flow recorder makes use of the clearly-established law governing the flow of water through a V-shaped weir, practical application being made by dividing the storage tank under the feed-water heater by a diaphragm having a V-notch cut at the top. All water fed to the boilers must pass through this notch. The rate of flow through the weir is dependent upon the head of water, and the record that shows this rate is made automatically by continuous measurement of the water level in the first section of the storage tank.

The measurement is accomplished by means of a float that moves vertically in response to changes in head. This actuates the recording device, through a cam mechanism installed between the float and the recording pen to make allowance for the fact that the flow of water over a V-notch weir varies as the $5/2$ power of the head. The cam is laid out as a spiral groove on a flat circular plate, and a small drum is mounted upon the cam spindle, a thin metal cable connecting this to the float and a counter-weight on another cable serving to keep the first cable taut. The cam serves for any weir, and to accommodate the recorder for use with weirs of different heights it is necessary only to substitute cable drums of the proper respective diameters.



FLOW METER FOR FEED-WATER HEATER TANKS

The cam follower is attached to the pen carriage and the pen rests lightly against a chart drum, the chart being driven uniformly by a clock. The pen, therefore, not only records the rate of flow at each instant, but the area under the pen line is proportioned to the total flow for any elapsed period. The total flow is registered directly without the use of a planimeter by an integrating attachment which consists of a counting train suspended from the pen carriage. This is driven by a small roller, which rests upon the center of an aluminum clock-driven disk. As the pen carriage is moved away from the zero position by increased flow the small roller is carried away the same distance from the center of the rotating disk, and hence is rotated at a rate corresponding to the amount of movement. The total movement of the counting train will therefore correspond to the total flow. A visible pointer moving along a large scale with open divisions is provided to make it possible to read the rate of flow from a distance.

Production of Bituminous Coal in Pennsylvania

Pennsylvania produced 147,983,294 tons of bituminous coal in 1914, according to figures made public by the United States Geological Survey, the value of the output at the mines being \$159,006,296. The great economic loss due to strikes is emphasized by the statement that during the year an aggregate of more than 1,000,000 working days was lost on this account; at the same time the enormous magnitude of the Pennsylvania coal industry is shown by the further statement that this lost time represented only about $2\frac{1}{2}$ per cent of the total amount of time worked. The number of men employed in the bituminous mines of the State was 184,201, the average production per man for each of the 214 days worked being $3\frac{3}{4}$ tons.

At the July meeting of the British Diesel Engine Users' Association it was decided that the allowance made for depreciation by wear and tear on Diesel engines by the revenue authorities was inadequate and that an allowance at the rate of at least 15 per cent a year should be provided. This high rate is interesting in view of the 5 per cent rate that is generally charged against steam-driven power plants.

News of Electric Railways

STRONG COMPANY PLEA FOR WAGE REDUCTION

Brief Review of Significant Statements Made by British Columbia Electric Railway in Its Plea for 15 Per Cent Reduction in Wages

At the opening session recently of the Conciliation Board meeting in the wage dispute between the British Columbia Electric Railway, Vancouver, B. C., and its employees officials of the company asserted that unless some method of reducing expenses was adopted it was only a question of time before the company would become insolvent. In his statement to the board W. G. Murrin, superintendent, proposed a general reduction of 15 per cent in all wages. He said that the alternative would be to cease altogether to give service in certain places, even though that would mean the forfeiture of the franchises. He is quoted as follows:

"Where companies are making big profits it is always urged as a ground for increasing the wage scale. We think it is a proper point to urge the opposite when we no longer are making profits. If we were making profits we probably would be quite willing to run on liberal lines and not urge the general depression. But we are now making no profits at all."

It was shown by means of figures and charts that whereas the use of the so-called tango, or eight for a quarter tickets, had increased the number of passengers on the company's cars, the receipts were slightly less and the cost of operation slightly more. For the month immediately preceding May 10 (the day on which the tango tickets were inaugurated) the passengers carried in the city totaled 1,630,000 and the receipts \$79,898. For the month following the use of the tango tickets the passengers had increased to 2,051,000, but the receipts were only \$79,042. In addition to the slight decrease in receipts the company ran 8000 more car-miles.

The chairman asked if the chief result of the reduction in fare to the company had been to discourage the jitney competition.

Mr. Murrin said:

"We must not blame the jitneys too much. I think the drop due to business depression has been underrated. There are probably 35,000 people who have left Vancouver, and of those who remain large numbers are out of work and do not, therefore, use the cars. The greatest drop in our traffic has been on some of the lines where there is no jitney competition, as, for instance, the interurban traffic on the Lulu Island branch."

Comparing June, 1913, with June, 1915, Mr. Murrin pointed out that in 1913 the receipts for June were \$185,000, of which \$50,000 had been paid in wages to car crews. In June, 1915, the receipts were only \$84,000, while the wages of car crews were \$41,000. Comparing the receipts and revenue for the railway system in the city Mr. Murrin is quoted as saying that it cost the company in May, 1915, 40 per cent more to operate than the receipts, and on the entire system 35 per cent more than the receipts.

The statement of capital invested and dividends for the last ten years showed that the capital had increased from \$7,000,000 in 1906 to \$46,000,000 in 1914. This was for all the company's enterprises, including its railway, light, gas and power properties, and represented actual cash subscribed by debenture shareholders. The largest dividend paid was in 1908, when on a capital of \$9,000,000 the company had earned in the previous year 7.82 per cent. In 1913-1914, on a capital of \$46,000,000, the company earned 4.69 per cent, and in 1914-1915, 2.76 per cent. Since June 30, 1915, there have been no profits; in fact, the earnings, after paying operating expenses, have not even been sufficient to pay interest on the debentures.

The Conciliation Board, before which the question of wages has been brought, is composed of A. G. McCandless, ex-president of the Board of Trade, named by the company; J. H. McVety, president of the Trades and Labor Council, named by the men's union, and Justice McDonald, of the Supreme Court, named by the Ottawa government, to act as chairman. Mr. Murrin and William Saville, chief of the payroll department, are presenting the case for the British

Columbia Electric Railway, while the case of the employees is being presented by Fred A. Hoover, business agent of the Vancouver union, with Business Agent Yates, of New Westminster, and the local presidents of the unions assisting.

CALIFORNIA ENLARGES COMMISSION JURISDICTION

The public utilities act, re-enacted at the last session of the California Legislature, went into effect in that State on Aug. 7. It places under the jurisdiction of the Railroad Commission all privately-owned public utilities within municipalities in the State. Though many cities of California had by vote placed their privately-owned utilities under the control of the commission, a number, including some of the largest cities, had not. These, by constitutional amendment, now lose jurisdiction over the utilities in question, so that the fixing of rates for water, gas and electricity and other regulation of public service corporations is entirely in the hands of the Railroad Commission. The only exceptions are utilities owned by municipalities themselves. For instance, the Municipal Railway of San Francisco does not come under the jurisdiction of the commission, nor does the Owens River aqueduct and water system of Los Angeles. However, the commission has control of these in so far as they operate outside their municipal limits.

The California State Constitution was amended in 1911, so as to enlarge the power of the Railroad Commission, theretofore existing only over railroads, to control all classes of public utilities that the State Legislature should specify. This amendment took effect on March 23, 1912. The municipalities then had power under the constitution to regulate rates of all utilities, public or private, within their bounds as the constitution expressly stated that the cities should retain all existing control of these utilities unless they voted them to the Railroad Commission. The amendment which has just gone into effect was passed in November, 1914.

REVIEW OF MISSOURI COMMISSION

The Public Service Commission of the State of Missouri has issued a statement reviewing its work during the last two years. This statement, slightly condensed, follows:

"The commission, since its creation, has issued 631 formal orders, and so far the utilities have only appealed from nineteen of said orders. Not a single order of the commission has yet been set aside by the circuit courts of this State or the Supreme Court of this State. In every case passed upon by either of the courts mentioned the orders of the commission have been affirmed as reasonable and just. The Springfield light case and the Kansas City, Clay County & St. Joseph Railway commutation fare case are the only cases pending in the federal court to review orders of the commission. After two arguments in the Springfield case, the federal court has granted temporary injunctions, but only upon condition that the company put in a 10-cent rate instead of its old rate of 15 cents, which had been ordered reduced to 8 cents by the commission.

"In some instances the utility is only reviewing a certain part of the order. For instance, in the order issued by the commission against the United Railways, St. Louis, the company is accepting and obeying all of the provisions of the order with one exception. The commission ordered three extensions into new territory. These will require the company to obtain new franchises from the city. The new city charter of St. Louis provides that at the end of ten years the city may condemn the property of any utility accepting a franchise granted under the new charter. An interesting question of law is raised as to what will be the effect if the street railway accepts from the city franchises to make these three extensions under the new charter; that is, whether or not the acceptance of the franchises to make these extensions will place the old franchises of the company under the provisions of the new charter.

"The commission feels that a question of such a serious nature should be determined by the courts, so the effect of

the new charter on the old franchises may be known by the company. All other provisions of the order, regulating the number of cars, sanitation, heating, etc., have been accepted by the company and will be complied with, pending the review of the above question in the courts.

"During the year the commission has adjusted more than 800 informal complaints, where no testimony was required to be taken or formal orders entered. The above figures show that the number of appeals from the orders of the commission is less than 3 per cent. This is far below the appeals taken from the judgment of the circuit courts of this State.

"The public service commission law provides a speedy and simple procedure for reviewing the orders of the commission. The commission in no way attempts to obstruct or prevent any utility from reviewing its orders if the utility is dissatisfied with the findings of the commission. The counsel to the commission does not invoke technicalities to prevent the courts from passing fairly and justly upon any order entered by the commission. In all hearings before the commission, all technicalities are disregarded and the commission attempts to get at the merits of the controversy as shown by the evidence."

NEW OHIO ROAD PERFECTING PLANS

The Cleveland & Ohio Central Electric Railway, formerly the Cleveland, Barberton, Coshocton & Zanesville Railway, has made a number of very important changes in its original plans, both as to route and mode of operation. The original route was from Cleveland to Orrville, through Barberton and Doylestown. The new route, approved by a certificate of the Secretary of State on July 19, extends from Cleveland to Wadsworth, thence by way of Rittman and Smithville to Wooster, which will be the southern terminus of the first division. The final destination of the line is Columbus.

The first division is 55 miles in length by the surveys. Most of the right-of-way and terminal rights have been secured and the contract to build and equip the first division has been awarded to the Lathrop-Shea interests, J. J. Shea, Buffalo, N. Y., being the president of the three construction companies included. The road will be equipped with gas-electric cars manufactured by the General Electric Company. It is also proposed to operate a freight service with 60-ton gas-electric locomotives. The tracks will be laid with 80-lb. rails. Limited cars will make the distance between Cleveland and Wooster in two hours. The road will enter Cleveland on West Twenty-fifth Street or Fulton Road. The contract calls for the completion of the road in 1916. The application for the change of name was made on June 5 and was granted on July 19. General offices are at 548 Rockefeller Building, Cleveland, Ohio. E. A. Norton is the general manager and has the original contract for constructing and equipping the line. George J. Hewlett is the secretary of the company.

PRIVATE LINE LIKELY TO ANTICIPATE FRANCHISE PROVISION

The franchise of the Kansas City Railways, the company which probably will succeed the street railway companies of Kansas City under reorganization, provides for the acceptance by the city of street car lines or extensions privately built, and for their operation by the street railway organization. The residents of a restricted district in a suburb have preliminary steps under way to take advantage of this franchise provision. This district extends from Broadway and Seventy-fifth Street (Seventy-seventh Street being the south city limits) westward to the State line, about half a mile. More than 150 families live in the restricted residence district in Kansas City, Mo., and a residence section is being exploited further westward, in Kansas. These people now walk half a mile to 1½ miles to the terminus of the street car line, Seventy-fifth Street and Broadway. They have subscribed \$23,000 for the building of an extension westward to the State line. David M. Proctor has charge of the movement. The project has been discussed with city officials, who are said to have encouraged it. The building of the line probably will not take place soon, as it is represented that the present equipment of the street railway is needed for more urgent demands in more

thickly settled and further-developed sections of the city. An argument pressed by the subscribers to the fund was that the street cars stood six minutes at the terminus, giving time for the car to run to the State line. Adjustments of service have recently reduced that idle time materially.

CONFERENCE CALLED ON VALUATION

A conference on the principles and methods of valuing public utilities, to be held under the auspices of the Utilities Bureau, will take place in Philadelphia, Pa., on Nov. 10 to 13. Among those who have already agreed to take part are Milo R. Maltbie, Clifford Thorne, John M. Eshleman, Charles A. Prouty, Prof. Edward W. Bemis, Dr. Delos F. Wilcox, Prof. John H. Gray and Max Phelan.

According to the announcement of the bureau: "The methods and principles adopted in arriving at 'fair value' will determine, if regulation persists, the rates and service standards for the patrons of all public utilities. Moreover, the question as to whether public ownership and operation will prove more advantageous than private ownership under regulations will be determined very largely by the relation that valuations bear to the cost of new plants.

"It is a matter of first importance, therefore, that all interested in the city's welfare should be informed as to the valuation, principles and methods that are being and should be adopted. It is equally important that experts and public service commissioners should not only be informed as to what the guiding principles are and should be, but also alert to the significance and future bearing of all these principles.

"It is the purpose of the Utilities Bureau to forward both of these ends through this conference on valuation. All experts on valuation, public service commissioners, public officials and interested citizens are invited to attend."

ELECTRIFICATION IN CHICAGO NOT FEASIBLE

Reported Conclusions on the General Situation Reached by Terminal Committee

Newspaper dispatches from Washington, D. C., purporting to contain authentic information taken from the forthcoming report of the smoke abatement and electrification of railway terminals committee of the Chicago Association of Commerce state that the committee has decided that the electrification of Chicago's terminals is impractical and impossible to finance. The proposed electrified zone contains 4501 miles of track of which 2819 miles are within the city limits. Some of the items of expense included in the estimates for electrification are 1600 locomotives at \$40,000 each and several power houses having a total capacity of from 1,000,000 to 1,500,000 kw. and costing \$100 per kilowatt. These, with the cost of the propulsion current conductors and changes in the existing property, make the total estimated cost \$280,000,000. It is also said that the reports convey the impression that the fixed charges on this large investment would cripple some of the railroads beyond recovery. The report also attempts to show that electrification in Chicago is much more intricate than in other cities where such work has been done.

Another portion of the report devoted to the question of smoke pollution is said to contain the following figures: Percentage of the total fuel consumed within the city limits of Chicago: by steam locomotives, 11.9 per cent; by all other services, 88.06 per cent. Percentage of the total visibility of smoke emitted within the city limits of Chicago: by steam locomotives, 22.06 per cent; by all other services, 77.94 per cent. Percentage of total solid constituents of smoke emitted within the city limits: by steam locomotives, 7.47 per cent; by all other services, 92.53 per cent. Percentage of the total cases of combustion in smoke emitted within the city limits: by steam locomotives, 10.31 per cent; by all other services, 89.69 per cent.

From the foregoing information the committee is said to conclude that air pollution so far as it is affected by the smoke of railroad locomotives is not injurious to the city's health. While there is reason to believe that this information is correct, it was impossible to obtain a confirmation at the committee headquarters, in Chicago. The statement was made there that the first abstract of the report will be given to the press on or about Sept. 15, 1915.

TERMS OF NEW OAKLAND POWER CONTRACT

The Consolidated Electric Company and the San Francisco-Oakland Terminal Railways have filed with the Railroad Commission of California their proposed new contract under the terms of which the Consolidated Electric Company will sell electric energy to the Key Route railway. The commission will pass upon the contract.

The electric energy for the Key Route division of the San Francisco-Oakland Terminal Railways has heretofore been supplied by the United Light & Power Company. In a recent decision the commission found that the rate charged the Key Route was excessive and unreasonable.

The Consolidated Electric Company, which will be a subsidiary of the Great Western Power Company, has made arrangements to take over the properties of the United Light & Power Company, and will hereafter sell electric energy to the Key Route. Under the new contract the Consolidated Electric Company will charge the Key Route 9½ mills per kilowatt-hour. The contract will run for a period of seven and one-half years, terminating on Dec. 31, 1922. It is estimated that the new rates will save the Key Route company from \$25,000 to \$50,000 a year. The lease of the steam plant of the Key Route to the United Light & Power Company has been cancelled and the plant returned to the railways.

FIGURES OF LONDON MOTOR BUS COMPETITION

At a recent meeting of the London County Council the chairman of the highways committee said that there was at the present time motor-omnibus competition on 100 miles of the Council's tramway routes, the number of miles run annually by the omnibuses over the tramways being, roughly, 20,000,000, and the cost, at 8d. per mile, £666,000. The number of men employed on the omnibuses might be taken as 1500. The additional number of men which would be required on the tramways to carry the passengers now taken by the motor-omnibuses over the routes in question would be 460, and the additional number of cars 184. These figures only related to the county area and would be considerably increased if Croydon, West Ham, etc., were taken into account. Having regard to the pressing need for economy in men and money in the national interest, he would certainly bring the matter before the highways committee with a view to an early report as to the extent to which the traveling facilities provided by the Council were duplicated by private enterprise. When asked whether the highways committee had given consideration to the possibility of reducing redundant services on traffic routes in London, in co-operation with the motor-omnibus companies, with a view to releasing men and machinery for government purposes, the chairman said that the time was clearly coming when the committee would have to consider what steps should be taken to avoid wastage in money and labor in connection with the street services intended for passenger traffic.

STRIKE IN HOLYOKE

The lines of the Holyoke (Mass.) Street Railway are tied up by a strike which was declared on Aug. 8. Negotiations regarding wages and terms of service had been under discussion by L. D. Pellisier, president of the company, and representatives of the men for some time. The old contract between the company and the men expired on June 1. The principal differences were over the desire of the company to pay only for platform time and its insistence on a three-year agreement, whereas the men wanted a day rate and the contract to continue for one year only. Charles G. Wood, chairman of the State Board of Arbitration and Conciliation, attempted to bring the officers of the company and the men together, but without result. The directors of the company opposed accepting the service of the State Board as arbitrators. The representative of the executive committee of the men, on the other hand, reiterated the determination of the men to accept no other form of arbitration except that proposed by the State Board, and the men themselves subsequently rejected the proposition calling for an arbitration board consisting of three Holyoke men to whom it was proposed to submit the questions in dispute.

INTERSTATE RAILWAY SUIT HEARING

Judge E. E. Porterfield of Division 7 of the Circuit Court of Jackson County, Mo., heard on Aug. 9 and 10 arguments on a motion for rehearing of the case of the Interstate Railway against the Kansas City, Clay County & St. Joseph Railway, in which a verdict for \$1,500,000 was awarded about a month ago. Judge Porterfield will receive briefs and probably give a decision in three or four weeks. The Kansas City, Clay County & St. Joseph Railway is now operating under Receivers Inghram D. Hook and J. G. L. Harvey, appointed by Judge Bird of the Circuit Court of Jackson County, as a result of an application of the Interstate.

The application for rehearing was argued by these attorneys: Senator James A. Reed and J. G. L. Harvey, for the Interstate Railway; Frank Hagerman, Henry M. Beardsley, William G. Holt, E. E. Yates, for the Kansas City, Clay County & St. Joseph Railway, the latter also being represented by Richard Saltonstall, Boston, and Charles German appearing for the estate of George Townsend. The defendants argued that the Interstate Railway had never legally secured its charter and was therefore not entitled to begin work on its line, the work being one element of the claim for damages; that the titles to right-of-way had never been perfected, claims being for such right-of-way; that failure to comply with various features of the statutes regarding railroads had resulted in vitiation of the charter and the company's privileges, so that it was in effect a "dead body" that could not be sued, and that could not sue; that the alleged "titles" to right-of-way were only options that had long ago expired; that these "titles" were largely promised privileges to cross certain lands, indefinite as to the places of location of such crossings, and therefore not enforceable; that numerous errors relating to testimony were in the record; that the instructions were inconsistent and improper; that the instructions commanded a verdict for the plaintiff if the plaintiff was found to have intended to build a line between St. Joseph and Kansas City, whereas the charter provided for a road to the Iowa line.

An eleventh-hour complication was an injunction suit brought in the federal court at St. Joseph, Mo., by Vinton Pike, an attorney of St. Joseph, Mo., in behalf of C. N. Atkinson, now of New York, formerly of St. Joseph, one of the original promoters and incorporators of the Interstate Railway. Mr. Atkinson claims to own practically all the stock of the Interstate Railway, and alleges that if anybody is to receive benefit from the verdict of \$1,500,000, it is himself. He asks that the Kansas City, Clay County & St. Joseph Railway be restrained from paying the judgment until his claims are adjudicated, and that a receiver be appointed for the Interstate Railways. It is asserted by the present plaintiffs that Mr. Atkinson sold his stock in 1905. It is asserted by Mr. Atkinson's representatives that he was a contractor, an original promoter who owned all but a few shares of the stock of the Interstate Railway and that he still owns this stock. The federal court term in St. Joseph opens Sept. 20. Judge Van Valkenburgh will probably sit there then; the term in Kansas City opens Sept. 10.

Inquiries at Pittsburgh.—Inquiries have been received by the Foreign Trade Commission of Pittsburgh, Pa., for prices on an order which will aggregate many hundreds of thousands of dollars. The inquiry was from the purchasing department of the French government and includes the following items: 5835 cars and coaches; 1750 journal boxes and 80 tons of drawbars.

No Bids for Newport Franchise.—Not a bid had been received for the street railway franchise in Newport, Ky., at 11 o'clock on Aug. 2, the time set for closing the bidding by the City Commission. The franchise was passed on May 31. Commissioner McCrea opposed the condition that the successful bidder must pay \$1,500 per route mile annually for the use of the streets on the ground that no company could afford such a rental, but he was overruled by the majority. Commissioner Morlidge is reported to have said that the Cincinnati, Newport & Covington Railway, which is now operating local lines, will submit a bid within a few weeks.

Dismissal of Complaint Against Seattle Asked.—Instead of filing an answer to the complaint of the Puget Sound

Traction, Light & Power Company, Seattle, Wash., made recently to the Public Service Commission, alleging that the municipality has entered into a campaign of harassment against the company, Corporation Counsel Bradford of the city of Seattle has filed a motion to dismiss the complaint of the company, on the grounds that the State Public Service Commission has no jurisdiction or power to hear or determine the matters set forth in the complaint. Until this motion has been acted upon the city of Seattle will not file its answer to the charge of the company.

Seattle Valuation Halted.—Councilman Allen Dale of Seattle, Wash., has introduced a resolution providing for a conference between members of the State Public Service Commission and the City Council, with a view to having the city aid the commission in completing a valuation of the Puget Sound Traction, Light & Power Company's properties in Seattle. The work of valuation is about three-fourths completed, according to a statement by Charles C. Reynolds, chairman of the commission, but because of a lack of funds cannot be finished until after the next session of the Legislature. Councilman Dale and other members of the Council believe that it would be to the interests of the city to extend such aid as is necessary in order to hasten the completion of the work.

Company Must Obey Terms of Franchise.—The Supreme Court of Michigan has decided in favor of the city of Monroe in its suit against the Detroit, Monroe & Toledo Short Line Railway, Detroit, Mich., to compel the latter to operate at least one car in both directions every hour. The railway took the position that jurisdiction rested with the State Railroad Commission as to the necessity of operating in accordance with the franchise provisions, but the Court held that inasmuch as the franchise was accepted before the change in the State railroad law, the railway must abide strictly by its terms. The company has been operating in accordance with the franchise in summer, but it has removed one car from the schedule in the winter months because business did not warrant its operation.

Power Contract Renewal.—The Chicago & Joliet Electric Railway, Joliet, Ill., announces the renewal of its contract for power with the Public Service Company of Northern Illinois to cover the period up to 1930. The terms of this contract have been submitted to the Illinois Public Utility Commission, which has informally approved them. Under the old contract the railway received all its energy from the Public Service Company's plant at Joliet, Ill. Under the new contract the local Joliet lines will continue to receive energy from the Joliet plant, but the interurban lines will be supplied from Blue Island, Ill. This change required the installation of a substation at Summit, Ill., a point on this company's interurban line near Chicago. The plant there is equipped with three 1000-kva. transformers.

Results with Surface Contact Systems at Lincoln, England.—The result of last year's working of the G.B. surface-contact system at Lincoln has been the slight increase in running costs per car-mile of from 5.91d. to 6.37d. The cost of repairs to the G.B. equipment, while slightly less than in the previous twelve months, is still considerably in excess of the average guarantee of £90 given by the company, and the actual average cost of repairs to the equipment has now increased to £110 per annum. The tramways manager, however, points out that evidently the £90 guarantee was on the basis that the G.B. system would be applied in many other towns, and that in consequence the cost of repair parts would be considerably less than was now actually the case when they all had to be made specially as required.

Temporary Extension of Manhattan Bridge Contract.—The present contract for the operation of surface cars on the Williamsburg Bridge, New York, will be continued until Nov. 30, by mutual understanding between Bridge Commissioner Kracke and the Bridge Operating Company. The agreement expires on Aug. 31, but to enable all the companies concerned in the controversy over the new contracts to reach some sort of a settlement the time has been extended by the Board of Estimate. Three railroad companies were concerned in the postponement of the expiration date—the Third Avenue Railway, whose offer for operation is the one now favored most by the Bridge Department; the

Manhattan Bridge Three-Cent Line and the Bridge Operating Company, the stock of which is owned jointly by the Brooklyn Rapid Transit Company and the Third Avenue Railway.

Reconsider Strike Award.—Dr. John Price Jackson, commissioner of the Department of Labor and Industry of Pennsylvania, who served as umpire on the board which arbitrated the wage question between the Wilkes-Barre Railway and its employees, has notified officials of the union that he will reconvene the board of arbitration for the purpose of determining whether the board had erred in its award. The arbitrators fixed a sliding scale award, and the union officials say that the agreement gave the board no authority to fix anything but a flat rate. The union leaders contend also that the award was indefinite, and that the fixing of a profit-sharing plan was a mistake. The union leaders point out that the board sent them a communication notifying them of the award, but allege that the award has not been properly drawn up and has never been signed.

Detroit Purchase Agreement Signed by Mr. Couzens.—The proposed purchase agreement between the city of Detroit and the Detroit (Mich.) United Railway by which the city would take over the property of the company within the one-fare zone has been signed by James E. Couzens, president of the Street Railway Commission, who is now in California. It is expected that the agreement will be submitted to the Common Council on Aug. 17, at which time some committee probably will be empowered to report out a date for the special election necessary in connection with the proposition. Inasmuch as the agreement must lie on the table for thirty days it is probable the election will occur late in September or early in October. When the agreement is sent to the Council the Street Railway Commission plans to offer figures setting forth in detail the earnings of the company within the one-fare zone and showing what the city expects to get to meet its obligations after acquisition of the lines.

Bill of Particulars Filed Against New Haven.—The United States Government has filed in the Federal District Court the bill of particulars asked for by the officers and directors and counsel of the New York, New Haven & Hartford Railroad to enable them to answer the Sherman law indictment charging them with engaging in a conspiracy to monopolize interstate trade and commerce between the New England and other States. The government alleges that in each of the matters specified in the 188 paragraphs of the bill of particulars it was with the purpose and intent of aiding, abetting and carrying out the conspiracy that the defendants adopted the plans and became responsible for them. The bill of particulars, after explaining in detail the acquisition of the various railroads, electric railway and steamboat lines, states that it was the purpose of the alleged conspirators in making the combination to control each of the common carriers absorbed and to induce and compel them to engage in the combination.

Joliet Wage Demands to be Arbitrated.—The demand for an increase in the hourly wage of the employees of the Chicago & Joliet Electric Railway Company, Joliet, Ill., was refused, and the question is to be submitted to arbitration. Under the terms of the contract which expires on July 1, 1917, the employees were permitted to open the question of wages July 1, this year. Accordingly they demanded an increase in the present scale, which provides for 23 cents an hour for the first six months, 24 cents an hour the second six months, 26 cents an hour the second year, 27 cents an hour the third year, if they are promoted to the suburban division, and 30 cents an hour when they are advanced to trainmen on the interurban line between Joliet and Chicago. The employees demanded an increase to 25 cents minimum and 30 cents maximum on the city lines, a 34-cent scale on the suburban lines and a 36-cent scale on the interurban line. These demands did not include employees outside of the train service because the court had decided several years before that employees other than trainmen could not be included. There are about 150 employees in the train service. They have selected F. A. Drew, a Joliet attorney, as their representative in the arbitration. The company's representative will be selected within a short time.

Financial and Corporate

CONFIDENCE IS RETURNING

American business of to-day is like the small boy who, after he got through the woods, wondered why he had been scared. A year ago, at the outbreak of the European war, dire predictions of all sorts of certain disaster were made, but now the country is beginning to smile at its apprehension. The pessimistic view that saw only possible weaknesses and took no account of points of strength, gradually gave way to a feeling of optimism as the country at large came into a fuller recognition of its position in world commerce.

Last August the declaration of war overseas seemed to arouse here an immediate feeling of impotence and danger. There was an adverse trade balance of about half a billion dollars; it was deemed certain that our international commerce could be saved only by some desperate expedient like a government merchant marine; an extended raid on our coffers by foreign liquidation of American securities was feared; the cotton crop was doomed, and the price of capital for American use was sure to rise to prohibitive heights. Bugaboos, one and all!

The trade balance in favor of Europe settled itself. By July, 1915, the balance had shifted in favor of the United States to the extent of a net credit of \$1,094,422,792, brought about by the tremendous excess of exports to Europe over imports from Europe. Instead of being a borrowing nation, this country found itself all at once the only country with capital, credit and goods to lend. We did not need any governmentally-owned marine, miraculously created out of credit, for Europe sent ships for the goods she wanted. The cotton crop financed itself with the aid of banks. Moreover, liquidation of European-held American securities on any very large scale failed to materialize, for it seems that Europeans unexpectedly believed that the United States, the only large neutral country endowed with sufficient industrial and financial powers to furnish Europe with the necessary food and goods for war consumption, was the safest place to have money invested. Last July, it is true, the bond market was overshadowed by some foreign selling to provide funds to meet the colossal British war loan, but the investment demand here was sufficiently keen to absorb such sales at comparatively small recessions in price. Nor has the price of American capital risen to prohibitive figures, notwithstanding the unexpectedly large war loans floated abroad. In June of this year New York City placed a large issue of 4½ per cent securities at a lower cost than in 1913, and fixed capital has been no harder to borrow this year than last. Interest rates on commercial paper, call money and time loans were lower in the first half of 1915 than in the corresponding period of 1914.

The foregoing are simply some of the features that mark the recovery of the United States during the last year and the recognition of its financial and economic independence. The position of this country in world commerce has become so powerful that the Bank of England has shipped more than \$50,000,000 of gold and securities to these shores in order to strengthen British financial prestige in New York markets. It should not be understood, however, that the future will be one of unalloyed prosperity. With a long continuance of the war the cost of capital and of living may rise slightly, and the degree of engagement of the country's industrial capacity for foreign consumption and the sharing of profits with workmen may prove an embarrassing over-extension when war is ended, but America is now more experienced in its ability to adapt itself to economic conditions. The greatest encouraging general factor now is the prediction of favorable crops, with increased acreage, quantity and diversification. The National Chamber of Commerce stands sponsor for the statement that confidence in the future is growing apace with the steady progress of the crops and the slow but continual improvement in industrial affairs. Although electric railways have their own peculiar problems of rates, wages and now jitney competition that demand special solution, they and other carriers should be benefited by the present improvement, which it is believed would persist even in the face of our own entanglement in foreign troubles.

ANNUAL REPORT

Montreal Tramways

The statement of income, profit and loss of the Montreal (Que.) Tramways for the year ended June 30, 1915, follows:

| | |
|---|-------------|
| Gross earnings | \$6,525,231 |
| Operating expenses | 3,713,996 |
| Net earnings | \$2,811,235 |
| Deductions: | |
| City percentage on earnings | \$414,149 |
| Interest on bonds and loans | 825,415 |
| Interest on debenture stock | 800,000 |
| Taxes | 92,800 |
| Total | \$2,132,364 |
| Net income | \$678,871 |
| Dividends | 278,880 |
| Surplus | \$399,991 |
| Transferred to contingent renewal account | 275,000 |
| Transferred to general surplus | \$124,991 |

The gross earnings decreased during the year \$617,572 or 8.65 per cent on account of the war and the financial depression. The operating expenses, however, decreased \$492,118 or 11.70 per cent, so that the net earnings decreased only \$125,454 or 4.27 per cent. The ratio of operating expenses to earnings was 56.92 per cent, compared to 58.89 per cent last year.

The sum of \$212,732 was charged to the contingent renewal account during the year, representing expenditures made for special renewals. An amount of \$666,429 was expended in the maintenance of the company's properties, plant and equipment. This, together with the amount charged to renewal account, made a total expenditure on upkeep of \$879,161. During the year there was expended on capital account the sum of \$621,125. There was also redeemed and cancelled \$144,906 of the underlying bonds of the company. The amount redeemed to date is \$983,513. The total passengers carried during the year numbered 206,992,801.

LINE REORGANIZES TO ELECTRIFY

F. A. Dolph, Chicago, Ill., who purchased the property of the Cincinnati, Bluffton & Chicago Railroad, Huntington, Ind., last October, has announced the reorganization of the company under the name of the Huntington, Bluffton & Portland Railroad. When \$113,000 of the purchase price of \$357,000 is paid on Sept. 6, the deed for the property will be delivered to the new company. The first payment is being advanced by a three-year 6 per cent gold debenture issue limited to \$150,000. When possession of the property is thus secured, the company plans to put out a first mortgage bond issue of \$700,000 to refund the debentures, to pay the second and third installments on the purchase price and to provide for the electrification of the line. The organization will ultimately have \$278,000 of common stock, \$220,000 of preferred stock and \$700,000 of bonds, a total of \$1,200,000. The new company will be capitalized at only 40 per cent of the old.

The railroad is now operated as a steam line, with a present valuation of \$901,964, according to the J. G. White Engineering Corporation. It has 50 miles of main line and 8 miles of branch and spur lines, operating in an ideal inter-urban territory. The betterments, electrification and equipment are estimated to cost about \$300,000.

As noted in the ELECTRIC RAILWAY JOURNAL of June 19 and July 31, Mr. Dolph has made an offer for the Fort Wayne & Springfield Railway, Decatur, Ind., which was scheduled to be sold on Aug. 12. It is reported that this interurban line would become part of a 420-mile electric railway system reaching into Ohio and northwestern Indiana.

Aberdeen (S. D.) Railway.—The Aberdeen Railway has been sold at receiver's sale to Charles A. Howard for \$21,000. It is reported that the stockholders of the old company will reorganize a new corporation sufficiently financed to operate the system. Already more than 85 per cent of them have joined in subscriptions to the new company, and it is expected that practically all of them will be so interested.

American Railways, Philadelphia, Pa.—The directors of the American Railways on Aug. 10 declared a quarterly dividend of 1 per cent on the common stock, payable on Sept. 15 to stock of record on Aug. 29. This dividend compares with a last previous dividend of $1\frac{1}{4}$ per cent. In explanation of the reduction the directors issued the following statement: "The falling off in earnings of the subsidiary companies, caused almost entirely by business depression and the rainy summer, and very little by jitney competition, made the board feel that the conservative thing to do was the reduction of the common stock dividend to a basis of 4 per cent per annum."

Ardmore (Okla.) Electric Railway.—David E. Booker has been appointed receiver for the Ardmore Electric Railway to succeed John F. Easley, resigned. The appointment of Mr. Easley was noted in the *ELECTRIC RAILWAY JOURNAL* of Jan. 16.

British Columbia Electric Railway, Ltd., Vancouver, B. C.—The directors of the British Columbia Electric Railway, Ltd., state that, owing to the large decrease in the company's earnings since the first of the year, they are unable to recommend any further dividends on the preferred and the deferred ordinary shares of the company for the fiscal year ended June 30. The net earnings for the last six months of 1914 were \$942,500, a decrease of \$306,000. For the first six months of 1915 the decrease was \$761,500, making the total decrease for the fiscal year approximately \$1,068,000, or 44 per cent. The net earnings for the year ended June 30 were \$1,352,500.

Cincinnati, Dayton & Toledo Traction Company, Hamilton, Ohio.—The Cincinnati, Dayton & Toledo Traction Company recently settled two judgments, for \$5,479 each, obtained in the United States District Court in December, 1914, and representing the principal and interest of debenture bonds of the subsidiary Dayton Traction Company. The company made an arrangement to pay \$3,125 on each claim at once and the remainder on Dec. 24, when a rental instalment will be received from the Ohio Electric Railway. There is no connection between the above mentioned debentures and the \$250,000 of first mortgage 5 per cent gold bonds, due on July 1, 1916, of the Dayton Traction Company.

Cincinnati, Newport & Covington Light & Traction Company, Covington, Ky.—The stockholders of the Cincinnati, Newport & Covington Light & Traction Company have authorized the directors to agree to a plan for the refunding of the bonded indebtedness of the Union Light, Heat & Power Company proposed by the Columbia Gas & Electric Company, which leases the property from the Cincinnati company. Under the plan the present bonded indebtedness, which matures in 1918, will be refunded by a new issue of \$5,000,000 of fifty-year bonds, which will be used to take up the present issue of \$2,000,000 with the remainder held for betterments. The Columbia company will provide a sinking fund for the new bonds.

Cleveland & Ohio Central Electric Railway, Cleveland, Ohio.—The Cleveland, Barberton, Coshocton & Zanesville Railway on July 19 received permission to change its name to the Cleveland & Ohio Central Electric Railway. An amendment also approved at this time, changing the route of the company from that prescribed in its charter, is to go into effect on Aug. 14. The new route is described elsewhere in this issue.

Denver (Col.) Tramway.—The Denver Tramway has notified holders of the first and refunding sinking fund mortgage twenty-five-year 5 per cent gold bonds of the Denver City Tramway, its predecessor company, that it will pay to the Bankers Trust Company, New York, successor trustee, a sum equal to 1 per cent of the principal issue of the bonds and an additional sum equal to the annual interest on all the bonds, amounting in the aggregate to about \$124,000, to be used for the redemption of bonds for the sinking fund. Sealed proposals for the sale of the bonds will be received by the Bankers Trust Company on or before Aug. 24 at not exceeding 105 and accrued interest.

Dominion Power & Transmission Company, Hamilton, Ont.—The talk in financial circles of the purchase of the plant of the Dominion Power & Transmission Company by the Hydro-Electric Power Commission of Ontario was alluded

to on Aug. 4 in a statement by W. C. Hawkins, managing director and secretary of the company. Mr. Hawkins declared that no negotiations were on at the present time. The last deal for the sale of the property, which was with Toronto financiers, fell through. The price mentioned at the time was \$16,000,000. The fact that the company is erecting a steam plant at a cost of about \$2,000,000 is taken as evidence that it has no plans at present for selling out, despite the fact that civic officials here understand that as soon as the Canadian Northern Railway resumes activity in this district it will endeavor to secure the private power plant in opposition to hydro-radials.

Hagerstown & Frederick Railway, Frederick, Md.—The total operating revenues of the Hagerstown & Frederick Railway for the year ended June 30 were \$424,347 as compared to \$404,088 last year, an increase of \$20,258. The operating expenses for 1915 were \$255,373 as compared to \$261,911 last year, a decrease of \$6,538. The operating income for 1915 was \$168,973, an increase of \$26,796. Income from other sources was \$9,662 in 1915 and \$1,566 last year. The gross income this year was \$178,636, as compared to \$143,743 in 1914.

Hudson & Manhattan Railroad, New York, N. Y.—The board of directors of the Hudson & Manhattan Railroad has declared a semi-annual interest payment of 1 per cent or \$10 on each \$1,000 adjustment income bond for the half year ended June 30, 1915, payable on Oct. 1. This payment is at the usual rate.

Interurban Railway & Terminal Company, Cincinnati, Ohio.—The report of Charles S. Thrasher and Charles M. Leslie, receivers of the Interurban Railway & Terminal Company, to the Common Pleas Court for the nine months ended June 30, states that the receipts amounted to \$180,874 and the expenses to \$168,668, leaving a net income of \$12,205, from which had to be deducted taxes of \$9,791. There was a net surplus of \$2,562 for June, but there is a deficit of \$1,086 for the nine months. The car-miles operated during the nine months numbered 752,107.

Minneapolis, Anoka & Cayuna Range Railroad, Minneapolis, Minn.—The Minneapolis, Anoka & Cayuna Range Railroad, the successor of the Minneapolis & Northern Railway, on July 28 filed for the purpose of record a \$2,500,000 mortgage to the American Trust Company and C. H. Bowen, Boston, as trustees. President F. H. Stevens is reported to have said that under the new mortgage \$250,000 is already available and of this amount \$125,000 will be applied to the purchase of the railway property from C. P. Bratnober and others, who came into possession by foreclosure liens for labor and material. The other \$125,000 will be used to complete the connection with the street railway line at Marshall Street, Minneapolis, and the electrification of the service. The company expects now to complete promptly the plans for through passenger service from Anoka to the corner of Marquette Avenue and Sixth Street in Minneapolis. It is expected that electric cars of the type used for the Twin City Rapid Transit Company will be running by Sept. 1. Pending completion of the trolley construction this line is being operated by steam.

Nova Scotia Tramways & Power Company, Halifax, N. S.—The Nova Scotia Tramways & Power Company, which was incorporated in 1914 to take over the Halifax Electric Tramway, Ltd., has asked the Nova Scotia Public Utilities Commission that its capital be increased to \$10,000,000 and that \$5,000,000 of first mortgage thirty-year bonds be issued at 5 per cent, \$3,000,000 to be presently issued, and the balance only to be issued for future requirements under restrictions against 80 per cent of expenditures on capital account. The petition also requests the board to approve \$3,000,000 par value of bonds, 32,500 shares of preferred stock and 62,500 shares of ordinary or common stock, to the order of the Nova Scotia Light & Power Company. The proceeds would be devoted to the following purposes: \$800,000 to the retirement of mortgages outstanding on the Halifax Electric Tramway, Ltd.; \$1,227,780 to construction of works; a certain amount to provide for taking over of the various properties, and the balance for contingencies and working capital. A report by The J. G. White Company showed that within only 55 miles of Halifax on the

property owned by the company there is a lake area that would give a storage of 2,000,000 cu. ft. of water, which would produce about four times the electric power at present available in Halifax. The estimated cost of works necessary for the development of this power was put at \$1,534,000. The report of P. Sothman, formerly chief engineer Hydroelectric Power Commission of Ontario, confirmed this report.

Pacific Gas & Electric Company, San Francisco, Cal.—The California Railroad Commission has authorized the Pacific Gas & Electric Company to acquire the capital stock of the West Sacramento Electric Company, now owned by George F. Detrick and H. W. Furlong. Messrs. Detrick and Furlong have agreed to sell all their interests to the Pacific Gas & Electric Company, which pays \$27,000 to the former and \$3,000 to the latter, they to invest the money in preferred stock of the purchasing company at \$82.50 a share. The Pacific Gas & Electric Company already owns and operates the electric railway lines in the territory served by the purchased company.

Port Jervis (N. Y.) Traction Company.—A Philadelphia syndicate headed by Edward E. Mandeville has formed a merger of the public utility companies, including the Port Jervis Traction Company and the Port Jervis Light & Power Company, in the territory around Port Jervis. The new company will be known as the Orange County Public Service Company.

Richmond & Rappahannock River Railway, Richmond, Va.—The Richmond & Rappahannock River Railway has filed a mortgage to secure \$500,000 of first mortgage bonds, due in 1935. This line operates between Richmond and Pamunkey, 7.5 miles by electricity and 17.9 by steam. It is expected that the line will be extended to Urbana in the near future.

San Joaquin Light & Power Corporation, Bakersfield, Cal.—The California Railroad Commission has issued an order authorizing the San Joaquin Light & Power Corporation to pledge as collateral security \$205,000 of first and refunding mortgage forty-year Series "C" 6 per cent bonds for an issue of promissory notes not exceeding \$153,750. The notes are to be in such ratio that their face value shall not be less than 75 per cent of the face value of the pledged bonds, and are to mature on or before two years and to bear interest of not more than 8 per cent, April 1, 1916, being the limit of issuance.

Toledo, Ann Arbor & Jackson Railroad, Toledo, Ohio.—On Aug. 5 the Ohio Public Utilities Commission authorized this company to sell \$523,000 of 5 per cent bonds at 85 to secure funds to complete its line to Dundee, Mich. The company was authorized in June, 1913, to sell \$850,000 of bonds at 80 for the purpose of extending the road to Ann Arbor, but according to report was never able to sell them.

Underground Electric Railways, Ltd., London, England.—The directors of the Underground Electric Railways, Ltd., have declared a distribution of interest at the rate of 6 per cent per annum (free of income tax) on the non-cumulative income bonds of 1948 for the half year ended June 30, payable on Sept. 1. This is the rate paid for the last three years. Among the controlled companies the Metropolitan District Railway has declared a dividend at the rate of 3 per cent per annum (less income tax) on the second preferred stock for the half year ended June 30, and the London Electric Railway at the rate of 1 per cent per annum (less income tax) on ordinary shares, interim, these payments being the same as those of last year. The London General Omnibus Company has declared a dividend at the rate of 6 per cent (free of income tax) on ordinary shares, interim, as compared to 8 per cent in 1914. The City & South London Railway has declared an interim dividend at the rate of 5 per cent on the outstanding preferred stocks of 1891, 1896, 1901 and 1903, while the Central London Railway has declared an interim payment at the rate of 3 per cent per annum on the ordinary stock and at the rate of 4 per cent per annum on the preferred stock.

United Light & Railways Company, Grand Rapids, Mich.—Under the offer noted in the ELECTRIC RAILWAY JOURNAL of June 12, holders of \$1,617,300 of 3 per cent second preferred stock of the United Light & Railways Company

had up to July 17 converted their holdings into 6 per cent cumulative first preferred stock. The second preferred stock outstanding before the exchange privilege was offered amounted to \$2,108,700. The privilege extends until Aug. 15, when the company may exercise the right to designate whether the stock still outstanding shall be converted into first preferred stock or common stock.

West End Street Railway, Boston, Mass.—F. S. Moseley & Company, Boston, are offering, to yield 4½ per cent, the unsold portion of the two and three-year maturities of the \$4,743,000 of securities recently sold to them by the West End Street Railway, as noted in the ELECTRIC RAILWAY JOURNAL of July 31. These one, two and three-year 5 per cent obligations are known as "serial debenture bonds," dated Aug. 2, 1915, and maturing \$1,581,000 each on Aug. 1, 1916 to 1918, inclusive, without option of prior redemption.

DIVIDENDS DECLARED

Lincoln (Neb.) Traction Company, quarterly, 1½ per cent, preferred.

Massachusetts Consolidated Railways, Greenfield, Mass., quarterly, 1½ per cent, preferred.

Pacific Gas & Electric Company, San Francisco, Cal., quarterly, 1½ per cent, original preferred and first preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

| Period | Operating Revenues | Operating Expenses | Operating Income | Fixed Charges | Net Income |
|----------------|--------------------|--------------------|------------------|---------------|------------|
| 1m., June, '15 | \$60,968 | \$34,019 | \$26,949 | \$19,160 | \$7,789 |
| 1 " " '14 | 71,595 | *41,215 | 30,380 | 17,567 | 12,813 |
| 12 " " '15 | 780,504 | *375,107 | 405,397 | 211,518 | 193,879 |
| 12 " " '14 | 782,952 | *365,001 | 417,951 | 208,791 | 209,160 |

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

| | | | | | |
|----------------|-----------|-----------|----------|----------|----------|
| 1m., June, '15 | \$87,846 | *\$60,831 | \$27,015 | \$30,371 | †\$3,356 |
| 1 " " '14 | 91,477 | *58,434 | 33,043 | 28,190 | 4,853 |
| 12 " " '15 | 1,042,100 | *707,321 | 334,779 | 349,613 | †14,834 |
| 12 " " '14 | 1,162,036 | *707,128 | 454,908 | 320,791 | 134,117 |

GRAND RAPIDS (MICH.) RAILWAY

| | | | | | |
|----------------|-----------|-----------|----------|----------|---------|
| 1m., June, '15 | \$92,411 | *\$70,399 | \$22,012 | \$13,961 | \$8,051 |
| 1 " " '14 | 109,413 | *70,651 | 38,762 | 13,361 | 25,401 |
| 12 " " '15 | 1,226,269 | *834,703 | 391,566 | 163,156 | 228,410 |
| 12 " " '14 | 1,297,010 | *837,793 | 459,217 | 157,880 | 301,337 |

JACKSONVILLE (FLA.) TRACTION COMPANY

| | | | | | |
|---------------|----------|-----------|----------|----------|---------|
| 1m., May, '15 | \$53,337 | *\$36,881 | \$16,456 | \$15,323 | \$1,133 |
| 1 " " '14 | 76,647 | *44,571 | 32,076 | 11,523 | 20,553 |
| 12 " " '15 | 654,297 | *452,217 | 202,080 | 151,492 | 50,588 |
| 12 " " '14 | 727,975 | *459,214 | 268,761 | 140,074 | 128,687 |

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

| | | | | | |
|----------------|----------|-----------|----------|----------|----------|
| 1m., June, '15 | \$67,446 | *\$40,379 | \$27,067 | \$16,011 | \$11,056 |
| 1 " " '14 | 62,002 | *40,257 | 21,745 | 15,579 | 6,166 |
| 12 " " '15 | 703,897 | *459,876 | 244,021 | 187,543 | 56,478 |
| 12 " " '14 | 677,723 | *458,174 | 219,549 | 184,834 | 34,715 |

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

| | | | | | |
|----------------|-----------|------------|----------|----------|----------|
| 1m., June, '15 | \$165,511 | *\$102,583 | \$62,928 | \$42,101 | \$20,827 |
| 1 " " '14 | 184,538 | *109,548 | 74,990 | 41,337 | 33,653 |
| 12 " " '15 | 2,180,942 | *1,282,296 | 898,646 | 492,793 | 405,853 |
| 12 " " '14 | 2,242,003 | *1,405,496 | 836,507 | 486,516 | 349,991 |

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

| | | | | | |
|---------------|-----------|------------|----------|----------|----------|
| 1m., May, '15 | \$134,790 | *\$86,142 | \$48,648 | \$24,533 | \$24,115 |
| 1 " " '14 | 178,918 | *98,380 | 80,538 | 23,179 | 57,359 |
| 12 " " '15 | 1,866,673 | *1,065,484 | 801,189 | 289,688 | 511,500 |
| 12 " " '14 | 2,154,828 | *1,207,578 | 947,250 | 270,247 | 677,003 |

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

| | | | | | |
|---------------|----------|-----------|---------|---------|--------|
| 1m., May, '15 | \$21,927 | *\$14,334 | \$7,593 | \$6,891 | \$702 |
| 1 " " '14 | 24,552 | *15,571 | 8,981 | 6,856 | 2,125 |
| 12 " " '15 | 295,356 | *188,897 | 106,459 | 80,943 | 25,516 |
| 12 " " '14 | 307,163 | *195,688 | 111,475 | 80,567 | 30,908 |

PORTLAND (ME.) RAILROAD

| | | | | | |
|----------------|-----------|-----------|----------|----------|----------|
| 1m., June, '15 | \$90,039 | *\$56,808 | \$33,231 | \$21,160 | \$12,071 |
| 1 " " '14 | 93,108 | *55,584 | 37,524 | 20,143 | 17,381 |
| 12 " " '15 | 1,043,735 | *647,596 | 396,139 | 261,730 | 134,409 |
| 12 " " '14 | 1,046,674 | *642,867 | 403,807 | 247,561 | 156,246 |

TAMPA (FLA.) ELECTRIC COMPANY

| | | | | | |
|---------------|----------|-----------|----------|---------|----------|
| 1m., May, '15 | \$81,422 | *\$42,851 | \$38,571 | \$3,630 | \$34,941 |
| 1 " " '14 | 83,719 | *44,264 | 39,455 | 3,698 | 35,757 |
| 12 " " '15 | 991,481 | *509,481 | 482,000 | 43,933 | 438,067 |
| 12 " " '14 | 921,648 | *511,968 | 409,680 | 46,588 | 363,092 |

*Includes taxes. †Deficit.

Traffic and Transportation

JITNEY JOTTINGS

New York and California Commissions Have jitney Regulatory Problems Before Them—Further Legislative Developments

The Second District Public Service Commission of New York has taken the first steps toward the enforcement of the so-called jitney bus law passed at the last session of the Legislature by applying through its counsel to Supreme Court Justice Hasbrouck at Kingston for a permanent injunction restraining James E. Adams, Corning, and Elmer G. Booth, Rochester, from operating jitney lines without the consent of the local authorities or a certificate of public convenience and necessity from the commission. Justice Hasbrouck will hear the petition on Sept. 4 in Kingston. Other proceedings will also be brought against other alleged violators of the statute. This statute requires all bus lines, motor vehicles, stage routes, any vehicle carrying passengers for 15 cents or less, or any vehicle operating in competition with a common carrier required to procure the consent of the local authorities, to obtain a certificate of public convenience and necessity from the Public Service Commission before operating in the streets of any of the cities of the State. Hitherto the commission has considered the enforcement of this law in the hands of the local authorities and has withheld action on its own part until the local authorities had been afforded time to act. Recently, however, a number of complaints have been lodged with the commission against so-called jitney bus lines apparently operating without authority. At the last session of the commission its counsel was directed to take court action against the alleged violators mentioned. Complaints also have been received against other alleged violators and these will be handled either in the regular way before the commission, or before the courts. The statute in specific terms makes all persons and corporations engaging in the jitney business, as defined, common carriers and subject to all provisions of law as such. The present applications to the Supreme Court are under Section 57 of the public service commission law which authorizes the commission to apply to the court for injunctions to restrain violations of this law.

The United Railroads, San Francisco, Cal., has filed with the Railroad Commission a complaint against the Peninsula Rapid Transit Company, asking that the commission require the Peninsula Company to file with the commission a schedule of rates, fares, charges and classifications, as prescribed by the public utilities act; that the company obtain from the Railroad Commission a certificate of convenience and necessity, as required by that act; and that the company otherwise fully comply with the provisions of the public utilities act. The complaint says that the Peninsula Rapid Transit Company is a California corporation, authorized as a common carrier of passengers for hire, particularly in San Francisco and San Mateo Counties; that the company carries all persons offering for hire from San Francisco through Daly City, Millbrae, Easton, Burlingame to San Mateo and return; that the company operates automobile buses with a capacity of twenty each, on regular schedules, and that for those reasons it is a common carrier and should be under the jurisdiction of the Railroad Commission, but that it has not secured from the city and county of San Francisco, nor from San Mateo County, nor from the governing bodies of the other cities whose streets it uses, authority as a common carrier.

The United Railroads' complaint says that it has franchises and authorization as a common carrier, and has invested many hundreds of thousands of dollars in securing its right-of-way and building and maintaining its suburban railroad line between San Mateo and San Francisco, and was operating this long before the other line began. The complaint says further that the railroad company gives an adequate service at all times between these points, and that there is no necessity for the establishment of the service of the Peninsula Rapid Transit Company.

Action has been brought against the Wichita Transportation Company, a recently established auto-truck service between San Diego, Cal., and the Imperial Valley, by the

Western Association of Short Line Railroads. This association has asked the California Railroad Commission to declare all auto lines running on regular schedules and having fixed passenger and freight rates public utilities and to take jurisdiction in their operation and financing. This is the first time since the start of the jitney craze that concerted action on the part of steam railroads has been taken.

The gross receipts of the Puget Sound Traction, Light & Power Company, Seattle, Wash., have fallen off \$360,000 in the past six months. Since the city gets 2 per cent of this gross a reduction in the city revenues from this source has been at the rate of \$14,200 per year. The decrease is attributed largely to the jitneys. During March between 600 and 700 jitneys were in operation in Seattle. At the height of their prosperity these machines are estimated to have carried 45,700 people a day, cutting heavily into the off-peak load, which affected the company much more seriously than inroads during peak traffic. There are now only about 350 jitneys operating and they cut into the off-peak load very little, as their traffic is chiefly during rush hours. There are now ten to fifteen applications a week for new jitney driver licenses, but cars are deserting the business faster than new ones enter it. The business of the company is now about 14 per cent below normal. The average for the last six months was 19 per cent below normal and it has been at times as far as 25 per cent below normal. As stated previously in the *ELECTRIC RAILWAY JOURNAL* the company is considering a light-weight one or two-man car to compete with the jitneys. The company has put competitive jitneys in Everett and has driven the independent jitneys out of business there to a large extent.

F. T. Griffith, president, and F. I. Fuller, vice-president, of the Portland Railway, Light & Power Company, Portland, Ore., are concerned with the recent complication of the jitney problem resulting from the act of the Supreme Court on July 26 in invalidating the jitney ordinance. The jitneys in Portland are not now required to carry surety bonds and the company is in just about the same position as it was when the jitneys arrived. Both Mr. Fuller and Mr. Griffith look upon the jitneys as more or less of a permanent institution. While they have not yet definitely settled upon a solution to the problem, they are looking toward lighter cars and quicker service.

The jitney regulatory ordinance passed in Scranton, Pa., to go into effect on Sept. 1, provides briefly that automobiles in public service in that city shall secure a license from the director of public safety; that the names of the owners and operators shall be filed with the city, together with facts about the cars, such as name, seating capacity, etc.; that the routes shall be specified; that a bond in the sum of \$2,500 shall be filed for each vehicle having a seating capacity of not more than five passengers, including the driver, with \$500 additional for each permanent seat in excess of the seating capacity of five; that any person owning more than one car shall be permitted to substitute a general bond covering all of his cars, such bond to be in the sum of \$25,000 for not more than ten vehicles, for \$50,000 for not more than twenty-five vehicles and for \$100,000 for more than twenty-five vehicles. The license fee for each vehicle seating five people or less is placed at \$10, for each vehicle seating six or seven people \$15 and for each vehicle seating more than seven people \$25. The carrying capacity of vehicles is fixed at the seating capacity and it is made unlawful to charge more for transportation along and over the route designated than the amount set forth in the license.

After eliminating the provisions calling for the payment of license fees, the Board of Works of Newark, N. J., on Aug. 5 passed the jitney ordinance on first reading. The sections relating to fees were taken out on the advice of City Counsel Frazer. The finance committee of the Common Council had agreed at a recent conference with a Board of Works committee to the fees that should be paid, placing them at \$50 for a car carrying five passengers or less and ranging as high as \$125 for cars carrying more than twenty passengers. The jitney owners and operators will be heard in opposition to the measure on Aug. 17.

The "owl" and "anywhere" jitneys operating in San Francisco have been excluded from the jitney bus class

by order of the San Francisco Police Commission. Hereafter jitney drivers must keep to specified routes and limit charges to 5 cents and 10 cents. Otherwise they come under the livery class, must have stands and load at certain points, with charges regulated by ordinance.

The local branch of the street railway employees' union at Portsmouth, Ohio, asked the City Council on Aug. 5 to pass an ordinance regulating jitney buses and jitney-bus traffic in that city. The men ask that the ordinance contain provisions for a license fee of \$80 annually, fixed routes and terminals, the number of passengers to be carried to be limited to the rated seating capacity of the vehicles, the deposit of \$5,000 by each owner as a protection for passengers who may be injured, and such other measures as govern the operation of utilities.

The City Council of Temple, Tex., has formally adopted the jitney ordinance which it has had under consideration for the past two months. The ordinance becomes effective immediately after publication. The new law follows that of Fort Worth rather closely.

Judge Brumm at Pottsville, Pa., has refused the application of the jitney owners of Pottsville for a permanent injunction against Pottsville city officials, preventing the enforcement of an ordinance regulating the jitneys, but said that he would permit the temporary injunction against the city to stand until September, to give the jitney owners and city officials a chance to agree on a compromise.

Alderman Dodd of the City Council of New Westminster, B. C., has introduced a jitney regulation by-law containing the following provisions: Before a license is issued, the inspector shall satisfy himself that the auto to be used is in good order; driver must be twenty-one years of age, speak English, be physically and mentally fit to operate a car, and skilled therein, and not be addicted to the use of intoxicants or drugs; passengers must not be carried in excess of the seating capacity of the machine; passengers must not be permitted to board or alight from a car, nor may the driver collect fares or give change, while the car is in motion; Council may from time to time designate routes, say where cars will be allowed to stand; drivers must not solicit passengers on business streets; no Asiatic or negro may be allowed to enter a car in which there are already white passengers; every jitney must put up a bond, the amount of which has not been determined.

Enforcement of the jitney bus ordinance in Flint, Mich., in which city the Detroit United Railway operates a city service, has been held up by the Circuit Court issuing an order for the city to show cause why a permanent injunction should not be made restraining the municipality from enforcing the provisions of the ordinance.

George K. Weeks, president of the San Francisco-Oakland Terminal Railways, was quoted recently as follows in regard to the jitney decrease in Oakland: "At the end of last week (July 16) there were 177 jitneys of all sorts plying in Oakland and the transbay cities, in comparison with more than 300 when the craze was at its height. The fact that the Superior Court has refused the injunction demanded by the jitney bus owners, and that consequently the ordinance is to be strictly enforced, should result in diminishing the number very materially. At the same time it must be remembered that so long as jitneys were untaxed and unlicensed they operated in an irregular way, chiefly during the hours of the greatest pressure of travel. The licensed cars, on the other hand, ply on a more or less regular schedule. I am convinced from a close study of the problem that if the gasoline car is to become a permanent factor in the transportation business, its proper field of usefulness will be the interurban run and not in congested city streets. Were the jitneys taxed, as are the street cars, and made to comply with paying requirements, they would not last twenty-four hours. They exist only by virtue of legislative discrimination."

An ordinance before the Council at Akron, Ohio, prescribes severe conditions for the jitney bus operators and taxicabs. Jitney bus drivers must be men of good character, must not smoke while carrying passengers, and must not carry more than the rated seating capacity of their machines. They must specify the routes they wish to traverse, and must cover them each trip. The license fee has not been determined. The fare charged by taxicabs is limited to 25 cents a mile by the ordinance.

TRANSFER ORDER IN ALBANY

On the complaint of the Civic League of Albany against the United Traction Company and the Schenectady Railway, the Public Service Commission for the Second District of New York has made an order directing that when local passengers are accepted on the west-bound cars of the Schenectady Railway a transfer must be issued on request for any of the intersecting lines of the United Traction Company between State Street and Broadway and Watervliet Avenue inclusive, such transfers to be issued in all respects in accordance with the rules of the United Traction Company. The traction company is directed to accept these transfers.

One of the clauses of the commission's order in the general case against the United Traction Company, made on Dec. 11, 1914, provided that the Schenectady Railway must give transfers to passengers boarding its east-bound cars within the city limits, and that order is now being complied with. The present order rounds out the transfer situation between the two companies so far as it relates to local traffic. The latest order of the commission says:

"It is not the regular practice of the Schenectady Railway to pick up west-bound local passengers destined to points east of Watervliet Avenue, but only passengers bound beyond the limits of the city of Albany. However, it does carry such passengers from time to time, but they do not receive a transfer to the lines of the traction company. If it was the regular practice to carry such passengers it would, of course, be very detrimental to the through service. * * * The commission is of the opinion that if the Schenectady Railway voluntarily carries west-bound local passengers it should give to any such passenger who may request the same a transfer good on the connecting lines of the traction company. * * *

SAFETY-FIRST SINS OF OMISSION BY EMPLOYEES

An interesting safety-first suggestion comes from A. D. Garriott, foreman of a carhouse of the Louisville (Ky.) Railway Company. Mr. Garriott says:

"If the principle of safety was as readily followed as is the sometimes careless indifference to our rules and regulations, we would all soon be perfect and avoidable accidents would be a thing of the past. But it is much easier for us to see the carelessness of the public or of some one else than it is to hold ourselves from violating some of the principles of safety and of the company's rules. How often we see men who advocate safety first and make suggestions along this line, and men who are really interested in the safety movement, do things on a sudden impulse of the moment that are a bad example to anyone who may see them. We see a car approach a carhouse or some place that is not a regular stop, the motorman catching the front of the car while it is in motion. We see employees run after cars or climb over the rear dash or ride the coupling to the next stop. Again we see motormen stand on the lifeguard and reach through the front vestibule and move the car. We see carhouse employees stand in passageways where cars might split switches and cause serious accidents. We could also show where track men and men in all departments of the company violate the principle of safety. Now we cannot say that these things are done deliberately, or simply because we do not think, or to save a few steps or a little time. I think if every man would make a resolution to set an example of safety, much good could be accomplished. Don't look for some defect in equipment or something some one else should have done, but ask yourself the question: 'What am I doing to prevent accidents and am I practising safety first?'"

REFUSAL TO EXTEND FARE LIMIT

The Connecticut Company, New Haven, Conn., has refused the request of residents of Prospect Beach who requested the company to extend the fare limit on its line out of New Haven from Cox's to Sea Bluff. In its reply the company said in part:

"In regard to the fare limit, we are obliged to advise you that we cannot under present conditions extend this beyond its present location at Cox's. This seems to us

the logical place for the fare limit, and when the length of ride for 5 cents is considered from Church and Chapel Streets, New Haven, to Cox's, a distance of 4.82 miles, with transfer privileges of anywhere from 2 to 9 miles further, Lighthouse Point, a distance of 9.60 miles; Short Beach road, 9.90 miles; Dixwell Avenue terminus, 9.15 miles; Barnes and Quinpiac Avenue, 0.20 mile; you certainly must agree with us that our rate is more than reasonable.

"As you are well aware, the last decade has seen a tremendous increase in the cost of material of every description, labor charges are much higher, in fact, every item entering into the operation of street railways has made this business more expensive. On the other hand, our fares have remained the same, and while the purchasing power of the nickel to us has vastly decreased, we are, in many cases, giving a very much longer ride for the same money.

"In addition to the increase in operating expenses, the street railways at the present time are laboring under extremely heavy burdens imposed by State and municipal governments, expensive permanent pavements, oiling and sprinkling of streets, maintenance of highway bridges; these charges, combined with the recent unrestricted competition of the jitney which is extremely serious, inasmuch as it is taking from us our profitable short-haul passengers, all tend to make street railway returns less profitable each year."

Licenses Trolley Cars.—At the meeting of the Commissioners of Hoboken, N. J., on Aug. 4, an ordinance was adopted under which every car of the Public Service Railway, Newark, entering Hoboken must have a license, for which it must pay \$25.

Cash and Transfer Registers in Springfield.—The new system for the use of cash and transfer registers on all cars on the Springfield (Mass.) Street Railway went into effect on Aug. 1. Under the new system a minute report of the various details of operation is required. Passes are no longer issued to employees or others, but tickets have been issued to replace them. This facilitates the accounting. Each car is equipped with two registers. The one is used to record cash fares, while the other records transfers and tickets received.

Westchester's Punctuality Record Better Than Ever.—In connection with the details of the New York, Westchester & Boston Railway's remarkable punctuality record for the last twelve months ending June 30, 1915, which were published in the *ELECTRIC RAILWAY JOURNAL* of July 31, additional figures now available for the month of July show that this railway's average for promptness is still on the increase in spite of the narrow margin possible for improvement. Out of 6536 trains run during July 6505 trains, or 99.5 per cent, were on time, as compared with this company's average for the last twelve months of 99.2 per cent.

Enforcing the "Jim Crow" Law.—The State law requiring the separation of whites and blacks in railway trains is being strictly enforced by the Louisville & Interurban Railway, Louisville, Ky. Since cards have been posted stating the terms of the State law there has been little difficulty in obtaining compliance with the measure, although this is sometimes grudgingly given. The compartment in each car reserved for the negro traffic is not as commodious as that for the whites, although it is not as frequently filled. On Sundays, however, there are sometimes more colored passengers than can be accommodated in their compartment regularly and easily and delays while they pass along the aisles are unavoidable.

Express Service Between Springfield, Worcester and Providence.—The electric express service of the Springfield (Mass.) Street Railway was extended on Aug. 2, when special service between Springfield and Providence by way of Worcester was begun. The decision of the officials to run a special car making the through trip in twenty-two hours was made in response to a demand which has been most pronounced from Providence shippers. Starting from Springfield over the lines of the Springfield Street Railway, the new express car travels over the tracks of five

separate railway systems. From Worcester to Uxbridge the route is over the lines of the Worcester Consolidated Street Railway. From Uxbridge to Milford the route is over the Milford & Uxbridge Street Railway, and from Milford to North Attleboro via the Milford, Attleboro & Woonsocket Street Railway. From North Attleboro to Providence the trip is over the Interstate Consolidated Street Railway and the lines of the Rhode Island Company.

St. Louis Skip-Stops Allowed.—The Missouri Public Service Commission has made an order authorizing the United Railways, St. Louis, to abolish 102 stops for three months. Sixty-two of the stops to be eliminated in the test are on the Broadway line. The remainder are on the Olive-University, Olive-Delmar and Olive-Maryland lines. The opinion holds that the United Railways in asking that 770 stops on various lines be eliminated did not submit sufficient proof that the changes sought would not inconvenience the public or result in greater safety to passengers and pedestrians. The experiment eliminating the 102 stops will begin on Sept. 1. The order states that if at the expiration of the test period it is determined that better service can be rendered to the majority of passengers on those lines, the United Railways will be permitted to petition the proper municipal authorities of St. Louis for the necessary modification of regulations to eliminate all useless stops.

P. R. T. to Carry Postmen for \$24,000 a Year.—The Philadelphia (Pa.) Rapid Transit Company and the United States government have entered into a new contract dating from July 1, 1915, and extending to June 30, 1916, under which letter carriers will be carried at an annual rate of \$24,000, an increase of \$10,000 over the contract executed five years ago by the government with the company at a rate of \$14,000 a year. When the agreement expired on July 1, the company refused to renew it on the ground that the rate was too low. An investigation by the company is said to have shown that it would collect \$95,000 a year in fares from carriers at a 5-cent cash charge. In declining to renew the agreement the company is said to have suggested \$71,000 per annum as compensation under a new contract. The postal officials demurred and it was finally agreed to grant an extension of the old agreement for one month, or until Aug. 1, to allow a further investigation in an effort to reach an adjustment of the dispute which would be acceptable to both sides.

Favorable Brooklyn Accident Record.—On the subject of safety the Brooklyn (N. Y.) Rapid Transit Company's activities have been numerous and far-reaching. According to the annual report of the company the various departmental organizations were completed during the autumn of 1914. In each of the last six months boarding and alighting accidents, car collisions, accidents in which cars strike persons, and car and vehicle collisions, make a more favorable showing than in any one of the corresponding months of the previous year—and this in spite of the fact that the hazard of accident was increased substantially by the reconstruction of several of the elevated lines and the construction of new lines, with operation over the same routes proceeding uninterruptedly during the progress of the work. While there were 1333 fewer accidents on the system during the fiscal year than during the preceding year, the payment for damages showed an increase owing to the fact that the number of actions tried representing accidents of previous years shows an increase of 42 per cent.

Excursions by Trolley and Boat to Niagara.—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has adopted a joint passenger tariff in connection with the Ohio Electric Railway, the Detroit & Cleveland Navigation Company, the Cleveland & Buffalo Transit Company and the International Railway, Buffalo, naming excursion rates from various points on the Fort Wayne & Northern Indiana Traction Company's line to Niagara Falls, N. Y., and return. The Union Traction Company of Indiana is also concurring in the excursion, routing people from Indianapolis and points on its line in connection with the Fort Wayne & Northern Indiana Traction Company to Fort Wayne and turning them over to the Ohio Electric Railway. The full excursion fare to Niagara Falls from La Fayette, the most

westerly point on the line of the Fort Wayne & Northern Indiana Traction Company's line, is \$10. This, of course, does not include meals, berths or staterooms. The route from La Fayette is via Logansport, Peru, Fort Wayne and Lima to Toledo, and thence by boat across Lake Erie.

Causes of Delays Advertised in Kansas City.—The receivers of the Metropolitan Street Railway, Kansas City, Mo., recently advertised in the daily papers of that city in a space 11 in. square a record of delays in service. The statement introducing the tabulation of interruptions to service follows: "Reports of every delay in the street railway service are made to the headquarters at Grand Avenue and Fifteenth Street. Whenever a delay occurs the nearest division station is immediately notified and either a repair motor truck or car is at once ordered to the scene. Many of these delays are due to causes over which the company has no control. Last week two were due to parades, one tying up most of the downtown service from ten to forty minutes. Fires, wagons or automobiles breaking down on car tracks and freight train blockades are other instances. Where possible cars are routed around blockaded sections. In all cases the street railway company uses every means to overcome obstructions to regularity in service. A record of delays in service for five days of last week is given here in the belief that it will be of interest to the patrons of the company."

Order Regarding Substitution of Open Cars for Closed Cars.—Under date of April 15, 1913, the Public Service Commission of the District of Columbia notified the Washington Railway & Electric Company that open cars could be substituted for closed cars on the basis of five open cars to furnish the service supplied by eight closed cars. Subsequently it passed an order prohibiting passengers from standing on the running boards. This resulted in passengers standing between seats on open cars. In a letter to the company on Aug. 6 the commission states: "The commission recognizes the objection to the practice of passengers standing between the seats and therefore believes that this space should not be taken into account in calculating the capacity of cars. While open cars have much greater seating capacity than the closed cars, these restrictions reduce the standing room in open cars to such an extent that the capacity of the two types of cars, including standing passengers, is nearly the same. It, therefore, appears to the commission that the capacities of open cars and closed cars do not warrant the substitution of only five open cars for eight closed cars, and that they should be considered on the same basis, and when open cars are operated the same number of open cars should be placed in service as is called for by the schedule in effect during the period of closed-car operation."

Fourth Report of New Jersey Welfare Committee.—The fourth annual report of the welfare committee of the Public Service Corporation of New Jersey has just been issued. As its name implies, the committee administers the welfare work of the corporation and its subsidiary gas, electric and railway companies, which work covers sick benefits, pensions and life insurance. In addition the committee looks after the payments made necessary by the employers' liability and workmen's compensation act. The corporation's voluntary welfare work and the operation of the State law are made somewhat reciprocal in that the employee receives the benefit of the one which redounds to his greater advantage. For instance, if the company's own plan called for a larger payment than the liability law in any specific case, the company would not stand on the strict letter of the law, but would make the larger payment. During the four years that the plan has been in effect the company has disbursed to employees, their relatives or dependants \$370,990. Of this amount \$144,697 was compulsory under the State law, the balance, or \$226,292, having been voluntarily paid for pensions, sick benefits and life insurance under the corporation's own plan. For the last year the corporation paid \$68,744 under the head of welfare work and \$53,301 required by the compensation act, a total of \$122,045. This was an increase over the preceding year of \$12,319 in voluntary payments and of \$5,443 in compensation required by the State law. The corporation has close to 15,000 permanent employees.

Personal Mention

Mr. Clinton D. Kellogg, Chicago, has been appointed general superintendent of the Gary, Hobart & Eastern Traction Company, with headquarters in Hobart, Ind. He succeeds Mr. B. J. Schramm resigned.

Mr. W. H. Given has resigned as assistant general manager of the Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia., to become manager of the Arkansas Valley Interurban Railway, a new position with that company.

Mr. R. W. Emerson, superintendent of the New York & North Shore Traction Company, Flushing, N. Y., has resigned effective on Aug. 20, to become assistant superintendent of the Cleveland (Ohio) Railway, a newly created position with that company.

Mr. J. C. Blackburn has accepted a position as superintendent of the street car lines in Marshalltown, Iowa, effective Aug. 1. Mr. Blackburn has been associated with the lines in Galesburg, Ill., since horse cars were used. He was also in service in Cedar Rapids, Iowa.

Mr. Milo R. Maltbie, formerly a member of the Public Service Commission for the First District of New York, and recently chairman of the valuation committee of the National Association of Railway Commissioners, has been appointed a member of the advisory board to Mr. C. A. Prouty, director of the valuation division of the Interstate Commerce Commission, Washington, D. C.

Mr. William H. Hitchcock, formerly general manager of the Trenton & Mercer County Traction Corporation, Trenton, N. J., has been appointed general superintendent of the Jersey Central Traction Company, Keyport, N. J., to succeed Mr. Samuel Barnes. Mr. Hitchcock began his career as a conductor in Washington, D. C., in 1896, and served the Washington Railway & Electric Company in several capacities until 1910, when he was appointed superintendent of transportation of the Wilmington & Philadelphia Traction Company and the Southern Pennsylvania Traction Company, Wilmington. In January, 1913, he was appointed general superintendent of the Trenton & Mercer County Traction Corporation, and subsequently was made manager.

Mr. Cecil G. Rice has been appointed assistant to the president, Mr. James D. Callery, of the Pittsburgh (Pa.) Railways, the Duquesne Light Company and the Beaver Valley Traction Company. The position of superintendent of the claim department, formerly held by Mr. Rice, has been abolished, and the work handled by that department will be divided among five associated bureaus with Mr. R. B. Gribble, chief of clerical bureau; Mr. C. C. Mullen, chief of inspection bureau; Dr. W. M. Holtz, chief of medical bureau; Mr. Augustus Baker, chief of adjustment bureau; Mr. H. B. Ockington, principal adjuster; Mr. G. E. Clarkson, chief of litigation bureau, and Mr. F. A. McKenry, auditor of associated bureaus. Mr. Rice will direct the work of these bureaus in addition to looking after such other matters as may be assigned to him by the president. Mr. Rice was born in Harrisville, W. Va., on Nov. 15, 1878. He attended the State Normal School at Fairmont, W. Va., and the University of West Virginia. Upon the completion of his studies he read law and later took up newspaper work. Before engaging in such work in Pittsburgh, he was city editor of the Parkersburg *Daily News*. Although not a resident of Pittsburgh he was selected by the Mayor, George W. Guthrie, now ambassador to Japan, for special work, and in this capacity served the city for two and one-half years. In January, 1907, Mr. Rice was appointed private secretary to Mr. Callery, president Pittsburgh Railways, later being made general agent of that company and still later being employed in different capacities in the operating department at the shops and carhouses. In August, 1908, he temporarily left the traction field to become credit manager of the Colonial Trust Company and also represented that institution as a member of the Pittsburgh Stock Exchange. In July, 1909, he assumed direction of the claim department of the Pittsburgh Railways, the Duquesne Light Company and the Beaver Valley Traction Company. In addition to introducing advanced ideas in connection with the handling of claims, Mr. Rice has for years been a close student of scientific management and business psychology.

Construction News

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

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

FRANCHISES

San Jose, Cal.—The San Jose Railroad has applied to the Board of Supervisors of the County of Santa Clara for a franchise to construct, maintain and operate a single or double track standard gage electric railroad with the necessary sidings, turnouts, switches, poles, etc., over a specified route in the county.

Macon, Ga.—The Macon Railway & Light Company is authorized to lay double track on Broadway between Boundary and Giles Streets.

Berwyn, Ill.—A petition has been received by the City Council of Berwyn, Ill., from E. G. Wright and others stating that they are ready to build a street railway upon Harlem Avenue from Thirty-ninth Street north to Twelfth Street, to be operated at a 5-cent fare with transfers from all crosstown lines, provided they are guaranteed a twenty-year franchise.

United Railways & Electric Company, Baltimore, Md.—This company will extend its Columbia Avenue double-track line 2100 ft. from the present terminus at Gwynn's Falls to Lansdowne.

Fairhaven, Mass.—The Selectmen have voted unanimously to grant a franchise to the Massachusetts Highway Service Company, Boston, to install wires on poles of the New Bedford Gas & Edison Light Company and the New England Telephone Company, along the Sconticut Neck Road from Washington Street to the Daniel W. Dean farm, a distance of 2½ miles, and to operate trackless trolley buses over that route. The company has arranged to purchase its power for the operation of its Sconticut Neck line from the Union Street Railway.

Pottsville, Pa.—Pottsville City Council has granted a franchise to build an electric railway to St. Clair, a distance of 3 miles. The Pottsville & St. Clair Electric Railroad is the name of the new corporation.

Petersburg, Va.—The Wythe Street franchise for an electric railway from Petersburg to City Point, for which a bid of \$25 was made by the Petersburg & Appomattox Company, has been awarded to R. H. Mann and S. W. Zimmer of Petersburg, who have taken over the interests of the Appomattox company.

Petersburg, Va.—The City Council awarded to the Petersburg & James River Corporation the Bollingbrook Street franchise for the proposed electric railway from City Point to Petersburg.

TRACK AND ROADWAY

Fresno (Cal.) Interurban Railway.—Construction work on the extension of the Fresno Interurban Railway has been started at the Barton Vineyard. It is possible that 3½ miles of the line may be finished before it is announced whether the road will go to Clovis or Centerville.

Municipal Railways, San Francisco, Cal.—The city of San Francisco has been requested by the United States Army authorities to extend its Union Street line through the army reservation to Fort Scott. The government is preparing plans for extensive new officers' quarters at the Presidio, to cost about \$400,000, and the new line would care for the additional traffic expected by the erection and occupancy of the proposed army buildings. City Engineer M. M. Shaughnessy and T. W. Ransome, chief engineer of the railway company, are investigating the feasibility of the extension. Work on the Church Street extension of the Municipal Railway in Market Street and the proposed Twin Peaks Tunnel line of the same company is being held up, it is claimed, on account of delay by the Board of Supervisors in declaring a policy toward questions of franchise requirements as they affect competing lines. The charter provides that when a new street railway franchise is granted the company obtaining the franchise may use existing lines of a competing company for ten blocks on any street, provid-

ing proper maintenance provisions are made. Otherwise such tracks may be used for a distance of only five blocks under the same conditions. The city is ready to begin laying tracks in lower Market Street, it is asserted, and Mr. Shaughnessy has asked the board for an early declaration of policy on the matters in question so that the work may proceed.

San Francisco-Oakland Terminal Railways, San Francisco, Cal.—Assurances were received from the San Francisco-Oakland Terminal Railways at a recent conference between officials of the company and the city of Berkeley that work would begin within a comparatively short time on the improvement of the company's roadbed on Adeline Street from Woolsey to the Oakland line, to be followed by rebuilding of the company's line on Bramcroft way from College to Telegraph Avenue. The work contemplated will cost about \$28,000.

Wilmington & Philadelphia Traction Company, Wilmington, Del.—Employees of the Wilmington & Philadelphia Traction Company have begun the work of connecting its lines with the People's Railway, which was recently purchased. Several miles of track will be taken up and the running direction of other lines will be changed.

Jacksonville (Fla.) Traction Company.—The committee recently appointed to prepare a statement showing the advantage to the company should it extend its tracks from Ortega to the State camp grounds, has completed its labors, and has submitted to Hardy Croom, manager for the company, a report which tells in detail of the immense amount of development work accomplished and still going on at the grounds, as well as a sketch of its history, its prospects for the future, and a statement of the probable earnings of the proposed extension.

Evanston (Ill.) Railway.—This company has promised service to a now unoccupied tract of desirable building lots if the city will annex the tract and provide it with sewers and water. The company has begun operation on its Howard Street extension.

Chicago & Milwaukee Electric Railway, Highwood, Ill.—This company has been asked to consider the possibility of a west side loop for Evanston, Ill.

Chicago, Peoria & Quincy Traction Company, Peoria, Ill.—A statement in regard to the plans of this company was made by Judge Albert Akers, Quincy, following a meeting of the directors on July 24. Judge Akers is quoted as stating: "A large banking house has come forward with an offer to take sufficient bonds from us to provide funds not only for the building of the first section of the interurban line but the entire line. Coincident with this offer has come the Talbott Construction Company's written proposition, which the board of directors has accepted, making it practically a contract, stating that the construction company regards this bond issue as cash and that the company will undertake the building of the entire line from Peoria to Quincy." [July 12, '15.]

Lafayette & Northwestern Traction Company, Lafayette, Ind.—A hearing was held on July 24 before Commissioners McClure and Edwards of the Indiana Public Service Commission to inquire into the matter of the Lafayette & Northwestern Traction Company, which recently announced that it contemplated the construction of a road from Lafayette to Chicago, and which, it was stated, had undertaken to issue securities without the permission of the Public Service Commission. O. L. Brown, general manager of the proposed line, stated that the Tippecanoe Construction Company had been organized among local farmers to finance the preliminary steps in building from Lafayette to Rensselaer; that about \$10,000 in stock had been sold, and that about \$6,000 in notes had been issued. Subsidies had also been voted by some of the townships through which the proposed road was to pass.

Topeka (Kan.) Railway.—The contract for a concrete bridge over Shunganunga Creek, Kansas Avenue and Twentieth Street, has been let to Arthur E. Allen, Topeka, at \$15,468, of which the Topeka Railway will pay \$4,500. The street railway will extend its line on Kansas Avenue to Twenty-first Street and over the bridge as soon as the structure is finished.

Detroit (Mich.) United Railway.—This company's 1915 program contemplates 14 miles of city track reconstruction in Detroit and a new crosstown line, including $\frac{3}{4}$ mile of double track and 1 mile of single track in Flint, Mich. In addition the company will double track 7500 ft. of the Michigan Avenue line in Detroit and extend the Kercheval Avenue line 4500 ft. Interurban line extensions for this year include $7\frac{1}{2}$ miles from Almont to Imlay City, Mich. This will form a part of the new Detroit, Almont & Northern Railroad, and it will be opened for service about Aug. 20.

Electric Short Line Railway, Minneapolis, Minn.—Plans are being contemplated by this company to construct a 45-mile extension of its lines. Two plans are under consideration. One is for an extension from Winsted to Clara City, via Hutchinson. The other plan is to build south.

***Faribault, Minn.**—W. K. Palmer, Kansas City, is contemplating the construction of an electric railway from Faribault to Waseca and possibly to Blue Earth, Minn.

Twin City Rapid Transit Company, Minneapolis, Minn.—As soon as the company receives permission from the War Department for the use of a right-of-way over a short strip of government property, the work on the extension direct to the Snelling Speedway will begin. A double track line will be laid to within a few feet of the St. Paul side of the racetrack, with a tunnel leading to the track for the ingress and egress of passengers.

Fallon (Nev.) Electric Railroad.—This company, which has completed the grade for its line between Fallon and Sand Springs, is reported to have arranged to proceed at once with construction work.

United Traction Company, Albany, N. Y.—General Managers Carl H. Graf of the Municipal Gas Company and Charles F. Hewitt of the United Traction Company have agreed to recommend to their respective boards of directors the placing underground of electric wires in South Pearl Street from Madison Avenue to Fourth Avenue.

Buffalo (N. Y.) Southern Railway.—This company will extend its tracks through Buffalo Street, Long Avenue, and Pierce Avenue, Hamburg.

Hornell (N. Y.) Traction Company.—The directors of Hornell Traction Company have decided to double track the lines of the company through Main Street and part of Broad Street.

New York, N. Y.—P. Clingman, 33 Pine Street, New York, N. Y., and certain property holders are interested in a plan to build a single-track electric railway along public highways between the towns of Sea Cliff, Glen Cove, Oyster Bay and Roslyn, to connect there with the New York & North Shore Traction Company's line. Three routes have been suggested and preliminary surveys have been made. No incorporation has yet been made and the proposition is still in its preliminary stages. Storage-battery cars may possibly be operated.

Schenectady (N. Y.) Railway.—The Public Service Commission for the Second District has authorized the extension of this company's lines from their present terminus at Nott Street and Wendell Avenue, Schenectady, along Nott Street to the Grand Boulevard at East Alley and thence along the Grand Boulevard on private right-of-way in the town of Niskayuna to Van Antwerp Road. The franchise for the extension was approved by the Common Council, Mayor and Board of Estimate last January.

Northern Ohio Traction & Light Company, Akron, Ohio.—A special committee of the Council of Canton will confer with the officers of the new industries now being located in the northeast manufacturing district and will then take up with the traction company the question of the best route to be followed by the railway extension which is to be built into the district now being so rapidly developed.

Cleveland (Ohio) Railway.—Director of Public Service Sidlo of Cleveland, Ohio, after making an investigation, will recommend to the City Council that the proposed extension of the East Seventy-ninth Street crosstown line of this company to Broadway and Aetna Road be built on two parallel streets instead of having a double track on one street. At a meeting of business men, city officials and county officials at the Chamber of Commerce on Aug. 5,

the proposed subways to the new high-level bridge across the Cuyahoga River were discussed. If such a plan is carried out, one of them will extend from the Public Square through Superior Avenue to the river for the eastern approach. On the west side of the river two lines would be necessary, one on Detroit Avenue to West Twenty-ninth Street and the other on West Twenty-fifth Street to Franklin Avenue. These tubes would be for the use of street cars only. County Engineer Stinchcomb estimated the cost of the subways at \$2,200,000.

Butler & Grove City Railway, Grove City, Pa.—This company has contracted and bought nearly all the material for the equipment of its line. Eleven carloads of rails have been received and these are now being laid. Two cars and material for three bridges remain to be purchased.

Chattanooga (Tenn.) Traction Company.—The extension of this company's lines to Hixon, north of the city, is being considered. It is suggested that later the extension might go on to Dayton, in the north end of the county.

Dallas (Tex.) Consolidated Electric Street Railway.—This company is relaying with new rails the portion of its Oak Lawn line along Bowen Street, between McKinney Avenue and Cedar Springs Road, and is welding the joints with thermit.

El Paso (Tex.) Electric Railway.—Plans are being made by this company to construct a line on Piedras Street from Tularosa Street to Alameda Avenue, El Paso.

Ogden, Logan & Idaho Railway, Ogden, Utah.—This company plans to purchase the right-of-way surveyed last fall for a new interurban line from Ogden to Brigham City. As soon as possible after the right-of-way is secured, construction work will be started. Although the right-of-way was secured and a new line is to be constructed, the present line from Williard to Brigham City will continue to be operated by the company, making two interurban routes to Brigham City. The new line will parallel the Oregon Short Line, with the exception that it will run through the center of Parry and Williard. Operation has been begun on this company's extension to Huntsville.

Petersburg & James River Corporation, Petersburg, Va.—The Petersburg & James River Corporation has begun the construction of an electric railway between Petersburg and Hopewell. Three miles of the road have been graded. J. Walter Long, president of the corporation, says the road will be completed and open for traffic by Dec. 1.

Richmond & Rappahannock River Railway, Richmond, Va.—This company is said to contemplate extending its line to Urbana in the near future.

Tacoma Railway & Power Company, Tacoma, Wash.—It is reported the City Commissioners have received the assurance of Louis Bean, manager of the company, that the Pacific Avenue line will be extended as a concession for a franchise to cross South Tacoma cars over the new Tacoma Avenue fill.

SHOPS AND BUILDINGS

Municipal Railways, San Francisco, Cal.—The contract for constructing the second story of the Municipal Railway carhouse at Geary Street and Presidio Avenue has been awarded by the Board of Works to James L. McLaughlin for \$26,747.

Union Traction Company of Indiana, Indianapolis, Ind.—This company expects to remodel its station at Pendleton.

Albuquerque (N. M.) Traction Company.—George Roslington, receiver of this company, has been authorized by the court to replace the carhouse of the company destroyed by fire recently.

Philadelphia & Western Railway, Upper Darby, Pa.—This company is working on plans for a proposed overhead station on Swede Street, Norristown. When these plans are finished the Council will be asked to permit the company to cover over two and a half squares of Swede Street in an effort to overcome the congestion complained of by the Town Council in making a station of the public street at the courthouse at Swede and Penn Streets, where both the Philadelphia & Western Railway and the Lehigh Valley Transit Company have been loading and unloading passengers.

Manufactures and Supplies

ROLLING STOCK

Worcester Consolidated Street Railway, Worcester, Mass., expects to purchase twenty-four four-motor equipments.

Indiana Railways & Light Company, Kokomo, Ind., has ordered two very light cars from the Cincinnati Car Company.

Butler & Grove City Railway, Grove City, Pa., expects immediately to purchase two cars for its new line. John Carruthers is president.

San Francisco Municipal Railway, San Francisco, Cal., has ordered one work car body from the Pacific Car & Equipment Company, to be equipped with Westinghouse motors.

TRADE NOTES

Charles F. Etter, Harrisburg, Pa., manufacturer of ready change carriers for street railway conductors, has moved his Harrisburg office from 904 North Second Street to 907 North Front Street.

Ohmer Fare Register Company, Dayton, Ohio, has issued a folder describing the economical service provided by this system. The folder reports that since January, 1915, the company has received forty-three contracts covering various types of registers for registering collections ranging in denomination from two to sixty different classes of fares.

Spray Manufacturing Company, Boston, Mass., recently incorporated to construct spray cooling systems, gas scrubbers, odor and fume condensers, etc., has changed its name to the American Spray Company, as it will engage in general engineering work involved in the use of spray systems. The management of the company remains unchanged.

Pratt & Whitney Company, Hartford, Conn., has opened an office and showroom at 16 and 18 Fremont Street, San Francisco. S. G. Eastman, formerly manager of the Chicago office, is in charge. A large stock of machinery, small tools and gages will be carried for the convenience of customers. The company has been appointed agent for the entire Niles-Bement-Pond line of machine tools, cranes, steam hammers, etc.

International Oxygen Company, New York, N. Y., has received an order from the United States Navy Department for the erection of a hydrogen generating plant for ballooning purposes at the Aeronautic Station of the Navy Yard at Pensacola, Fla. This company has also received an order from the Government for the installation of a system for generating oxygen and hydrogen at the Washington Navy Yard, Washington, D. C.

Joseph T. Ryerson & Son, Chicago, Ill., have just completed new warehouses on Westside Avenue, Jersey City, N. J. The company has maintained an office at 30 Church Street, New York City, and steel warehouses at Boonton, N. J., for some time. This new move, however, will increase its stock and service to a marked degree and will mean a great deal in immediate shipments to steel buyers of the Eastern territory. The new warehouses have been built on a 10-acre site of the junction of the Hackensack River and Newark Bay, thus affording facilities for making water shipments to all parts of New York harbor and adjacent waters and for transshipment to ocean liners. The plant is provided with switches from the Central Railroad of New Jersey. The company has also acquired, in addition to the former trucking capacity, a fleet of motor trucks for making deliveries in Greater New York.

Latin-American Public Works Corporation is the name of a new company which will be organized for the general purpose of developing business in Latin-American countries. The activities of the company are to be directed specially toward the acquisition, on favorable terms, of concessions and contracts for public works and also of existing public utility or other properties which may require extension or improvement or both. It is also planned to conduct studies and investigations of business opportunities in South and Central America. The authorized capital will be \$1,000,000, divided into 10,000 shares of the par value of \$100 each. The shares will be all of one class, and there will be no

promotion profit of any kind whatever in connection with the organization of the company. It has also been arranged that a representative of the company shall visit some of the localities where the best opportunities now exist, for the purpose of securing, subject to the approval of the directors, such business as can be negotiated on a decidedly favorable basis. Application for a charter has been filed at Dover, Del. The incorporators are: J. G. White, president of J. G. White & Company, Inc.; Douglas I. McKay, assistant to the president J. G. White Engineering Corporation, and Severo Mallet-Prevost, of the firm of Curtis, Mallet-Prevost & Colt.

ADVERTISING LITERATURE

Templeton, Kenly & Company, Ltd., Chicago, Ill., have issued a catalog describing its various types of Simplex jacks for electric railway use. The catalog contains convenient instructions for the proper operation of these jacks when moving or setting machinery, such as lathes, lifting or straightening telephone or trolley poles or extricating trucks or removing wreckage from tracks. These jacks are made in a number of different sizes and capacities from that suitable for track or ballast work to that required for lifting heavy cars.

Sauvage-Ward Brake Company, New York, N. Y., has issued a catalog describing the savings effected in the life of brakeshoes by the use of its S. W. automatic shim slack adjusters. A 95 per cent increase of life for brakeshoes is asserted to have been saved on a certain road by the use of the slack adjuster. These adjusters have been adopted by seventy-five roads throughout the United States. The catalog contains a trial offer to equip from one to twenty-five cars at the expense of the manufacturer for a period of from two to three months.

General Electric Company, Schenectady, N. Y., has issued Bulletin No. 44407, which describes the GE-225-B, 600/1200-volt ventilated commutating pole railway motor. This type of motor has characteristics which adapt it especially to high-speed interurban service. It is built on substantial mechanical lines, and in details of design and construction follows the general GE practice for railway motors. The bulletin gives a complete description of the construction details and shows some characteristic operation curves. Bulletin No. 44090 gives an analysis of the equipment for various forms of up-to-date railway substations, and specifies suitable apparatus for different voltages. The details of the apparatus required are given for permanent indoor and outdoor substations, and also for portable substations. The bulletin is amply illustrated from photographs of typical installations, supplemented by detailed views of substation apparatus, complete tables of ratings and dimensions, together with drawings showing the location of the apparatus in both indoor and outdoor substations. This bulletin should be of particular interest to the practical railway operator for the reason that, in addition to the data specified above, it gives a very comprehensive set of railway switchboard wiring diagrams.

NEW PUBLICATIONS

The Utilities Magazine. Vol. I, No. 1, July, 1915, published by the Utilities Bureau, 216 City Hall, Philadelphia. Price, \$1 per copy.

The organization of the Utilities Bureau, as the outcome of the convention of mayors in Philadelphia last November, was reported at the time in the ELECTRIC RAILWAY JOURNAL. Under the direction of the bureau, of which Morris L. Cooke is acting director, "The Utilities Magazine" has been published "as one medium through which the Utilities Bureau will give to officials and city residents information of interest and usefulness in utility matters." The need of such a magazine is explained by the statement that "so many magazines misrepresent the truth as to public plants." The first number contains a digest of jitney ordinances, a discussion of the right of a plaintiff to examine the books and property of a utility company, the decision of the New York Public Service Commission, First District, in the New York Edison-Stadtlander case and one or two shorter articles. No statement appears in the first number as to whether the magazine is to be published at regular intervals or spasmodically.