

Electric Railway Journal

[Consolidation of Street Railway Journal and Electric Railway Review]

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Selling Transportation— the Subject of This Issue

MANY keen observers have declared that electric railways have not paid enough attention to merchandising their product. This may be because of a feeling that if good service was given business would come as a matter of course. Nevertheless, there is no doubt that business can be increased by attention to methods well recognized in other lines as desirable for stimulating trade. The reports during the past two years of the committee on merchandising transportation show at once the growing interest in this phase of the work and excellent examples of how to go about it.

It is the object of this number largely to tell what the sales department can do, what it should consist of and how all of the different departments can help in the sale of transportation.

One purpose of the sales effort on an electric railway should be to increase the riding from necessity riding to that which can be obtained if the riding habit is well developed in the community served by the railway. To secure this result the public should be saturated with the idea of the desirability and economy of riding. This is one of the duties, perhaps the primary duty, of the sales department, and for a nation which has the reputation of always being in a hurry, it ought not to be a difficult task in most cities by stressing the time-saving idea to increase the riding habit.

The owner or manager of a successful department store, however, does not stop at creating a desire in the minds of his patrons for merchandise of various kinds. He knows that that alone will not sell goods. He tries to meet the desire which he has created for the articles which he has for sale by putting the merchandise up in an attractive way. He must also charge an attractive price for it, although this does not mean that the goods must be sold at cost or less than cost. The price is not controlling in the sale of either transportation or general merchandise. Provided the goods are what are wanted and the seller has the reputation of being satisfied with a reasonable profit, the public is not apt to complain about the price.

It is here that all of the departments can help. To some, the connection between the track engineer and the sale of transportation may appear very far apart.

Nevertheless the connection is very close. Bad track discourages travel. In like manner the superintendent of equipment, the designer of cars, the schedule maker and other heads of departments have an important influence over the popularity of the electric railway, in accordance with the efficiency with which they carry on their respective duties. They are helping to put the package of transportation up in the form wanted by the prospective passenger or buyer.

Finally, the whole organization should be inspired through the chief active executives with the sales idea. It will pay.

A Critical Demand for Financial Leadership

WHILE the present issue is devoted largely to a plea for sales leadership in the electric railway industry, a demand which is at least as critical must not be overlooked. This is the demand for financial leadership in the industry. It is less tangible to talk about; it is not something which can be expected of the whole organization as can salesmanship; it must be confined to and expected of only a very few of the higher executives, but the necessity for it—immediately—is very real. This idea is suggested incidentally, too, in Mr. Goodwin's article. In the composition of his board of directors it will be noted that a balance is suggested between the three groups of sales, financial, and engineering and operating. Engineering and operating talent the industry has and can be proud of. But Mr. Goodwin might have said as much about the necessity for financial statesmanship as he does of sales statesmanship in the directing personnel of the company.

Bankers, as such, are not what the industry needs. There is enough ready talent for the mere marketing of securities once issued. What is needed is real financial genius in the rebuilding of the financial structures of many companies. It is well recognized—emphasized definitely during the past few years of adjustment and readjustment—that the greatest load carried by some

companies is the load of the existing financial organization. Not that it was originally faulty. It merely doesn't suit now. What to do can be determined only by real ability. Credit relief is necessary, but at best temporary; it will make the job easier. But the desirability—the necessity—of something more fundamental is evident. There must be constructive leadership in determining the most sound and practicable financial policies for electric railways.

From time to time special commissions investigate and report with suggestions. Public service commissions take a hand. Occasionally receiverships occur. All of these are mere symptoms. The real solution must be found from the inside. The opportunity and the obligation therefore rest on those now in positions of financial responsibility in the railway industry.

Come to Atlantic City Prepared for Discussion

WITH the advance papers in the hands of the membership and the convention so close at hand, it is greatly to be hoped that a large number of the members of the American Electric Railway Association are preparing or have already prepared discussions of the various committee reports. These, almost without exception, represent an amount of hard work little realized by those who have not served on the committees. The need of full and general discussion is particularly great in the case of the Engineering Association, for whether "standards" shall be stepping stones or stumbling blocks in an industry or art depends on careful determination and accurate statement. As in the case of the man who was in doubt as to whether to buy a camisole or a casserole, the answer depends on whether the "chicken" is "alive or dead."

A well-chosen standard represents the average judgment of the men who prepared it. But changes in materials and methods may materially alter conditions and so make modifications necessary; or misunderstanding, due to poor wording or what not, may demand a clearer expression. Knowledge of the need of these comes most quickly and best from the men who actually do the work.

Other years, at the booths, a large amount of most valuable practical information has been "swapped"; indeed, a good many consider these over-the-exhibits discussions more valuable than those in the regular sessions, and the latter have suffered considerably in consequence. This year, however, with no exhibits, and with special efforts being made by the association and by committee chairmen and members personally to secure comments, there should result such attendance and discussion as cannot fail to be most valuable, both to the association and to those who take part in it.

New Commission's First Important Decision

SIX CENTS is to continue to be the fare in Utica, N. Y. This is the decision of the new Public Service Commission in its first important rate case. In this late day nothing extraordinary in the way of interest attaches to a fare decision such as this, but in the present instance the case takes on special significance because of the standard of future action which is set down by the commission. Fault is found by the com-

mission with the basis of value set up by the railway, and the pronouncement is made that "public utilities just as other departments of business must expect to cope with periods of depressions, just as at other times they enjoy periods of prosperity and full dividends." This is good as a theory, but in the case of the New York State Railways it does not appear that the company ever enjoyed any periods of prosperity and full dividends. Moreover, it would seem that the commission is oversanguine as to the results likely to be attained in reduced expenses through the use of one-man cars and by the general lowering of the prices of commodities needed by the railway in the conduct of its business. These are just a few of the things in which it would appear that the judgment of the commission is not likely to be approximated.

But whether or not the commission is proved to be correct in its judgment, the decision ought to set at rest the opinion which gained circulation during the session of the Legislature at which the new regulatory body was created that the public utilities would have an easy time of it before the incoming body. Coming as the ruling does almost on the eve of the November elections, the opponents of Governor Miller have been handed a resounding whack that will be heard through the length and breadth of the state. It may be that the New York State Railways will be able to accomplish under the continued 6-cent fare in Utica all that the commission anticipates, but if Syracuse, in which the same company is operating at an 8-cent fare, is any criterion, then the likelihood is remote of its getting on as gloriously in Utica as the commission expects.

Safety in Bus Design an Important Factor in Selling Transportation

IN THE PAST many patrons of the motor bus have commented seriously on the accident hazard of this type of vehicle. Fear of overturning, irresponsible driving, poor brakes, etc., have kept away many prospective passengers. During the past year considerable pioneering work has been done by the manufacturers of motor buses, as is evidenced by a glance at different designs of bus bodies published elsewhere in this issue. They show that serious thought has been given to the question of both chassis and body design from the standpoint of safety and comfort of passengers as well as for easy ingress and egress.

That there will not be, for a long time to come at least, a standard bus body for each of the several carrying capacities is probably more nearly the fact than with the case of the rail-borne vehicle. This is evident particularly when a study is made of the various chassis now in use in motor-bus operation. There are, however, several salient facts that seem to stand out as being of the utmost importance, and especially so if the bus manufacturers want their products used by the electric railway industry.

The railway executive has always made every effort to transport his patrons to their destinations in safety. This is one of the essentials in railroading. So, when considering the purchase of rail-less vehicles, his first thought will naturally be toward safety. Buses to meet this requirement must have a large factor of safety against their chance of overturning in case of skidding and striking obstructions or holes in the highways. While the method of rear-end drive has much to do with the question of the height of floor and the resultant

center of gravity above the street, there is no doubt that the rear wheel tread should be widened out proportionately with the floor height to meet this requirement. What valid reason exists to make the rear tread of passenger carrying motor buses the same as the standard railway tread, namely, 56½ in.?

Another thought as to safety comes to mind, namely, the street accident or collisions with other vehicles. The bus being mobile and not tied to any particular course along the highway as is the case of the trolley car, the operator can by quick perception of the situation avoid many collisions. Not so with the operator of the trolley car. He can only avoid collisions by stopping unless the obstruction clears away. In the case of the motor vehicle there is a large proportion of accidents that can be eliminated if the vehicle could but be steered easily and the driver be able to take quick advantage of his distance. With a narrower front wheel tread, which will permit of quicker and shorter turns than if both axles treaded alike, the street accident liability can be reduced without affecting the factor of safety against overturning.

These factors, together with ample braking surfaces designed for smooth retardation, though sufficiently rapid to bring the vehicle to rest promptly without unnecessary skidding on smooth surfaces, and careful drivers so located that they have a clear vision forward and on both sides, should allay any fears on the part of the passengers or operators against increased accident hazard due to bus operation.

Modern Housing vs. Profitable Transit

THERE was a time when transportation lines for cities were, as a matter of course, run through the regions of densest population because their builders frankly were out to get a return on their investment. It is true that in the United States, particularly, many lines were also built through sparsely-settled districts, but in these instances the promoters generally were hopeful that the money-making density would come in time. No restrictions on the height of buildings or on the relation of open spaces to built-over areas were known or thought of in those earlier days of electric railroading.

Today the situation is vastly different. First of all there is a much greater interest in securing park areas and large open spaces around public buildings or civic centers. Second, and far more important, is the garden city housing movement. The projectors of garden cities deliberately plan for a density of population, say twelve per acre, which is far below the density required to make the city railway a profitable venture (approximately 200 is the figure for Manhattan Borough, New York). Third, the usual garden city is not the rectangular roaded affair for which trackways are most suitable, but is likely to be made up of curved streets following, more or less, the natural grades of the terrain.

It would seem from the nature of this development that while the city of the future will be more healthful for the inhabitants, it will offer less opportunity for profit-making transportation. Either of two results must flow from this change: Transportation must become a community affair in which the city absorbs all losses through the tax rate, or else the district affected

must pay a direct subsidy to the transportation company. Otherwise the transportation company must make the service for such communities self-sustaining by charging a higher rate of fare than in the poorer but more populous districts. The latter alternative is not at all fanciful but is already a fact in Great Britain, where the motor-bus service introduced as the natural transport means for such districts tends to average a higher rate per mile than the service by car. In these cases, also, the flexibility of the graduated fare makes it possible to have an apparently like but actually different scale of fares through the simple expedient of giving shorter stages per penny via bus than via car.

Determine the Traffic Possibilities— Then Act Accordingly

THERE is a question as to how far an interurban railway can go profitably in attempting an intensive campaign of advertising and solicitation for new traffic. If the business being handled is a large proportion of the total available in the territory, there is little to be gained in such a campaign. But if the business handled is only a small part of the traffic moving between the points under consideration or originating within the territory served by the electric line, then there is room for development.

For example, the Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, is handling 85 per cent of all traffic, freight and passenger, originating within and moving between the limits of its lines. With that condition, it would obviously be a waste of effort and money to undertake any special work to secure the other 15 per cent, a good deal of which is probably identified with the competitive railways in some way that would prevent any possibility of securing it for the electric line. On the other hand, the Chicago, North Shore & Milwaukee Railroad probably hauls not to exceed 25 per cent of the traffic moving between Milwaukee and Chicago, having a field of 75 per cent on which to work. With such a proportion of the business going over other lines and such splendid termini as Chicago and Milwaukee, the possibilities for securing more business are very real and one may easily justify a considerable advertising outlay and an intensive solicitation program.

These two examples are perhaps the two extremes. Few electric lines have the business of the territory served so completely in hand as the Iowa company, particularly in a case involving steam lines. And few lines have the possibilities in uncultivated business that the North Shore Line has, of which it is quite evidently not unmindful, considering the development work that is being done. By determining the total amount of business being handled by all the transportation agencies, then, once or twice a year, and taking into account the nature of the territory served, an interurban can arrive at a rough measure of how heavily it can afford to go into new traffic solicitation for the next year. The article on advertising and soliciting for traffic, elsewhere in this issue, will supply a few ideas on how new business can be secured. In general, it might be said that almost universally in the interurban field there could be a much more determined and resourceful, persistent and intensive solicitation to traffic than exists, with worth while results.

Basically Success in Selling Transportation Depends Upon Fundamental Principles of Salesmanship — Whether the Commodity Be Transportation, Merchandise or Personal Service, the Principles of Presentation Are the Same

Wanted—A Transportation Sales Manager

By William L. Goodwin

Assistant to the President the Society for Electrical Development, New York, N. Y.

SALESMANSHIP, definitely recognized by the inclusion of a sales manager as a leading executive of the railway organization, is, in a word, a suggestion which appears to me to offer the opportunity to railway executives today.

Perhaps I should explain why I, who am not an electric railway man, dare make such definite suggestions. In September, 1920, I received through J. G. Barry, manager railway department General Electric Company, Schenectady, an invitation from Harry Reid, president Interstate Public Service Company of Indianapolis, to address the fall meeting of the Central Electric Railway Association. My first reply contained this expression:

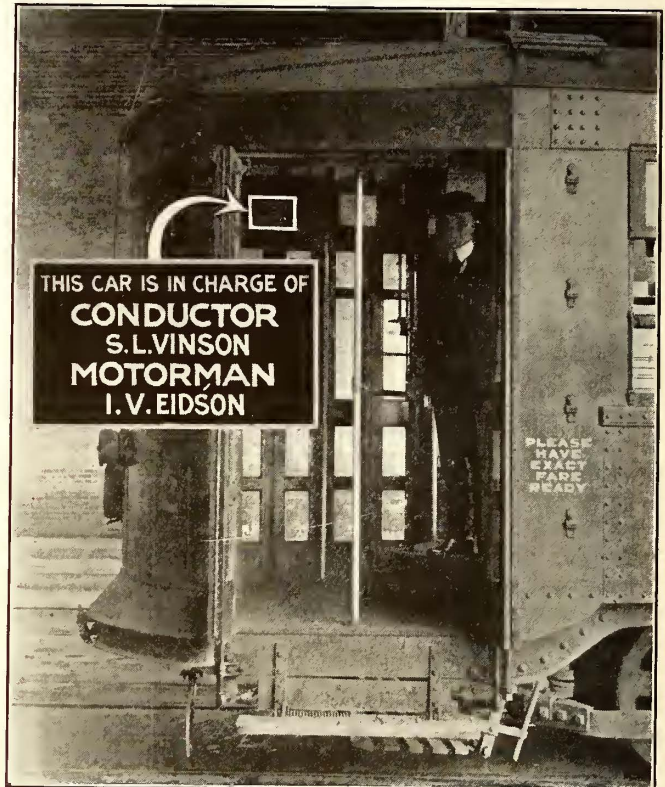
As you perhaps realize, this street railway business is quite foreign to the work I have been undertaking. I have never attempted in any way to help the street railway industry because I know nothing about this highly specialized business—hence I hesitate to accept.

However, the message was transmitted to Mr. Reid; it brought forth a reply that the invitation stood, and I would be asked to talk on the subject of "Co-operation," with the qualification: "This is a broad subject, and Mr. Goodwin is at liberty to handle it in any way he may see fit."

Having no specialized knowledge of the street railway industry, but a background of some twenty years in practical selling and trade co-operation, I felt that this permitted broad latitude, and the invitation was accepted. The study which I made then, the talk I gave there, and the arguments which have ensued, have caused more study and analysis of the situation, from which I believe some useful conclusions may be drawn.

Not being dependent upon the electric railway industry for my livelihood I exercised the privilege of a frank expression in my Indianapolis talk. I wished there, as I wish now, that my ideas may be of value. Again when the *ELECTRIC RAILWAY JOURNAL* requested an article I felt that unless the privilege of free expression was granted no good would result. The privilege granted, let us hope that at least one idea will come to you from this effort.

My observation of the electric railway industry and the outstanding facts which present themselves to me can be summed up in the broad statement: "The industry is sick; far too many companies are in the hands of receivers, and the majority of the remainder are seeking havens of safety." And I think all will admit that the electric railway industry is sick, very sick, but it is not suffering from an incurable ailment. The illness is not one that could be singled out as a specific ailment. It is a complication of many ailments, which I will touch upon later. That the ailment is curable I am convinced; that the solution will be found is certain.



The Ultimate Salesman on the Job and How He Is Introduced to the Patrons by the Georgia Railway & Power Company, Atlanta

It *must* be found, and found quickly.

But why mention specifically the one hundred and one ills of the electric railway industry? How to correct them is what we are concerned about. This naturally leads to the question: "Why should an American industry of such essential and important value to our citizenship be in this condition?" and the self-determined answer which I assign is "incompetent management." I use the term "incompetent" in the broad sense, since success or failure, when attributed to an industry or parts of an industry, in the last analysis, must reflect a debit or credit on the side of competent or incompetent management as reflected in dividends.

Over a long period of time, competent management reflects an ability to employ invested capital at a profitable return. Incompetent management indicates a lack of ability to employ capital continuously at a fair rate of return. Since the electric railway industry is not earning a proper return on the invested capital and since investment in the industry is frowned upon by experienced investors, responsibility for this condition

must be placed in the management of the electric railway companies.

Volumes could be written upon the underlying reasons for failure, and the subject offers ample opportunity for our most experienced debaters, but summarizing all the causes and reducing them to a single statement I still believe that the electric railway industry is the only great American industry that has attempted to operate without a sales department. Here is the fundamental reason for the present condition of the electric railway companies of this country.

But right here is an opportunity. The very fact that the industry is in this condition should immediately suggest to the live executive the many ways in which the business cannot only be brought back to a normal state but can be made a very substantial and consistent profit earner.

COMPETITION MUST BE MET

Transportation is too important a part of civilization to be ignored. The public is going to have transportation and transportation which will gain its approval. Grumbling about the problems encountered and the competition met and offering alibis for inability to cope with the situation get one nowhere. The question is merely one of competition, and in time men will develop who are capable of meeting this situation and they will be the successful executives of the future. This is simply history repeating itself, but why wait for the development of another generation for relief?

You, the present operatives of the electric railway companies, have the ability to meet the situation, if you will but take yourselves away from your problems long enough to get a picture of what is on the horizon. Let us assume that the business of transportation is sound, and its service is necessary and desirable. Then let us assume that the industry has found itself in its present state because of excessive competition. Do you recognize your present condition as the result of competition? The professional politician, the demagogue newspaper, an ignorant or indifferent public, regulation or restriction covering fares to be charged are all as real forms of competition as are the jitney, the walker, the stay-at-home and the pleasure automobile. In a broad sense let us recognize them as competition and let us compare this form of competitive restriction and regulation with what every other form of business has to contend with and then realize that your proposition is no more difficult than that of your successful associate in your community.

Let us, for example, take some of the conditions in other branches of the electrical industry—the manufacturing, jobbing and retailing fields. Whatever their problems, invariably they are met by sales methods. You have the professional politician who is constantly criticising you for his personal advancement. The jobber and the contractor each have thousands of competitors who never tire of criticising them whenever they see an opportunity. You have the newspapers; they have the intensive advertising of the competitor,

each contending superior merit for his products and superior service for his company. Ignorance and indifference are common to all industries, and in the sales of electrical products generally and also of electrical energy the public was, and to a large extent still is, totally ignorant of the real nature of the product. But by a constant high-pressure active sales effort individually and collectively they meet this ignorance and indifference and orders are secured. As against your regulation by the state or municipal bodies and the difficulties resulting therefrom, they have the Sherman law, the Clayton law, a monopoly or combination law in every state, inspection of their products, regulation of the methods of installation, bond laws, lien laws, and a dozen other restrictive measures which you have not and which do not discourage them in the least, nor cause them to attribute failure to these agencies.

There is one thing more which you have recently had a taste of, and which is a matter of common practice in other lines of business. I refer to competitors who are ignorant of cost and persist in selling their goods at ruinous prices. True, they fall by the wayside occasionally, but others spring up rapidly and the merry

race goes on. The right sales arguments soon acquaint the purchaser with the facts. Goods are sold at a higher rate because the seller has established his good will. Value and dependable service offset the lower price. In your case you have the jitney offering for a nickel a ride that you know can not be produced at double the price. Is not your answer a selling proposition?

PRACTICAL knowledge of operating problems in the electric railway industry has no value, in the final analysis, if it cannot be translated into dividend earning ability. Passing the buck of responsibility gets us nowhere. The time has come when you must produce dividends or step aside and allow others to do so.

If you can establish the fact that your commodity is worth what you ask for it and you have the confidence of your customers, they will buy your product in spite of a lower price and a poorer quality. But the burden of such work is on you. For a time you are going to have a very difficult job in convincing your customers, because, generally speaking, you do not enjoy their good will. Good will in business is nothing but a consistent and persistent repetition of the qualities of your product or service rendered. You have had the product and you have rendered the service, but you have failed persistently and consistently to keep the qualities of your product before your customers. If everybody in the community is damning street car service and you know it is good, why not tell them about it? But if you keep silent long enough, the fact has been established and sooner or later you are inclined to believe it yourself.

If you will analyze any of the large successful industrial corporations in this country you will readily discover that their principal executives possess real sales instincts. Presidents, vice-presidents and general managers are nothing more than a selection of the most competent sales minds in the institutions. Every problem in the final analysis is approached from a sales standpoint. Talk to any of the great legal minds, even, in our largest manufacturing companies, and you will recognize instantly a keen sense of sales instinct. Decisions affecting internal or external problems are always given with the interest of the customers ever in mind.

The law is very definite and specific. Sales departments are told what they can not do, but the sales instinct of the legal mind always suggests to the sales department what it can do as a way out. That is the effect of sales instinct in the legal mind. Does the counsel of an electric railway company advise his executives from this standpoint? If he does, then he has a legal mind with a sales instinct, but if his advice is always solely from the standpoint of the company and its rights and if he constantly urges on the executives the need of standing on their rights, then the decision is a legal one and the reaction on the industry is only what you now face.

In considering the problem of your industry, or in

THE question of overcapitalization, that our professional politicians like so much to talk about, is incidental in relation to the failure.

The question of overcapitalization would in time have readjusted itself had proper sales effort been put forth.

Many, if not most, industrial enterprises are overcapitalized, and yet they are successful. The number of companies or corporations conducted upon a conservative capital basis is the exception rather than the rule, yet we can daily observe and record successes in spite of this overcapitalization.

fact, any activity for profit, knowledge is of little or no value unless you can translate it into dividends commensurate with investment and risk. Industrially speaking, what is the value of knowledge of operating, engineering, financial problems, of the handling of men, of schedules, or any other subdivision of the business, if the operation does not produce profit? There is ample knowledge in the industry of operating problems—to apply this knowledge profitably is a selling job.

THE TRANSPORTATION COMMODITY AND ITS VALUE

An electric railway company has a commodity to sell that is just as tangible as merchandise, be it either necessities or luxuries, just as tangible as banking service, just as tangible as professional service, engineering, medical or scientific, and just as tangible as the service of selling amusement.

In the electrical industry as a whole, the commodity is either electrical energy, transportation or commodities. Transportation and electrical energy represent intangible forms of service, principally because the "man in the street" has little or no opportunity of applying relative values. Whatever, then, the price charged, there is a natural tendency toward suspicion of an excessive charge.

From infancy we are taught relative values, and this simple, yet fundamental, principle of relativity stays with us throughout our life. But in service commodities, such as electrical energy and transportation, no such principles of value have been established. It is evident, therefore, that as a fundamental proposition, we are attempting to sell something of unknown value,

"unknown" in the sense that we, of the industry, have failed to establish the value. Such intangible forms of service must be translated into relative values in order that the average mind may comprehend value received for money paid. To my mind, here we hit upon the fundamental fault in past and existing methods of selling such a commodity as transportation. In almost every line of human endeavor, measures of standard have been established, be it yardstick, the quart measure or the pound weight. The fact that in this particular case we are selling car rides makes no difference.

Here is another way of expressing it. Trade is founded upon the principle of the exchange of services for money. "Services" in the broad sense may be interpreted as the exchange of commodity or service, at a profit. You are selling street car transportation; I am buying it. Your success depends upon your ability to sell what you have to me at a profit and to make me satisfied with the sale. In this case we are talking of a car ride at a given figure. If I get the value for my money and don't know it, it is your fault. The burden of proof is always on the seller. Here, I think, the electric railway industry has failed to realize its responsibility.

Let us analyze service and see whether or not salesmanship is the foundation of success.

Everywhere we look and everywhere we turn, we see evidences of real selling effort to attract our attention to this or that commodity.

In the field of luxuries such as automobiles, musical instruments and home furnishings generally, proper salesmanship induces us to buy many times our requirements and at values greatly in excess of our ordinary needs.

Banking, which has to do purely with the producing of profit in the handling of money, has felt the necessity of employing the most modern methods of salesmanship, and every successful bank on this continent today features the value and character of the service it renders as a means for holding its present clients and acquiring new ones.

In the field of amusement the most intensive application of sales principles is involved. People have literally been brought to a condition of mind that they consider amusement almost a necessity.

Only in the professions do we find the lowest degree of scientific sales methods, and this is largely due to the fact that the professions long since established ethics which frowned upon salesmanship. But the professions are still in the classification of individual effort, and the compensation received by the average professional man is directly in proportion to the degree to which he applies or fails to apply sales ability.

The electric railway industry for one reason or another has failed to follow some of its early experiences of proved value. Very recently, consideration of the application of scientific principles of selling transportation has again been taken up. But nowhere do we find in the electric railway industry well-defined sales departments, headed by men with sales instinct.

In spite of this, there are many examples of excellent sales ability in the transportation business. Perhaps a discussion of some of these, coupled with an interpretation or discussion of what I mean by the more or less intangible and usually undefined term "salesmanship," may prove of interest. It may also help lead to my suggestion as to how the railway may organize for this sales effort.

Probably one of the most consistent examples of salesmanship in transportation is the case of the California Street Cable Railway of San Francisco. This company has constantly enjoyed the confidence of its patrons and the San Francisco public since the first wheel was turned. I cannot recall \$1 that ever was spent for newspaper publicity, nor do I recall any specific case where publicity of any kind was used in the company's cars or elsewhere.

For many, many years I personally walked several additional blocks to ride on this railroad in spite of the fact that the time element of service from the given point to which I traveled was about five minutes longer than a more convenient electric road. But I, together with many thousands of others, had been sold as youngsters to the transportation of this railroad. I am now convinced that the directing genius of the road had a high sense of selling ability. The many, many courtesies which were daily evidenced by the gripmen and conductors on this railroad brought them close to the hearts of the people of San Francisco.

I cannot recall a single instance in which the question of time element in trips ever interfered with courtesy and convenience. Cars stopped in the middle of the block, or at the beck and will of the rider. I have actually seen these cars stop, both going up and down hills, on grades of from 10 to 15 per cent. These were always made in a courteous way, with evident pleasure to the car operators.

There were no signs on the cars "Do Not Talk to the Motorman." In light of the speed at which the cars traveled and the equipment provided for emergency stops, this was probably unnecessary, but the fact remains, nevertheless, that there was a feeling on the part of the car rider that, once boarded on a California Street Railway cable car, your safety was assured, and your comfort and pleasure was a consideration.

The old Sutter Street Railway of San Francisco was another typical example. Both of these roads were close and keen competitors; in fact, they operated on parallel streets three blocks apart. There is hardly anything that I could say about the California Street Railway that I could not say with equal emphasis about the Sutter Street Railway. In both cases the employees were of the highest intelligence; they remained in the service of the company for long periods of time; the equipment in both cases was maintained at the highest possible physical standpoint, and as I recall these bright, shining, clean, convenient modes of transportation, with equipment designed particularly to meet the needs of San Franciscans who delighted in riding on the outside, or open type car, I can again realize that here was an earnest effort to meet the need of customers by supplying equipment and service in conformity with their desires.

Probably the next nearest example that I may cite, even recognizing that there is a lapse of some thirty years between the time that the incidents have occurred, and which left such an impression upon me, is the modern day method of selling transportation as exemplified by the Fifth Avenue Coach Company. Any car rider in the metropolitan district of New York will realize instantly when boarding one of these coaches that the management as well as the operating personnel of the buses represents men of well-formed sales habits and ideas. The chauffeurs of these buses have a keen sense of human instinct, and can actually convey these buses through the most crowded section of New

York, and can, almost with an uncanny instinct, select their customers waiting on street corners at a considerable distance before they approach them.

Here, again, the equipment is kept in the highest possible physical condition, and a rider on a Fifth Avenue coach cannot help but realize a feeling of company interest when patronizing these buses. And remember the slogan on each bus—"Civility."

On any bright Sunday it is impossible to secure seat accommodation; true, the buses and their routes lend

STRANGE though it may seem, it is nevertheless a fact, invariably the less the competition, the less the success of the enterprise.

It would be interesting to acquire statistics to determine if it is not a fact that more failures have been recorded where exclusive privileges are granted than through any system of competition.

An exclusive privilege without proper regulation and direction stultifies initiative and causes us to assume such a self-satisfied attitude of mind that we become lazy to our responsibility and indifferent to our opportunity. After a time we commence to feel that we are serving by sufferance, and this underlying thought or principle has perhaps done more to injure the electric railway industry than any highly competitive system that ever might be encountered.

themselves to such desires on the part of their patrons, but the fact remains that public prejudice against either the management, the equipment, or the security of transportation, any or all, would result in a public reaction that would make the bus a very undesirable conveyance.

And bear in mind that the fare on these buses, so long as my recollection goes back, has always been 10 cents, and there is no criticism, apparently, on this charge, in spite of the fact that buses are operated over routes established by the city in certain sections of the metropolitan district at one-half this fare.

The question of the cost of transportation after all is secondary to its value. My personal experience has been during the past four years that I actually seek a Fifth Avenue coach in preference to a Broadway surface car, in spite of the fact that the time element between my office and home is considerably less on the street car than it is on the coach. When we consider that the Fifth Avenue coach line is under the same management as the Interborough Subways and other transportation systems in metropolitan New York, the natural query is why this fine discrimination in service and the attitude of the people one toward another.

Apparently the operators of the Fifth Avenue Coach Company, including the motormen or chauffeurs and the conductors, realize they are in competition with other modes of transportation, and it is this realization of competition undoubtedly which reflects the character

of the service rendered; in other words, salesmanship is the predominating, managing influence of the Coach Company and has been instilled into every one of the operators having to do with it.

Many similar cases could be cited.

Evidences of salesmanship in the steam railway field are too numerous to mention at length, but a few examples of early sales effort may suffice: the Santa Fé and its Harvey dining service, the Southern Pacific and its poppies, the Northern Pacific and its great big baked potato for 10 cents, the Milwaukee and its popular dining car conductors, the Canadian Pacific illustrated and descriptive time-tables and hotel system, the extra fare trains of many roads, where you are rebated upon failure of the company to make schedule, the amusement parks of most early ventures. These and many similar are all evidences of a lost art in selling transportation.

A comparison between the Fifth Avenue coach system with other methods of transportation in the metropolitan district does not reflect credit on the latter. Many, if not most, of the surface cars are poorly kept.

QUESTIONS of publicity have a definite relationship to the product to be sold. Publicity as such has no value unless we have something to sell at a profit, and the product we offer for sale must have merit. It is useless to spend money for publicity in promoting a product without merit, and merit is of no value unless people can be made to understand it.

The platform men are far separated from their patrons. Either the operating schedules are so fast or the rules of discipline so rigid that the platform men carry an expression of intense pain in the performance of their duties. Riding on surface cars in the metropolitan district has long ceased to be a pleasure; it is a painful duty which the patron must perform.

Of course no one rides in a subway for mere pleasure, but that is no reason why the journey should not be made pleasurable. It is difficult to keep the cars clean. The underground mileage operates against this, but does this justify trains being turned back at the end of runs littered with papers, dust and dirt which could easily be removed and would be removed if salesmanship were employed? In the entire subway operation, comfort and convenience have been made secondary to efficiency, and every car rider feels this the minute he enters a subway station.

VALUE OF THE SERVICE MUST BE DETERMINED

The great contest which is on at the present time between almost every electric railway company and its local community, between operating costs and fare income can be corrected by proper sales methods.

There are two ways to fix the price of transportation.

1. Fix the fare first, and then give as much (or as little) as that fare will buy. This has been the practice of the past, and broadly speaking, is the practice of today. It has resulted in failure. It does not employ or consider sales instinct or application.

2. Establish a standard of service and then fix the fare at a figure that will maintain this standard. Adjust

the fare from time to time as standards of service and other factors change from time to time. This should be the 1921 model. It is based on scientific selling, salesmanship, sales instinct. Do not be misled.

You must establish a measure of transportation value. Whether you use a yardstick, a quart measure or a balance scale, the measure must be one which the public understands. Relatively speaking the electric railway companies offer more for the money than any other industry or business institution in the community, but they have failed utterly to acquaint their patrons with the character and value of the service rendered. The keen sales manager realizes this only too well. He will rapidly reach a common understanding of what the transportation company has to sell and how it shall be sold.

THE PUBLIC MUST BE "SOLD" ON THIS VALUE

American people with whom we must deal, even though the majority do not realize it, possess a keen subconscious realization of human psychology, know the value of commodities or service in relation to the purchasing power of the nickel, and will be quick to grasp the situation, once it is properly presented subconsciously. *They know* the value of an average car ride is worth more than a nickel, and what they are really doing is testing *your* selling ability.

Give them the facts in true selling form, and profit for your effort is assured.

They are not of socialistic tendencies, and Americans will pay for what they get, when they know the truth and value of transportation, and it's up to you, Mr. Street Railway Executive, to produce the goods.

Your business is selling transportation at a profit. Whether the fare be 5 or 10 cents is immaterial. It may be 5 cents in Pessimistdunk, 7 cents in Mediadunk, and 10 cents in Optimistdunk. The variables in each case will determine results, but the net return from the operation should be relative, all factors considered.

A RADICAL CHANGE OF POLICY NECESSARY

There are only two ways out—public ownership or change of policy. The first would be a national calamity; the second would be the salvation of the industry. Change of policy need not mean change of management. Increased fares are but temporary expedencies—with them must come an understanding on the part of the public of a measure of service and a recognition of a modified policy.

The electric railway company is looked upon as a corporation whose temperature is always below freezing. Raise its temperature by employing sales methods. As a matter of fact, it is and should be the most human thing in the community. Salesmanship in transportation means to sell more rides to more people and always at a profit.

One way not to do this is to post up too many directions for the car riders to absorb at one time. Well-worded regulations are necessary. But sometimes I see them given in such large doses that I am minded to ask how much does a patron have to learn and what antics does he have to go through in addition to paying his fare in order to get his ride.

Other conditions which should not exist are:

Men, equipment, schedules, tracks and the physical properties with the appearance of neglect. Street cars littered with indiscriminate advertising, from vague, patent medicines to other joy killers. Platform men.

improperly equipped from every angle to perform their duties. And the thousand and one other negative selling suggestions which are successfully destroying an otherwise profitable business.

MAKE YOUR COMMUNITY PROUD OF YOUR COMPANY

Talk about the city—about things along your right-of-way. Let the people know you are interested in civic affairs. People like to know about important industries. Talk about your receipts, your expenses, your fixed charges, cost of maintaining track, etc. Be liberal in transfer time privileges or eliminate them entirely. Public opinion is discernible; psychology plays an important part in molding favorable opinion. Favorable public opinion is an asset—it is difficult to acquire and when once possessed, guard it zealously.

You need the help of business men, you need the help of the whole community. Such appeals are always received in terms of reciprocity. If you want others to help you, you must be willing to help them.

The electric railway industry has held itself aloof, either from community co-operation or industrial co-operation. I have attended many conventions in the electrical industry. I have observed men from every other branch of the industry in attendance at your conventions, either for the purpose of selling their wares or acquiring information, but if you tabulated the attendance of all the electric railway men in the country at all the other trade conventions in the country, you would be ashamed to discuss the result. The sooner electric railway men recognize this principle and affiliate with other successful companies and organizations, the sooner will they acquire sales instinct.

Here is another job for the sales director or sales manager. Unquestionably more real information of value can be secured from an attendance at a convention representing commercial men than ever could be acquired by attending solely conventions of operating electric railway men. You must take yourself away from your own problem long enough to find out how the other fellow handles his problem.

You are breathing rarefied air; the atmosphere in which you live does not contain a sufficient amount of oxygen to keep you healthy. Think of business as you would a vacation. Get away from the daily grind of your business; go to the mountains or the seashore and get that relaxation and inspiration that enables you to take up your duties with renewed energy. In other words, mix with fellows in some other line of business, particularly in other divisions of the electrical business.

It is a great satisfaction to read one's own writings, but after all, it is wise also to read what the other fellow writes.

WHAT IS SALESMANSHIP?

For any industrial operation to be successful, there must be in the institution a certain proportion of individuals blessed with what we clearly recognize as "sales instinct." The recorded instances of success without this sales instinct are so exceptional that it is difficult, if not impossible, to find them; at least a sufficient number to merit any consideration.

Sales instinct dictates, first, a knowledge of product; second, a knowledge of policy, and third, the right thing to say at the right time. The skilled salesman comes home with the order, and a profit results from the transaction. Industrially, we are a nation of skilled salesmen. Once we instill in the electric railway indus-

try this necessary fundamental instinct, we will have started on our journey toward success.

Sales instinct may be likened to psychology; no two men employ the identical method in similar cases. The personal equation always enters. Did any one with a knowledge of selling ever hear of a standardized, standard package, capsule form of sales argument? Did any salesman ever formulate his sales argument and then, when admitted to the office of the executive or purchasing agent, ever carry out an argument so formulated?

On the contrary, the number of failures in industry which have been recorded through a lack of sales instinct are so numerous, and can be so definitely proved, that one hesitates almost to think about it.

Sales ability recognizes competition, no matter in what form it appears; it will be merely a matter of every-day routine. Analyze, if you will, the personnel of our most successful industrial corporations, confine your analysis further to the electrical industry, and you will find the men at the head of these institutions, and

POSITIONS VACANT

COMMERCIAL manager The man we want is not fully developed in the street railway business. He may not be a street railway man even, but if selected he must be a "go-get 'er." His duties will be to increase business. He will be required to sell rides in large numbers. Doing that he may have to create the reason for the ride. Salary as high as your qualifications. In reply tell what you would do to merchandise transportation on a street railway. How would you do it and can you do it? Applications confidential of course. P-342, Elec. Ry. Journal. Real Estate Trust Bldg., Phila.

STATISTICIAN wanted; must have several years' experience in electric rail-

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Somebody Is Apparently Waking Up! This Advertisement Appeared in the Sept. 17 Issue of ELECTRIC RAILWAY JOURNAL

those all the way down the line in charge of operations, to be men of sales instinct, call them executives, managers, or what not.

If they are successful, they possess sales instinct, otherwise they are soon relegated to the scrap heap of routine positions.

It is recognized, and undoubtedly is a fact, that the less competition, the less the opportunity for success. The principal trouble with the electric railway company, it has not had real, severe competition, in the usual recognizable form. Hence it has not felt the necessity of developing sales methods and employing sales instinct to meet its competition. It has viewed its problem from an operating basis, and operators, as such, do not recognize their competition when they see it. Hence, they do not know how to combat it.

Why talk about competition? The electric railway company has no competition in the broad sense, except the competition which it creates itself. What an opportunity for a real salesman! The only company in the community, with the whole community as a prospect twice every day! Boards of councilmen, politicians, and demagogue newspapers should be easy prey for the real salesman. There is a constant attempt to justify failure on the form of competition encountered. A successful salesman has no alibis to offer. A lost order is of passing moment in his career. He seeks new fields, new prospects, and builds new customers.

The stay-at-home, the walker, the jitney, the bicycle rider is the lost customer. He will be lost until he is brought back with renewed effort, founded on right selling.

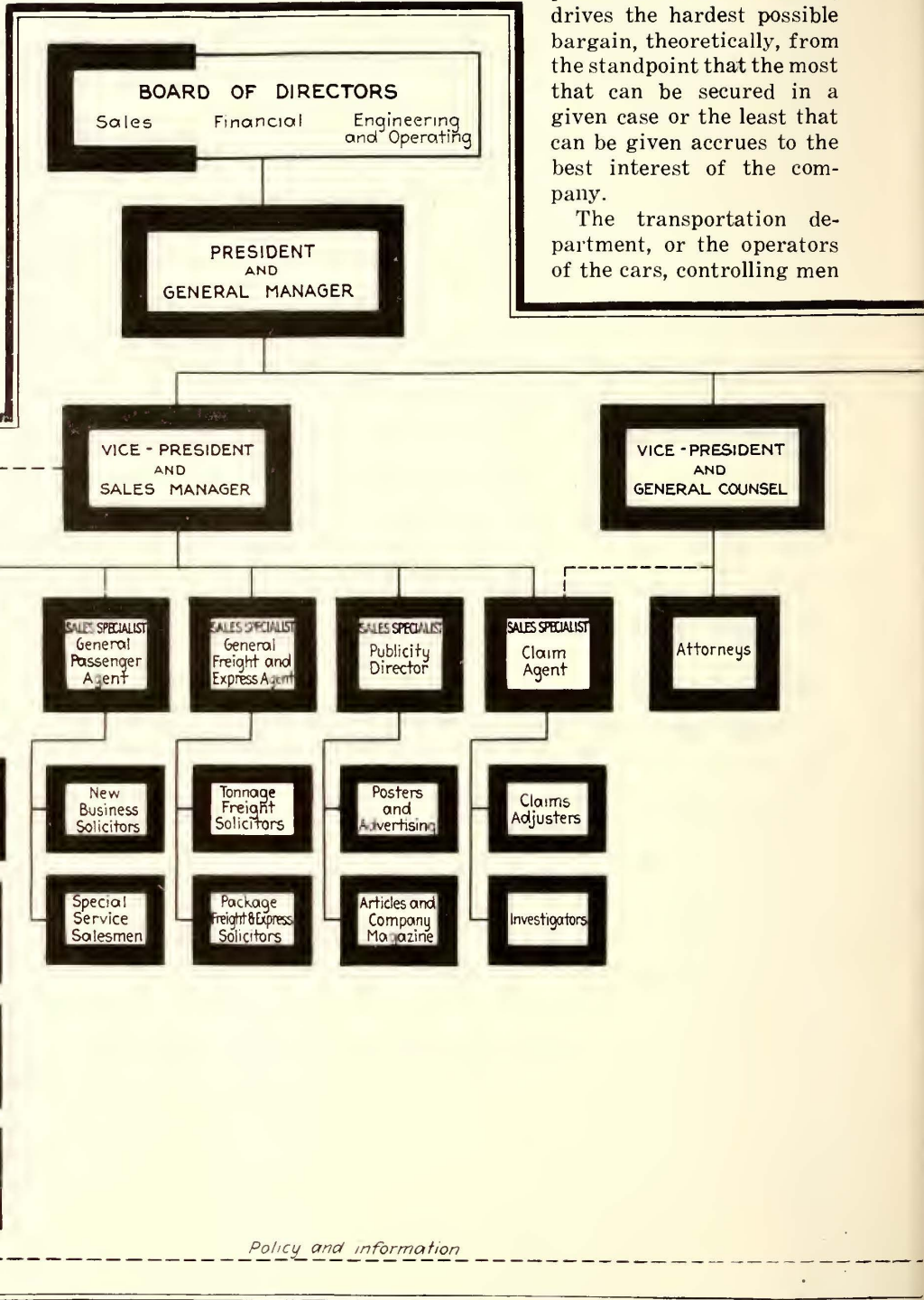
You very properly are asking by now, "What is the answer to all this talk? What is new about this? How, concretely, would you introduce this sales manager or sales instinct? Let us take a look at the existing organization of a typical or average railway.

The president or general manager is usually selected for his financial or operating executive ability, and this is as it should be. But executive ability utterly fails in accomplishing its purpose unless it possesses a sufficient understanding of the problem in hand so to organize the

ments which we call "legal," "transportation," "power and overhead," "equipment," "way," and "accounting." Now let us analyze these departments from the standpoint of the personnel in charge.

The legal department, in the matter of franchises, public relations and claims, drives the hardest possible bargain, theoretically, from the standpoint that the most that can be secured in a given case or the least that can be given accrues to the best interest of the company.

The transportation department, or the operators of the cars, controlling men



A Suggested Organization for an Electric Railway to

company or institution that the business can be operated at a profit.

Merchandising transportation, which is probably an appropriate expression to cover the broad field, means selling transportation at a profit. But we cannot undertake a merchandising proposition without sales management or sales direction.

But what do we find? We find that the president or general manager has set up a number of sub-depart-

and runs, approaches the problem from the standpoint that the man-power operating the cars has the same relation to the physical operation of the road as the motor under the car. Platform men are really individual salesmen of the transportation company, but they are trained as car operators and not as individual salesmen. The successful platform man should be selected upon his ability to cultivate good will of his patrons and to cause them to enjoy street car riding. A five-minute

discussion with the average motorman or conductor will convince you that the motorman is primarily interested in getting his car over the ground and the average conductor is so involved in collecting fares and keeping time schedules that courtesy to patrons is of secondary moment.

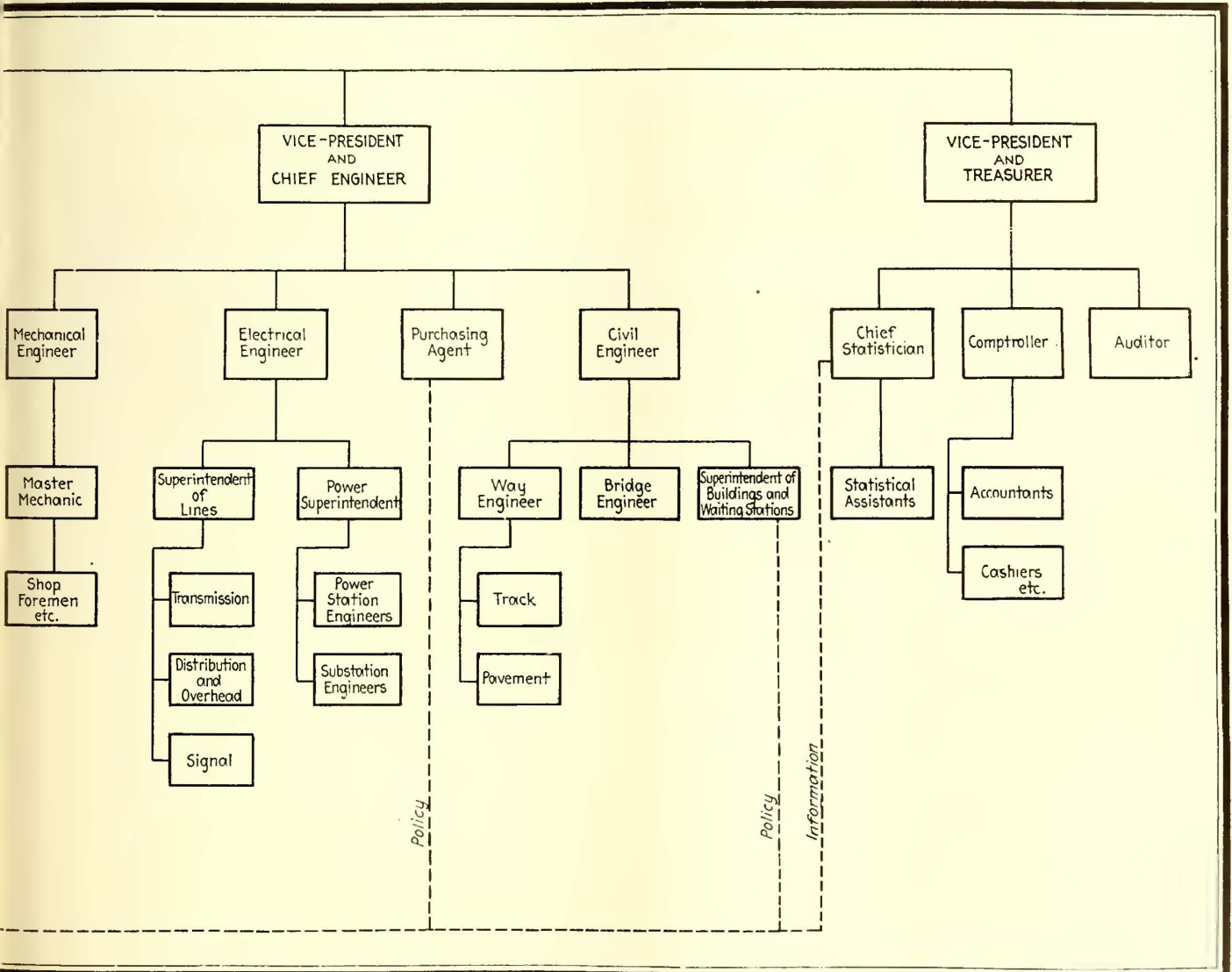
The fault is probably due to the system under which the men are employed; they are employed as car operators and not as company salesmen.

Next let us consider the schedule makers in this department. They are charged primarily with the problem of dealing in loads and schedules. The pleasure they derive from their work is their ability to keep cars loaded to maximum capacity and schedules based on maximum efficiency. At the slightest sign of a slackening of traffic, schedules are reduced, and in multiple-car equipment cars are taken off. The result of this

other departments of operation—power and overhead, equipment, way and accounting. These divisions of electric railway operation are so intangible to the average layman or passenger that we can easily group them under a general department of operating and providing the character of equipment and service essential to success.

This does not minimize the necessity of their recognizing their relation to the final sale. They do not come in direct contact with the sale, which is the point now in mind.

Recognizing that the present condition is one of long standing and will take a considerable time to correct, you should first start by a general reorganization of your internal affairs and put your house in order. Let us maintain your present executive head under the title of president and general manager. Now let us set up



Employ the Principle of Salesmanship in Transportation

condition is obvious to all—it ceases to become a pleasure to ride during the busy hours because of the overcrowded condition of the cars, and during the slack hours because car schedules are so designed that the average patron is so annoyed in waiting for cars that he is in an unpleasant frame of mind when he enters the car and drops his nickel into the conductor's fare box.

It is not necessary here to review the conditions in

those departments necessary to present your service, with intelligent salesmanship as a foundation.

I have prepared, with the co-operation of the ELECTRIC RAILWAY JOURNAL editors, a chart which embodies my ideas of an organization based on this sales idea. It is only a sample chart and is not intended to be complete or all inclusive. But it does point out where I think salesmen should be. Each of the heavily bordered blocks represents a man chosen for his "sales instinct."

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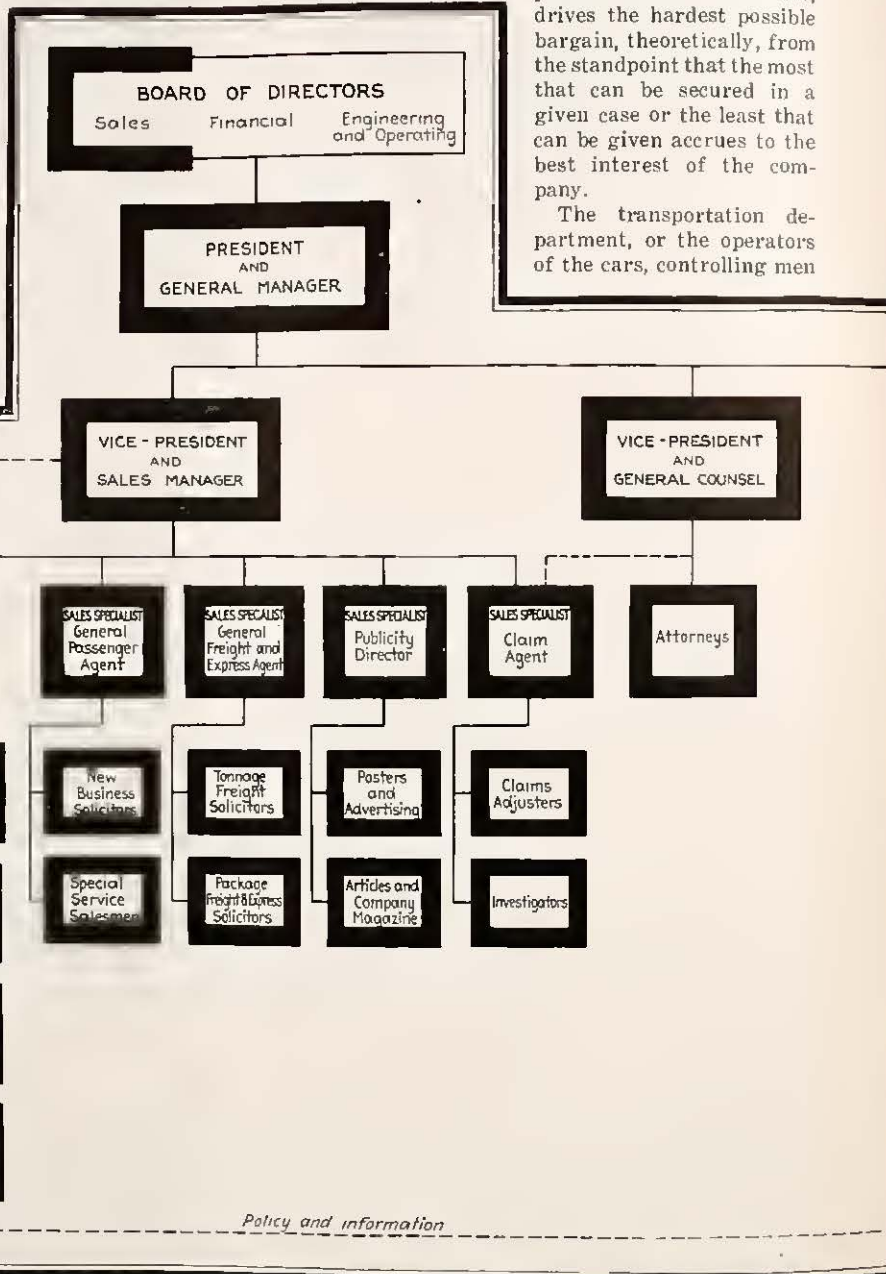
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A Suggested Organization for an Electric Railway 10

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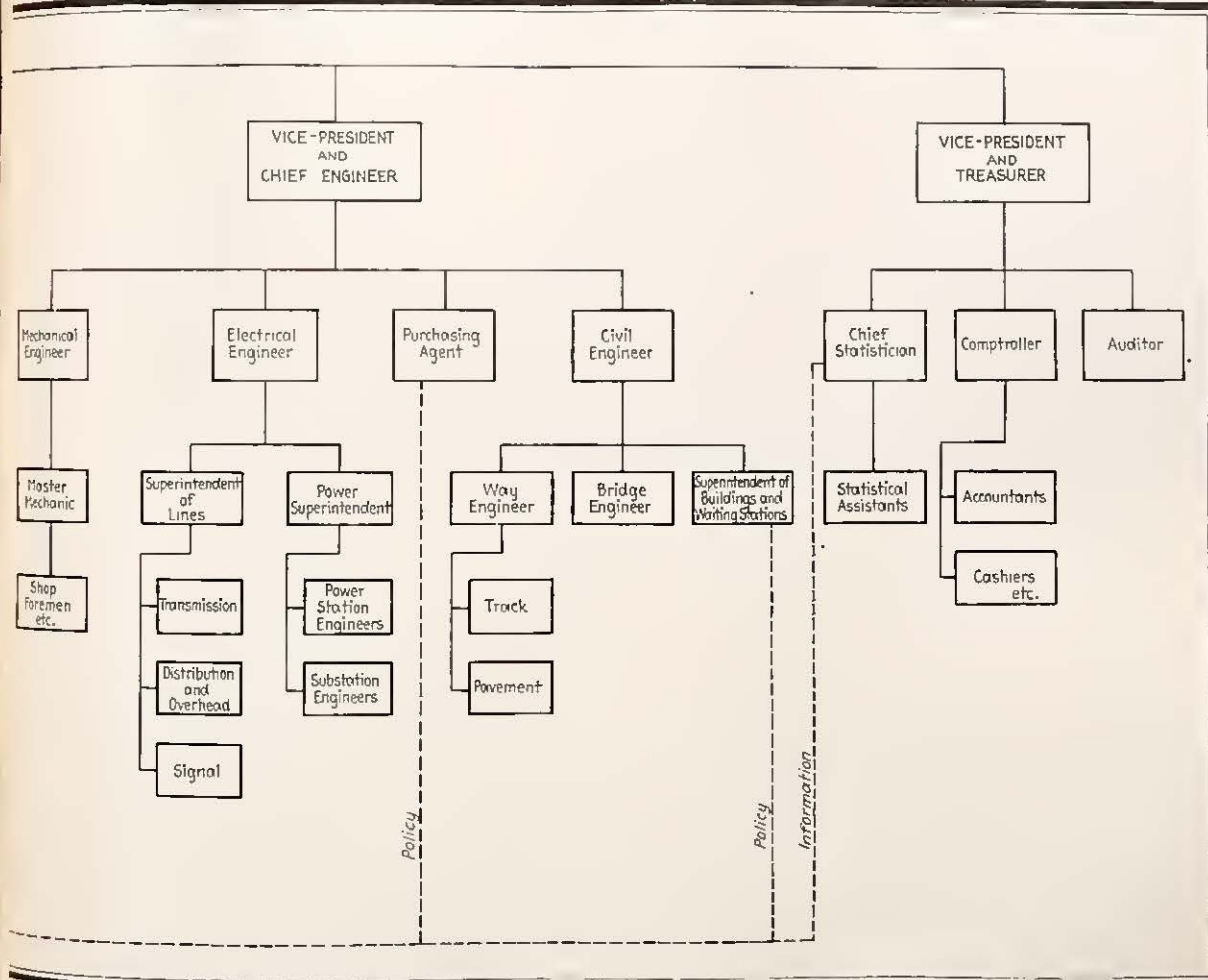
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We will have first a sales department, then a legal department, then an engineering department and last a financial department. Each of these departments will be in charge of a vice-president—the senior vice-president in charge of the sales department, and next in order legal, engineering and financial. The chart herewith in the main would outline an organization of such departments with additions or subtractions dependent upon individual cases.

I think the idea which I wish to convey is largely evident on the chart itself. The sales department is charged with selling transportation at a profit. It is responsible for all relations with customers (the riding public), it is charged with relations with the general public. The man at the head of this department must be a man who first, last and all the time is a salesman. All other qualifications are secondary to it.

The sub-departments of the sales department must also be manned by men whose outstanding quality is sales instinct. They must naturally have ability to organize and handle their departments. The director of transportation, for example, must be a man with ability to organize and direct human energy. He must be able to fraternize with his men, and from his own sales ability and sales spirit to inculcate in them the ability to handle in a satisfactory way the patrons of the company. Under such organization and direction, platform men become the individual salesmen. On them rests largely the ability to maintain proper relations with customers.

The transportation engineer, too, as well as the superintendent of transportation, must be a salesman. He must approach his problems not only from the standpoint of efficient operation, but also to satisfy the needs of the community; in fact, the latter is his principal job. Time schedules, while essential to successful operation, should not be permitted to interfere with the convenience and comfort of patrons. They should be fitted to that convenience.

The transportation department is not the only sub-sales department. Certainly the passenger agent and the freight and express agent, with their forces, must be the very essence of salesmanship. The publicity director must recognize that advertising is only a piece of salesmanship. There is precedent enough in successful utility companies for placing the claims department in the sales department to justify that suggestion here. We must keep in mind that it is salesmanship of the broadest order that we are talking about, and not merely stimulation of a few more car rides. The claim agent is in a most advantageous position to exercise real sales ability.

It may be wondered at that I insist that the general counsel be as much of a salesman as the sales manager, but I think that earlier in this paper I have indicated the relation of the legal adviser to the sales policy of the company. Certainly some of the greatest salesmen in the industrial field today are the principal legal vice-presidents. On the other hand, some of the greatest hindrances to successful sales efforts on the part of whole organizations are attorneys who judge or predicate their actions on technicalities rather than on sales instinct.

While not advisable to place them in the sales department, I have provided connection between both the superintendent of waiting stations and the purchasing agent to the sales manager for contact on the question of policy. The reasons, I believe, are very evident. And

that there should be a very close relationship between the statistical department and the sales manager is axiomatic. The statistician should certainly be governed by sales direction. It is through him that the sales manager acquires information regarding those more tangible forms of competition, such as the stay-at-home, the walker, the private automobile (with its increasingly helpful hand to passers-by), the taxicab, the jitney and the bicycle.

I repeat that the organization indicated in this diagram is but a suggestion which I am using as a graphic picture to indicate what I mean by the importance of placing men with sales instinct in railway organizations as an answer to what to do in order to institute the radical change of business policy which the industry really needs.

I have no thought that the personnel of the electric railway should immediately be transformed to conform with the ideas here suggested, but a step might be taken at once; viz., those executives and others indicated in the diagram as essentially sales positions might well take a course in salesmanship; they might devote a part of their time to an extensive study of selling, salesmanship, sales psychology, and sales instinct.

Whether these qualities are natural or acquired makes no difference. For the present, a school in salesmanship could be started in each company, and it would probably be astonishing to realize how quickly the men would respond to the ideal. As new men are hired, particular emphasis should be given to sales instinct.

As to how the men would be rewarded, either in compensation or other ways, for their particular selling ability, is a matter that would not necessarily lend itself to any standardized practice. Each sales executive would determine from the broad principles involved the best practice to apply in his particular case. If the right man is selected as the vice-president and sales manager, or such other title as may be most appropriate to his position, his sales instinct will soon be reflected throughout the organization, and the existing counsel, president and general manager, and all others will sooner or later acquire a broad conception of the fundamental principles and policies involved, and the reaction throughout the organization will be speedy and profitable.

But the trainmen are the salesmen, and they should be employed, first, for their sales ability. The sales executive with real sales instinct, having his finger on every vibration of the entire system, will know the right thing to say at the right time, will outline for the advertising department the broad ideas to be expressed, and the advertising department will translate these ideas or expressions into appropriate language for public consumption.

But the printed word must be backed up by performance, and performance to the car rider is what he sees and feels and absorbs by instinct, psychology, or whatever else you chance to call it, and he will not be fooled by any clever expression, beautiful pictures or other appeals not supported by a mental and physical realization of a modified policy in service.

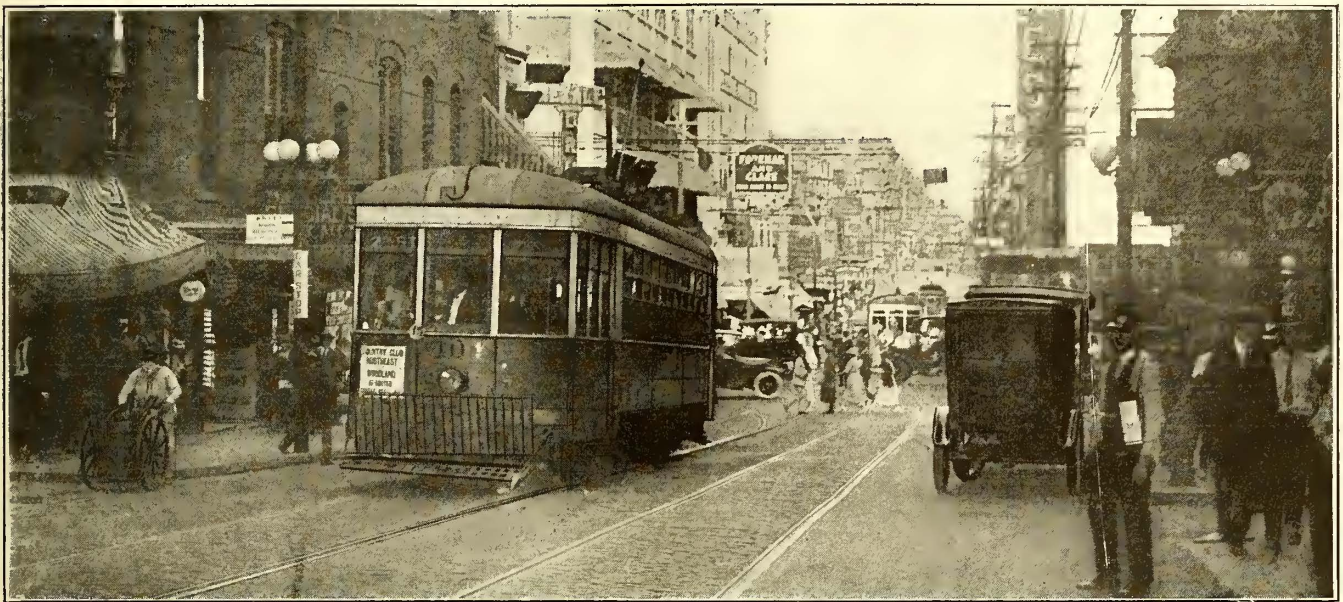
A sales manager is not a panacea for your every ill—the professional politician, the demagogue newspaper and the ignorant or indifferent public will always be with you—these are merely forms of competition—recognize them as competition and combat them by proper sales methods. That is the job of your sales manager.

Some Operating Economies Made Possible by Increased Schedule Speed, Better Distribution of Service and Rerouting—Obtaining the Most in Service and Earnings from Car-Hour Expenditures

Greater Operating Efficiency Enables Better Merchandising of the Service

By F. G. Buffe

General Manager for the Receivers the Kansas City (Mo.) Railways



Corner of Main and Twelfth Streets, Kansas City, Mo., at 5 p.m.

A westbound car is shown stopping in the berth just west of Main Street. At the right of the picture is seen a front-end collector wearing the new portable farebox waiting for a car to pull into this eastbound double berth. Two cars have just left this stop and have crossed Main Street and are proceeding across Walnut Street to the double-berth stop between Walnut and

Grand, skipping both Main and Walnut. The traffic officer is allowing north and south bound traffic to proceed after he has passed the east and west-bound cars across the intersection. The double-berthing signs are shown at the left of the west-bound car. Seven cars are in sight, as the headway at this point at 5 p.m. is forty-five seconds in the maximum direction.

A PLANT manufacturing transportation reckons the expense of production in car-hours. Every sixty minutes of measured time means a money outlay for platform wages, power, maintenance and the other expenses which go up and down with this extremely busy little unit of measurement. At least 60 per cent of an electric railway's maintenance and operating cost varies directly with the number of car-hours operated. Therefore, one of the greatest, if not the greatest field for making major economies lies in utilizing car-hours so that the public and the company receive from them as nearly as possible 100 per cent efficiency. Cars standing in congested districts waiting to get through bottle necks; cars consuming too much time loading and unloading; cars not getting through heavy traffic points on schedule time; cars routed so as to provide excess and duplicate service are all expense producers and revenue reducers. Such cars are not only depriving the public of service, but are increasing the company's operating expenses, making higher fares necessary and detracting from the quality of the product which the plant is turning out to sell.

Many crimes are committed in the name of economy,

and very often methods are employed for this purpose which when analyzed not only fail of the result expected but actually entail added expense either through increased overhead cost or lack of efficiency in some other direction. There have been bonus systems instituted which only resulted in increasing wages under another name. The library of perhaps every company in the country contains handsomely-bound copies of elaborate efficiency reports upon one phase or another of its business, prepared at large expense, which could not today be located were it not for a good cross index filing system. One useless car, useless either because of congestion or poor routing, operating eighteen hours a day, 365 days a year, will eat up \$12,000 in wages, power and other direct costs.

The best merchandising transportation advertisement, after all, is service, and without it all the advertisements and all the propaganda in the world will not convince the car-riding public that it is getting what it should get for the increased fare it has been made to pay. In practically every fare increase in the country the public has countered by demanding service, and that town in which there is the least complaint over fares is the

one in which the street car company is furnishing the public the maximum in car service.

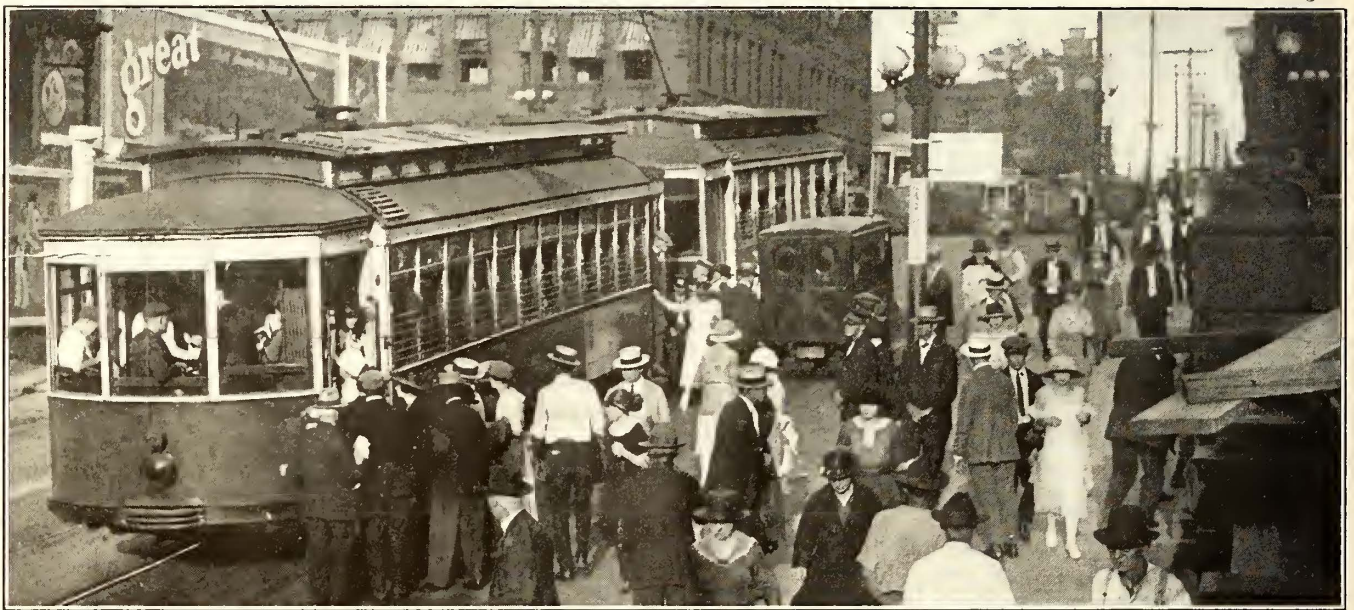
In Kansas City we found that our biggest field for improving service and effecting operating economies that counted was in the better arrangement of our car-hours and getting more out of them than we had before. After doing all the minor things that could be worked out we reached the conclusion that drastic and radical measures would have to be adopted to give the public the best our facilities afforded and to effect economies which were imperative.

Due to the topography of Kansas City, and especially the severe conditions in the retail district, operation of an electric railway system is, to say the least, extremely difficult. The retail business and office buildings of the city are concentrated within a comparatively small area, six blocks north and south and five east and west. In the maximum rush hour, through the inter-

section during the hour between 5 and 6 in the evening. These cars were provided and dispatched, but only 190 were able to get through due to the fact that the intersection was plugged for practically the entire time either by cars or vehicles, and as a consequence the public was deprived of fifty-three cars when most needed although the company had provided them and was paying the car-hour expense they entailed.

The services of John A. Beeler and his staff were enlisted, and together with our own transportation department force, more than a year was spent working out this problem. Recommendations were made from month to month and changes were gradually instituted in which public officials gave good co-operation. The measures for relief which were adopted and which are now in effect are principally as follows:

Car stops were relocated and combined, making what is practically a skip-stop system in the business district.



Double-Berth Stop on Eighth Street Near Grand Between Grand and Walnut

The severe grade on which the cars must stop and the narrow street make this one of the most difficult operating points. At this intersection 243 cars pass between 5 and 6 p.m., and at

Eighth and Walnut Streets, 258 pass during the hour. A car stop sign and an information sign just above are seen at the right of the illustration.

sections within this area 5,000 car movements were formerly made, of which an astonishingly large proportion were left-hand turns. Extremely narrow and congested streets further aggravated the situation. To make matters worse, because of the topography of the district only two east and west lines were possible. In addition to the car movements, there were at the same time more than 400 jitneys plying their trade in this district and a good proportion of the 40,000 automobiles owned by Kansas City's 350,000 citizens. The absence of parking restrictions converted the narrow streets into outdoor garages, so that it was impossible for vehicular traffic to pass between car tracks and parked automobiles.

This situation became so bad that in December, 1919, we showed speeds as low as 0.8 m.p.h. through two blocks representing the point of maximum congestion. This condition would exist for fully fifteen-minute periods. During the rush hour the average speed of street cars and vehicular traffic was reduced practically to a walk. All principal intersections were choked with traffic. At one corner 243 cars were scheduled through

Cars on the two heavy east and west streets were made to clear in one movement the heaviest intersections and to stop at designated points regardless of corners.

Double berthing was arranged at all downtown stops.

Traffic officers were instructed to pass cars across intersections in pairs and simultaneously in opposite directions whenever possible.

Automobile parking restrictions were put into effect during rush hours.

Additional street collectors were employed so as to facilitate loading and unloading, and to see that the doors are closed promptly as soon as proper loads are on the cars.

Cars were made to stop but once at each passenger stopping point and proceed after the doors are once closed.

These and other minor remedies upon adoption produced the most gratifying results. They have now been in effect for more than a year and a half. In the direction of heavy travel during the evening rush hour on five principal streets in the business district the aver-

age increase in the number of cars passed is 30 per cent and the average speed of cars has been increased 42 per cent. In other words, the car rider is now receiving 30 per cent more service at the right time and is being carried out of the congested district 42 per cent faster than formerly.

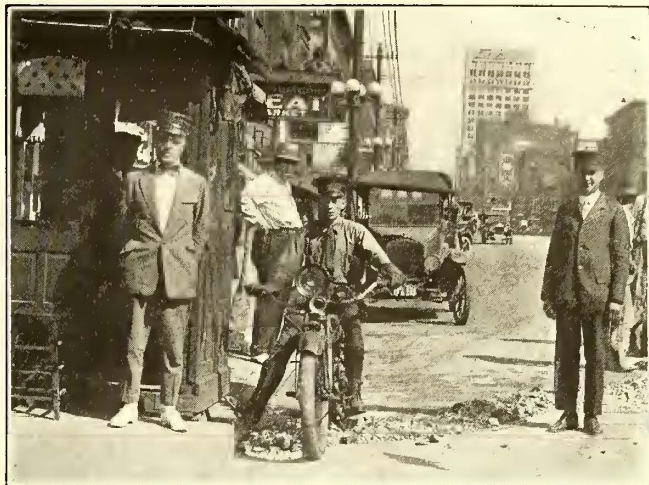
Because these "bottle-necks" were opened so that scheduled cars are enabled to pass through on schedule time, headways are regular, delays due to congestion are practically eliminated and the entire system moves easily and without confusion. As a result, several hundred car-hours per day were saved in cars sent from the carhouses to fill spaces formerly caused by the inability of scheduled cars to get through the congested district. Every car-hour paid for was available for public use and returned its correct proportion of revenue. The public talked of increased service, when as a matter of fact the company had not increased the number of cars dispatched but had only made it possible to put its transportation service at the disposal of the public when and where it was needed.

The system average schedule speed has increased from 8.8 m.p.h. to 9.3, an increase of more than 5½ per cent. The resulting economies and better service can be easily computed.

MAJOR REROUTING DIFFICULT BUT EFFECTIVE

The next strenuous problem attacked was that of rerouting the lines. This was an extremely difficult task and required not only careful and conscientious work to reach the best solution, but extremely diplomatic handling in order to secure permission of the city authorities. To change routes of years standing is a radical move, and is immediately met by the resistance of business interests which feel that they will suffer a loss with the change of routing.

However, the plan recommended by Mr. Beeler, with a number of modifications, described on page 957, Volume 56, *ELECTRIC RAILWAY JOURNAL*, was finally adopted by the City Council and much of it has been put into effect. Changes have been made very gradually, one line at a time, so as to avoid inconvenience to the public, and to date, although some of the largest and heaviest lines have been changed, there has been no complaint but, instead, universal commendation.

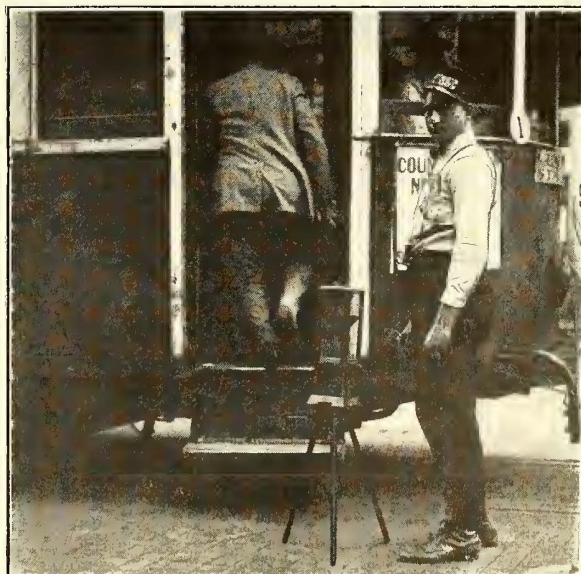


Dispatcher's Booth and Attendant at a Busy Corner, Motorcycle Inspector and Uniformed Inspector

Unfortunately, it was not possible to put Mr. Beeler's report into effect in its entirety, and certain changes insisted upon by public authority have reduced the estimated savings which were inherent in the plan. Nevertheless, the fact remains that for the first six months of this year there has been saved in platform labor and power an average of \$22,000 per month, and in July, due to added rerouting under the ordinance, this saving was increased to \$31,000.

The Kansas rerouting is still being discussed by the city authorities of Kansas City, Kan., and the receivers, and should permission be given to install the plan proposed, which is a modification of that outlined by Mr. Beeler, it will mean an additional saving of approximately \$8,500 a month.

The rerouting has resulted in a 20 per cent decrease in intersection car movements in the downtown district, has eliminated left-hand turns to a large extent, and has consequently increased the ease and rapidity with which cars are moved. The economies from the rerouting arise from the absence of duplication and the fact that cars are kept moving throughout the length of their routes over producing territory. All downtown loops and dead mileage have been eliminated wherever possible.



Street Collectors Are Supplied with a Belt-Type or Tripod-Type Farebox for Use in Front-End Collection in Congested Districts

Routes have been concentrated also so as to keep pace with the business growth and development of the city, and service has been correspondingly regulated.

RECEIVERS GO THE LIMIT ON SERVICE

Coincident with the appointment of Senator Francis M. Wilson and Colonel Fred W. Fleming as receivers in October of last year, a decided increase in service was inaugurated. Jitney competition was then at its maximum, 400 jitneys daily carrying an average of from 40,000 to 50,000 passengers. The receivers, although previously acquainted with the street railway business other than as passengers, decided that the only limit to car service in Kansas City would be cars and facilities. The Board of Control's rush-hour standard of 4 sq.ft. per passenger and a non-rush standard of a seat per passenger was discarded and service exceeding this placed on all lines. Therefore a large part of

An Excessive Street Railway Valuation

Not only on the showing made by Colonel Fred W. Fleming for the receivers of the Kansas City Railways Company, but on the basis of common knowledge as well, the assessed valuation of the railways property recommended by the Missouri tax commission is excessive.

There was a time when the company had a substantial investment value and a rosy speculative value. That time is long past. The speculative value faded under the stress of war conditions. It carried a large share of the real investment value with it.

With the company hopelessly bankrupt, the old valuation figures became meaningless. The *Star* doesn't pretend to know what the property would bring at a sale. But with the company's present prospects, with the competition of the automobile and with the necessity of a high fare that prevents what might be considered a normal expansion of business, it feels confident that the system would bring nothing like the \$19,000,000 valuation recommended by the tax commission. Moreover, other property in Jackson County is on a 50 per cent valuation, so the street railway is heavily penalized in being assessed at what is supposed to be a 100 per cent valuation, but which is much more than that.

This newspaper is not concerned with saving tax money for the owners of the property. It is concerned that the street car riders shall not be burdened with hundreds of thousands of dollars of taxes beyond what are fairly due. Under the present circumstances every dollar of excessive taxes means skimping the service or maintaining a burdensome rate of fare, or both.

In the interest of the development of Kansas City, which needs cheaper and more adequate street railway service, the *Star* hopes the board of equalization will see its way clear to make the street railway assessment nearer in line with the existing actual valuation.

Editorial Comment from the Kansas City "Star"

the savings effected through rerouting and other car-hour economies have been used in giving Kansas City without question the finest street railway service it has ever enjoyed, and as far as I know the equal of any being furnished anywhere in the country today. It certainly is, as measured by any comparative loading and service standards authorized by commissions.

At the time service was so increased other economies in the transportation department were inaugurated as rapidly as possible, many of which had been put into effect prior to the receivership, and the results of which were utilized to give this greatly enhanced service. These are more or less familiar to every one, including, wherever possible, turn-back schedules so as to keep the maximum number of cars in the districts of maximum population and travel. In other words, an effort was made so to arrange schedules as to give zone service where it could possibly be done. This resulted not only in economies in schedules, but in maintaining headways to correspond with the traffic density of the various sections of the city, and not to run expensive car-hours where they were not needed.

Safety cars, of which this company operates 100, were adopted as early as April, 1919. At the present time approximately 20 per cent of the daily car-hours are safety car-hours. Allowing for 40 per cent decrease in headways and a corresponding increase in service, this means a direct daily saving of \$400 under the amount it would require with the larger units.

Labor turn-over has been reduced to the lowest in the history of the company. In August it was less than 2 per cent. This, coupled with intensive instruction and the easier and less congested movement of cars through the business district, has resulted in a 24 per cent decrease in all classes of accidents for the first six months of this year as compared with the first six of last year.

The reduction in the number of transfers as a result of the rerouting is another important effect. The necessity for transferring has been reduced at least 25 per cent with the routes already changed, and studies show that with the entire rerouting in, the 150,000 daily transfers should be reduced to not to exceed 100,000.

Today 690 maximum rush-hour cars are being operated as against 640 a year ago. Car-hours have been increased from 7,400 to 7,900 a day with a corresponding increase of 4,600 car-miles. When it is considered that every car is getting through congested points on schedule time, that turnbacks on all principal lines are returning cars to the business district when needed, and that combination of routes has eliminated downtown loops and service duplications, it can easily be seen that the actual increase of service to the public is much greater than as represented by the actual increase in the number of hours operated. Kansas City is today receiving at least a 30 per cent better street railway service as service is measured by loading standards, headways, car availability and speed than it did prior to the changes related.

IMPROVED SERVICE HAS WON PUBLIC FAVOR

Without one line of advertising or publicity of any kind this transportation service is merchandising itself. The receivers have made plain to Kansas City that notwithstanding that every possible economy has been and will continue to be made, it will not be in those directions that will curtail car service. As a result of this continued policy there has been a most astonishing reversal in public opinion in Kansas City. This is perhaps well illustrated by the change in attitude of the *Kansas City Star*, as shown by the accompanying editorial quoted from the *Star*, which has always been very antagonistic to the company. Although the receivership is not yet a year old, jitney competition has practically been eliminated almost entirely through the force of public opinion. The number of jitneys has been reduced from 400 to 130, and through ordinances recently passed these are now operating illegally and unless legal complications arise they should disappear from the streets entirely within another thirty days. The first ordinance was one prohibiting jitneys on car track streets. The next ordinance required them to secure the consent of 51 per cent of the property frontage from property owners on all residence streets upon which they operated. They failed to do this on every route and have been ordered off the streets of the city.

Contrary to most cities during the past three months:

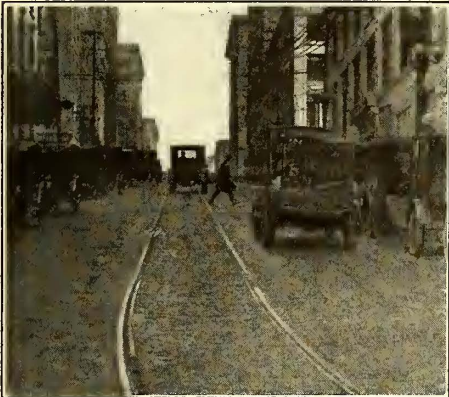
of extreme industrial depression, the number of passengers has not decreased under those carried a year ago, but has shown about a 3 per cent increase. The public and the press are both keenly alive to the policy of the receivers and there has been in Kansas City no agitation for a decreased fare.

The receivers' policy has been better to merchandise their product, not through maintaining the selling price and reducing the cost, but in return for the fare paid to reduce the operating cost and give back to the public part of the saving in increased comfort and increased service. It has been a far-sighted policy of reconstruction not influenced by loading standards, slide rule calculations or false economies. The policy is well summed up in the statement of one of the receivers in giving his orders to the operating department:

"I don't care anything about hearing of 4 sq.ft. of

tion department for facilitating movement of traffic, preventing congestion, eliminating delays and otherwise saving car-hours and better serving the public. Although most of these methods are in use to a certain extent on other systems, a brief description may be of some interest in showing the relation to more economical and more regular service.

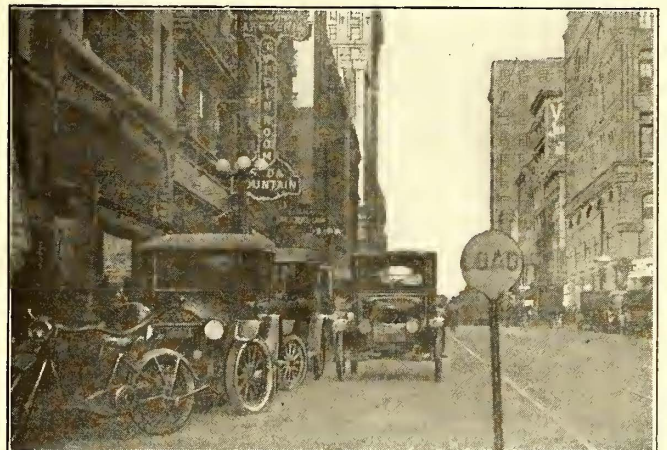
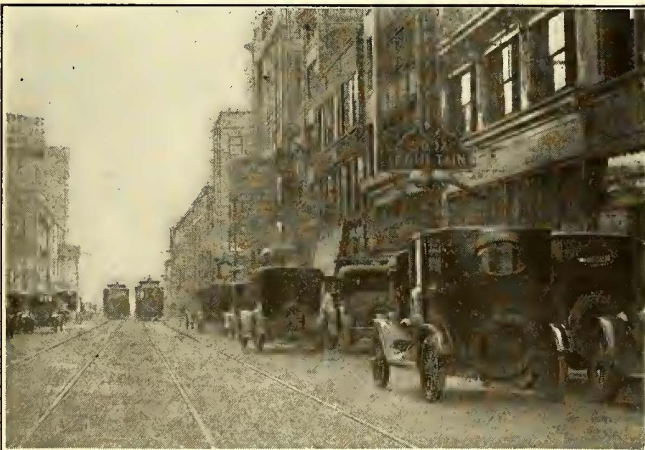
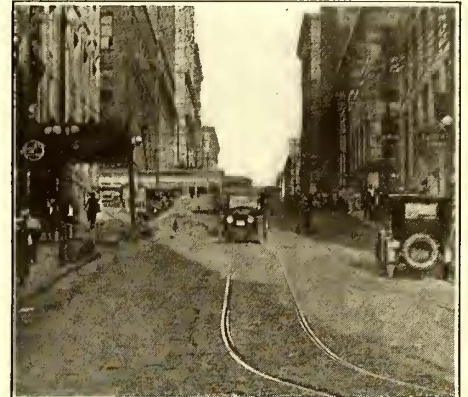
All cars are operated on regular schedules. The dispatching force reports to an official known as the chief dispatcher, located in the office of the superintendent of transportation. On every line dispatchers are located at important points and at terminals. At the more important places small dispatchers' booths, with the permission of the city, have been erected at the corner. Dispatchers at the heavy points are on duty eighteen hours a day, and at other points during the rush-hour periods. These dispatchers are of course



*Anti-Parking Laws Allow
Higher Schedule Speeds
in Kansas City*

The two views at the top show the appearance of Tenth Street before and after the passage of the anti-parking ordinance. Note the heavy grade and derail.

The two illustrations at the bottom are views of Walnut Street taken before the passage of the anti-parking law and showing double parking and lack of clearance.



space per passenger or speaking of human beings as if they were articles of merchandise. I have ridden street cars for years, am a strap hanger and a seat rusher by nature, and common sense teaches me what square service to the public means. Our first job is to show the people of Kansas City that it is the duty of a public service corporation to serve the public, and whenever it ceases to do this the very name is a fraud practised upon the people and it ought to take in its sign and quit business. Our job is to please the people who ride our cars, and within a reasonable limit, wherever legitimate requests are made, they will be complied with or good, sufficient and satisfactory reasons given why they cannot be."

DISPATCHING SYSTEM KEEPS PROPER SPACING

The dispatching system, the company police force, and the inspectors on the Kansas City Railways are other effective means at the disposal of the transporta-

in constant touch with the office of the chief dispatcher. Their duties consist of checking the cars to see that they are running on schedule time. Any gaps in the spacing that occur are filled at once by taking cars from other lines, by ordering space cars sent from division points, or by emergency turnbacks.

Because of this system of dispatching and the ability to correct bad spacing, it is not necessary in schedule making to leave slack in the schedules or to arrange for layovers at the end of the line other than the time necessary for switching. This means a tremendous saving in the course of a year in car-hours operated in providing equal service.

At extremely heavy loading points in the downtown district starters speed up loading by starting cars by whistle signals. It is their duty to note when a car is sufficiently loaded and then give the signal to proceed, and to co-operate with crossing policemen so that when right of way is given there is no delay in start-

ing the car. Street collectors and trainmen also work in connection with the starter at these locations.

Uniformed inspectors are employed, who act in the nature of supervisors. During the rush hours these men are stationed at all heavy points and act in case of emergency, assisting traffic officers in getting cars through. In addition they take immediate charge of any important situation that arises.

As an experiment some time ago an inspector mounted on a motorcycle was added to the force. He is stationed at a central point downtown and is able quickly to reach any point in the central zone where trouble occurs. This experiment has been so successful that several more will be added to the force of inspectors.

The company also maintains an extremely efficient force known as the police department. This force is made up of ex-policemen and its organization is similar

to an ordinary police department with a day captain and a night sergeant on duty at all times. These men are commissioned special police officers. They cooperate with the city police department and are stationed at such heavy loading points as ball parks, pleasure parks, theaters, coliseum, and wherever usually heavy crowds are anticipated. They assist in loading the cars, preserving order, clearing up automobile congestion, and in any other way that a commissioned officer can assist traffic.

As a result of the policy outlined above and of the extremely large operating economies made possible by some of the methods explained, and a return of a large part of these savings to the public in service, we have increased the quality and quantity of our product and it is rapidly merchandising itself in an increased public confidence and public good will.

The Employee Is the Direct Salesman to the Public of the Transportation Which the Company Produces—Much Depends on Whether He Knows His Business

Relationship Between Management and Men —A Traffic Factor

By James P. Barnes

President Louisville (Ky.) Railway

THE obligations of management are threefold and may be briefly summarized as follows:

1. Adequate service to the public.
2. Fair wages and conditions to the employees.
3. Fair return to the investor.

These obligations are as fundamental and important each to the others and all to the undertaking as are the individual legs of a tripod. Let one fail and the whole structure totters and falls. Moreover, each expresses an obligation as well as an inherent right.

The public is entitled to adequate service. This is its right, but coincident therewith exists the obligation on the public of fair treatment to employee and investor.

The employee's right to fair wage and working conditions is beyond argument, but here again are the parallel obligations on the employee of adequate public service and fair return to the investor.

The right of the investor to fair return for the use of his property in public service is equally fundamental, but only upon condition of adequate service and fair treatment of employees.

In this triangle of relationships there exists for a single right a double obligation upon each side. Each side of the triangle touches the two other sides, and symmetry is lost when pressure is uneven and the balance is destroyed between privilege and obligation.

It is the primary duty of management to maintain the proper balance between the three parties at interest or the three forces at work, and this three-phase nature of management must be always maintained. Management should stand as the trustee for the public when it is dealing with the employees and the investor; as

the trustee of the employees when they are dealing with the public and the investor, and as the trustee of the investor when he is dealing with the public and the employees.

Now a trustee is one who is intrusted with the property (or interests) of others and is bound to administer those things intrusted to his care in the interests of the rightful owner. The management of a public utility is in its highest and best sense a trust to be administered in the interest of the public, the employees, and the investor. Nor is this an anomalous situation, for only by the fair and proper treatment of all of these three parties at interest can the life and usefulness of a public utility be truly preserved.

Having in mind the three-sided responsibility and outlook of management, then, let us consider some of the details of its particular relationship with the employees. The management stands as the representative of the public and the investor when they are dealing with the employees and as the representative of the employees when they are dealing with the public and the investor. It follows then that the task of the management is first and foremost to find a point of balance where these contrasting duties can be consistently discharged. This position is necessarily one of absolute and impartial justice to all three parties at interest for the undue favoring of one party carries with it, as a matter of course, discrimination against the other two. The problem of human relations here involved is the problem of weighing and balancing interests sometimes partially or wholly conflicting, though often identical.

It is now the generally accepted basis of management

that the public is entitled to the service it wants. At the risk of digression it is not out of place to say that the problem of the management on the side of public relations today consists almost wholly of the honest endeavor to determine what kind and quality of service the public really wants (*i.e.*, is willing in the mass to pay for) and to adjust the service rendered so as to satisfy the public demand to the greatest possible extent. The function of modern management is not the arrangement of arbitrary schedules with existing facilities in a mere effort to satisfy the apparent demand as indicated by riding habits with present facilities. Modern and progressive management must seek below the surface and endeavor to determine what facilities as well as what arrangement of facilities are desired by the public.

The management must fearlessly follow out the development of popular demand and be prepared to meet any conclusion the logic of circumstances may indicate. If the public demand is truly for new or novel means of transportation in whole or in part, even to the point of the abandonment of considerable portions of present plant, how much better is it to go courageously forth in an effort to meet, standardize and supply that demand than to sit dolorously wringing the hands and complaining of "fickle sentiment" while some broader-visioned, perhaps newly organized, competitor prepares to absorb the business that is ready and waiting for the hand of him who will reach out to grasp it! Without an open mind there shall be no progress, and he who clings to the dead past will be buried with the rest of its dead.

Modern management should, by virtue of its angles of contact with public demand, be the first to sense desire for change and improvement. With this demand formulated in definite terms, trusteeship asserts itself and management becomes the pleader with the employee and the investor for that which the public requires. Public demand will in the long run be satisfied so far as it is reasonably possible, and management can have no greater asset than the ability quickly to appreciate and promptly to meet the public need.

SYMPATHETIC UNDERSTANDING OF EMPLOYEES' NEEDS ALSO NECESSARY

It is equally true that the employee will have in the long run that to which he is fairly entitled in the way of both wage and working conditions. In the past far too much time has been consumed in negotiation of small advantages and burdensome conditions both on the part of management and employees, and far too little time has been devoted by either to the earnest, straightforward attempt to analyze, understand and sympathetically treat the ideals, desires and strivings of the other.

With very few exceptions, the executive of today has passed through a course of practical railroading which by a mere effort of memory should recall to him the nature and conditions of all phases of activity in the organizations whose affairs he administers. Unless he

can know and understand these things, his right to the trusteeship of management is or should be forfeit. Sympathetic understanding of conditions surrounding each class of work upon a property is fundamental in just and correct dealing with the employees involved, and as no man can of his own activity keep in touch with all these things, save on very small properties, it follows that the first requisite for sympathetic and just relations is a sympathetic and just organization for the handling of these relations.

The distinction between duties of staff and line officers is nowadays too well understood to require more than mention, and the modern manager will avail himself of these two types of organization which may almost universally be concentrated in one general organization. The duties of a department head are dual in that he must represent his employees in dealing with the management and the management in dealing with his employees. Here are the staff and line duties almost exactly defined and, as the staff officer advises and confers as to successful strategy and tactics, so will the department head advise and confer as to successful policy and fair dealings.

IN this article Mr. Barnes points out how the public, the employees and the investor have mutual obligations and rights, while the management is the trustee whose duty it is to preserve a proper balance between the three parties in interest.

Now the successful functioning of a staff depends upon thorough understanding and frank discussion of fundamentals as to both conditions and symptoms. So the staff organization must for successful functioning comprise all department heads and the type of organization adopted by modern management should for the sake of prompt and efficient work be divided into as few major departments as possible. Within each of these departments should be a distinct staff organization functioning in precisely similar manner to the general staff and serving as a clearing house for many departmental matters which would otherwise occupy the time and delay the work of the general staff.

To illustrate: It has been found that the work of large organizations can be successfully handled with a manager's staff of say five department heads representing respectively the transportation and traffic, engineering, legal (including claims), accounting and financial departments. Observe how closely this classification follows the lines of the American Electric Railway Association and its affiliated bodies and that each of these department heads is, in the work of the association, furnished with a reference library especially devoted to his own line of every-day activity.

RULES FOR STAFF MEETINGS

Staff meetings should be frequent and regular so that policies shall be consistent and logical but not so frequent as to interfere with proper performance of line duties. Generally speaking, not oftener than once a week and not less often than once a month should suffice. Staff meetings should be held in an atmosphere of utmost frankness. Personal animus and sensitiveness to criticism should be left at the door and, if possible, the claim check lost entirely. The rule of discussion should be "criticism of every point where weakness is apparent, but no criticism that is not

constructive." We all know lightning storms are bad, but it does no good to complain of their effects unless the complaint results in more efficient arresting apparatus.

There has been too much in the past of the so-called executive session, which sometimes savors of conspiracy and is always subject to such interpretation. That this criticism may not arise, let there be no taboo on subjects of discussion at staff meetings. Let the one touchstone be "for the good of the property or of the industry" and let discussion be free and open with reasons given and opinions exchanged. If possible by discussion, even though more time be taken (it is seldom wasted), let decisions, especially as to major points, be unanimous.

Going from the staff meeting after full and free discussion and with knowledge of all facts and conditions bearing upon the points at issue, our line officer is doubly qualified for the discharge of his duty and the further dissemination of the real truth about company affairs.

Being a public servant our business is a matter of public concern, and there is no place in our program for "confidential memoranda" or "inside information." Rather, let all confidential matter take such form that employee, public and investor can be confident of its correctness and straightforward truth, and let all inside information be available to and understandable by all who wish to see the inside. Many a bitter complainant has been converted into a stanch friend by a glimpse of the inside difficulties surrounding the thing or element of service which touches his interests. Consistent truth telling will in the end result in a reputation for truthfulness, and he who makes none but reliable statements will in the end enjoy the reputation of reliability.

In the relationship between management and men it is of especial importance that the barriers to mutual understanding and confidence be removed. Here, as elsewhere, the initiative is with the management, and perfect frankness regarding all matters of operation and finance is fundamental. No good rule was ever weakened by explanation of the reasons for it, and no bad one ever strengthened by refusal to discuss its purport. No honest plea for relief or assistance was ever weakened by disclosure of the actual need. "Tell the truth and shame the devil" is a schoolboy motto, but a good rule for adult mankind none the less. Honesty is the best policy if policy it be rather than principle, and only upon such a basis can mutual confidence be established sufficient to meet and overcome the emergencies which will arise.

TEACH THE NATURE OF THE DUAL TRUSTEESHIP

Let every officer who has authority over men, and especially those who exercise discretionary authority, be fully instructed as to the dual trusteeship of his employment. Let him understand that he is staff and line officer both, and that he can carry the burden of his responsibilities on both shoulders only walking straight with head up and eyes to the front. Even-handed justice and a fair distribution of burdens and courtesies to all will bring sunshine to the cloudiest atmosphere and produce relations like those which surrounded a certain carhouse foreman, who because of efficiency was promoted to fill a vacancy at a larger carhouse. Twenty-odd of his men, understanding only that he had been transferred, called at the superin-

tendent's office to request that he be left at their head "because he treated us square." When they learned that the transfer was in fact a promotion they sent him a note of congratulation and cheerfully reported to his successor. Such relations are the stuff of which success is built, and it is not in the carhouses of such foremen or such men that strife is born.

It is not severe discipline but uneven discipline that hurts the hearts of men. The surest way to general dislike is the playing of favorites to a few who usually join the hue and cry in the end, and this rule applies throughout the organization from the humblest straw-boss or foreman to the titular head of the concern. Moreover, it cannot be effectively impressed by preachments, for here as elsewhere the initiative rests with the management, and the contacts of every-day business must be arranged to function from the very fountain-head of all authority with equality of justice to all.

Every office door should be open to all men whose activities come under the direction of that office. Many men will suffer for days together under trying conditions or under what they feel to be unjust discriminations. When such a man reaches the pitch that determines him to lay his troubles, real or fancied, before "the boss" a discouragement or undue difficulty in reaching his interview may leave him a disgruntled and dissatisfied worker, when a sympathetic reception, a friendly interview and a frank discussion might not only have turned a knocker into a booster but have brought out suggestions of real merit for the simplifying or expediting of other men's work as well as his own. The old saw that there never was but one man who was always right and he's dead, carries more than a grain of truth, and the foreman or superintendent who inclines a sympathetic ear to the troubles or inconveniences of his men will not only know better and be better known, like better and be better liked, but will find his business efficiency improved by the thoughts that will be brought to his desk.

Definitely organized vehicles for suggestion and discussion regarding every-day matters of operation and maintenance may well be instituted and a good central figure for this purpose is a safety committee or council with numerous committees functioning in all departments. On one property where a dinner is given monthly for employees of the carhouse operating the highest mileage per accident the number of miles per accident has been more than doubled over the entire property. Some of the carhouses have gone so far (and this is the suggestion of the platform men themselves) that a chart is posted conspicuously bearing the names of all platform men and a black cross marked opposite the appropriate name for each accident so that all may know the individual safety record of each fellow employee. No disciplinary action is based upon the record of black crosses but the self-discipline brought about thereby and manifested in greater caution of operation is making better operators and better men of many whose only fault was heedlessness.

Relationship between the management and employees becomes, then, just this series of relationships between man and man, man and foreman, foreman and superintendent, superintendent and department head, staff and line officer which, founded on square dealing and sympathetic consideration of both sides of every question, and, carried out upon the basis of the triangular relationship with double obligation, makes for understanding, confidence and cohesion.

But relationship between management and men is not completely or correctly functioning unless it recognizes and affects the means and methods of carrying out the employee's double obligation to public and investor, which completes his side of the square deal.

DUTIES OF EMPLOYEES TO INVESTOR AND PUBLIC

Adequate service is the right of the public. To render such service is the duty of the employees. Fair return is the right of the investor. To secure fair return is the duty of the employee. The individual employee, particularly he who comes in daily contact with the public, is seldom in a position to see the problem of service as a whole. Like a well-cut jewel, perfect service has many faces, and the outlook from one of these differs from the outlook from any of the others. The point where the work of each employee affects the safety, comfort and convenience of the public is for that employee the outlook from his particular face. Be he trainman, car cleaner, trackman or what not, each employee can know the effect which his own work should have on the public and by that standard may he measure the performance of his obligation to render adequate service. The motorman who jerks his car, the conductor who insults the complainant, the car cleaner who passes by a smudged spot and leaves a potential clothing stain, the trackman who leaves rough spots to jar equipment and destroy the nerves and comfort of passengers and passersby; each in his particular face of the jewel of service is failing in his individual responsibility to the public and is rendering imperfect or unsuccessful in his particular place the attempts of the management to achieve adequate service.

No service can be best service unless every man concerned in the rendering of it puts forth his best effort to make it so. And every one in the employ of a railway company, from the track laborer to the motorman, from the transfer clerk to the switchboard operator, is concerned in rendering service and can by his best and only by his best bring that service to the point where with honest pride all can say: "We render to the public the best service that can be given." Not for less than his best effort can the employee discharge his obligation to the public, and if the discharge of the obligation is less than his best so is he entitled to less than the most that can be done for him.

Just as distinct though less obvious is the employee's duty to the investor. Tracks, cars, wires and buildings are the property of the investor and are lent for the public service. Abuse of this property resulting in too rapid deterioration or premature scrapping constitutes a breach of the employee's obligation to deal fairly with the investor. Proper economical use, such use as

one would give one's own, is the fair measure of the employee's duty to the investor in the use of this property, and only by such use can the obligation of the employee to the investor be discharged and the employee become entitled to all that may be his right from the investor.

Again, the employee's double obligation places him in the position of mediator between public and investor. Having in charge the comfort of the one and the property of the other, he is in a position oftentimes to protect and defend the interests of the one from the attack or injustice of the other. To the public he says, "Without the good will of the investor and the investment of his funds, I cannot obtain the equipment to render you the service you desire." To the investor, "Without the good will of the public obtained through adequate service, I cannot earn the hire of your property." He can explain the desires of the public to the

investor and the difficulties of the investor to the public for he is in touch with both and his daily work teaches him the needs and obligations of both. Now these things being so and the employee for the most part being engaged full time in his daily work it becomes the function of the management, with whom is the initiative, to bring these things to the attention of employee, public and investor. Let the employee know by square dealing throughout the organization that the square deal brings the best results. Let the public know by service rendered and shifted or altered to meet changing requirements that square dealing with the public is the rule of good operation.

Let the investor know through his board of directors the getting of a square deal means the giving of two square deals. Let service be measured by the Golden Rule.

THE RULE OF THE SQUARE DEAL

Remembering that the square is not merely a four-sided polygon but is made up of two pairs of parallel lines, each square to the other, let all functions of management in relation to employees and to public and investor be discharged according to the rule of the square deal. This in its simplest terms is the heart of the relationship between the management and men: Square dealing, based on sympathetic understanding and honest endeavor not only to protect rights but to discharge obligations.

An organization thoroughly permeated with these ideals will bring about satisfaction to public, employee and investor alike; will meet no insurmountable obstacles and few difficulties; will function in bad times as in good; will, in short, perform that ideal thing—A Public Service.

Perfect Service Is Like a Well-Cut Jewel

MR. BARNES says:

THE individual employee, particularly he who comes in daily contact with the public, is seldom in a position to see the problem of service as a whole. Like a well-cut jewel, perfect service may have many faces, and the outlook from one of these differs from the outlook from any of the others. The point where the work of each employee affects the safety, comfort and convenience of the public is for that employee the outlook from his particular face. Be he trainman, car cleaner, trackman or what not, each employee can know the effect which his own work should have on the public, and by that standard may he measure the performance of his obligation to render adequate service. The motorman who jerks his car, the conductor who insults the complainant, the car cleaner who passes by a smudged spot and leaves a potential clothing stain, the trackman who leaves rough spots to jar equipment and destroy the nerves and comfort of passengers and passersby; each in his particular face of the jewel of service is failing in his individual responsibility to the public and is rendering imperfect or unsuccessful in his particular place the attempts of the management to achieve adequate service.

Street Railway Tracks Are the Show Windows of the Industry—Object of Track Is to Sell Rides—Track Maintenance the Keynote in Transportation Sales

The Track Department As a Factor in the Sale of Transportation

By William R. Dunham, Jr.

*Formerly Engineer Maintenance of Way the Connecticut Company,
Now Chief Engineer Engel & Hevenor, New York*



A Show Window That Sells Rides

SALES depend upon the attractive or pleasing display of the article offered. Salesmanship consists in offering inducements to the prospective purchasers as well as consummating the deal. The purpose of the writer is to try to show how the upkeep of the track structure of an electric railway will offer inducements to the public to buy transportation. The track and pavement are the show windows of the industry, for they show the buyer what he may expect in the way of comfort when he purchases his transportation. They are always before the eyes of the prospective patrons and make or mar the pleasure of riding.

The comfort and safety of the traveling public who patronize the trolley car depend on the track to a great degree. With this thought in mind, it becomes evident that good track makes for the sale of transportation, and it is only for selling transportation that the trolley came into being and exists. Street car rails or tracks are but an improved pavement for one class of vehicle, and the smoother and easier this pavement is kept the greater inducement for customers to buy the transportation offered.

From the standpoint of the railway managements the track is the fundamental part of the railroad. It is necessary to care for the transportation needs of the community in addition to being the window display.

Managements can spend money to best advantage on track and should not cut the maintenance fund during every wave of economy and should not put in cheap

track at any time. It is true that about the only place to cut expenses is in maintenance—cars will run a long while on bad joints, but after a while deferred maintenance means a new track or no transportation and a resultant outlay that amounts to more than would have been necessary to keep the old track in repair.

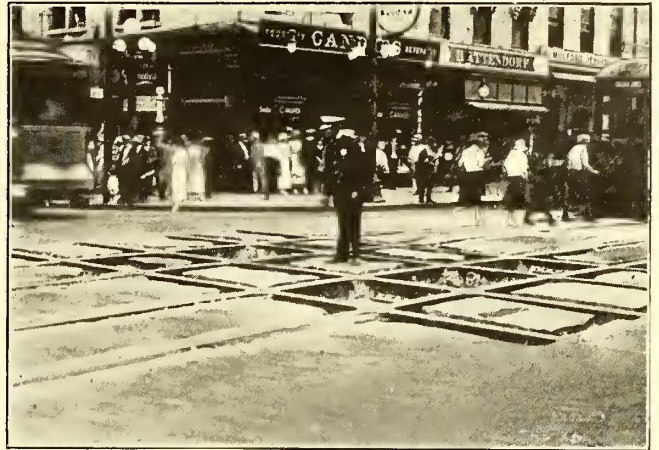
It is good business and sound economics to put in the best possible track on new construction jobs. The over-all cost of installation plus maintenance will always be less for the good construction, and sufficient experience and data are available to enable any management to put in a good track.

Track is the advertising agency of the railway business and has nothing to do with production costs. Its business is to sell rides and it should be supported to that end and its success measured by the business brought into the industry. The track advertises the railway business twenty-four hours a day, year in and year out, and its business is to make sales at the established price.

It is doubtful if many maintenance engineers look upon themselves as sales engineers for transportation, yet all their endeavors to keep their tracks in good condition have a bearing on the receipts of the company—for a smooth-running, easy-riding track offers an inducement to ride—it sells transportation. All the efforts of the maintenance-of-way men, therefore, are directed toward selling transportation, and every improvement in track conditions is a bid for riding.



The Advertising Force at Work



A Job of Special Trackwork That Makes for Comfort

Make sales by making good tracks and maintaining good tracks and then go after production costs.

One element in the functioning of the maintenance force is its relation to the public and the municipal highway officials. Here is a fine place to sell transportation. Letters complaining of bad tracks or pavements should be answered and the complaints considered. Free advice should be thankfully received even if not acted upon.

The highway officials also must be treated fairly and must be sold street railway transportation. These officials get the complaints of the public and often have the authority to order ill-advised remedies or changes. It is good business to educate these officials and to maintain cordial relations with them, so they can understand the viewpoint and problems of the transportation and maintenance men in the railway organization.

THE EVOLUTION OF THE TRACK

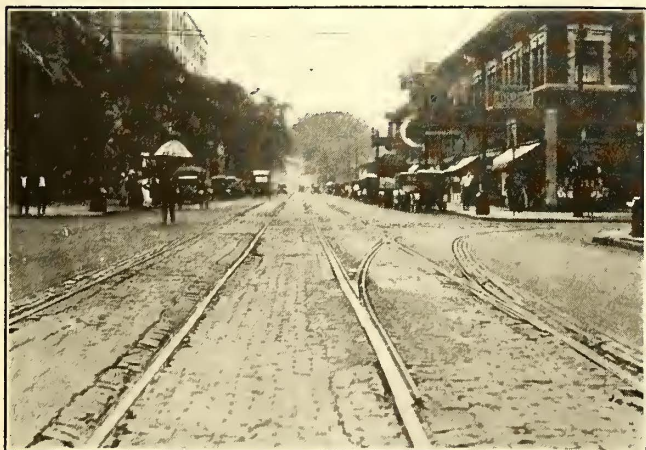
Many improvements have been made in track construction for street cars since the industry was started. It began with a light iron strap spiked down on wooden stringers in the horse car days and weighing 30 lb. to the yard; and then changed to a light T-rail, 18 lb. per yard, heavier and laid on ties with no ballast. From these beginnings, the industry has advanced until the modern track uses rails weighing as high as 140 lb. per yard with stone or concrete for ballast, and the ballast drained to prevent, as far as possible, the deterioration due to the presence of water. Improvements in joints, the weakest factor in the track structure, has kept pace with the better rails. It is a long step ahead from the

light four-bolt joint previously used to the improved joint of today—be it the heavy twelve-bolted joint or the welded joint, which means no joint at all so far as the effect on the purchaser of transportation is concerned.

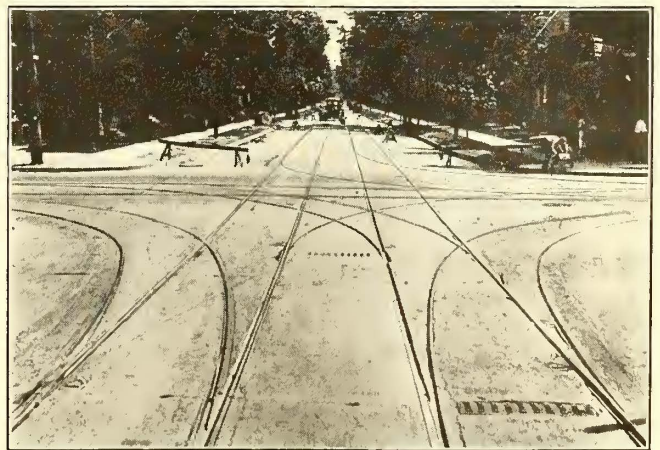
Perhaps no greater attempt for smoothness of riding has been brought out than the easy approach to curves, through the use of spirals or easements. It is not so hard to remember, when the car in turning a street corner would change its direction of movement with a suddenness which was most uncomfortable—but now, with the use of the easement, the change in direction is made more gradual, and the comfort of riding is enhanced, so the curve approach is a piece of salesmanship.

Curved-head rails are one of the latest salesmanship features produced by the up-to-date sales or way engineer. He will tell you that it puts off rail corrugations or cuts maintenance costs, but either one of these statements is merely another way of saying that it makes riding more comfortable—for the less that maintenance costs, the better and more comfortable the riding will be, and the greater the inducement to ride. A similar effect is obtained by tilting the rails, and this has positive effects on the purchasers of transportation. They have asked, "What makes this track ride so smoothly?" after the improvement has been made. So the difference in the riding qualities of the track, as noticed by the layman, are not always to its discredit.

As an advertising feature for a company, the track is always before the public. Its condition, and the condition of the adjoining pavement, is inseparable, and



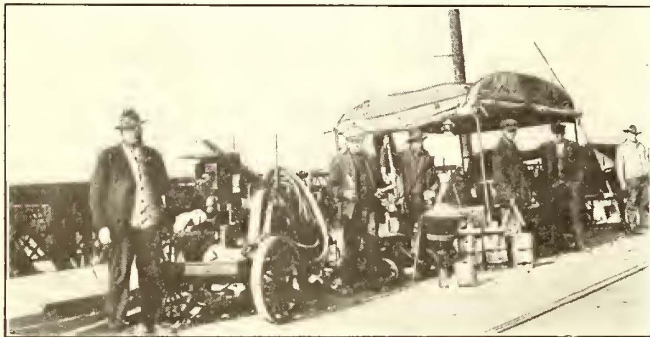
Asphalt Next to Rails Rapidly Deteriorates



Cars Should Cross This Without Jar

while the condition of the pavement will not induce riding, it is an index of the condition of the track, for good pavement cannot exist in connection with poor track. Good track and pavement is the "show window" of the transportation sales shop. It shows what the purchaser can expect for his money, and while he is perfectly willing to be shaken up and jolted around on a "scenic railway," he expects, and is entitled to, a smooth ride for his fare when going to and from his pleasure or business.

It is not necessary in the present stage of the art to spend large sums, relatively speaking, to keep tracks smooth. With the various types of welding, in many instances poor joints can be taken care of as fast as they develop, and while the perfect welding and welder have not yet arrived, it is poor salesmanship to put off this class of work until that happy time comes. The man who has paid for his transportation is not interested in knowing that 2 per cent of the welded joints have been broken and you are waiting until the art is perfected before you do any repair work, but he is vitally interested in the fact that 98 per cent of the



Ready to Weld Joints

joints have held up, for in that amount his riding is made more comfortable.

He won't say so, nor will he understand even that the joints are welded—he only knows that his riding is a smooth accomplishment. Perhaps that is one of the discouraging phases of selling transportation—if it is comfortable riding there is usually no comment; the discomforts are the facts dwelt on.

The construction of modern track for street railways is the result of years of careful study on the part of many engineering minds. It has swung from rigid to elastic construction, with exponents of both types still in evidence. As the pavement is usually rigid, the elastic type of track results in excessive pavement repairs—and usually, disintegrating pavement is a public irritant of great potency. The advocates of this type of construction point to the greater costs of track and equipment maintenance, if the rigid type is used. The modern pavement, however, usually has a concrete foundation which surrounds a good part of the rails, so that resilience through the use of wooden ties cannot be obtained without breaking the bond between the concrete and the rail. As this permits seepage of water into the substructure, it begins to disintegrate with resulting bad effects to both track and pavement, for nothing is so demoralizing to a track structure as water. To overcome this and also to take care of ground water, the modern track is subdrained. This alleviates but does not entirely remove the effects of the moisture. The ties become soft and spongy, allowing the rails to work, and in the winter frost action heaves

the pavement, and surface water seeping down along the rails carries surface dirt which works in between the paving top and base until the rails have the appearance of being below grade and are between two ridges of pavement. A very unsightly condition and not conducive to the comfort of other users of the highway results. There may be instances of elastic track construction where the track and pavement remain in good condition. However, it hardly seems practicable. The semi-elastic type of track construction assumes to give resilience by interposing an elastic cushion, usually in the shape of a wooden tie, under the rails. This tie is imbedded in concrete which also imbeds the rail base between the ties. In theory, the wheel loads go through the rails at the ties only, and the resiliency of the wood relieves the hammer blow of the wheels. Just what happens to the concrete between the ties and what its function may be is not quite clear, nor is it clear how the resiliency in the wooden ties is taken up so that the movement in the rail does not break the bond between the rail and concrete paving base. The question as to how the rails are held so rigidly by the concrete paving base that they do not move and so disintegrate the pavement, and yet are so resilient that they do move but do not wear out under the hammering of the wheels, is an interesting one. They furnish a rigid support for the pavement and a resilient way for the car wheels, two apparently opposite results.

The rigid type of construction is the other extreme. It is designed as its name implies—not to move. In this type, the substructure is drained to provide for ground water; steel ties are imbedded in concrete, which extends up high enough on the rails to act as a base for the paving; the paving surface is made as impervious to surface water as it is possible to waterproof it, either by cement grout or pitch in the paving joints and along the rails or by a concrete pavement to the top of the rails. Whatever resiliency is obtained in this type of construction is that which is inherent in the rails themselves.

The advocates of elastic track construction point to the evils of rail corrugation, which must occur in the rigid type of construction, but this effect also occurs in the elastic or resilient type. There are many theorizers on the causes of rail corrugation, and as many theories. Every one of them can be proved.

Track construction in itself can be made to sell transportation. Many examples are available where citizens write in to the railway company to advise it how to construct track on a new job or to complain about some feature of the construction work. It seems that every patron thinks he knows how to make good track, and the interested group of citizens found on a new construction job is evidence of these conditions. Such advisory letters should be answered in the same manner as a salesman answers the inquiry of a customer.

Then, again, in doing construction work it is good salesmanship to do it rapidly and without troubling other traffic. It is bad salesmanship to make all automobiles drop down over a 6-in. curb of pavement or dirt when crossing a street on which a railway company is doing construction work. A little effort and a little money to prevent these things will pay dividends through the reaction of public sentiment.

The main point in selling transportation, however, is not the type of construction so much as it is the keeping of the track in the best possible line and surface and

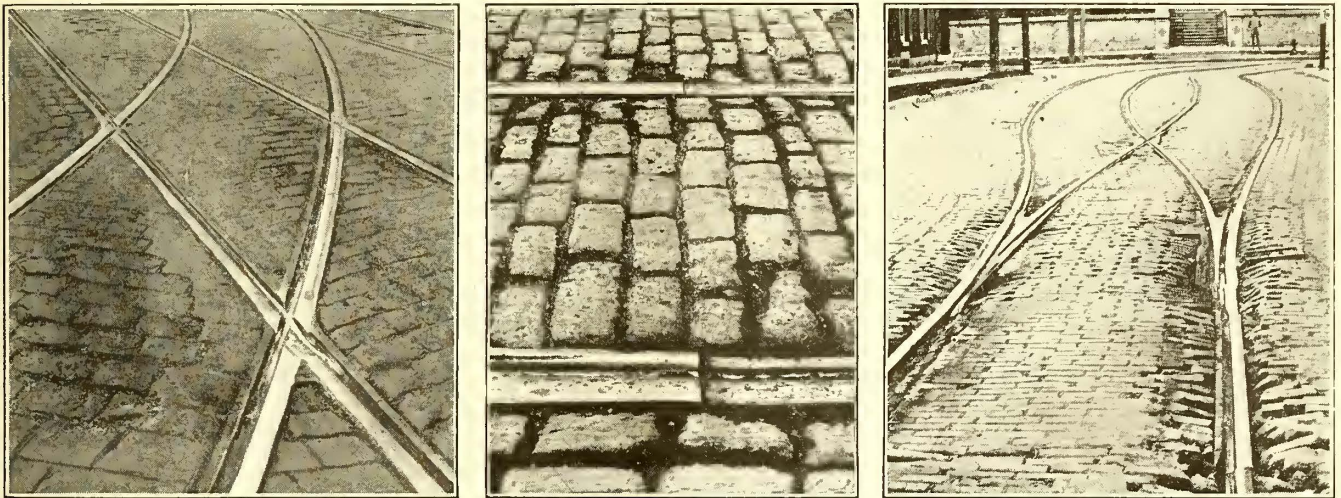
giving the smoothest ride for the money that can be obtained. The type selected, therefore, should be determined on, by what it will cost to maintain the track after it has been built. This cost must include the maintaining of the pavement, which is the advertising side of the proposition, for the prospective passenger will judge of the track and the service by the sightliness of the street surface as this first meets his eyes.

MAKE AND MAINTAIN GOOD JOINTS

The joint is, structurally speaking, the weakest part of the track, the part that has been more thought over perhaps than any other feature. With the advent of the heavy deep rails, steel channel bars have been used with six, eight and twelve bolts to hold them in place. They have been welded by pouring molten iron around the rail ends, with several ways of melting the iron; special forms of bars have been applied to the webs of the rails, these bars being then welded to the webs in spots by the passage of a heavy electric current through

formed. This small depression rapidly grows worse as its depth increases, until the whole joint disintegrates. It can be remedied at the start by grinding the two rail ends level, using one of the numerous forms of grinding machines now on the market. The depression can also be built up by welding steel onto the rail head, using the electric arc and a steel rod, the excess steel deposited being ground off with a grinding machine. Another method is to weld the joint plates to the rails and then build up the heads of the rails as this practically removes the joint. The welding and grinding require care, but laborers with a fair degree of intelligence can be trained in a short time to do this sort of work. This trouble does not ordinarily occur with joints which are welded when the track is constructed.

The larger roads have separate gangs of men who do nothing but weld, but any road large enough to operate cars is large enough to have at least one welding and grinding outfit, providing it wishes to sell transportation by means of smooth riding track, and if properly



Examples of Poor Merchandising

the bars and rails, and the application of a heavy pressure against the plates; by drawing an electric arc along the top and bottom edges of the plates at the junction of the rail heads and rail bases, depositing steel from the arc by melting; or by laying a steel rod along the top and bottom edges of the plates and melting it into the rail and plate with an electric arc so that they are welded together. The plates have also been riveted together through the rail, and one type of joint has molten spelter poured in between the plates and rails—the whole being riveted. All these methods are being used in an endeavor to keep the rail ends from moving.

The application of each method depends on the use of a relatively high temperature, and as the temperature is confined to a short section of the rail near the end this makes a critical point where the heat crystallizes the steel and a fractured rail may result, usually just back of the line of molten metal in the cast-welded joint or the ends of the bars in the electric-welded joints. This break is not perhaps a frequent occurrence, but does occur often enough to prevent use of these forms of joints by many way engineers. So far, perhaps, the welded type of joint is the better practice.

With the bolted type of joint, the continual passing of car wheels over the rail ends gradually depresses the head of the receiving rail and a "cupped joint" is

handled such an outfit makes for economical track maintenance.

Rail corrugation is one type of track deterioration the cause of which every maintenance man knows, and there are as many theories for it as there are track men, and a few more. It occurs in all types of construction, most frequently in the grooved or tram sections of rails, occasionally in the plain or standard girder types; on tangent and curved track, but generally on rails the heads of which are on a slope horizontally toward the gage line. There is one remedy, an expensive one, and that is grinding out the corrugations. The rail head, when corrugated, has a series of waves along the surface. The passing of car wheels over these waves jars the whole track and pavement structure, loosening the rails from the ties and breaking up the pavement surface. It is also very noisy and disagreeable. The corrugation should be ground out as soon as it occurs, although it has been known to disappear after a time, but in selling transportation, no chances should be taken and it is better to renew the rail if no grinding outfit is available.

SPECIAL TRACKWORK COSTLY BUT ESSENTIAL

The most expensive part of the railway track is the special trackwork, and next to the joint, perhaps more thought has been given to its design than to any other

one feature of the track structure. The first cost is high, the life is short, and the cost of renewal is large, compared with the same length of tangent track.

Special trackwork is a convenience and necessity for crossing tracks or switching smoothly and rapidly. More complaints can arise because of 50 sq.ft. of bad special trackwork than from the occasional pounds caused by bad joints on miles of straight track.

Special trackwork is very expensive to install and to maintain, but money is well spent in this manner for crossings are aggravating sources of trouble from a sales standpoint. If switching causes a car to stop or slow up, causes the motorman to throw the switch by hand or causes a bad jolt, the passengers are irritated and become nervous. Another factor in causing rough riding is that at some congested crossovers the traffic officers or late schedules will force the motorman to operate the car at high speed, even though against the company rules, and the passengers get the benefit of all the rough spots.

Another point in regard to special trackwork is that it should be smooth so as not to irritate or cause jars to other vehicular traffic. In Little Rock, for example, the automobile owners commented very favorably on the fact that the street railway had put in special trackwork which caused no rough riding in the automobiles.

Another case that comes to mind that hurt sales is where a pavement and special trackwork repair job at an important crossing was prolonged until the volume of complaints became enormous. Quick repair with the least interference with other traffic or the appearance of the street is an essential requirement to maintain public good will.

Speed of movement can be increased at crossover and switching points by the use of special trackwork and electric track switches. The electric switches save money in the long run and also do away with schedule delays caused by the motorman having to stop his car, get down and throw the switch. A psychological factor is the fact that the passengers, when they see a motorman throw a switch by hand, think the method crude, but when the switch operates by electricity they think the idea splendid and guess as to how the feat is accomplished.

FOUNDATIONS AND PAVEMENTS DISCUSSED

The best foundation possible should be put in at all special trackwork locations, using ballast well tamped under the ties, and well drained. Provision should also be made for draining surface water away from the structure, especially at the switches and frogs; if pos-

sible, the track elevation should be such that surface water will flow away from rather than toward the layout.

Undoubtedly the best type of pavement around frogs and switches is granite block on a concrete foundation with cement grouted or pitch and pebble joints. Cement grouted pavement will undoubtedly be more permanent, but granite block with pitched joints will be easier to remove when it becomes necessary to renew the worn pieces. The average life of frogs and switches, under fairly heavy traffic, is about five years, and as the pavement is broken up from the constant pounding before it becomes necessary to renew the pieces, it is well to have the pavement of a type easily removed and when removed fit to use again. Undoubtedly a granite block pavement with pitch filled joints comes nearest to these requirements. A hard brick pavement with cement grouted joints could be used, although the constant jar of the wheels passing over the various gage-line intersections will tend to disintegrate this pavement more quickly than it will the granite block. With either type of pavement and joints between the pavement steel switch pieces and rails should be waterproofed with an elastic material such as pitch or asphalt. Cement grout should not be used for this purpose as it will shatter quickly, thus letting water seep between the rails and pavement with consequent rapid disintegration of both.

The conclusions to be drawn, therefore, are that the maintenance of a track structure and pavement are of vital importance to the advertising and sale of transportation; that the sale of transportation is as necessary to a manufacturer of transportation as is the sale of any other commodity, and while people will ride of necessity, the ease and comfort of riding should be so pronounced that the non-riding public would get the riding habit, not from necessity but because it is easy.

Managements should see that the maintenance department has the best equipment and skill at its service if they wish to sell transportation. This equipment and skill is needed for several reasons—it means speed in repair work and minimum cost, and it means good advertising in that the public takes pride in seeing modern equipment used by the railway and is convinced it is up to date and that the management knows its business.

The writer believes that the way engineers can go a long way to obtain this result by looking at their work from the viewpoint of salesmanship. While the cars deliver the goods, the track advertises and displays them and also makes for safe and comfortable riding and easy delivery.



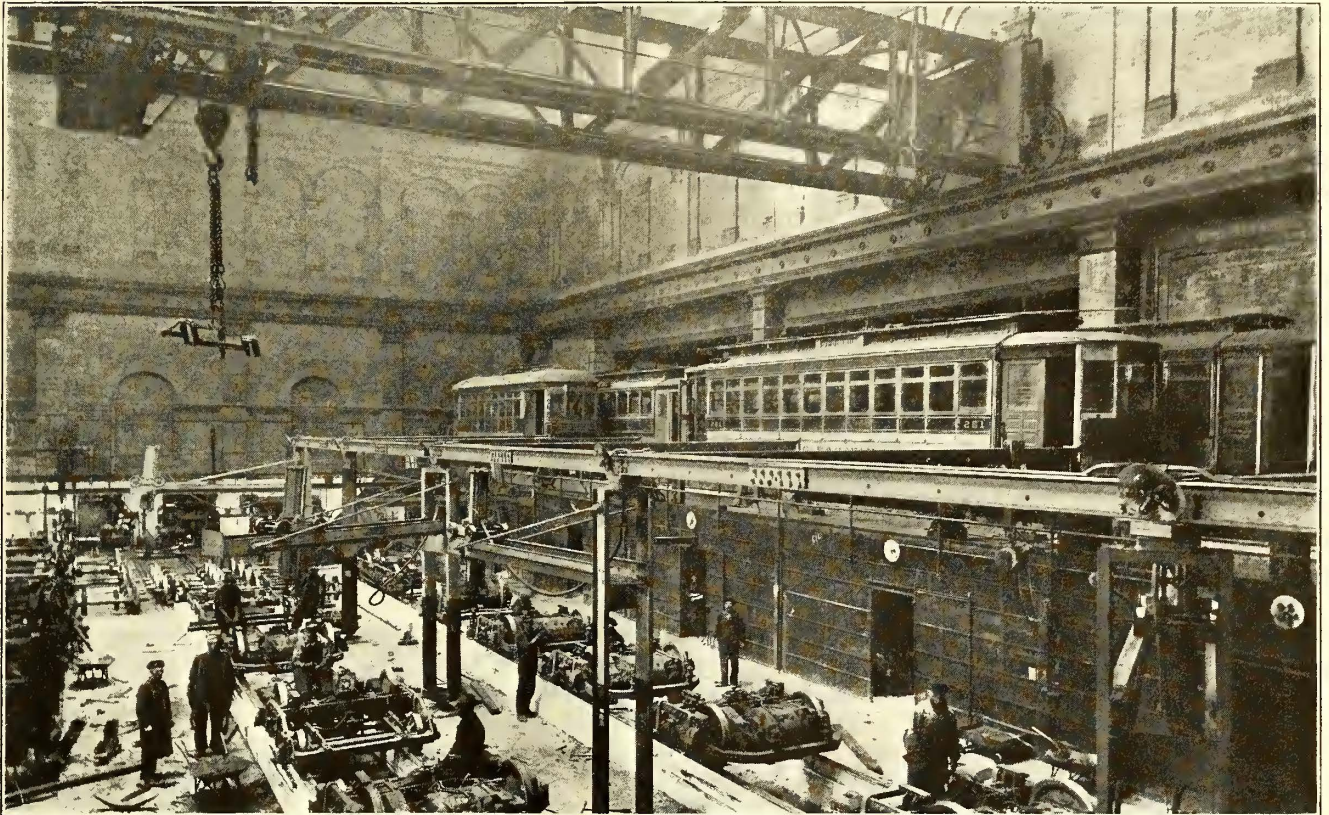
Installation of Steel Ties in Detroit

The Efficiency of a Street Railway Organization and the Class of Service Furnished Are Accurately Reflected by the Condition of the Rolling Stock Equipment

Relation of the Equipment Man to the Sale of Transportation

By J. S. McWhirter

Master Mechanic Third Avenue Railway, New York



Adequate Overhauling Facilities Make Reliable Equipment

THE QUESTION, "What part does the car equipment man take in the sale of transportation?" may be answered by the analogy between the organization of the supply company and that of the electric railway. Like the factory engineer or manager of the supply company, the car equipment man does not come in contact with the customer as does the salesman or the transportation man. But as the efforts of the salesman fail unless he is backed up by the factory engineer or manager, so will the efforts of the transportation man fail unless he is backed up by the car equipment man. Therefore, the part of the car equipment man in the sale of transportation is to meet the requirements of the company's customers from the car equipment standpoint, in order that the transportation man may have the strongest "factory" support in the sale of his product.

First of all, from the standpoint of the customer, is the general appearance of the car, in which painting and cleaning play a large part. The use of a bright and pleasing combination of colors is the basis of an attractive appearance, which must be maintained free

from dirt and dinginess. The average appearance is improved by the practice of touching up and revarnishing at frequent intervals as compared with burning off and repainting at longer intervals.

The appearance of the car windows is as important as the appearance of the painted surfaces. Dirty windows are perhaps the most obvious indication that the customer is not receiving the grade of service which he expects. Floors are also closely observed by the customer, and while he realizes the impossibility of spotlessness, he is quick to resent any unnecessary accumulation of dirt or refuse. Hence the car equipment man must make car cleaning one of his most important duties, while in the design of equipment his efforts must be directed toward the elimination of dirt pockets and ease of cleaning.

DISCOMFORT AND ANNOYANCE WITHIN THE CAR MUST BE MINIMIZED

After a passenger has boarded a car it is most essential that he be carried without discomfort. Here the seat and seating arrangement play an important part.

The contour of the cushion and back, the height of the cushion above the floor, and the allowance of knee and foot space are the first considerations. Next is the question of arrangement. While there is an undoubted preference in the mind of the average car rider in favor of the cross-seat he is generally willing to sacrifice this preference on short rides in favor of the ease of access which is secured with the longitudinal seat. Then there is the question of the seating material, the factory worker generally being indifferent to the material while the office worker and shopper prefer rattan seats. Here the car equipment man must weigh the economy of the longitudinal or wood slat seat against the possible gain in patronage or good will to be secured with cross seats or rattan-covered cushions and backs.

For those passengers who cannot be accommodated by the seats, hand holds must be provided. The considerations are that these must be sanitary and sufficient in quantity.

The window is an important point of contact between the car equipment man and the car rider. While it is not necessary for window sash to be movable during the "closed car" season, in the summer time it is desirable that the lower sash may be readily and safely opened or closed by the passenger. Another chance for irritation which the equipment man can avoid is loose or rattling sash or glass.

From the passenger's viewpoint the push button signal system is important. He has a right to expect that his signal given on any push button will be audible to the operator of the car. As it is not the number of push buttons, but rather their reliability, which is important, a push button so located as to be convenient to each exit may replace a number of push buttons on the window posts with economy and increased reliability.

Heating and ventilation require careful design by the car equipment man. The main considerations are the maintenance of a moderate temperature and the avoidance of drafts and foul air. The first two considerations can only be secured with cars whose doors are so interlocked with the controller or brake that they must be closed while the car is running, and when these conditions have been met it is a simple matter to proportion the ventilating system to remove a sufficient quantity of foul air. Thermostatic heat control has been found superior to hand regulation to provide the proper temperature, but the car equipment man must not neglect its maintenance as proper operation depends to a large extent on this.

THE OPERATION OF THE MOTIVE POWER AND BRAKES MUST BE SMOOTH AND FREE FROM JERKS

Smooth acceleration is desirable from the passenger's viewpoint, while the opening of the circuit breakers or a flashing of the controller are very alarming to the more timid. The car equipment man can generally provide smooth acceleration by a careful adjustment of the resistance steps. The annoyance of blowing circuit breakers is best avoided by the use of line switches located under the car floor, but fuses must be used with the line switches to secure full protection. The flashing of controllers is greatly reduced by the line switches, which remove the breaking of the heavy arcs from the controllers, but even with this protection, controller frames must be well grounded.

As smooth acceleration is desirable so also is smooth braking. Brake handles and valves must be kept in

such a condition that the operator will have no trouble in applying and releasing the proper amount of air, and the brake release springs must provide for prompt releasing of the brakes.

THE RUNNING GEAR IS ALSO AN ELEMENT IN MAINTAINING GOOD WILL

Probably the source of greatest annoyance toward electric railway car equipment is the flat wheel. In too many cases poorly laid out brake rigging has been responsible for an excess of flats. Yet flat wheels will always develop, and that car equipment man will cause the least annoyance who will get his flat wheels off the road the soonest.

Noisy gears are close seconds to flat wheels as sources of annoyance. Now that the split gear is a thing of the past and efficient noise-reducing gear lubricants are available, the problem is largely one of the worn axles and axle-bearing housings. The elimination of these requires an expensive program of arc welding and re-boring for the maintenance department, yet the car equipment man finds this the most economical course in the long run.

Loose and rattling truck parts give the public the impression that a car is on the way to the junk heap. When this condition prevails the car equipment man is more apt to be at fault than the truck and careful attention is needed.

The car rider appreciates an easy-riding car just as he appreciates an easy-riding automobile. Some designs of trucks are hopeless misfits from this important viewpoint, but it is the duty of the car equipment man to provide easy-riding trucks to the greatest of his ability.

CONTINUITY OF SERVICE IS IMPORTANT

Continuity of service is as important to the electric railway as it is to the power company. Delays in either case result in loss of revenue. Motor failures are an important source of delays which can be largely prevented. Flashing can be prevented by close attention to brushes, brush-holders and commutators. Coil trouble can be minimized by dipping, baking and hot banding. The remaining electrical troubles are more easily avoided.

While certain car riders are impatient of folding doors and steps, it has been found that the elimination of boarding and alighting accidents produces much more good will than is lost by the use of these safety devices. It may be noted that the accident-saving efficiency of these devices is materially increased when they are so interlocked with the control or brake apparatus that the car cannot be started until the doors are closed. Another element of good will is the number of pick-ups which are being scored by automatic wheel guards in knock-down cases. The maintenance of these safety devices is an additional expense to the car equipment man, but he is glad to maintain them for the benefit of the organization as a whole.

The hand brake is a safety feature of the modern car which the customer expects will be available for his protection when needed. The co-operation of the transportation man with the car equipment man is necessary to keep the hand brake in operating condition, but the latter should provide a brake with which the car can be controlled as readily throughout its range as with the air brake throughout the entire range of piston travel of the air brake.

While the human element in car operation is fallible the car rider expects the car equipment to be infallible, and it is the duty of the car equipment man to meet this expectation. Brakes, wheels, sanding apparatus and the emergency features required for stopping the car must be in safe operating condition at all times, but this is only another way of saying that they must be well maintained.

The part of the car equipment man in the sale of

transportation is thus to provide to the best of his ability bright, clean, well-maintained cars which are suited to the requirements of the car rider, and which operate smoothly, reliably and with a maximum of safety. If he would succeed in fulfilling his part he must be willing to devote all of his thought and an eternal vigilance to the task. The points enumerated constitute the major portion of his creed. It is evident that he must be a man of broad gage.

Car Design Is Intimately Connected with Volume of Traffic—How the Car Can Be Made Attractive to Patrons and Thus Increase Business

The Car as a Transportation Salesman

By Norman Litchfield

New York

WHO is the true sales agent of the electric railway—the president? Hardly, for at best he can come in contact with but few of the road's patrons. The general manager? Perhaps more nearly so, but he is apt to be too busied with the prevention and settlement of strikes, the hammering down of the ever-soaring operating rates, placating commissions, and buried under the multitudinous tasks that form the heavy chain which, like Marley's ghost in Dickens' famous story, he is doomed to carry clanking behind him throughout his existence.

And so we would find it if we traveled down the line of the various officials, that one and all, necessary though their functions be, are tied and bound by their duties so that as salesmen of their company's only product, transportation, they fail to get acquainted with their customers and make sales—a very picture of unsuccessful salesmanship. They play rather the part of the production end of the plant, analyzing the needs of the market and providing the necessary output and an attractive product.

How does a customer get to know a manufacturing concern? Through its salesmen, of course; that goes without question. Then how does a patron get to know a railway? Chiefly, and in the case of the average electric railway, almost entirely through its cars. We may therefore fairly state that the cars form the sales force of the railway. If the headway be too great and Salesman Trolley Car does not show upon the job at the psychological moment and Salesman Jitney steps in, he gets the business. Why not? "Absence makes the heart grow fonder" was never said of a trolley car, that's sure. And if Salesman Trolley is dirty and his shoes need shining and he is loud and noisy, who wants to associate with him? A wise receiver, now gone to his rest, spent the greater part of his first receipts in painting his cars, and the attitude of his public quickly changed. No matter how decrepit the internals might be, the surface looked clean and shiny, and people were willing to ride in it. It's the rosy cheek that sells apples; it even often gets husbands, and so why not patrons?

If we agree that the trolley car is the road's most potent salesman, we may then proceed to analyze the

characteristics which make for success and point out some of the errors time has shown to exist, and so pave the way for a better understanding with our patrons and a surer marketing of our product.

Let us assume, therefore, to begin with, that the transportation department has provided a schedule with headway sufficiently close so that I, the patron, when I come into the market, find Salesman Car conveniently near when I call for him. Note that phrase, "When I call for him."

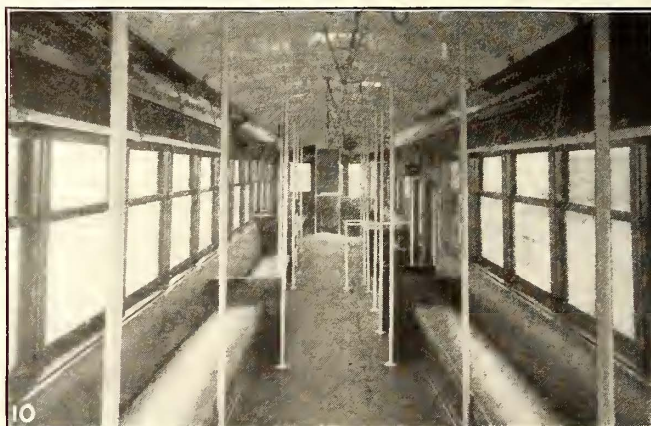
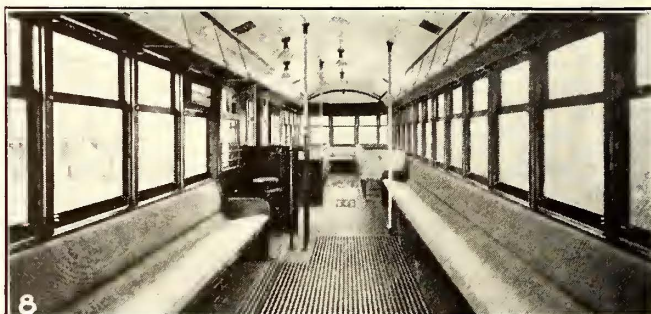
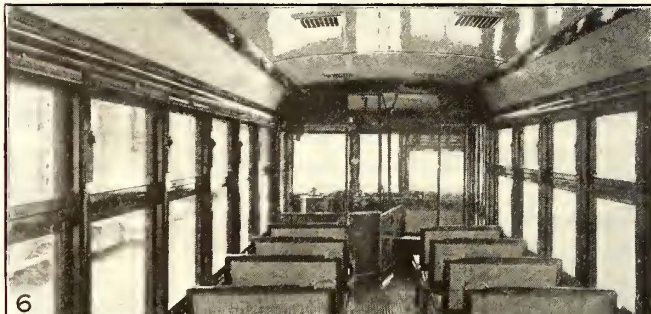
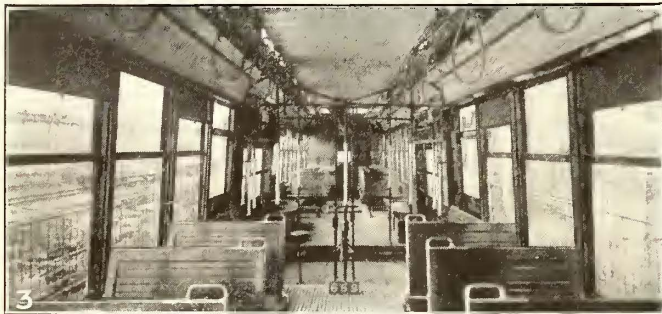
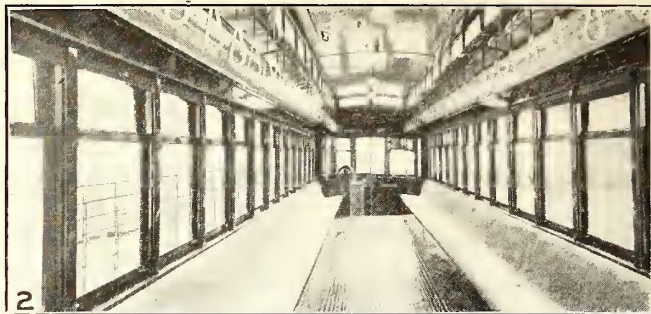
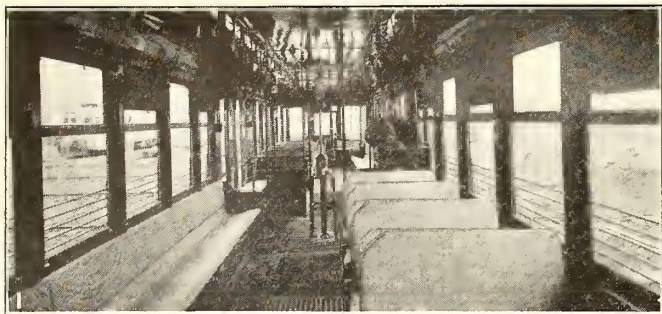
If he thrusts himself noisily upon me when I don't want to hear him, disturbing my work and mayhaps my rest, you may be assured I will have none of him and will turn to Friend Jitney, who, though he squawks a bit too much, yet travels on rubber heels.

NOISE MUST BE REDUCED

Therefore, to begin with, we must provide means of making our cars run quietly. Notable work has been done along this line in the use of helical gears for motors, strict truck maintenance, eliminating loose and rattling parts, non-chattering brake hangers and the use of wooden blocks for the support of brake rigging. Another aid is the pit grinder, which can help make the soul-racking flat wheel a thing of the past. Then, too, the science of lubrication has been developed to the point that on a well-conducted property the hot box is a rarity where formerly it was a troublesome pest. In this part of the subject comes the question of the car weight, for it is undeniably more difficult to operate heavy cars quietly than light ones, not so much because of any inherent defect in the car itself, but because of the greater blow given at rail joints and crossovers. Who has not lived at some time near crossovers, where one could almost tell the class number of the car by the noise it made?

No specific cure-all for noise can be given, but those items already mentioned have done their part in making a more favorable attitude of the public toward the roads.

The car approaches, and I attempt to board. If many people are leaving the car, do I have to stand out in the wet and cold until the last man has disembarked, before I can enter? Or, on the other hand, do I still



Types of Cars—Interior Views

- No. 1—Center-Entrance Car with Staggered Arrangement of Seats to Equalize Load.
- No. 2—Double-End Car with Longitudinal Seats.
- No. 3—Center-Entrance Car with Longitudinal Seats Near Well and Cross Seats Near Ends.
- No. 4—Center-Entrance Car with Cross Seats.

- No. 5—Safety Car with Division for Colored People.
- No. 6—Safety Car with Separating Partition for Operator.
- No. 7—Center-Entrance Trailer.
- No. 8—Peter Witt Car with Longitudinal and Cross Seats.
- No. 9—Double-End Car with Cross Seats.
- No. 10—Peter Witt Car with Stanchions Instead of Hand Straps.

have to stand out in the weather while the conductor is laboriously collecting the fares of a long line of passengers ahead? How often is my enthusiasm for a road dampened before ever I have left the pavement? So herein has come about the development of five distinct classes of car:

1. Rear entrance, front and rear exit with separate motorman and conductor.
2. Center entrance and exit, with crew of two.
3. Front entrance and exit, with crew of two.
4. Front entrance and center exit, with crew of two.
5. Front entrance and exit, with one-man crew.

We cannot now go into a discussion of the relative merits of these different types of car. Like salesmen, a different type is needed for each set of conditions. But in each class there are certain constructional details which bear vitally on the selling of transportation, and it is with these we wish to deal.

STEPS AND DOORS

First among these comes the question of the number of steps, whether one or two. In answering this it must be made clear just what is meant by the "number of steps." Is it to mean simply external steps or is it to include all the upward rises from the street level to the car. If external steps are the criterion, there can be but one answer, namely, one step, largely for the reason that folding doors and steps have become a *sine qua non* of safe operation, and it is not practicable to use two external steps and have them fold. If it means, on the other hand, the total external and internal steps, then the question becomes not of one or two steps but rather of one, two or three steps, counting the external step as one, the platform as two and the body floor as the third. As to which is the more preferable arrangement, this question, like many others, cannot be settled entirely by itself, its solution generally being a compromise between the desirable rise of each step and the height of the top of the motor from the track.

We must therefore first give consideration to what constitutes a desirable height of step. This is determined by considerations of comfort, safety and speed of interchange of passengers. For stairs a rule in common use by the architects provides that the sum of the lift and tread shall equal 18 in., this giving a proportion which has been found by experience to be one which is comfortable and which makes a flight of steps which can be traversed at a reasonable rate of speed. This matter of tread and lift proportion is one which is frequently misunderstood, it being sometimes thought that if the step is low it will be comfortable, which is not the fact if the tread is not properly proportioned. I have in mind one stairway on a suburban line which has badly proportioned low steps which are a constant source of complaint—verbal if not written—on the part of the road's passengers.

For the first step from the street level to the external step or well of center-entrance cars it would be desirable to limit the height to 12 in. It must be admitted at once, however, that this has been accomplished in but few instances, and then somewhat at the sacrifice of other important features, and the best that can be accomplished is about 14 or 15 in. In fact, this may be considered to be about the general standard height, practically no cars now being built with anything over 15 in. where external steps are used.

Having determined 14 in. as the height of the first

step, the two others become dependent on the height of the body floor from the rail, which in itself is dependent on the height of the motor. Much effort has therefore been expended by the motor designers to produce a motor of minimum diameter. This has resulted in a car floor averaging about 34 in. from the rail, with a maximum of say 36 in. With 14 in. first step, this leaves from 20 to 22 in. to be divided up between step to platform floor and step to car floor. Now, it is particularly on the step from the folding step to the car platform that the matter of proper proportion of tread to life becomes important. Using the formula already quoted, with tread say 10 in. or so, the proper lift becomes 8 in. Two conditions prevent the attainment of this ideal, the one the necessity for drawbars in many cases under the platform and the other the vastly increased use of the life guard installed under the platforms and for the successful operation of which sufficient clearance must be maintained between it and the platform arms for the body of a grown man or woman. This means a platform floor height of about 27 in., making the lift from the external step to the platform floor about 13 in. This is uncomfortable and makes for accidents in boarding and alighting. This leaves the lift from the platform to the car floor about 7 to 9 in.

To sum up, therefore, it will be seen that the selection of step heights is not one that can be made at will, but is controlled by well-defined conditions, and that for the end-entrance car the average figures are:

	Desirable	Actual Average
Rail to external step.....	12 in.	14 in.
External step to platform.....	8 in.	13 in.
Platform to car floor.....	7 to 9 in.	7 to 9 in.
Total lift.....	27 to 29 in.	34 to 36 in.

We have therefore been forced to put our patrons to discomfort at the very entrance to the end-entrance car, although the matter is one which has been much improved in recent types as compared to designs of some years ago.

With the center entrance and exit there does not exist the necessity for body clearance underneath the car framing and hence better conditions are found. It also is almost universal to use sliding doors, without external steps, a common feature being to have a center well from 14 to 15 in. above the rail, a step from well to car floor of from 9 to 10 in. and a ramp from this point to the necessary motor clearance level.

In the end-entrance, center-exit car the exit is built with the car floor flush and with two internal steps of dimensions about:

From floor to first step.....	10 in.
From first to second step.....	10 in.
From second step to rail.....	14 in.
Total.....	34 in.

Confronting the would-be passenger at the time of boarding are the doors with which all modern cars have their platforms equipped inclosing the car and protecting the crew and the passengers from inclement weather. How shall they be operated, by hand or by power?

That is a question that must be left to the opinion of the individual operator, for as far as the passenger is concerned both work reasonably well, and it is questionable whether his desire for the company's product will be affected one way or the other, whether the "gates

are set ajar" by compressed air or by brute force. On the other hand, from the viewpoint of the crew, the pneumatic operation so lessens their labor that it should tend materially toward giving them an attitude favorable to the interests of the company, and so help to improve the quality of the company's only output, transportation, which is delivered to the customer through the medium of the crew, who if they be worn out and grouchy inevitably arouse in the passenger a feeling of hostility. And it should be noted, as the writer has frequently observed, that this hostility is not directed against the individual conductor or motorman, but against the railroad and its management. That might form an interesting subject for thought on the part of some of the expert psychologists who masquerade on our payrolls in the guise of publicity men.

Hence the welfare of the crew is in no small sense vital to the successful marketing of transportation, and pneumatic operation of doors and steps should go a long way in obtaining the desired result, and it may be remarked in passing that manufacturers state that the large majority of the cars built in the last five years have been furnished with pneumatic doors. If it be a safety car, then pneumatic operation, preferably foot controlled, is a necessity to permit the operator to be free at all times to make change, issue transfers, etc., and get away promptly.

Closely connected therewith too is the matter of safety, for if the doors be pneumatically operated it is possible and customary to interlock them with the control and the brakes so that they cannot be opened until the car has stopped, or to start the car until the doors are fully closed. Some one may ask, How does such an arrangement sell transportation? The answer may be somewhat negative, but is none the less apt, that a hurt passenger can lose the company many more dollars than the amount settled by the claim agent, for it is certain that no amount of money ever made up for the loss of an arm or a leg, and the maimed passenger becomes the worst possible kind of publicity agent whose workings, while not always visible, are surely there, undermining the company's credit and stealing its patrons.

While therefore the pneumatic door devices may cost more than the manual arrangement, the balance seems to be in their favor, and we can rightfully say that they too aid in "selling transportation."

FARE COLLECTION

We have thus assumed that our passenger is safely on board the car, housed safe and snug, but, alas, if it be a prepayment car, and the crowd be great, he may still be standing in the street, held up by the line of people in front of him, who, oddly enough, are trying to present some money to the railway company, a strange and unusual proceeding! And more strangely, it is often here that apparently the most effort is made to slow up the proceedings, as it were. One would expect, rather, that the fare collector would be trained by the starving company to pounce upon his victim and extract the necessary nickel from him with the minimum of delay. It sometimes appears that so much attention has been paid to the prevention of the loss of the fraction of a per cent of the revenue through the peculations of the crew that it has entirely blinded our eye to the fact that we are not getting our passenger on quickly enough and with due regard to their comfort. Protecting railings should be carefully studied and reduced to a minimum and the farebox placed

where it will allow the general average pick-up load to board the car and have the doors shut before the first man pays his fare. This presupposes the fare box entirely off the platform, and, if weather conditions permit it, away with bulkheads and everything else that hinders free movement of passengers! Adequate change-making machines and foot-operated registering devices all help, but there is still room for improvement and the door is wide open to the inventor who perfects better and more automatic means of fare collection and registration.

So at last we have our passenger safely in the car, having had due regard to his safety, his comfort in climbing the steps, etc., and have succeeded in separating him from his nickel (I write in New York), or in more generous towns his dime. It is astonishing when one jots it all down to see what care and attention has been paid to the mere getting our friend on and into the car. I doubt if our millions of riders ever begin to appreciate it, but make but one error in any of these points and they will appreciate your mistake, never fear, and the public is a past-master at the expression of such appreciation.

COMFORT IN SEATING

Having paid his fare, the passenger naturally turns his thoughts toward the possibility of a seat, and he attempts to thread his way through the throng, which, regardless of the type of car, always congregates around the entrance, resting its weary frame against anything leanable against. His comfort is then vitally affected by two things which are practically inseparable in their importance, namely, the aisle width and the character of seat. Here comes in the consideration of what constitutes the aisle and what the most desirable type of seat. The latter really comes first, and the selection should be made according to the character of the service. If it be one of frequent interchange of passengers, the personnel of the load changing several times in a trip, the longitudinal seat is desirable, as it gives the widest and most flexible aisle, allowing free movement of passengers so that they are more likely to distribute themselves throughout the length of the car, and furthermore the short rider is not much interested in having a cross seat.

If, on the other hand, the service is one where the load is picked up in a small area and carried some distance to various points where they disperse to their homes, then the cross-seat arrangement becomes the proper one, provided the way clearances are such that a reasonable width of car can be used. For it must be remembered that, regardless of what width we make the actual seat, for comfort each person should have about 18 in., and unless we put arms on the seat will take that much, whether we as operators like it or not. Therefore with two cross seats, one on either side of the central aisle, 6 ft. are going to be occupied by the seated passengers, and unless a reasonable width of car is possible the clear aisle will be so narrow that congestion will result and passengers will be seriously inconvenienced and annoyed. If it is less than this the aisle is bound to be congested and passengers seriously inconvenienced and annoyed.

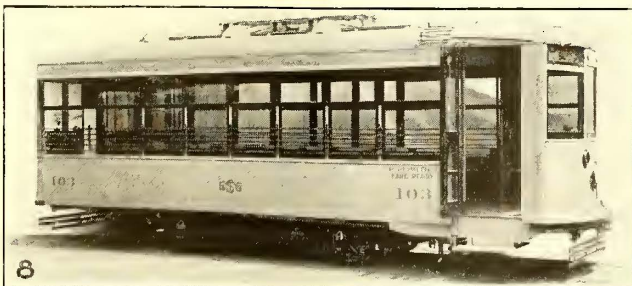
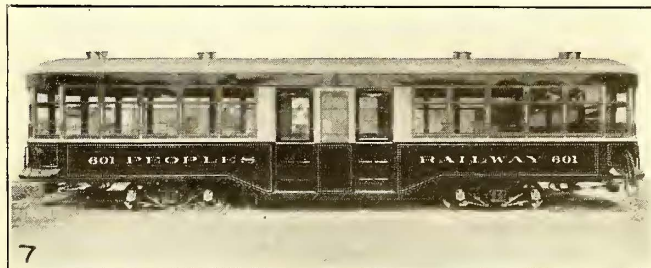
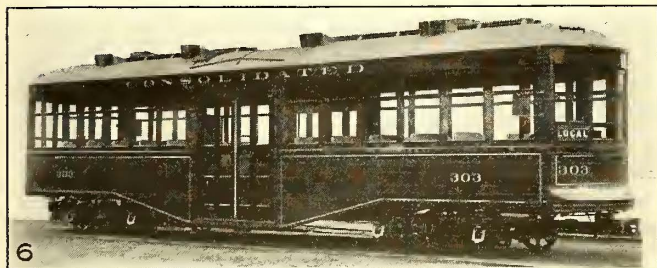
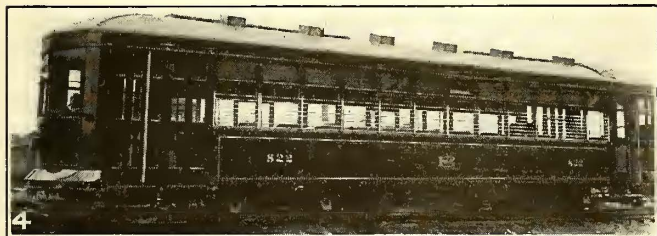
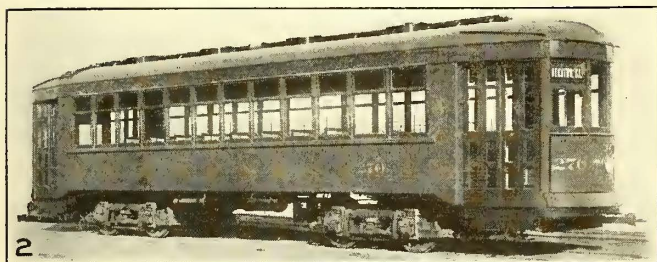
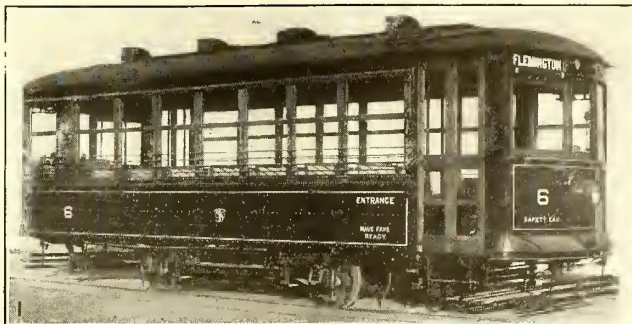
Then comes the question of the space that shall be allotted between cross seats. It certainly should be sufficient to allow a fairly tall passenger to sit in comfort, not always in a rigidly upright position as some cars require, and further to place a reasonably sized

bag under his knees and in front of the seat. To attempt to work too closely is but folly, as it does not please the passengers and tends to slow up passenger movement so that, if the headway be close, less passengers can be carried past a given point than if fewer seats were furnished. In fact, it would seem that in two things there has been somewhat of a tendency to go too far, the one in the extreme lightening of the car and the other in the crowding in of seats, merely as a talking point that so many seats have been provided.

Having seated him or herself in the corner next to the window, the passenger attempts to rest his arm on the window sill, and often

dow seat? The answer is obvious that it is too bad we are forced by our narrow city streets to omit the arm at the aisle so as to give more free aisle room. Here the advantage in flexibility of passenger movement outweighs the discomfort to the individual and is therefore properly condoned, but not so at the window. By all means let us have the arm rest.

For windows we have the choice of one of four arrangements: First, the double sash in its two varieties, one with the lower sash designed to raise, the other with the lower sash stationary and the upper sash designed to drop; second, the patented semi-convertible arrangement in which the whole sash lifts



Types of Cars—Exterior Views

- No. 1—Safety Car.
- No. 2—End-Entrance Car with Cross Seats.
- No. 3—End-Entrance Car with Longitudinal Seats.
- No. 4—End-Entrance Car with Double Folding Steps.

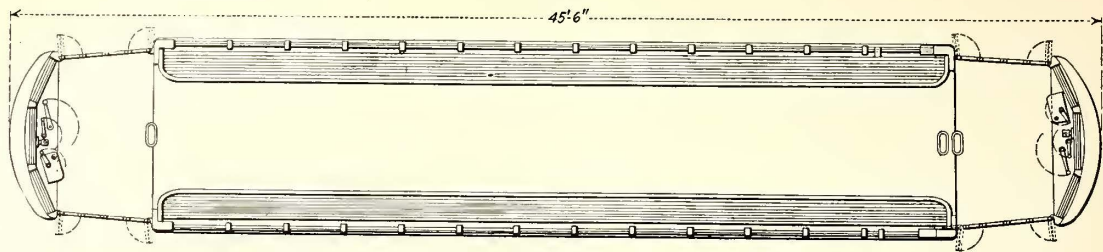
Types of Cars—Exterior Views

- No. 5—Peter Witt Car.
- No. 6—Center-Entrance Trailer.
- No. 7—Center-Entrance Trailer with Double Doors.
- No. 8—Safety Car.

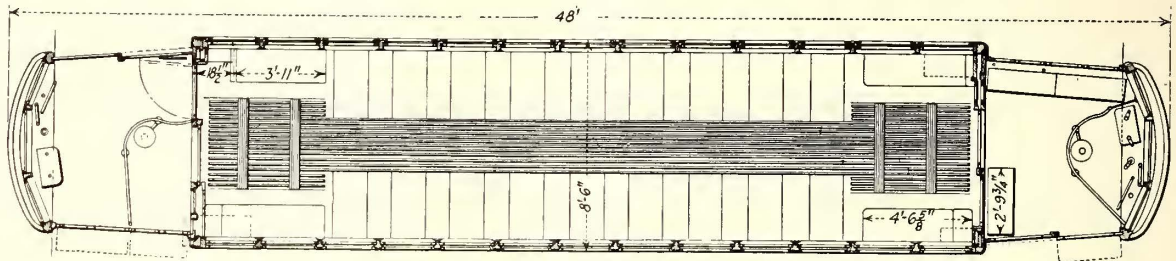
finds it missing; a slight inconvenience, but nevertheless one which is not only an inconvenience but something of an irritation, and the small amount of weight that is saved by its omission certainly does not justify the possibility of making the passenger uncomfortable and put him in a mood wherein he is apt to find fault with the company. It is all very well to argue that the aisle seat is built without an arm rest, therefore why not the win-

into the roof, necessitating a rather awkward and displeasing looking ceiling arrangement; third, the single sash designed to drop into a pocket, and, fourth, the single sash arranged to be removed permanently during summer weather.

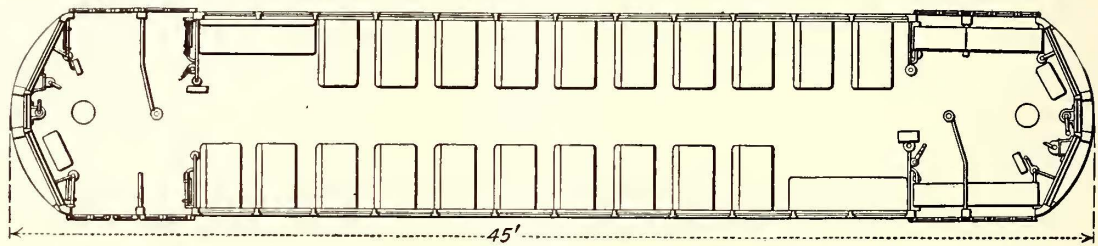
Which pleases the patrons of the road most? I wonder if that question has always been uppermost in the minds of designers. It sometimes seems not,



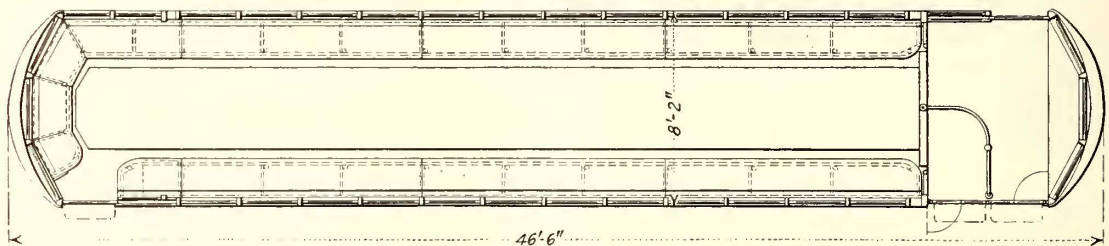
Double-End Car with Longitudinal Seats



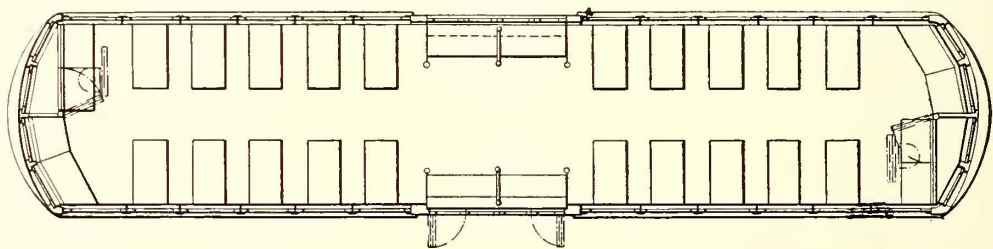
Double-End Car with Cross Seats



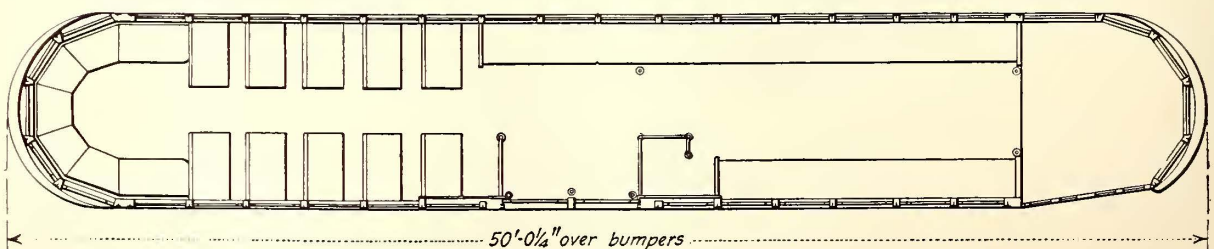
Double-End Car with Cross Seats



Front Entrance Car with Emergency Exit



Center Entrance Car



Peter Witt Car

Plans (Drawn to the Scale of 1/8 In. = 1 Ft.) of Typical Double-Truck City Cars

whereas it should be, for it does not take many additional passengers to pay for whatever may be the additional cost of upkeep or power consumption of one arrangement over the other.

Let us analyze the matter. In the first place, no one in these days of good-looking houses, cars and automobiles likes to ride on a car which has not a pleasing interior; secondly, he wants to be able to see out with the least obstruction to his vision; further, he desires to be as cool as possible in the warm summer sun, and yet hates to get chilled and wet if the summer shower suddenly descends. And all the time we must remember that if he is sitting in a cross seat he demands his full 18 in. width of seat. That is a specification of desires that is troublesome of fulfillment, as is evidenced by the numerous varieties of window construction that have been brought out.

The decision, if it were left to the passenger, I believe, would be for the single sash dropping into a pocket for longitudinal seats, and for cross seats a single stationary sash, removed altogether in summer time, with a good substantial curtain that he can pull down in case of rain.

Now, the latter arrangement undeniably puts a big burden on the railroad company, requiring it to provide large space and arrangements for storing the sash in the summer time, and probably the best compromise is the double sash, with the lower sash arranged to lift just as far as it can be made to do so.

HEATING AND VENTILATING GO HAND IN HAND

The reverse of these conditions obtains in winter time, for then the passenger wants the window closed and a reasonable heat provided. The heating of the car, it may at once be said, has been pretty thoroughly worked out and the heater companies are prepared to provide heaters which will maintain an even temperature of about 50 deg. F., which is the most comfortable for passengers, who as a general rule in city cars do not wish to remove their overcoats or their furs with which they have provided themselves in cold weather. But this requires attention of one sort or another to maintain the even temperature desired, as much or even more discomfort being caused by an overheated car as by a cold one. The true solution seems to be the use of a thermostat automatically controlling the heaters, and while they are not as yet entirely perfected, yet they have been brought to a stage of development where they perform fairly satisfactorily, and the large amount of power saved by their use considerably overbalances the cost of their upkeep.

Closely in hand with the matter of heat goes that of ventilation, a subject on which there has been and even yet is about as much misinformation and ignorance as any subject with which designer and operator have to do.

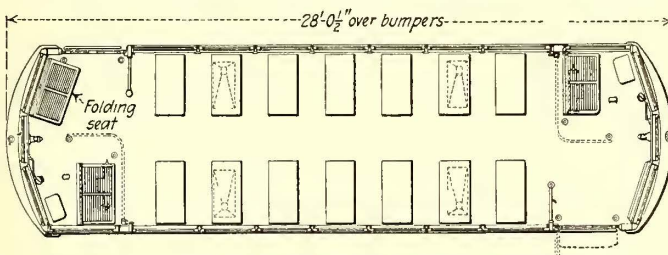
It was the old theory that poor ventilation was caused by an excess in the air of carbon dioxide, the waste gas that we breathe out from our lungs.

Careful experiments made some years ago at one of our large universities, however, threw some light on the interesting and disputed subject. A number of men were inclosed in a large glass box and kept under observation while they pursued various activities such as reading, writing, etc. In the meanwhile no fresh air was admitted into the box; it, however, was equipped with electric fans, which at the beginning of the experiment were not in motion. After a time the inmates began to show signs of physical exhaustion, and

then the fans were set in motion and the men immediately revived and picked up their work again, and continued working without serious discomfort even though no "fresh" air had been admitted and the CO₂ content of the air was very much higher than generally considered desirable.

Further practical experience has been along the same lines, so that it seems to be pretty well established that to secure satisfactory and comfortable ventilation enough cool, fresh air must be admitted to prevent foul odors, and it must be in gentle motion so as to provide sufficient evaporation from the skin of the passengers so that they will not suffer from excess bodily temperature, and at the same time the motion of the air must not be violent enough to cause a strong draught. It is not possible in an article of this character to discuss the merits of various systems of ventilation, and it can merely be pointed out that the foregoing constitute the fundamentals of good ventilation and that the findings are rather against the pre-heating of the incoming air and the use of any type of ventilating system which will not cause the free admission of cool, fresh air when the car is moving slowly or is stopped altogether.

The American rider, as a rule, is a cleanly and somewhat particular person, and to a large extent his nose



Standard Double-End Safety Car

rules him in his judgment of the railway company. The matter of ventilation, therefore is one, aside from a matter of health, that should receive careful and intelligent attention and should not be lightly shoved aside for purely constructional reasons.

CURTAINS HELP

The next thing that affects our riders' comfort and convenience is that of the window curtain. Some discussion has arisen of late whether these are not merely a useless extravagance. This seems doubtful. The railway company in accepting its passenger tacitly agrees, within reason, to carry him to his destination in safety and comfort, and in both of these items the curtain plays its part. Most all riders are readers, and no one can read with full sunshine on the printed page letter in comfort or in safety, for the glare on the white page is an acknowledged severe strain on the eyes and one which should be avoided. Again, in case of sudden storms arising in the summer, when the windows are open and have remained open for some time, even the most ardent advocate of this or that style of window will agree that occasionally (some of us think frequently) the windows stick and it is impossible to close them. Then the question of the presence or the absence of the window curtain comes very much to the front and, if absent, ruined costumes and disgusted riders result.

Conditions vary of course, and too sweeping a conclusion should not be drawn, but in the main, and with reasonable prices in a period of the President's "normalcy," which it is to be hoped is at least on the horizon,

the verdict is for them, as constituting one of the small things that represent "service."

LIGHTING ARRANGEMENTS NOT UNIMPORTANT

Being seated comfortably, housed snug and warm and dry, and being, as aforesaid, a somewhat literary person, the rider opens his newspaper or his favorite "movie magazine" and starts to read. Now, in the matter of illumination, I think we are more inclined to be overgenerous than stingy. Many of our cars belong, so far as age is concerned, to the era of the old "16-candle power" carbon filament lamps, and the lighting system was laid accordingly. Even then, if the voltage regulation was reasonably good, the amount of illumination provided was large and the cars presented generally a decidedly brilliant appearance. To realize this, we have only to turn our minds back to the wonderful center oil lamp of the old horse cars with its many-faced prismatic reflectors, whose sum total of candle power was so small that it seemed like the coal fire of Scrooge's clerk, which if poked at all, went out, giving up the ghost and saying, "What's the use?"

Then later came the marvelous Mazda lamp of today, a very scientific baby whose christening was not in candle power, of the meaning of which we had a glimmer of understanding, but in something called "watts," so that we hardly realized that we were obtaining a unit of double the brilliancy, and we stuck them in our cars, lamp for lamp, in the old socket just as they were, turned on the "juice," and sat back and exclaimed, "My, isn't it fine and bright!" And the funny thing of it is that we are hurting rather than helping our eyes. For the eye is so constructed that light is admitted to the retina, whose function is somewhat that of the "movie" screen, through the pupil, which is a shutter, or rather an aperture, which automatically opens or shuts to admit more or less light to the retina as it finds it well for the general well being of the eye. This accounts for the fact that when we enter a dark room at first we can see nothing, but gradually things begin to appear out of the darkness and we are able to find our way about, even though falteringly. This is due to the fact that the pupil has opened to its widest extent, admitting all the light there is and producing thereby a faint picture on the retina. Equally so, when suddenly exposed to a very intense, brilliant light, the

pupil immediately contracts and admits a smaller amount of light to the retina, and hence the picture is somewhat dimmer.

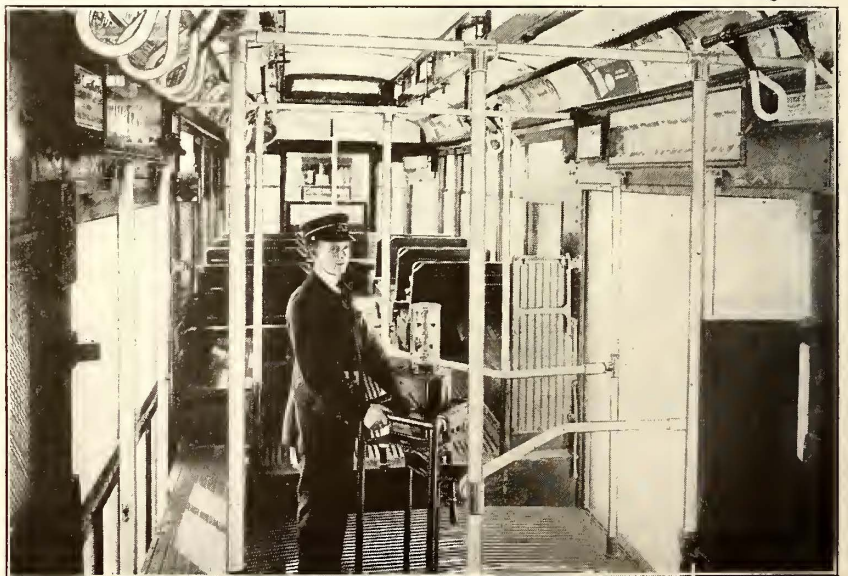
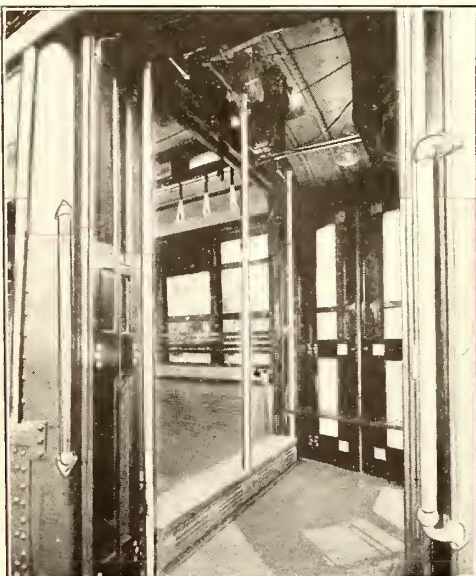
Now, while the Mazda lamp as a whole unit gives a degree of illumination which may not be considered excessive, nevertheless the filament itself is extremely brilliant, as is evidenced by the fact that we cannot look directly at the filament without instinctively turning away with our eyes smarting. It is desirable, therefore, that the lamp be shaded so that in an ordinary standing or sitting position the eye will not see the bare filament, and by so doing a less total amount of illumination is required for the reason before stated, that the pupil stays wider open. This cuts down the power consumption for illumination and is therefore desirable. The shading further permits us to use a smaller number of high-power lamps, thus reducing the first cost and the maintenance, and giving, if intelligently placed, equally satisfactory illumination.

PUSH BUTTONS MAY BE HIS LAST IMPRESSION

Our rider nears the end of his trip, and as he approaches his destination he desires to warn the car operator that he wants the car to stop. By and large, the obvious way for him to do it is by the convenient push button, one of the symbols of authority of which the American, native born or melting potted, is ever fond.

Starting out as an unmitigated nuisance, as it admittedly was in the old days of dry batteries and house-bell wiring, it has evolved into a sturdy piece of apparatus that needs only a reasonable upkeep to have it render its service quietly and unobtrusively to the passenger, allowing him to leave the car with kindly feelings toward the company and its plea for a fairer show in the municipality in which he lives. Don't forget that last impressions are often controlling.

With a few steps the passenger is off the car and our responsibility toward him is ended. What a cycle of human interest it has been from the moment that his eyes scanned the horizon for his car until we let him off at his corner, bound for his home or his work. And the cycle repeats itself millions of times each day throughout the country. And on the skill with which the cycle is traversed depends the success or failure of our service.



At Left, a Clean and Roomy Entrance Invites Attention. At Right, White Enameled Stanchions and Hand Straps for the Comfort of Standing Passengers

Merchandising Is Different in Railroading than in Private Enterprises—To Determine What Constitutes Efficient Service, Traffic Surveys Are Made and All Runs Are Charted

Making Transportation Serve—and Sell

By Clinton E. Morgan

Assistant General Manager Brooklyn City Railroad Company

IN THE USAGE of transportation the word "merchandising" conveys a meaning not wholly clear. From whatever angle we attack the question of transportation we are met by conditions not found in the ordinary forms of business, and which, therefore, do not lend themselves to the methods and policies therein employed.

Possibly it should be true that the principal problems of "selling" transportation do not differ greatly from the principal problems of the average merchant, but whether this be so or not the essential facts of the transportation industry unquestionably exclude "merchandising" when we attempt to apply this term to the business of running a street railway system.

It is plain that the street railway systems carry obligations and enjoy rights in a sense wholly distinct from those of merchandising. All this is true even of large corporations which are a collection of individuals as holders of stock.

This general view is put forth with the idea of dispelling any misconceptions that may arise from the use of the term "merchandising." It is the duty of railways to deal with conditions as they are, not as they have been or should be. It does not aid effective policies to deal loosely with terms that may lead both the public and the workers in the transportation industry astray.

In Brooklyn, where a situation scarcely without parallel in the country has existed, the obstacles to successful management have been greater than those faced by private enterprise, even in abnormal periods. Added to the difficulties resulting from resumption of inde-



Borough Hall, Brooklyn, Showing Loop and How Study Has Resulted in Elimination of Congestion Due to a More Even Car Flow

pendent operation and the disentanglement of the surface lines from the great network of transportation, involving subway and elevated systems, were new and indirect difficulties presented by a combination of municipal and private ownership.

The Brooklyn City Railroad, while under separate management and control, cannot be regarded for purposes of management or of public policy as distinct from the great network of transportation interests of which it forms a part.

To make the situation still harder the management of these lines was confronted not only with the unusual troubles of an unusual traction situation but also by a hostile municipal administration. The management was even forced to resort to the courts to eliminate unfair bus competition and to be enabled to exercise its franchise rights.

Dealing with the question of merchandising Brooklyn's transportation in sense of marketing or, better still, providing service, we may pursue some lines of analogy between the storeman and the street railway operator in a discussion germane to the symposium which this number of the ELECTRIC RAILWAY JOURNAL embraces. The storeman relies to a great extent on direct advertising, and, while this method is followed in varying degrees by transportation systems, selling in Brooklyn is being accomplished by the indirect method.

This policy is grounded on the belief that the first demand of the public is service and that when this service is supplied the result will be appropriate public acknowledgment with resultant increase in earn-

TABLE I—SUMMARY OF FOUR DAYS TRAFFIC CHECK, SHOWING OLD AND NEW RUNNING TIMES BETWEEN THE VARIOUS TIME POINTS

	April 16, 1921			April 17, 1921			April 19, 1921			April 20, 1921			Total New	Average Old
	Number Trips	Total Time	Average Time	Number Trips	Total Time	Average Time	Number Trips	Total Time	Average Time	Number Trips	Total Time	Average Time		
Buffalo Avenue to Kingston.....	14	62½	4½	6	27½	4½	12	54	4½	12	56	4½	4½	6
Sterling Place.....	14	84½	6	6	32½	5½	12	52½	4½	12	51½	4½	5	4½
Washington and Bergen.....	14	57½	4	6	29½	5	12	60	5	12	67	5½	5	6½
Vanderbilt Avenue.....	14	31	2	5	14½	3	12	27½	2½	12	27½	2½	2½	3
Flatbush-Atlantic.....	14	49½	3½	5	15	3	12	38½	3	12	39	3	3½	3
Livingston Street.....	13	37	3	6	14½	2½	12	30	2½	12	32	2½	2½	1½
Borough Hall.....	13	86	6½	6	32	5½	12	71½	6	12	72	6	6	6½

ings and a better understanding on the part of the car rider, whose co-operation is essential to success.

In former days little thought was given to transportation in the nature of a sale. It was simply a case of putting what you had on the street and the public could ride or not. It was ample, however, when the companies were not required to seek business through the devices of the salesman. This attitude has made the problem more difficult, for the time when the public looks upon the advances of transportation companies without skepticism has not yet arrived. In Brooklyn, however, this skepticism is fading, but owing to the

other surface and rapid transit lines operating in the borough and resumed independent operation, following the failure of the Brooklyn Heights Railroad to meet the obligations incurred as lessor. Since that time—Oct. 19, 1919—every effort has been made to maintain car service that would meet the requirements of the public. How successful these efforts have been is shown by the results flowing from unified operation of all the borough surface lines under one directing head. On Feb. 15, 1920, the receiver for the three other surface lines with which the Brooklyn City Railroad had formerly been associated as a part of the

B. R. T. system entered into an agreement with H. Hobart Porter, vice-president and general manager of the Brooklyn City Railroad, to supervise for him operation of all the other surface lines of the Nassau Electric Railroad, the Brooklyn, Queens County & Suburban Railroad and the Coney Island & Brooklyn Railroad.

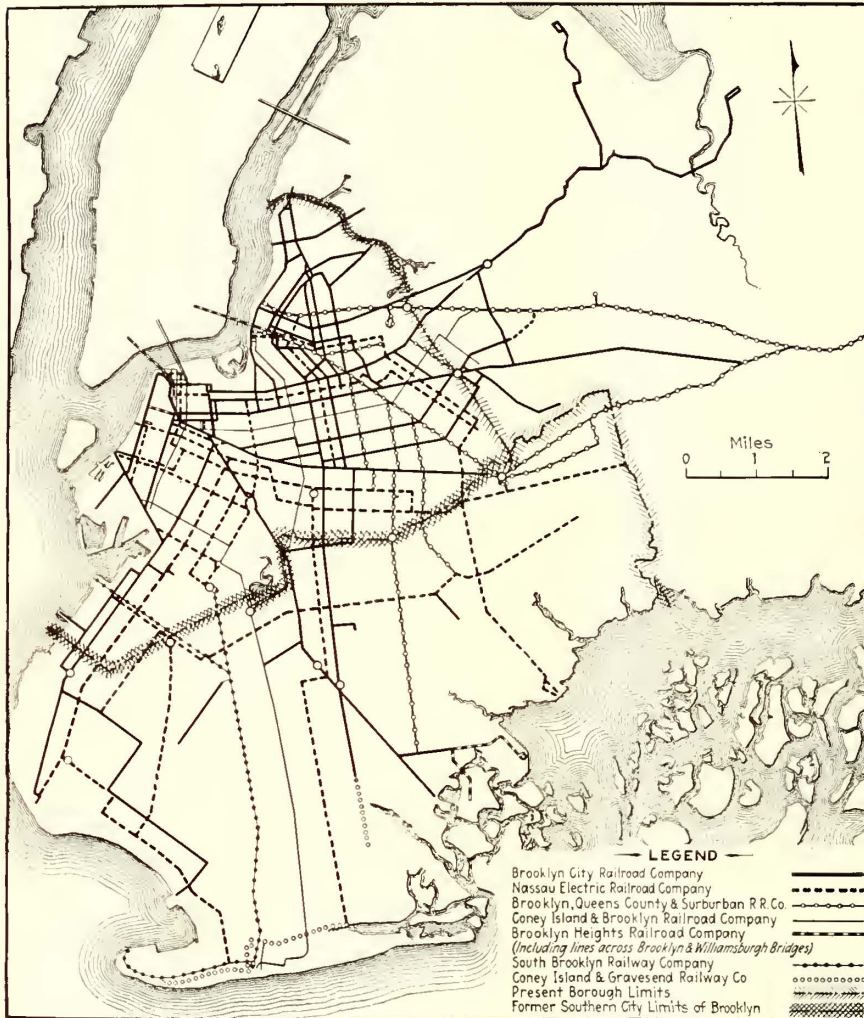
During the past year, notwithstanding the trainmen's strike in August, 1920, and the opening of the new rapid transit lines, which have greatly changed the traffic flow, the management has been able, by consistent application of a fixed policy, to study the traffic needs of each line separately and to handle more passengers at a lower cost per passenger than heretofore. Results have proved that this policy was sound, as the car riders have been given a quicker and better service.

The surface lines of Brooklyn operate 524.887 miles of track and are owned and operated by seven companies as shown in table below.

Of the above, all except the Brooklyn City Railroad are controlled by the Brooklyn Rapid Transit Company's system.

Following the return of the Brooklyn City Railroad's property to its owners in 1919, and owing to the diversified ownership of the lines, it became necessary to break up several routes. The result was the forming of new riding habits by the public.

Soon after this changed condition of riding habit a thorough traffic survey was made of all surface lines. The object was to find where patrons were located, their riding habits, distance traveled, and, this ascertained, to adjust the service to their needs, with the view of determining the percentage of loading of the entire line. The further aim was to determine the methods used in the analysis, some of which are used generally throughout the country. In addition to these usual methods, and owing to the importance of complet-



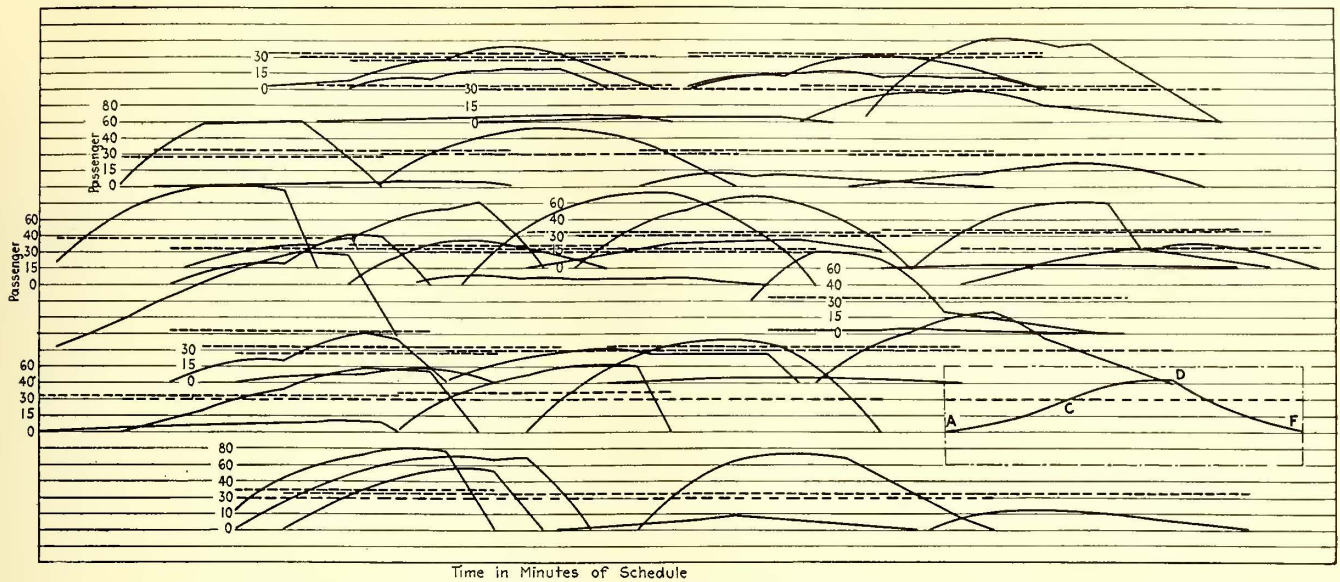
Map of the 525 Miles of Surface Lines in Boroughs of Brooklyn and Queens

complications which an unfriendly city administration had produced, the general public still harbors doubt.

We believe that the transportation companies cannot reasonably ask the public for substantial support unless they give the equivalent of that support in adequate service. This attitude is based not upon altruism or upon any vague theory of rights but upon the fundamentals of an existing situation.

"Service" is difficult of definition. Service that is considered adequate for one property is entirely inadequate for another. This is true even as to lines on the same property. Efficient service must be built upon two prime factors—the attitude of the car riders and the economic cost of meeting that attitude. In Brooklyn the problem of the surface lines took definite and intensive form when the Brooklyn City Railroad, by decree of the federal court, was separated from the

	Miles of Track
The Brooklyn City Railroad.....	232.104
The Nassau Electric Railroad.....	146.409
The Coney Island & Brooklyn Railroad.....	52.488
The Brooklyn, Queens County & Suburban Railroad.....	64.956
The Brooklyn Heights Railroad.....	5.205
The South Brooklyn Railway.....	16.028
The Coney Island & Gravesend Railroad.....	7.697
Total mileage	524.887



Passenger Counts Plotted Graphically to Show Passengers on Cars at Each Five-Minute Interval in Comparison with Seating Capacity

ing this survey at the earliest possible moment, many novel methods were and are now being employed to determine the necessary factors incident to providing the proper service in the most economical way.

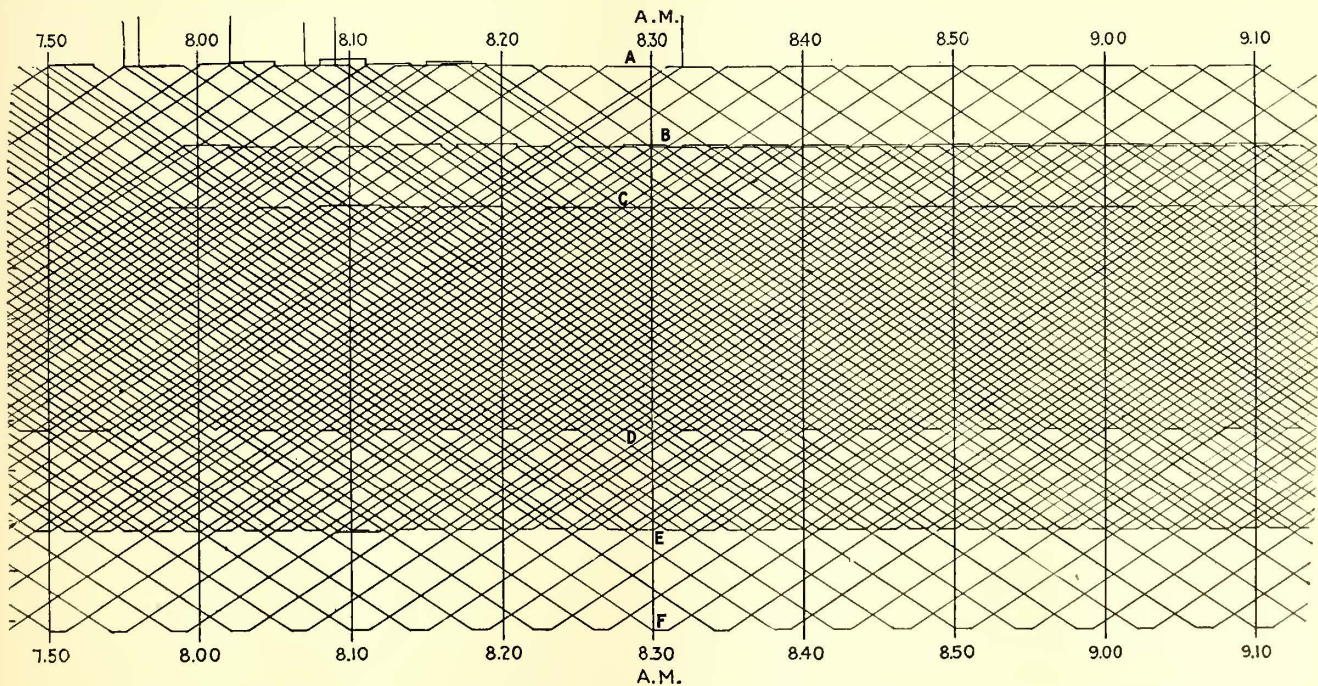
In determining the service requirements, each line was checked from the beginning to the destination by stationing a trained checker at various points approximately five minutes from each other, regardless of distance. This virtually amounted to taking a cross-section analysis of the line. The men make a check of the line in both directions during the twenty-four hour period on the trunk lines, twenty-four hours per day, seven days per week, and on the lines of lesser travel from four to six days.

These passenger counts are then tabulated for the given line and are plotted graphically, together with the location points. From such calculations the various loading percentages in either direction on the

entire line from 0 to 100 per cent are readily determinable.

While the checks are being made by checkers stationed five minutes apart, as explained, experienced operators and motormen are assigned to the line for the purpose of checking up the actual running time between any two time points for the various types of equipment, so that the correct running time can be incorporated in the contemplated schedule.

This enables us to make comparisons with similar traffic charts showing the number of seats at the same points. From these records it is easy to determine the exact loading of the lines, enabling the schedule department to build schedules to meet the requirements of the line by providing the maximum cars at the 100 per cent points, cutting back cars on either end of the line at points where the percentage of loading has correspondingly dropped.



Graphical Analysis of a Schedule from Which the Movement of a Car Can Be Seen at All Times

The schedule being technically correct and providing for accurate spacing, the next important item is to maintain the operation and spacing as called for in the schedule, as the proper spacing results in the selling of the transportation to the respective rider on sight, particularly when the cars are operated on a frequent headway. When a car rider observes a car approaching in the near distance he will unhesitatingly wait for it, but when there is no car in sight the result in many cases is the loss of the passenger. Particularly is this true if the destination of the passenger is within

the superintendent's office the gross revenue per line for the day, together with the platform cost for service rendered on such line. The superintendent's office compiles such figures for all lines operated, making a report each morning, which is placed in the hands of the superintendent and the management by 9 o'clock, showing the total gross revenue and platform cost for the preceding day by lines, as well as by depots or carhouses.

From this statement the revenue and platform cost are plotted graphically for each line as illustrated

Bulletin Order No. S-1728
 Brooklyn, N. Y., May 1st, 1920

Brooklyn City Railroad Company
 Coney Island and Gravesend Railway Company
 South Brooklyn Railway Company

LINDLEY M. GARRISON, Receiver of
 Brooklyn Heights Railroad Company
 The Nassau Electric Railroad Company
 Brooklyn, Queens County and Suburban Railroad Company
 Coney Island and Brooklyn Railroad Company

TO ALL CONCERNED:

COMPLAINTS

We have received, particularly during the last few months, entirely too many complaints reporting misconduct and the use of discourteous and profane language on the part of our Conductors and Motormen to the patrons of this Company.

Employees engaged in public service are constantly brought face to face with situations requiring them to exercise great patience, self-control and good judgment. However, there is absolutely no excuse for giving offense—no matter what the provocation—and a situation can always be best met by our employes curbing their tongue. Keep your temper, speak quietly and avoid giving offense. By conducting yourselves in this manner, assisting passengers who need your help and doing your best to increase their comfort while under your care, you will discharge your passengers in a happier and more contented frame of mind and feel far better, satisfied with yourself.

Remember that without the fares that these passengers pay, it would not be possible to pay you your wages. They are your own personal customers and it is to your advantage to have more and better satisfied passengers.

The reputation of a Company depends to a large extent upon the civility, honesty and good judgment of its employes together with their ability to get along with all kinds and classes of people. The habit of courtesy is as easy to cultivate as that of rudeness and pays better.

Discourtesy to passengers is a most serious matter and the matter is being brought to your special attention with the understanding that it will not be tolerated under any circumstances and that severe discipline will be applied in all cases where an employe wilfully and knowingly insults a passenger because such an employe is not worthy of holding any position with the Company.

Put a little SMILE in your language when dealing with the traveling public.

WILLIAM SIEBERT, **WILLIAM SIEBERT,** **WILLIAM SIEBERT,**
 Supt. of Transportation Supt. of Surface Transportation Supt. of Surface Transportation, for
 BROOKLYN CITY RAIL ROAD CO. CONEY ISLAND & GRAVESEND RY. CO. BROOKLYN HEIGHTS RAILROAD CO.
 SOUTH BROOKLYN RY. CO. THE NASSAU ELECTRIC RAILROAD CO.
 BROOKLYN, QUEENS CO. & SUB. R. R. CO. CONEY ISLAND & BROOKLYN R. R. CO.

This is to certify that I have received and read copy of BULLETIN ORDER No. S-1728, dated May 1st, 1920, relative to complaints issued by the Superintendent of Surface Transportation, and thoroughly understand what is expected of me in the future in regard to my dealings with the traveling public.

Badge No. _____

Date _____ Depot _____

SUBJECT No. 2—TRANSFERS.		SUBJECT No. 3—PROTECTING PASSENGERS WHEN BOARDING AND ALIGHTING.	
SITUATION	WHAT TO SAY	SITUATION	WHAT TO SAY
A. WHEN A PASSENGER ASKS	1. I'm sorry, we do not transfer in that direction. 2. Next time PLEASE ask for transfer when paying fare.	A. WHEN PASSENGER GETS ON BOARD	1. When cars are coming in a stop and passengers get out to get on. 2. Whenever passengers are boarding car.
B. WHEN A PASSENGER OFFERS	1. A transfer on which the limit has expired. And in case the passenger asks for extra time, allow only so much free time. 2. A transfer improperly punched. And if passenger desires to offering the transfer.	B. WHEN PASSENGER GETS OFF	1. When passengers start to get off a moving car. 2. Whenever passenger
	1. I AM SORRY, I can not see it that transfer, as the time has expired. I AM SORRY, but it is against the rules to allow any more time. 2. I AM SORRY, I can not see it that transfer, it is improperly punched. PLEASE pay your fare. Take my number and report the matter to the Conductor.		1. Wait until the car stops PLEASE. 2. Watch your step PLEASE. 3. Do not board PLEASE, it is dangerous. Car stops at rear side only. 4. GET OFF PLEASE. Alight for the doors. 1. Wait until the car stops PLEASE. 2. Watch your step PLEASE.

MAY 12 11 30 A.M. 1920

Office of Superintendent of Transportation

192

File No. _____

To _____

Dear Sir:

A patron of the Company has complained about your treatment of him while a passenger on your car on _____

It is understood that in many instances a passenger may be the aggressor, and that your work is often performed under trying circumstances. This does not justify you, however, in losing your patience or in being discourteous to any passenger, under any circumstances. Remember that it always takes two to have an argument, and if you conduct yourself in a dignified, courteous manner, you not only will find that you have the sympathy and respect of your passengers, but you will make of them your friends.

When you are asked a question, give a polite answer; when a passenger complains to you about rules you are trying to enforce, tell him in a quiet manner that you are simply obeying your instructions. Your passengers have a right to expect courteous treatment from you, and while they may not always return it, you gain nothing by entering into an argument with them or answering them in any but a polite way.

Yours truly,

Supt. of Transportation.

I have read the foregoing, and understand what is expected of me in the future in regard to being courteous to my passengers and answering their questions in a civil manner.

Badge _____

Forms Used in Schooling Trainmen. At Left, Bulletin Notice Relative to Complaints. At Top, Right—Pages from Trainmen's Courtesy Code. At Bottom, Right—Form Letter to Individual Trainmen Used When Personal Complaints Are Made of Their Action

a comparatively short distance. The traffic surveys referred to enable the transportation department to determine the frequency of the headway. In any case it is of the utmost importance to keep the cars of any route properly spaced, without which an unbalanced loading condition and operation of unprofitable mileage ensues.

Delays, rerouting, cut-backs, turn-backs and pull-ins are all reported to the office of the superintendent of transportation, who thus can correct any irregularities.

Shortly after midnight the carhouse clerks tabulate the conductors' remittances for each line, reporting to

on page 502 with percentage ratio of the two plotted each half month.

Coincident with the plotting of the platform cost, such costs are checked with the scheduled allowance to determine their correctness and checkmate any unauthorized service being operated or the failure of any division to operate the schedule as provided. Other reports made to the superintendent of transportation show any discrepancies in or additions to the authorized schedules and their reasons therefor.

Having the reports covering the preceding day's operation early in the morning the management is able

TABLE II—METHOD OF TABULATING TIME CHECKS ON ST. JOHN'S PLACE ROUTE TO DETERMINE THE ACTUAL RUNNING TIME BETWEEN FIXED POINTS

Car Number	Buffalo Ave.	Kingston	Sterling and Rogers	Washington and Bergen	Vanderbilt Ave.	Flatbush and Atlantic	Livingston and Flatbush	Borough Hall	Date	Total Time
5092	4	6	3½	2½	4	2	5	0	..	27
5075	5	8	5	2	4	1	7	0	..	32
4589	4½	5½	4	2	4	3	5	0	..	28
4597	5	6	4	2	4	3	6	0	..	30
4593	5	6	4	2	3½	2½	6	0	4	29
5092	5	7	3½	2	3	3	5	0	..	29
4589	5	5	4	2	4	3	5	0	16	28
5072	5	5	4	2½	3½	2	7	0	..	29
4594	4	6	4	2	3	3	6	0	20	28
4597	4	6	4	2	3	3	9	0	..	31
4588	4	6	3½	3	3½	3	7	0	..	30
4593	4	3½	3½	3	3	2½	8½	0	..	28
5081	4	7	4	2	3	4	9	0	..	34
3139	4	7	6	2	4	..	..	..	..	23
Total.....	62½	84½	57½	31	49½	37	86	0	..	408
Average....	4½	6	4	2	3½	3	6½	0	..	..
5088	4	7	4	3	3	3	5	0	4	29
4598	5	7	5	3	3	2	6	0	..	31
4591	4	5	4	..	..	3	5	0	17	21
5077	4½	4½	5	2½	3	2	5	0	..	27
5090	5	4	5	3	3	2½	5	0	20	27½
5083	5	5	6	3	3	2	6	0	..	30
Total.....	27½	32½	29½	14½	15	14½	32	0	..	165½
Average....	4½	5½	5	3	3	2½	5½	..	..	..
4582	4	4	4	2	4	2	4	0	..	24
4595	5	5	5	2	4	3	6	0	..	30
4581	5	4	4	3	3	3	6	0	..	28
5082	4	5	6	2	3	2	5	0	4	27
4591	4	4	5	2	4	2	5	0	..	26
5075	4	5	6	2	2	2	6	0	19	27
5086	5	4½	5	3	3	2	6	0	..	28½
5072	4½	4	5	3	4	2	7	0	20	29
5092	4½	4	5	2	4	3	6	0	..	28½
4579	5	4	4½	1½	2	3	7	0	..	27
4588	4	4½	5	2	2½	3	6	0	..	27
4593	5	4½	5½	3	3	3	7½	0	..	31½
Total.....	54	52½	60	27½	38½	30	71½	..	..	334
Average....	4½	4½	5	2½	3	2½	6	..	..	..
5086	5	4½	5½	2½	3½	3	5	0	..	29
4588	5	4	6	2	3	2	7	0	..	29
4591	4	4	5	2	3	3	5	0	4	26
4579	4½	4	5½	3	3	2	6	0	..	28
5088	4½	4	5	2½	3	3	6	0	20	28
5086	5	5	6½	2	3	2½	6½	0	..	30½
4591	4½	3½	5	2½	3½	3	6	0	20	28
4597	4½	4½	5½	2	3½	2	6	0	..	28
4586	4	4	6	2½	3½	3	5	0	..	28
4584	6	4	5½	2	3½	3	6½	0	..	30½
4597	5	5	5½	2½	3	3	6	0	..	30
5073	4	5	6	2	3½	3	7	0	..	30½
Total.....	56	51½	67	27½	39	32½	72	0	..	345½
Average....	4½	4½	5½	2½	3	2½	6	..	..	..

to analyze the operation of each individual line and to make changes in the succeeding day's operations. Any immediate necessity for changing the schedule or re-routing to improve the net result is also immediately evident from an analysis of the daily curves plotted from these reports.

In addition to the statements and graphic charts described, tables are prepared covering individual lines and showing by months the gross revenue, platform cost, car mileage and passengers carried, together with the increase or decrease over the previous year and the percentage thereof.

To arrive at the earnings per car-mile for the various types of equipment, the expenses are allocated on the car-mileage basis for the equipment on the specified line. Thus the cost per car-mile for such line can be determined with reasonably accuracy. Inasmuch as the reports give the revenue by line, it is easy, through this method, to determine at once whether or not the specific line is actually meeting its proper proportion of the expenses.

With these data at hand, the management is able to keep its finger on the "riding pulse" of the community and the service rendered and to change the schedules to meet changing conditions without waiting to secure more detailed information from actual figures submitted later by the accounting department.

In conjunction with this method of analyzing transportation, the conductor and motormen, dealing direct with the public, must be taken into account as the salesmen employed in the direct marketing of this transportation. They are being schooled continuously in politeness and courtesy so they will attract patronage and rid street car transportation from irritating disturbances and avoidable delays. In this connection the salesmen for the street car company may be likened to the salesmen for almost any concern or business which is endeavoring to place its wares before the buyer. But there is this difference: Instead of spasmodic visits, as in the case of the commercial salesman, successful transportation requires the establishment of a frequent service, so that the customers—the riders—are approached with never ceasing regularity; the service being in charge of polite and courteous salesmen, the conductors and motormen.

"Merchandising Transportation" in this sense does not mean simply running a given number of cars, nor a certain number of car-miles, nor even furnishing a given number of seat-miles on a given line. Rather, as described, it involves the policy of first ascertaining the transportation needs of the patrons and then giving them the best possible service at a minimum cost. It is this policy and these ends which are fundamental in keeping transportation "sold" and inviting new customers.

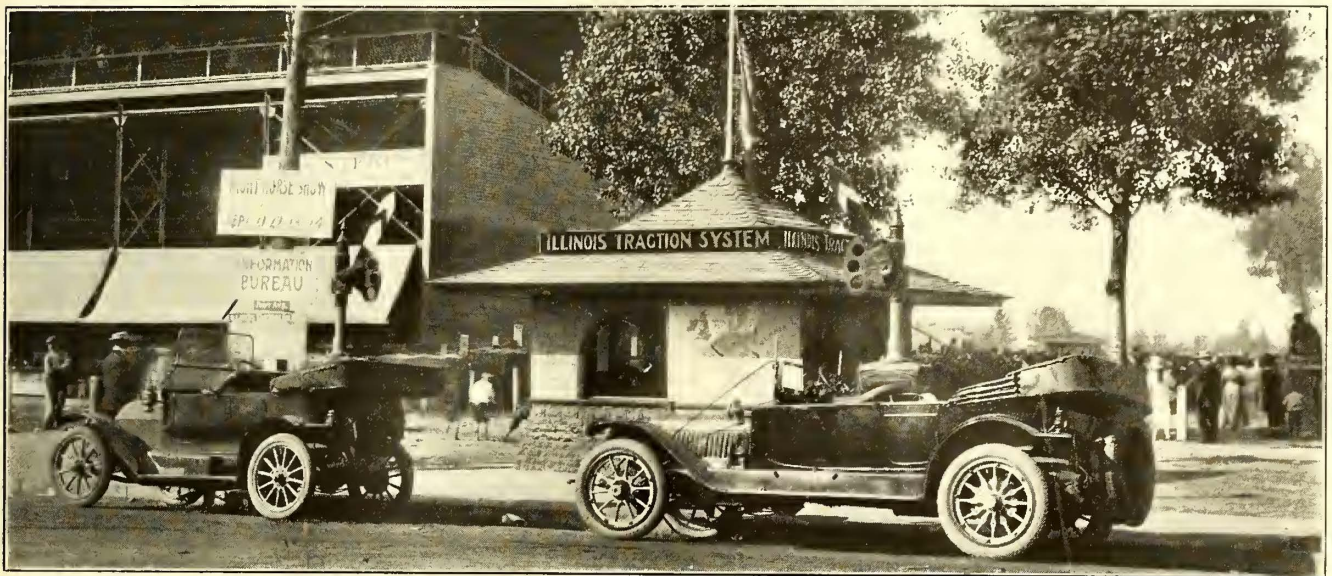


Left, Flatbush Avenue Looking Toward Prospect Park. Right, View on DeKalb Avenue, Where the Heaviest Surface Car Line Is Operated. Rush-Hour Schedules Call for Headways of Less Than Sixty Seconds

What Some of the Interurban Railways of the Middle West Are Doing This Year to Stimulate Traffic—Earnings Holding Up Well

Soliciting and Advertising For Freight and Passenger Traffic

By "Observer"



Illinois Traction System Booth Maintained at the State Fair as the Official Information Bureau

"FIGHTING for business" about expresses what is being done this year by those interurban railways in the Middle West which are showing gross earnings approximately equal to or better than last year. It is notable that the success of these companies, in contrast to the showing of some of the others that have experienced a rather discouraging falling off in revenue, is attributable in good measure to the greatly increased and persistent sales activities of the management and traffic and advertising departments. In other words, business has been sustained almost by main strength. Falling off in riding of regular travelers has been offset by stimulating more casual riding and by going strongly after the transportation of convention parties and all other kinds of group movements.

In general, more solicitation and more intensive solicitation, more advertising, better service and more attractions in the way of excursions, etc., are the things that have been done to hold up the earnings in the face of general business depression. And with it all is probably a better understanding of the need of and ways to merchandise electric railway transportation. Undoubtedly, also, the competition of the steam railroads and motor buses and trucks has served as a spur to increased effort on the part of traffic men.

The following survey of some features of what some of the electric railways of the Middle West are doing to attract and create traffic for their lines may contain ideas that can be used to advantage elsewhere.

One of the best sources of freight traffic for the Illinois Traction System this year, according to C. F.

Handshy, general manager, has been the road-building program in which the State is engaged. The company works closely with the contractors and the materials supply dealers, and by virtue of this has thus far been able to get a very large proportion of the hauling of road materials for hard roads built parallel to or in the vicinity of the traction system. Hard roads under construction, contracted for or planned for the near future parallel the lines of the Illinois Traction System between St. Louis and Springfield, Springfield and Decatur, Springfield and Peoria, Bloomington and Decatur, and Decatur and Danville. For example, the mileage of the Illinois Traction System between Springfield and St. Louis is 99.1 miles, while contracts have been issued for 89.71 miles of hard road between these two points. For this construction work the Illinois Traction System will haul fully 75 per cent of the materials used.

The volume of traffic which this extensive construction program means may be realized when it is considered that 1 mile of the Illinois standard 18-ft. concrete road requires approximately twenty-two carloads of sand, thirty-six cars of gravel, seventeen cars of cement and one carload of reinforcing steel. In addition, the contractor's receiving station and much of the equipment must be moved once for about every 8 miles of road built, each such move meaning a special freight job for the traction company. At each point where the contractor makes a set-up or receiving station the railway installs a siding with a capacity for about twelve cars. The railway furnishes and claims the

To make this Earth our Hermitage
A Cheerful and a changeful page



God's bright and intricate device
Of days and Seasons doth suffice

Publicity Leadership—The Original of This Illustration Is a 38 In. x 60 In. Poster, in Varied and Brilliant Colors—A Real Work of Art—It Is a Sample of What

Is Used by the London Underground to Set the Tone of Poster Advertising at Its Stations—a Tone the Company Is Careful to Maintain in All of Its Own Posters

material used in the siding, but the contractor pays the cost of putting it in and taking it out.

Thus, while the Illinois Traction System anticipates that the hard roads will take away a certain amount of the short-haul riders, it is making the most of the situation by securing the business of hauling the necessary materials. The main interurban lines of the Illinois Traction System comprise 418 miles of connected line, paralleling which there is probably in the neighborhood of 200 miles of concrete road for which the Traction System has secured or will secure the haulage of materials.

The freight revenue of the I. T. S. is now approximately one-third of the total revenue of the interurban system. Of this, approximately one-half is derived from hauling coal originating at mines served by the company. The efforts of the traffic department during the past year have been largely directed to increasing the tonnage that can be handled profitably. This has included the establishment of new industries along the electric lines which may be expected to produce traffic for years to come, the continuance of overnight service for merchandise and important carload freight, a considerable broadening of the tariff arrangement all around, enabling the company to inaugurate joint rates with over 300 steam railroads and to quote through rates into practically all parts of the country, and the consummation of a physical connection with the Illinois Terminal Railroad at Edwardsville, Ill. The last named meant an amount of business such that the total expense of making the connection was paid off the first month. Altogether, the railway now has about 200 industries on its 418 miles of interurban line. Many of these are grain elevators and coal mines.

I. T. S. ADVERTISING FOR TRAFFIC

The use of billboard and novelty advertising on the part of the Illinois Traction System has been largely discontinued, but the use of newspapers, which are considered the best medium for reaching the public, has been continued at the rate of about \$1,500 a month. Approximately 200 daily and weekly newspapers are used regularly, of which 171 have contracts with the traction company by which space is exchanged for transportation. This space is used largely to advertise excursions and now and then for general good will publicity. One of the most successful of these excursions was a Saturday-Sunday-Monday-Decoration Day excursion. The three-day limit and the rate of one and one-quarter times the single fare proved very popular and attracted over 4,000 people to make the trip between St. Louis and Springfield, Ill. The same kind of an excursion permitting people to go on Saturday and Sunday and return Monday was provided over Labor Day, and this was likewise successful. In addition to the newspaper advertising, these excursions are advertised by slides in the motion picture theaters and by fliers in the cars and in the stations and stores around the various towns. In contrast with these three-day excursions, the Sunday excursions conducted during the past summer between Springfield and St. Louis for a rate of one and one-half the regular one-way fare have not proved very successful.

St. Louis baseball games are featured frequently in the advertising copy of the Traction System and this has proved to be a good drawing card. A recent contest inaugurated by E. E. Soules, publicity manager, offering prizes for the best 200-word letters telling why

the Illinois Traction System is "the best way to the best State fair," resulted in a large amount of exceedingly favorable newspaper publicity. There were 571 entries in the contest, and the newspapers in all the towns along the system took considerable interest in the contest and gave a good deal of space to it, often front-page space. In addition, of course, the traction company advertised the contest in the daily papers and then capitalized on the winning letters for further complimentary copy about the traction company. In addition to the five prizes awarded, the company acknowledged the letters of all other entries who had taken the trouble to write letters saying nice things about the company, by sending them a friendly letter and a deck of Traction Playing Cards or a railroad map of Illinois, which have been much in demand. This is believed to have aided in creating a good feeling among the many contestants, as indicated by the number of thank you letters.

A new feature of publicity recently started is a neat folder timetable printed monthly which has all tables on one side when unfolded. On the opposite side are a few pictures of freight and passenger equipment, a map of the system, list of company officials, general information and two columns of "news note" in which are given notices of various coming events to take place at points on the system, items of interest about cities along the line, some general good will matter, etc.

An especially effective piece of advertising run during the year was a full page of pictures with interesting captions in the rotogravure section of a Peoria Sunday newspaper. This portrayed many features of the Traction System and appeared as editorial matter rather than as advertising. Special pictures were secured for this and it made a very attractive page.

The great value of motion picture advertising is not being overlooked by the I. T. S. During the past summer a series of seven travelogue films ranging in length from 55 ft. to 63 ft. have been shown in fifteen motion picture theaters in St. Louis, which is the only city on the system where satisfactory distribution can be obtained. These films are of a strictly advertising nature and they appear under the common heading of "Evelyn's Traction Log." The main points designed to be brought out in these seven films are frequency of service, location of the interurban terminal in St. Louis, the block signals, the McKinley bridge, the parlor cars, picnic travel and the sleeper service. The films are run in that order, changing to the next in sequence each week.

The motion picture series is run in each house several times over during the summer. Each film gives a short, interesting sketch wherein Evelyn, an actress, brings out the feature of the traction line forming the subject of that film. The total cost of this advertising, including the making of the films and their distribution and display in the fifteen theaters from May to September, is \$250 a month. The publicity department is now working on a film for advertising the freight facilities of the company to be shown before various business associations and civic organizations.

Another advertising scheme of the Illinois Traction System which costs little and has proved quite effective is the operation at the Illinois State Fair each year at Springfield of a booth which the fair authorities designate as the official information booth. Several attendants are stationed there to make sleeping or parlor car reservations, follow up any freight prospects,

explain the signal exhibit, distribute such souvenirs as traction postcards, blotters, fans, maps, etc., and to answer the thousand and one questions that are asked. This year the publicity department kept a record of the questions asked for one day and made up a story based on this to which a number of the newspapers gave prominent space, one of them under the heading "Is It Any Wonder I. T. S. Man Grows Gray Hair Overnight?"

NEWSPAPER COUPON SCHEME ATTRACTS TRAFFIC

Richards Breckinridge, general freight and passenger agent Aurora, Elgin & Chicago Railroad, when interviewed as to what he had done to improve traffic, said: "The only thing I can think of is making my force work their heads off and even participating to some extent myself." However, the A., E. & C. is showing an increase in revenue over last year so far this year. This may be partially explained in what follows and by the spirit of intense work indicated in Mr. Breckinridge's jocular remark. He is having success again this summer in attracting excursion business through the co-operation of one of Chicago's evening newspapers. An excursion from Chicago to Glenwood Park, 39 miles distant, was run four business days one week and five business days the following week at the end of August at a special fare of 75 cents and war tax, one way, as compared with the regular rate of \$1, which could be secured by presenting at the newspaper office a series of coupons from six issues of the paper. The newspaper received the coupons and sold the tickets, which were good only for the dates issued and on the special train. The railway then simply billed the newspaper for the number of passengers hauled on each excursion. About 400 people a day made the trip to Glenwood Park. Mr. Breckinridge is convinced that newspaper advertising is the greatest producer of traffic of any form of advertising.

While business on a great many interurban lines has fallen off very sharply, both passenger and freight, that of the Chicago, North Shore & Milwaukee Railroad has held up remarkably well. Britton I. Budd, president, explains that this is not particularly because there is any improvement in business, but rather that the company has been doing more soliciting for business. The number of passengers is only slightly under what it was last year, but the revenue is equal to last year due to an increase in the long-haul riding and a slight increase in fare which evened up the intra- and interstate rates.

For a time the merchandise dispatch business of the company fell off very greatly, but is now back practically equal to last year. This does not mean that the individual shippers are forwarding anywhere near as much tonnage, but it means that the number of customers patronizing the road has been doubled and nearly trebled. The best part of this is that having won all these new customers, when business picks up the railway seemingly should hold them all and the problem will not be to get business but to know how to handle what is offered.

SOURCES OF PASSENGER TRAFFIC

Practically 100 per cent of the travel of theatrical people between Milwaukee and Chicago, amounting to an average of fifty fares a week in each direction, is secured by the Chicago, North Shore & Milwaukee Railroad. This is accomplished through personal solici-

tation of the business each week and through special service which the electric line supplies. This consists of an arrangement whereby all of the baggage of each "act" is checked directly from the theater in one city to the destination theater in the other city. A special baggage car is run each way every Sunday night so that the baggage is received after the last performance Sunday evening and delivered to the stage of the destination theater early the following morning. The transfer man at the receiving end collects from the "act," while the transfer man at the destination end collects from the stage manager. This service has included the handling of various kinds of stage animals, including horses and elephants, etc., which are loaded into the baggage car at the Congress Street station, just off the downtown loop, of the elevated railways in Chicago, where a large capacity elevator is available.

EXCELLENT RECORD BRINGS PRAISE

Not only is the transportation of the theatrical people secured when the troupes are changing from Milwaukee to Chicago bookings, and vice versa, but also when they are moving from Milwaukee to points requiring a transfer to other lines in Chicago. The electric line has made such an excellent record in serving these people and making special arrangements to make connections with outbound trains from Chicago that the theatrical people are universally enthusiastic for the North Shore Line and are constantly giving the line a good word in their travels.

This through checking of baggage from point of origination to destination points, as used for the theatrical people, is also available for the general public. An arrangement has been in operation for some time with the Commonwealth Checking Company, Chicago, and Milwaukee Transfer Company whereby they make use of three coupon checks, covering the records of the transfer company at either end and the electric line between cities. The originating transfer company collects for the transfer charges at both ends of the railway.

That this checking convenience is bringing a good deal of patronage to the company can perhaps be shown by the fact that the number of pieces of baggage handled by the North Shore Line this year as compared to last has increased nearly 600 per cent. Baggage is carried on nine trains a day each way. In other words, traveling men can leave either terminal city at almost any time of the day and have their baggage checked from a Milwaukee hotel to a Chicago hotel and travel on the same train that they do. This is bringing the business of a large proportion of the traveling salesmen to the electric line.

Considerable patronage for the North Shore Line has been assured through the sale of twenty-five ride tickets and 1,000-mile books by the traffic department to large concerns which have salesmen and representatives traveling between Milwaukee and Chicago frequently. A firm having many men traveling makes a good saving by this means, as the rate by ticket or mileage book is 2½ cents per mile as against the regular rate of 3 cents a mile. Consequently, a large number of these special rate books and tickets have been sold by representatives of the traffic department. A campaign put on to sell this form of transportation this summer resulted in more transportation of this kind being sold in one month than had been sold in the entire year of 1920. While this plan reduces the revenue received

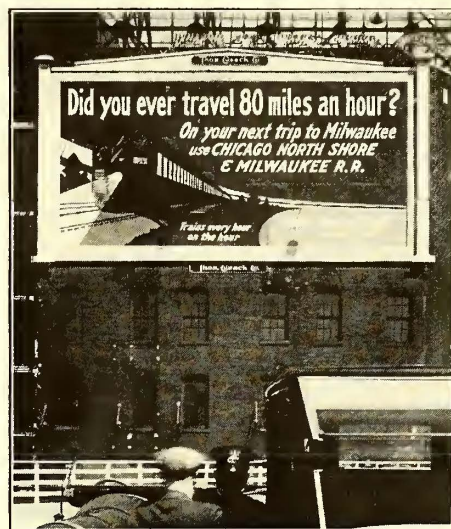
from the passenger riding on the lower rate, it insures his riding the electric line every trip for some time to come, and the saving effected makes the advance ticket easy to sell.

A revenue of \$45 a day on the average is derived from a contract with the distributing agency for the Chicago afternoon newspapers. About three tons of newspapers a day are delivered to the North Shore Line at the Congress Street station of the elevated railways. The truck drivers place the papers on the elevator and they are lifted to an elevated platform, where they are put in a special chute which delivers the papers directly into a baggage car. This car leaves the Loop not later than 1:40 p.m. and completes all deliveries to north shore towns as far as Waukegan, Ill., by 3:15 p.m. The newspaper publishers estimate the weight involved, based on the number of packages, and send the railway company monthly a check, accompanied by a statement of the tonnage. There is no time for the railway company to take weights. A rate of 75 cents per 100 lb. is secured for this business

work done by Mr. Shappert is the large amount of personal service rendered to the various organizations and individuals, ever having it in mind to capitalize the advantage that this service gives him in business for the North Shore Line. In his solicitation work he makes extensive use of the associations of commerce in cities not only along the line of the railroad but in cities at distant points, wherever there is a possibility that their members can utilize the North Shore Line to advantage in their business pursuits or on some special trip.

He makes the comment that any traffic man who does not utilize and work with the commerce associations is overlooking a very important source of information and selling assistance.

Advertising for traffic is a consistent part of the efforts put forth by the Chicago, North Shore & Milwaukee Railroad to influence travel over its lines, and the duller times are the more the company advertises. The normal advertising appropriation for the current year was to have been approximately \$35,000, but on



Attractive and Expensive Advertisements of the North Shore Line

At left, advertisement on building wall opposite Wilson Avenue station of the Chicago Elevated Railways. At right, billboard advertisement facing down Michigan Avenue, Chicago, for which the North Shore Line paid \$1,000 for thirty days.

and when the contract was secured the rate was 25 cents per 100 lb. in excess of that charged by the American Railway Express Company. Since that time, however, the latter rate has increased to \$1 per 100 lb., so that the newspaper agency is benefiting from a lower rate at present as well as better service, although the matter of service was the consideration which won the contract. In dropping off papers at various stations the North Shore enforces an order that the car must come to a complete stop before the package is dropped. This is a service which has been greatly appreciated, as the papers are not torn and soiled.

A good example of what may be accomplished by carefully following conventions and looking ahead to future traffic is afforded from a recent instance. F. W. Shappert, traffic manager, attended the last convention of the Associated Advertising Clubs at Atlanta, Ga., used his influence to secure the next convention for Milwaukee, and then signed up seventy-one clubs from all parts of the country for as many chartered cars over the North Shore Line from Chicago to Milwaukee for the 1922 convention.

One of the most effective phases of the solicitation

account of the business depression advertising was intensified, and, as a result, between \$45,000 and \$50,000 will be spent this year in this manner. The advertising work is handled by John J. Moran.

It is hardly possible for a person to be long in any one of the cities served by the North Shore road without being reminded of its service in some attractive way. Car cards are carried in the elevated and surface cars in Chicago, Waukegan, Racine and Milwaukee. A 30-in. advertisement is carried once a week in each of the local newspapers in the cities along the line between terminals. In Milwaukee and Chicago papers 600-line advertisements are carried once a week or more, frequently when some special occasion warrants special advertising. Another very effective advertising medium used is the Cusack Company's billboards. The total monthly expenditure for billboard advertising this year is running regularly \$550 a month, while \$1,000 additional was spent for the month of August for a single billboard, 14 ft. x 50 ft., which is wonderfully located where it is seen by thousands of Chicago motorists and pedestrians every day as they drive or walk along Michigan Avenue toward the bridge connecting Michi-

gan Avenue with the Lake Shore Drive on the North Side. This is pictured herewith.

Each of the regular billboard advertisements is located at an exceptionally strategic point. In Chicago a very attractive advertisement occupying the wall of a building advertises the road to the passengers of the elevated railroad and to the large population in what is known as the Wilson Avenue district, the board being located at the corner of Wilson and Broadway. This advertisement occupies a space 137 ft. x 31 ft. and costs the railway \$100 a month, including the original painting and maintenance painting twice a year. In this case the company floodlights the advertisement itself. At the corner of Kedzie Avenue and Madison Street, another important outlying business section on the West Side in Chicago, the company has a 14-ft. x 50-ft. illuminated billboard on which the monthly rental is \$100.

Five other billboards in Chicago are erected on the property of the elevated railways. One of these is located on the street level at Wilson and Broadway, one

film that the name of the railroad appears is on the side of the cars as the train comes to rest in the Milwaukee terminal. Consequently, it has been possible to show the picture as an educational film in all of the principal theaters in Chicago and North Shore towns, and also in the towns in southern Illinois and those in Indiana close to the Illinois line and in towns as far west as Rockford, Ill.

Altogether, the film has been shown in some 200 theaters at picked locations, and this is done without cost for the showing, the only expense involved being \$5 per day per film to the booking agency. The cost of producing this film was approximately \$2,000, including seven standard prints which are used in the theaters. In addition to these prints, the company has three non-inflammable prints which cost \$100 each and a small portable motion picture machine which cost \$250, which have been used by representatives of the company before various business men's meetings, private clubs, associations of commerce, etc., probably averaging at least one showing a week somewhere. At Chi-

Important Comparison of Rates


FROM	To Cleveland				To Toledo				To Detroit			
	One Way		Round Trip		One Way		Round Trip		One Way		Round Trip	
	Electric	Steam	Electric	Steam	Electric	Steam	Electric	Steam	Electric	Steam	Electric	Steam
TOLEDO	\$3.08	\$4.17	\$5.78	\$8.34	5.86	\$1.16	\$1.67	\$2.32	\$2.06	\$3.39	\$4.07	\$6.78
FREMONT	2.27	3.23	4.21	6.26	1.30	1.77	2.43	3.54	2.49	4.00	4.83	8.00
BELLEVEUE	1.94	2.49	3.62	4.98	1.67	2.24	3.08	4.48	2.87	4.46	5.48	8.92
RIORWALK	1.57	2.16	2.92	4.32	1.51	1.84	2.81	3.68	2.71	4.06	5.21	8.12
SANDUSKY	1.62	2.32	3.02	4.66	2.48	4.06	4.59	8.12	3.68	5.06	6.99	10.12
LORAIN	.70	1.04	1.30	2.08	3.08	4.17	5.78	8.34	4.28	6.39	8.18	12.78
CLEVELAND												

Fast Through Limited Service Every 2 Hours

SHIP YOUR GOODS VIA ELECTRIC PACKAGE

The Lake Shore Electric Railway Company

July 4th
Suggestion



Milwaukee
—The gateway to Northern Lakes and Woods

North Shore Trains
—The great way to Milwaukee

Connections at Milwaukee for Waukegan, Watertown, Oconomowoc, Oakfield, Pewaukee Lake, Lake Belah, Sheboygan, Sheboygan Falls, Port Washington, Plymouth, Crystal Lake.

Daily local line connections for Northern Michigan points. "Pere Marquette Line" Steamers from Milwaukee to Ludington, Manatee, Frankfort and Onokema.

Chicago North Shore & Milwaukee R. R.
Chicago Passenger Station—229 South Wabash Ave.
Telephone Huron 3413

Do Not Think or Speak Too Harshly

If Something Should Go Wrong
With Our Service Occasionally.

Always Remember That We Regret It More Than You.

Our Endeavor Always Is
To Give Good Service and Please Our Patrons

The Lake Shore Electric Railway Company

At Left, Advertisement of Rates by Lake Shore Electric. At Right, a Bit of Candor by Same Company. In Center, 45-In. Newspaper Ad of North Shore Line

on the South Side on Thirty-ninth Street between State Street and Wabash Avenue, one opposite the Marshfield Avenue elevated station on the West Side, one at Fifteenth and State, and an important one on the Van Buren Street bridge of the elevated facing Jackson Boulevard. These are all illuminated signs. There are also illuminated and non-illuminated signs at points outside of Chicago.

MOTION PICTURE ADVERTISING VERY EFFECTIVE

Since April of this year extensive use of a motion picture film has produced results which lead the officials of the company to believe that this is the most effective method of advertising for traffic. The motion picture used is a one-reel story having the title "Along the Green Bay Trail." It depicts the mode of travel in the days of the Indian and compares this with the modern high-speed travel in comfort and luxury over the electric line. The comparison of the two modes of travel gives an opportunity to picture many of the beautiful stretches of scenery along the electric line and the high type of rolling stock and roadbed employed in the modern means of travel. The scenario develops a very interesting little story, and the only place in the

Chicago's elaborate Pageant of Progress it was shown sixty times a day, and as a result several specific instances of its influence in "selling" the road were experienced. One woman watched the film through and then asked numerous questions and later came back and informed the attendant at the booth that she was taking a party of thirty-five to Milwaukee over the electric line that night. A man who became interested in the picture chartered two cars to take a party of 125 to Milwaukee, explaining that he had seen the company's advertisements, but had not realized the advantages of the North Shore Line until he saw the motion picture. Several other instances of definite business for the company are known to have developed from the showing of this film at the pageant.

Arrangements have been completed for showing the film at the Lake County, Ill., Fair, the Ozaukee County Fair at Sheboygan, Wis., and at the Electric and Food Show in Milwaukee, all this fall.

LAKE SHORE BELIEVES IN ADVERTISING

J. F. Starkey, general passenger agent Lake Shore Electric Railway, Sandusky, Ohio, summarizes his recent activities as follows:

"I advertise constantly in the newspapers, giving the public the time of all our trains, and when anything of special importance is to occur along the line I advertise it in all the papers, using, usually, a 5-in. double column display for about a week previous to the affair. I carry a two-color advertisement, 11½ in. x 16½ in., in the front of each compartment of all our cars, changing it about every four months. Beginning with the late spring I advertise the summer resorts, of which we have several along our line, and at other times anything that I think will attract the eye and get us patrons.

"I have advertised quite extensively the fact that our rates are lower than the steam line rates, especially since the advance of the latter to 3.6 cents a mile. In the cars I carried not merely the statement that our rates are lower, but compiled a table of comparative rates between main points and with cards about 10 in. x 14 in. gave the fact wide publicity throughout the cities and towns which we serve. At first some steam

are made good for twelve days returning and at about the same percentage of reduction as noted above. We offer special car rates that bring us much additional revenue, particularly during the summer seasons. These rates are about 70 per cent of the regular round trip rates."

THROUGH PASSENGER SERVICE SUCCESSFUL

J. A. Greenland, general passenger and freight agent Indiana Service Corporation, Fort Wayne, Ind., had this to say about building up traffic:

"I think the biggest thing we have done is the inauguration of fast county-seat-stop trains between Indianapolis and Fort Wayne, which service has been extended just recently to Lima. These trains are very seldom late and are handling an increasing number of people. Every day we hear compliments on this service and hope when business picks up to put on more such trains. We have just closed a successful campaign for Niagara Falls excursion traffic and are very much

Better Than Express Service at Practically Freight Rates

Service That Appeals to Business



As a shipper you have a direct interest in railroad transportation. You want the best you can get at the lowest cost to you.

Above everything else you want a Service that is fast and reliable; a Service that can be depended upon in all seasons throughout the year.

Such a Service has been developed for your particular benefit by the NORTH SHORE LINE. It is a Specialized Service for communities on the north shore, between Chicago and Milwaukee. It is faster than the best Railroad Express service at a much lower rate.

Since the Merchandise Despatch Service of the NORTH SHORE LINE was inaugurated nearly three years ago it has never suffered interruption. When other transportation lines were tied up by snowstorms, the electric line gave Continuous Service to its patrons.

Give the NORTH SHORE LINE a chance to prove the superiority of its Specialized Service. A trial will convince you.

The Proof of Superiority



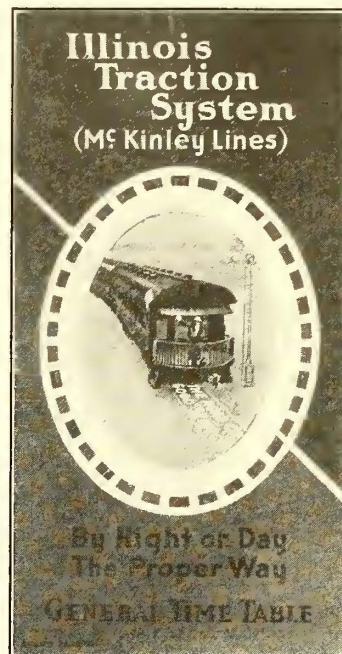
WHEN the NORTH SHORE LINE claims that its Merchandise Despatch Service is superior to all others, it has proof to establish that claim. It gives a superior quality of Service because its customers receive personal attention which they do not get from ordinary transportation lines.

Shipments received at the Montrose and Broadway Station in Chicago up to midnight are unloaded in the Milwaukee Station ready to be called for at 7 o'clock the following morning. Day shipments are handled with equal promptness.

Here is a concrete illustration, an everyday occurrence.

A merchant whose store is located on the South Side in Chicago found it necessary to get merchandise from Milwaukee. He left the NORTH SHORE Passenger Station at Adams and Wabash at 8 o'clock on the Limited. He ate breakfast on the dining car, reached Milwaukee and purchased the required goods; boarded a Limited leaving Milwaukee at 12 o'clock noon, had luncheon on the dining car; reached his store in Chicago; returned to the Montrose and Broadway Station with his delivery truck; and found the merchandise already there. He said it was the best Service he had ever seen. He is a regular customer now.

Use the Electric and Save the Highways



Two Inside Pages of Four-Page Folder Sent to Prospective Merchandise Customers by North Shore Line

Cover of the I. T. S. Timetable

line representatives took exception to this, but we defended our action simply by claiming the right to resort to any legitimate means of securing traffic, and nothing further has been heard of it.

"Through close touch with connecting lines we urge the sale of through tickets whenever possible, and, of course, through the Central Electric Traffic Association, each traffic manager seeks to help a sister line all he can. In connection with the Western Ohio Railway, the Toledo, Fostoria & Findlay Railway and the Fostoria & Fremont Railway we offer a week-end reduced rate to Sandusky during the Cedar Point season. This rate is about 80 per cent of the regular fare. To Indiana interurban lines as well as the Wabash and Clover Leaf steam lines we offer the same reductions as a basing rate, and during the season we have many excursionists to Cedar Point, Cleveland and Niagara Falls. We also sell many tickets to Niagara via our line to Cleveland, the C. & B. Transit Company from Cleveland to Buffalo and the International Railway to Niagara. These rates

pleased with the business we have received. We handle the people through to Toledo by our line and the Ohio Electric Railway carries them to Cleveland, where they take the Cleveland & Buffalo boat line to Buffalo."

Another thing that the Indiana Service Corporation has done is to originate a timetable which shows all the through connections with other electric lines at the terminals of its lines. This has proved to be a great convenience to patrons who find it very difficult to figure out through connections where a number of timetables must be consulted. It is serving to induce more interline riding. This plan, of course, serves to stimulate traffic for other companies as well as the Indiana Service Corporation, but the idea is that the plan will later become reciprocal.

The Interstate Public Service Company, which operates the unified and greatly improved interurban line between Indianapolis and Louisville, has been very successful in building up both its passenger and freight business. The installation of fine new all steel cars and

fast through schedules has attracted a considerable increase in the number of passengers. Similarly, the inauguration of an overnight freight service over practically the entire system has attracted a large amount of tonnage. No small factor in the success of the company in thus rapidly building up its business has been an active traffic department, backed up by good service and unusually good co-operation on the part of the operating department. Speaking in general terms on this subject, Bert Weedon, traffic manager, summarized the requisites of a successful interurban as being, first, thorough knowledge of the territory; second, ample equipment to care for the need of this territory; third, a freight organization with ability to cope with competitors; fourth, thorough and constant solicitation; fifth, reliable freight schedules which will supply the demand for transportation.

Sunday excursions, running from Indianapolis to Louisville one week and from Louisville to Indianapolis the following week, were inaugurated on July 31 to extend through August. On July 31 a three-car train carried a total of ninety-six passengers out of Indianapolis and a total of 206 into Louisville. On Aug. 7 114 people were carried out of Louisville and a total of 262 into Indianapolis, a three-car train out of Louisville having been relieved by two cars additional from Columbus to Indianapolis. The round-trip rate given was \$3 between the terminal cities, with a correspondingly low rate from intermediate cities. L. M. Brown, superintendent of transportation, reports that these excursions were a profitable undertaking.

DETAIL INFORMATION ABOUT SHIPPERS IS HELPFUL

The Chicago, Ottawa & Peoria Railway, Joliet, Ill., is working intensively to secure all available business, if one may judge by information furnished by A. M. Farrell, general freight and passenger agent. The company prepares for intensive solicitation by delegating one of its traffic agents to call upon every merchant or manufacturing concern at any point along the line and secure information indicated on a questionnaire which he fills out as a result of his interview. This questionnaire, when completed, gives the name, address, nature of business, from what point on the company's line this concern receives freight or express, the names of the shippers, who controls the routing and if controlled by the consignee, a copy of the routing order, freight received from foreign lines and whether this is transported by steam or electric railway or motor truck. The questionnaire also calls for information as to whether the concern ships any freight or express, and if so, how it is transported, what the routing orders are, and, if any shipments are made by trucking company, the rates are secured if possible. A final question is whether this concern or party has any grievance with any department of the railway company.

By a study of the information thus secured it is often possible to show shippers where the electric line can make them a saving either of money or time in the handling of their business. This is working out to the mutual benefit of all interested parties. When any routing orders are received they are personally placed by the railway company's solicitor, which gives him a chance to ascertain whether or not the shipper has any other shipments that can be handled.

Mr. Farrell has found that the passenger business of his company depends a great deal upon the advertising which is done in newspapers and upon direct solici-

tion. A good deal of passenger traffic is secured through the handling of lodges and various organizations on picnics and conventions, mostly to Starved Rock, Ill. When advance notice of such a group movement is obtained the railway company has a circular printed for the organization which covers the full details of its picnic and the attractive features of the point at which the outing is to be held. These circulars are then distributed among the members of the organization and prove a very desirable form of advertising, for the reason that the suggestions of the company go into the homes of members of the lodge or other organization backed up by the committee of the lodge in charge of the picnic, whose names are printed on the circular. Often, where members are unable to take advantage of the trip at just that time, they avail themselves of a similar trip later on.

Mr. Farrell makes the observation that all electric lines should inaugurate an extensive plan for solicitation of business moving between their stations and keep in close touch with the consignor and consignee in order to straighten out any difficulties that might arise and thus establish confidence in the electric lines. He considers that every electric line should solicit business just as the wholesale grocery salesman solicits orders for his house. He contends that it is the continual repetition in advertising and solicitation that brings results and works out to the mutual benefit of railway and shipper.

C. P. Ryan, general passenger and freight agent Indiana Railways & Light Company, Kokomo, Ind., explained that for certain reasons the traffic department has been able to do but little advertising or solicitation of freight and passenger business during the last six or eight months. He says: "Our main efforts are directed toward our agents along the line of inducing them to be courteous and obliging to those who would ship freight or take passage on our cars. We urge them to promise nothing but what can be fully accomplished by our service, and we believe that this system, in the absence of actual advertising and solicitation, has accomplished a great deal toward putting this company on the list regarded as reliable in its dealings with other business men."

The creed of E. Hamprecht, general freight agent Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, in soliciting business is thus summed up:

"I find good service is the greatest advertisement. Give all you can for the money and make the patrons feel that you are interested in their welfare. Do as you promise and keep in constant touch with shippers and consignees. If this is done it will not be long until the returns will be noticeable."

H. A. Benjamin, general freight and passenger agent Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, is quoted as follows:

"We have always tried to notify the industries which we serve of the movements of their business both in and out bound, and on their inbound business to furnish the time of arrival some twenty-four hours in advance. We have found that they are very appreciative of this information. In my opinion, in order for a railroad to increase its business it should establish service that is reliable and continue this service in such a way that the public learns to have confidence in it. This must be accompanied by close personal contact with those served."

The Chicago & Joliet Electric Railway, which operates out of Chicago and connects at Joliet with the Chicago, Ottawa & Peoria Railway, has found a profitable source of passenger business in a joint arrangement for carrying passengers from Chicago to the beautiful Starved Rock State Park, located on the latter line 83 miles from Chicago. Through tickets are sold in each direction and the cost of advertising is proportioned between the two roads. Attractive folders and space in Chicago newspapers have been used in the advertising program. Notwithstanding the industrial depression, W. H. Heun, superintendent of transportation, reports that his company has advertised the passenger service this season to about the same extent as in previous years in order to keep before the people the points of interest and the electric routes for reaching them. He commented that special care is taken in making arrangements for picnics to promise only what can be carried out to the full satisfaction of the patrons as to transportation and park privileges, this leading to repeated annual trips of excursion parties. He believes that truth in advertising is an important factor in soliciting excursion business and has been the means of holding as well as increasing traffic.

Railways Could Profitably Undertake Joint Advertising Campaigns

By J. C. SCHADE

General Manager Winona Interurban Railway, Warsaw, Ind.

WE OFTEN HEAR it said that advertising in the railway field is limited and this is a true statement if we decide to follow the time-worn paths of the old school. It must be admitted that service is the foundation of railway publicity, and in order that advertising may be effective service must be made to back up the whole proposition.

But it does not follow that when we have advertised the fact that "Cars run every hour between Podunk and Squeedunk" that the field has been covered! We should go further and tell the people of "Podunk" something about the interesting things which may be found in "Squeedunk." What is meant by this is that a successful railway publicity campaign must create a desire among the people of one locality to see what is actually going on in some other locality. It makes no difference how small the town may be, there is always something of interest to draw the outsider.

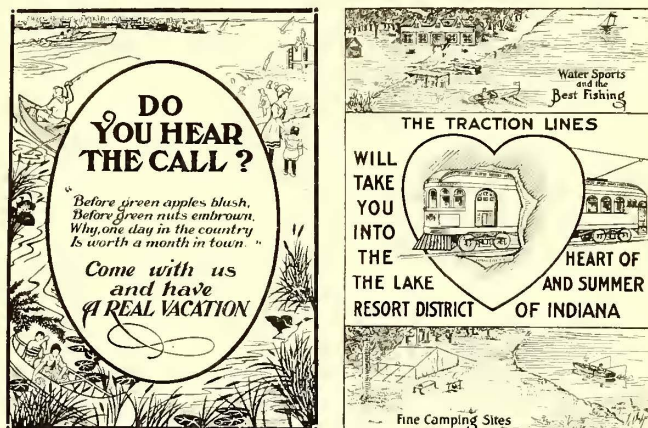
For example, the attractions of Indiana are its lakes and summer resorts dotting the whole northeastern part, its great manufacturing industries in what is known as the Gas Belt section, its State parks in the southern part and its great educational centers. Any one of these things would be suitable subject matter for advertising copy. Similarly interesting points and industries may be found in other localities and it would seem to me in looking at the proposition from this angle that we are overlooking an opportunity in the advertising field when we do not take advantage of the splendid material scattered around in our front yards.

Looking back over a period of years, we may find here and there an effort on the part of some of the electric railways to advertise things of local interest, but in the main, our efforts have been largely directed toward a scramble of local time cards, which if taken separately indicate to the public that there are only one or two electric railways operating in the entire country.

In this connection, it would seem that we are all more or less at fault. We do not place sufficient importance upon the question. For example, pains should be taken to inform travelers in South Bend how best they can get to Louisville. It would be good advertising to put this information into the hands of the public in an intelligent way. It is good business to show people how they can go from Podunk to Squeedunk and better business to show them how to get from Squeedunk to any other place.

Getting back to the question of feature advertising—we tried it out in a small way this year. With the assistance of some of the Indiana lines, 25,000 four-page pamphlets (reproduced herewith) which were descriptive of the lakes and summer resorts located in the territory served by the Winona Lines were distributed. The results have been most gratifying. In checking up with the various hotel managements, it was learned that a large number of new people had been attracted to these places, because of the publicity afforded by the pamphlet.

Let us suppose that all of the attractions in Indiana,



Two Outer Pages of Attractive "Outing Folder" Distributed by Winona Interurban

Ohio or Michigan were treated in this manner and that the advertising campaign was put out on a co-operative basis by the several interurbans interested. There could be no question about successful returns. The normal American citizen is chock-full of play; his curiosity is easily aroused; make a noise and he wants to investigate. Why not "blow the horn" and give him a chance to come and look? It is up to the electric railways to stimulate interest in places that will mean traffic for them.

The Central Electric Traffic Association is to be commended upon its recent effort to unify the rates of fare to conventions and large gatherings. It is now no longer necessary to secure the consent of individual carriers to establish reduced fares. The Traffic Association has delegated this power to a committee and the result is that the central territory railways are operating as a unit.

Let us hope that in years to come we may operate as a big family, joining in one big effort to tell the people of Squeedunk about the wonderful things which are to be found in Podunk, to tell the poor fellow at South Bend how to get to Louisville over four different traction systems without referring to a grip full of time cards, and to remove the "whereases" and "wherefores" of the individual lines and operate as an industry.

The Latest Addition to the Transportation Salesman's Stock in Trade Opens Up Many New Avenues for Selling Transportation and Developing New Car Riders

A New Merchandising Agent— The Rail-less Vehicle

An Editorial Discussion

AND what of the rail-less vehicle—the trolley bus and the motor bus? From the standpoint of the transportation man, in his rôle of salesman, in his attempt to furnish a product to meet the customer's wishes, in his effort to do business as any first-class business man by supplying his customers with complete needs in his line, the least that can be said of bus transportation is that it deserves careful study and analysis. If it will serve the transportation man in his business he should grasp the opportunity to use it not only in the places where he knows he cannot afford to operate rail service but to supplement existing routes where it is necessary to meet the wishes of the traveling public. For, today, there is a real demand on the part of the public to ride on rubber tires out in the open and for that privilege in some cases it is willing to pay a higher rate of fare. The use of the bus on the part of the traction companies also affords them many new avenues of selling transportation, thereby increasing their own usefulness to the community, in that they are able to serve a larger territory and a greater number of patrons. It also affords a means of maintaining the transportation monopoly which community welfare demands, thereby keeping out the competitor who seeks to provide service to points now readily reached by the existing transportation agency.

As yet, unfortunately perhaps, the railway man has failed to grasp the many opportunities that lay before him for bus service. But the transportation salesman who is a close observer of traffic and the whims of the traveling public is watching the rail-less vehicle. He believes it is a new and undeveloped means for increasing his volume of business both by adding new customers and by securing more purchases from old customers. This type of vehicle, he claims, has both an economic and a merchandising sphere in passenger transportation and it should receive the attention of every railway executive.

Purely from the standpoint of selling transportation, therefore, which is the fundamental service of electric railways, it would seem that rail-less vehicles can be used in both complementary and supplementary service.

There is no doubt that the public likes to ride on rubber tires, and also that the public wants increased service in many places. As stated before, the rail-less vehicle thus affords a merchandising agency to satisfy these demands. Taking into consideration the psychology of the public it deserves study by railway men. At a minimum of investment, it sells transportation that is new and that is needed.

By complementary service is meant the various classes of extensions and feeder service. For instance, extension or feeder service can be run from the end of

the main street line where there are several hundred families within 1 or 2 miles. The installation of bus service in such cases not only supplies cheaply a transportation need but also develops more riders for the main railway system. Then again, bus service is feasible for outlying or remote townships or suburban centers that are infrequently served by steam railroads and that also have no interurban connections. Such service develops traffic; enables the townspeople to reach a real shopping center and fosters community interest.

The bus also offers a means to aid urban crosstown traffic by connecting the open links to form belt lines around the main and congested traffic center and to aid through traffic by connecting open links in interurban systems. There can be no question but that these applications of the rail-less vehicles will sell transportation and develop new business.

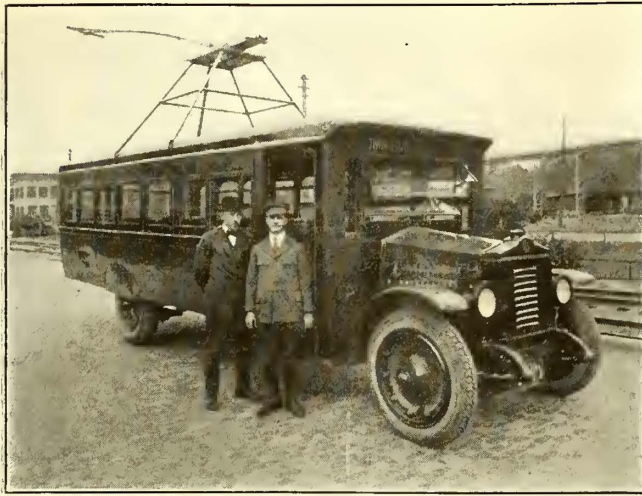
By supplementary service is meant that which assists in carrying traffic on what might be called, in a general way, existing routes. For example, in many cities there is an opportunity to use the rail-less vehicles on boulevards or other streets which are not served by railway vehicles in a sort of de luxe service on which a higher fare can be charged. This also often aids the main transportation agency by relieving overloaded heavy traffic lines. The coach systems of New York, Detroit and Chicago are outstanding American examples of this supplementary service.

The rail-less vehicle can also be used on routes which are overcrowded during rush hours. Here the rail-less vehicle is able to aid the rail system not only by transferring a certain number of passengers to the de luxe service, but also by giving an ordinary service. This kind of operation need not be confined and preferably should not be confined to the same streets on which the rail cars operate, but should be given simply between the same termini. In this way it is evident that a territory not heretofore directly furnished with transportation is traversed and becomes a source of some considerable traffic. Such supplementary service is good business, as it makes for better service and pleases the public. In general, it appears that it can be offered most economically by a rail-less vehicle.

WHAT ABOUT THE ECONOMICS?

In a general way the economic situation today, at least so long as the public roadway is used, in addition to the merchandising element, provides certain saving arguments for the rail-less vehicle.

There exists in practically every traction community today a want for additional transportation service. The existing railways have found that it is increasingly difficult to finance these extensions with rail service and



Trolley Bus Developed by Trackless Transportation Company, New York, N. Y. Seating Capacity Twenty-nine. General Electric Equipment Used



"Rail-less" Car Developed by J. G. Brill Company, Philadelphia, Pa. Seating Capacity Twenty-eight. General Electric Equipment Used

often if these extensions were built the fare necessary to come anywhere near meeting the cost of the service operated would be so high that riding would be discouraged, with the result that the losses would have to be borne by profitable lines.

In such cases the railway can not afford in this day to neglect to provide for the growth of the community. If it does it will not be long before independent operators enter the field, and instead of co-operation to render the most economical form of transportation to answer the needs of the community there at once begins direct competition. These operators will attempt to carry passengers not alone from the terminus of the existing railway line but will duplicate existing rail service in an endeavor to reap as large a profit as possible. The usual result has already been demonstrated in several communities.

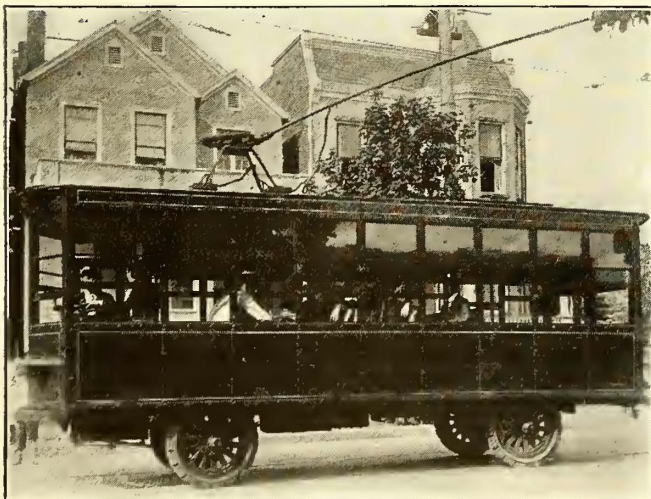
It is not always to be expected that at the start bus operation will be self-supporting. That has long been true of rail extensions as well, but with the bus it is possible, due to its mobility, to shift its route from time to time so as to accommodate the greatest number of persons. This fact alone is one of the reasons why bus

transportation will play such a real part in the future passenger transportation field. Already under private individual ownership the motor bus has fulfilled a popular demand and it is now incumbent upon the existing traction companies to supply this service as a part of their own organization where the circumstances warrant.

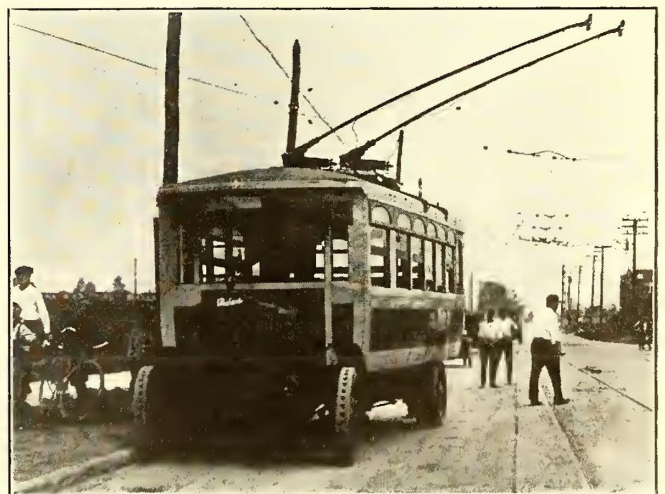
It is obvious that one organization furnishing co-ordinated service will supply better transportation than can several companies or individuals supplying duplicate and competing service. President Gadsden of the American Railway Association said nearly a year ago "that the railways themselves must adopt and use the motor bus in its correct economic sphere."

The traction companies have within the last year or two begun to recognize the attitude of the public mind toward the motor bus. Information gathered shows that about twenty-five electric railways are now operating approximately 130 vehicles either in complementary or supplementary service. In some cases the fares charged are a part of the street car fare, while in others an endeavor is made to maintain bus operation on its own feet.

As yet, however, only a start has been taken by the



"Trollibus" Built by Atlas Truck Company, York, Pa., for Operation by the Virginia Railway & Power Company. Seats Thirty Passengers. General Electric Equipment Used



Trolley Bus Designed by Packard Motor Car Company, Detroit, Mich. Brill Body on Standard Packard ED Chassis. Seats Twenty-five Passengers. Westinghouse Equipment Used

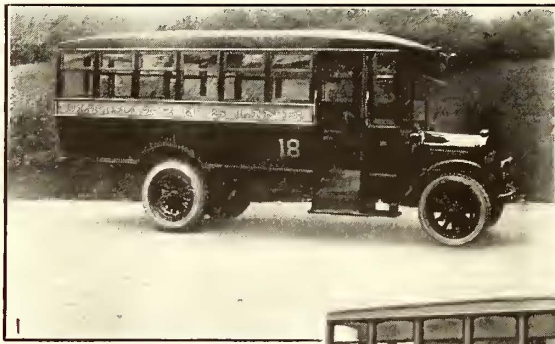
traction companies in using rail-less transportation as an adjunct of their service. Its many possibilities have not really been recognized by the operators of rail-borne vehicles.

TRANSPORTATION ADVANTAGES

From a transportation standpoint the motor bus and trolley bus appear to have distinct characteristics not possible of the rail-borne vehicle. The motor bus has two that make it the most mobile unit. One of these is its ability to be shifted at the will of the operator from one street to another as traffic conditions change;

practice which is of great value to those that must patronize public service conveyances. This method of loading and unloading eliminates a class of accidents prevalent with rail-borne vehicles that has made it necessary to promulgate police restrictions which often impede instead of facilitate other forms of vehicular street traffic.

It is not considered at all necessary for a railway to build up an entirely separate operating and maintenance organization if it decides to operate buses. Today the majority of companies maintain a well-equipped garage under the jurisdiction of the master mechanic



Typical Motor Buses



Fig. 1—The Ultimate Truck, Type AJL. Designed and built by Vreeland Motor Company, Inc., Newark, N. J. Seating capacity twenty-two. Uses Buda motor with Sheldon worm drive.

Fig. 2—Motor bus developed by International Motor Company, New York, using Brill wood body on standard AB chassis, with longer springs and wheelbase. Special rubber spring blocks in spring suspension housings give easy riding with solid tires. Seating capacity twenty-five.

Fig. 3—Standard type of transit body built by Paterson Vehicle Company, Paterson, N. J., mounted on Reo chassis, for use by Danbury & Bethel Street Railway.

Fig. 4—White Motor Bus, used by Gloucester Auto Bus Company, Gloucester, Mass. Two-ton capacity chassis, mounting wood body, seating twenty-seven passengers.

Fig. 5—The Imperial Omnibus. Designed and built by the Trackless Transportation Company, New York. A low center of gravity type omnibus. Buda motor and Clark type rear wheel internal drive. Kuhlman truss side all steel body. Seating capacity twenty-nine.

Fig. 6—Day-Elder motor bus, manufactured in Newark, N. J. Zig-zag seating arrangement gives wide aisles and makes for easy unloading when crowded. Buda motor and Sheldon worm drive rear end used. Seating capacity twenty-five.

Fig. 7—Low floor type of motor bus developed by Republic Truck Sales Corporation, Alma, Mich. Uses Knight sleeve valve motor with rear wheel internal drive. Seating capacity twenty-five.

the other is its ability to avoid traffic "jams" or getting tied up on account of accidents to other units or fires along the route of operation. With the trolley bus much of this mobility is found wanting—due to being tied to overhead wires for power. While it is true that it can pass around other vehicles stalled on the street, it must nevertheless follow a fixed route.

Sidewalk loading is also possible for each unit—a

to look after the present automotive equipment now used by their track and line departments. It is but a step forward for this same maintenance force to care for the passenger bus, and so far as mechanical details are concerned it is impossible to see any difference except that perhaps it needs closer inspection for it must not be allowed to fail in service. Nor is a separate transportation organization necessary except in

so far as bus operators are concerned. Supervision can and should be given by the traffic inspection force used for the existing rail lines.

About the only thing that would be duplicated if rail-less service was rendered would be the accounting system to determine the cost of operation. There appear to be two methods that can be followed—one is to keep separate accounts, which at the end of the fiscal period would be added in with the cost of rail service, while the other is to keep the entire cost of operation separate and add only the net result into the income account.

It is doubtful if the motor bus and trolley bus will supplant at present much if any of the existing rail lines.

The field of the bus, it appears, is not to supplant existing trolley routes but rather in furnishing complementary and supplementary service thereto. The bus can do a real work in developing new territory adjacent to growing communities and can also aid in establishing community spirit between neighboring towns and villages until sufficient density of traffic has

been developed to warrant the necessary expenditure for rails, power plants and distribution systems; that is to say, a more extensive transportation system.

Editorially the ELECTRIC RAILWAY JOURNAL has already taken the position that there is a distinct field for this mode of transportation, and that it should be operated as an adjunct by existing traction companies.

There is no fear that many rail systems will be supplanted by bus systems. It is self-evident, however, that the facts as they now exist indicate a growing public use for rail-less vehicles in transportation. The field has been over-emphasized by some and under-emphasized by others. It appears that those who know most about transportation, urban and interurban, are the ones to apply the most sound business and sales ability toward the correct application of this method of transportation.

Of course the ever-rising question of cost is in the mind of every one who would like to study this situation. Several studies have been made to determine the facts, and these are now being published. One of these studies follows.

An Analysis Indicates that, Based on Cost of Service Alone, the Rail-less Vehicle, with Its Smaller Fixed Charges, Can Compete with Rail-Borne Vehicles in Certain Circumstances

The Bus Transportation Field

By C. W. Stocks

Associate Editor "Electric Railway Journal," New York, N. Y.

THE cost of rendering service using the motor bus, the trolley bus and safety car as part of a co-ordinated system has for some time past been a matter of much conjecture. In an attempt to determine the facts as they exist a comprehensive study has been made of the cost to build and operate a 3-mile line under varying headways with each type of equipment. In this study data were drawn from experience in so far as they were available. The figures are based on the theory that the 3-mile line is an extension of an existing transportation system, either a bus system or a trolley line. If the existing transportation system is a trolley line, there would naturally be advantages in the use of the same kind of equipment on the extension and these would be reflected in considerably lower maintenance and transportation costs than those indicated in the tables. On the other hand, if the city system was operated by buses, the same economies would follow the use of buses on the extension. The figures, like estimates of this kind, are intended to reflect average conditions and costs only. Individual cases are quite apt to show a divergence from them.

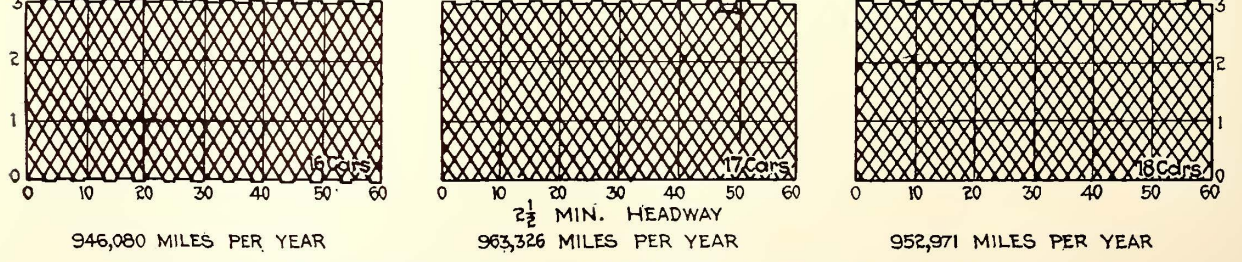
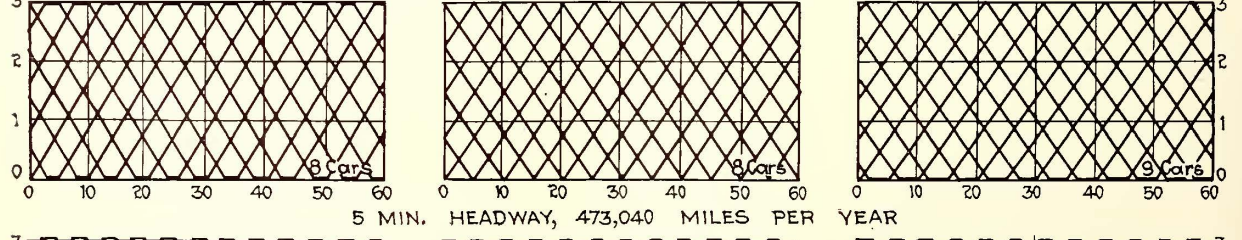
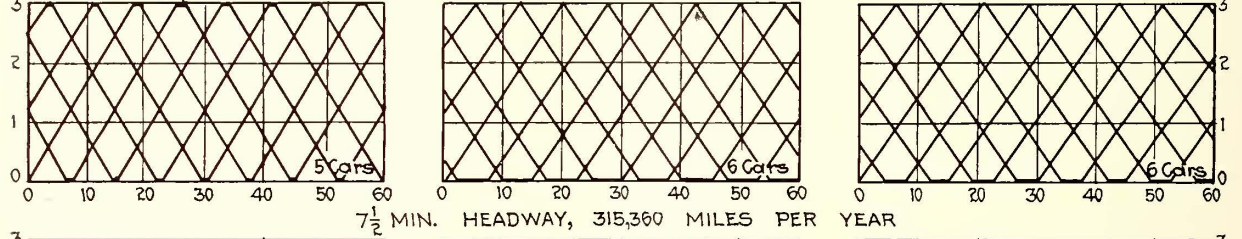
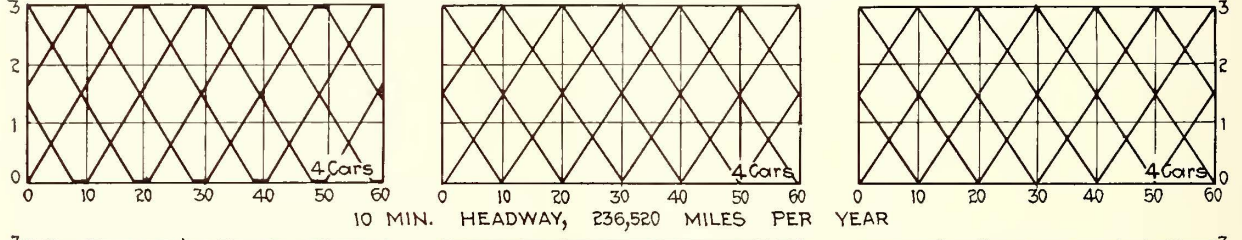
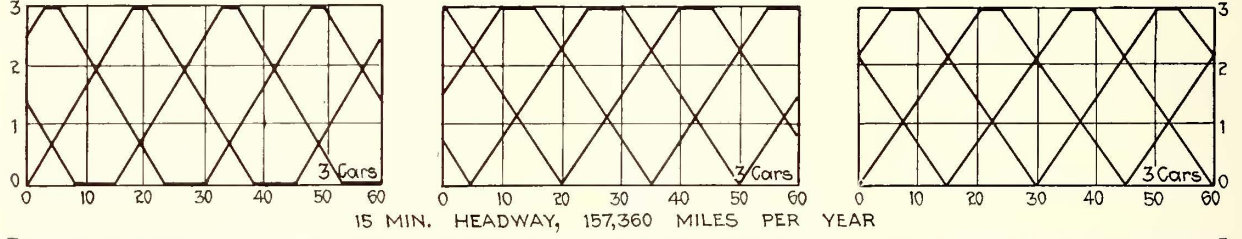
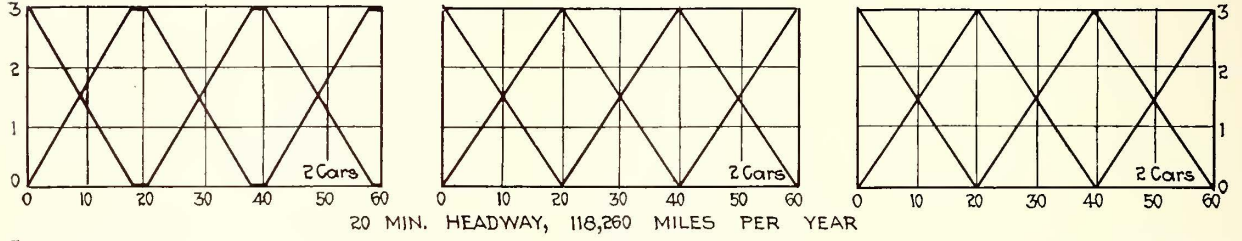
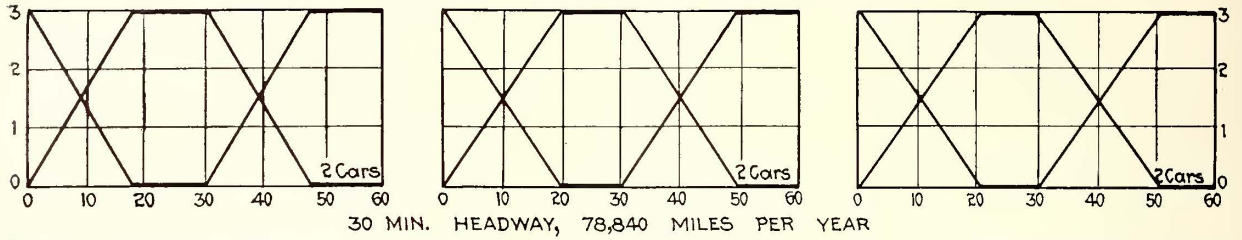
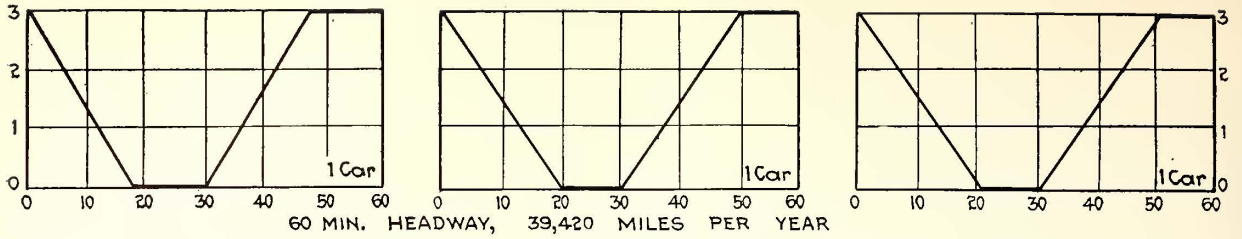
Another factor which has not been included, because it has been impossible to evaluate it, is that of relative obsolescence of the three classes of vehicles. Nevertheless, it is probable that as the electric railway art is older there is comparatively less chance of radical changes in the art than with the newer type of vehicles.

It should be understood that this analysis does not involve the question of supplanting rail service with service by rail-less vehicles. If this is contemplated it

becomes necessary for the new form of service to earn not only its own fixed charges but also the depreciation, fixed charges and taxes on the investment in rails and distribution system supplanted. Such items must be added to the total cost of service shown in the supporting tables and curves for the rail-less vehicles to be used, in order to get a strictly comparable basis with the safety car.

Based on the hypothesis just stated, the analysis indicates that where the traffic is thin the field of the highway-borne vehicle is superior. On the other hand, as traffic requirements increase, the lower cost of operation of light, rail-borne vehicles gradually offsets the fixed charges for the necessary rail investment, so that, with the assumptions used, headways of less than 2½ minutes can be operated most economically with rail-borne safety cars.

The analysis also shows that the motor bus has the most varied field and is cheaper where traffic requires less than 116 seats per hour. This means that schedules calling for headways of fifteen minutes or more can be operated economically only with the motor bus. The trolley bus, due to the investment required for overhead wires and the slightly greater cost of the vehicle itself, even though its bare operating costs are less than the motor bus, has its field of economic operation between the motor bus and the rail-borne vehicle. Traffic requirements calling for headways ranging from two and one-half to twelve and one-half minutes which furnish from 720 down to 150 seats per hour can best be handled by the trolley bus.



946,080 MILES PER YEAR 963,326 MILES PER YEAR 952,971 MILES PER YEAR

Reading from Left to Right, Operating Schedules for the Motor Bus, the Trolley Bus and the Safety Car at the Headways Assumed

It is only natural that the bus is shown to be the most economical for operation under long headways; that is, where the traffic is thin. In reality this appears to be the field which has the greatest possibility of future development, for practically all of the needed extensions that the railways should have built in the past few years are just suited for exploitation by the rail-less vehicle.

It is evident that even with present costs of new construction urban transportation facilities cannot be built so as to operate at the rate of fare in effect on systems built under pre-war conditions. The investment for track alone would provide many vehicles.

This difference in investment necessary as between the several modes of transportation is sufficient to warrant the railway operator in adopting the bus for original development purposes on (1) extensions to existing rail lines; (2) for crosstown services, especially between factory districts and housing developments that have no direct rail service; (3) for belt lines in urban centers to connect mid-points of rail routes so as to facilitate passenger convenience and reduce the time spent in traveling via a roundabout rail route. As the density and permanency of the traffic develops other types of vehicles may be found more economical of operation.

Both the motor bus and trolley bus are also possible of use to supplement existing rail service where traffic has outgrown present track facilities. In the case of the motor bus, though, it is not necessary to confine its route of operation to that of the existing rail service, but simply between the same termini. Even an entirely alternate route through adjacent territory can be used, thus opening up new territory not heretofore directly furnished with transportation. Another undeniable field for the motor bus is to outlying suburban points even as far as 20 miles where only several trips a day are necessary to meet the traffic requirements.

The 3-mile route was selected as the basis for computation in the belief that from an analysis of the cost of service thereon the relative practicability of each mode of transportation could be indicated. Such a length of line may also be considered as the average needed extension branching off of an existing route or for a new route starting from some civic center and tapping territory not served by other forms of transportation.

Among the factors considered in making the analysis were those of service, speed and mobility of operation. The service was laid out to operate on headways varying from sixty to two and one-half minutes in order to determine the variations in cost of service as the number of vehicles and car-miles increased. The whole analysis was predicated on the standard classification of accounts for electric railways. By so doing direct comparisons as to costs for each form of vehicle can be made.

For convenience of operation and ability to maintain the proper headways a double set of overhead wires were strung for trolley bus operation in view of the tight schedule when the headway was reduced to twenty minutes. Double tracks were considered necessary for operation of safety cars when running on less than a fifteen-minute headway.

It is estimated that approximately the same amount of traffic can be handled on each form of vehicle, although undoubtedly a safety car can carry a greater number of standees. It was assumed that the motor bus and trolley bus would seat twenty-nine and the safety car thirty. On the basis of maximum capacity,

TABLE I—INVESTMENT ACCOUNT UNIT COSTS

	Unit	Motor Bus	Trolley Bus	Safety Car
Vehicles.....	Each	\$7,500	\$8,000	\$6,000
Seating capacity.....	Each	29	29	30
Garage or carhouse, including shop space.....	Per vehicle	\$750	\$750	\$750
Land for garage or carhouse.....	Per vehicle	250	250	250
Shop tools and machinery.....	Per vehicle	250	250	250
Electric lines.....	Route-mile		4,500	
	Double pair		6,000	
Distribution system.....	Route-mile			3,500
	Double track			7,000
Track construction.....	Per mile			30,000
	Double track			60,000

the buses would each carry forty-five, as compared to fifty-three on the safety car.

The unit prices used in calculating the total investment for each mode of transportation are given in Table I. The prices used are believed to be conservative and, except for the cost of vehicles, represent pre-war prices. Present-day prices were taken for the rolling stock in each case.

In calculating the cost of service many items of expense were found to vary directly with the number of car-miles operated, while with others the expense does not vary with the service. For instance, much of the expense incident to the way and structure maintenance for rail service is due to the elements, irrespective of the number of cars operated if the same operating efficiency is maintained at all times. For this reason the maintenance figures per car-mile for track include a fixed expense of \$466.66 per mile of route, a total of \$1,400 to cover the cost of removal of snow and ice, cleaning and sanding track, etc. Electric line maintenance, likewise, includes \$166 per mile of route, or \$500 to cover the cost of painting poles, repairs to broken wires and damage caused by storms.

The allowances for superintendence of equipment, for transportation and for general and miscellaneous expenses represent the practice of up-to-date operating electric railway companies. This service was taken as being a part of a co-ordinated system.

TABLE II—UNIT COSTS USED IN CALCULATING COST OF SERVICE

	Unit	Motor Bus	Trolley Bus	Safety Car
Way and Structure Accounts:				
Highway expense.....	Route-mile	\$75	\$75	...
Track maintenance and bonding.....	Route-mile			\$466
Fixed expense.....	Route-mile			0.9 cents
Variable expense.....	Vehicle-mile			
Electric line maintenance.....	Route-mile		\$166	\$166
Fixed expense.....	Route-mile		0.4 cents	0.3 cents
Variable expense.....	Vehicle-mile			
Maintenance buildings, fixtures and grounds.....	Investment	2 per cent	2 per cent	2 per cent
Depreciation track.....	Investment		6 per cent	4 per cent
Depreciation electric lines.....	Investment		6 per cent	6 per cent
Depreciation of buildings.....	Investment	2 per cent	2 per cent	2 per cent
Equipment Accounts:				
Superintendence.....	Vehicle-mile	1.6 cents	1.6 cents	1.6 cents
Maintenance of vehicles.....	Vehicle-mile	5.0 cents	3.0 cents	2.0 cents
Service equipment maintenance.....	Total	\$100	\$100	\$100
Shop equipment maintenance.....	Total	\$100	\$100	\$100
Shop expenses.....	Vehicle-mile	0.3 cents	0.3 cents	0.3 cents
Depreciation vehicles and equipment.....	Investment	12.5 per cent	12.5 per cent	8.333 per cent
Depreciation shop equipment.....	Investment	10 per cent	10 per cent	10 per cent
Power Accounts:				
Gasoline—wholesale.....	Gal.	22 cents		
Unit cost.....				
Gasoline consumption.....	Miles per gal.	7.0		
Lubricants.....	Bus-mile	0.4 cents		
Cost of power, at 2½ cents kw.-hr.....	Vehicle-mile		3.16 cents	3.62 cents
Conducting Transportation:				
Superintendence.....	Vehicle-mile	1.3 cents	1.3 cents	1.3 cents
Wages of operators.....	Man-hour	65 cents	65 cents	65 cents
Cleaning and washing.....	Vehicle year	\$100	\$100	\$100
Other transportation expenses.....	Vehicle-mile	Balance to make 0.5 cents per mile with cleaning and washing		
Traffic expenses—Advertising.....	Vehicle-mile	0.16 cents	0.16 cents	0.16 cents
General and miscellaneous expenses.....	Vehicle-mile	3.9 cents	3.9 cents	3.9 cents
Taxes on physical property.....	Investment	2 per cent	2 per cent	2 per cent
State license.....	Vehicle	\$50		
City permit or car license.....	Vehicle	\$25		
Fixed charges—interest.....	Investment	7 per cent	7 per cent	7 per cent

TABLE III.—ANALYSIS OF COST OF SERVICE ON A 3-MILE EXTENSION

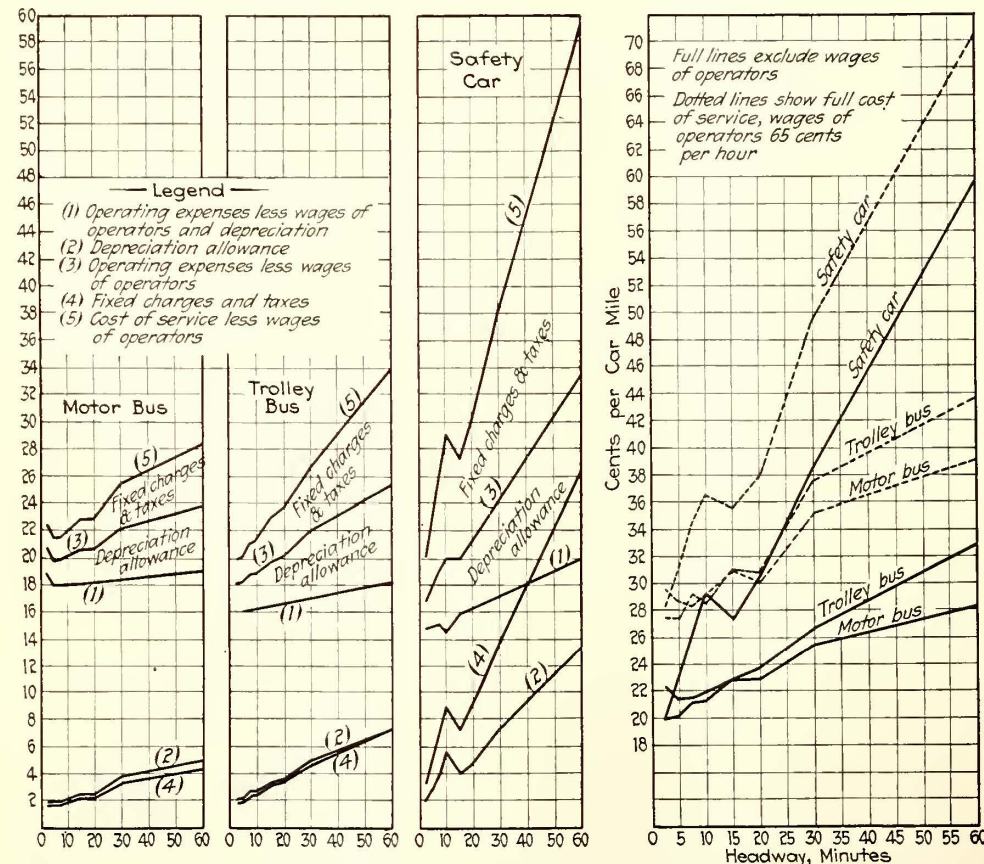
	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car
Headway (minutes).....	60	60	60	30	30	30	20	20	20	15	15	15
Mileage run per year.....	39,420	39,420	39,420	78,840	78,840	78,840	118,260	118,260	118,260	157,680	157,680	157,680
Car-miles per car-hour.....	6	6	6	6	6	6	9	9	9	8	8	8
Necessary vehicles.....	2	2	2	3	3	3	3	3	3	4	4	4
Revenue seats.....	29	29	30	29	29	30	29	29	30	29	29	30
Revenue seat-miles.....	1,143,180	1,143,180	1,182,609	2,286,360	2,286,360	2,365,200	3,429,540	3,429,540	3,547,800	4,572,720	4,572,720	4,730,400
Dead time in schedule.....	40%	33%	30%	40%	33%	30%	81%	None	None	20%	11.1%	6%
Total investment.....	\$17,700	\$32,200	\$115,200	\$26,550	\$41,550	\$122,550	\$26,550	\$46,050	\$122,550	\$35,400	\$55,400	\$129,300
Cost of Service (cents per vehicle-mile):												
Maintenance of way and structures.....	0.647	2.315	6.095	0.342	1.376	3.667	0.228	1.051	2.845	0.181	0.888	2.443
Depreciation of buildings.....	.076	.076	.076	.057	.057	.057	.038	.038	.038	.038	.048	.038
Depreciation of track.....			9.132			4.566			3.044			2.283
Depreciation of electric line.....		2.055	1.598		1.027	.799		.914	.533		.685	.399
Total way and structures.....	0.723	4.446	16.901	0.399	2.460	9.089	0.266	2.003	6.460	0.219	1.621	5.163
Maintenance of equipment.....	8.908	6.908	4.408	8.564	6.654	4.154	8.570	6.570	4.070	8.526	6.526	4.026
Depreciation of vehicles.....	4.756	5.073	2.537	3.658	3.805	1.903	2.379	2.537	1.268	2.378	2.537	1.268
Depreciation of shop machinery.....	.127	.127	.127	.095	.095	.095	.063	.063	.063	.063	.063	.063
Total equipment.....	13.791	12.108	7.072	12.317	10.554	6.152	11.012	9.170	5.401	10.967	9.126	5.357
Power.....	3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620
Conducting transportation.....	12.641	12.641	12.641	12.633	12.633	12.633	9.022	9.022	9.022	9.925	9.925	9.925
Traffic.....	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160
General and miscellaneous.....	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900
Total operating expense.....	34.758	36.415	44.294	32.952	32.867	35.554	27.903	27.415	28.563	28.714	27.892	28.125
Taxes.....	.898	1.634	5.845	.674	1.054	3.109	.449	.779	2.073	.449	.703	1.640
Licenses and permits.....	.380			.285			.190			.190		
Fixed charges.....	3.143	5.718	20.456	2.357	3.688	10.882	1.571	2.726	7.254	1.572	2.459	5.740
Cost of service.....	39.179	43.767	70.595	36.268	37.609	49.545	30.113	30.820	37.890	30.925	31.054	35.505

Ample allowances have been included for depreciation. Buildings were assumed to have a life of fifty years, track structures twenty-five years, electric lines sixteen and two-thirds years. The life of the motor bus and trolley bus was taken at eight years, while that of the safety car was assumed to be twelve years. Shop tools and machinery were estimated to last ten years.

The estimates for power are based entirely on purchased power at a rate of 2½ cents per kilowatt-hour at the car so as to forego the necessity of calculating power

plant and substation costs. Power consumption was figured at 1.4 kw.-hr. and 1.6 kw.-hr. per mile respectively for the trolley bus and safety car. These figures are predicated on 250 watt-hours per ton-mile for the rubber-tired vehicle as against 200 watt-hours per ton-mile for the safety car. Gasoline consumption for the motor bus was estimated at 7 miles per gallon at a wholesale cost of 22 cents per gallon.

Separate schedules for each of the several headways taken were figured for each mode of transportation.



Graphical Analysis of Items Involved in the Cost of Service

The schedule speed, however, was taken at 10, 9 and 8½ miles per hour for the motor bus, the trolley bus and the safety car respectively. This gives a one-way trip in eighteen, twenty and twenty-one minutes. It was assumed that the rail-less vehicle, due to its greater mobility, could hold a faster schedule than the safety car. The schedules as assumed are shown in the accompanying diagrams. From these diagrams it will be noted that for each of the headways the actual speed in miles per hour for each of the three vehicles is the same until the headways are reduced to seven and one-half minutes or less; then, due to the difference in speed and layover time necessary, the car-miles per car-hour for both forms of rail-less vehicles are greater than for the rail-borne safety car.

Operator's wages were taken at the same rate for each form of vehicle, for it

TO AN EXISTING TRANSPORTATION SYSTEM FOR VARIOUS HEADWAYS

Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Headway (minutes)
10	10	10	7½	7½	7½	5	5	5	2½	2½	2½	
236,520	236,520	236,520	315,360	315,360	315,360	473,040	473,040	473,040	946,080	963,326	952,971	Mileage run per year
9	9	9	9.6	8	8	9	9	8	18	8.625	8½	Car-miles per car-hour
5	5	5	6	7	7	9	9	10	18	19	20	Necessary vehicles
29	29	30	29	29	30	29	29	30	29	29	30	Revenue seats
6,859,080	6,859,080	7,095,600	9,145,440	9,145,440	12,460,800	13,718,160	13,718,160	14,791,200	27,936,454	28,589,130	28,589,130	Revenue seat-miles
10%	None	None	4%	11.1%	None	10%	None	None	10%	4.16%	5%	Dead time in schedule
\$44,250	\$64,750	\$237,750	\$53,100	\$83,450	\$252,350	\$79,650	\$102,150	\$274,500	\$159,300	\$196,650	\$348,000	Total investment
0.127	0.738	2.035	0.099	0.663	2.836	0.077	0.583	1.634	0.052	0.507	1.431	Cost of Service (cents):
.032	.032	.032	.029	.033	.033	.029	.029	.032	.029	.029	.032	Maintenance of way and struct.
		3.044			2.283			1.522			.756	Depreciation of buildings
	.457	.533		.342	.400		.228	.266		.112	.132	Depreciation of track
												Depreciation electric line
0.159	1.227	5.644	0.128	1.038	4.552	0.106	0.840	3.454	0.081	0.648	2.351	Total way and structures
8.494	6.484	3.984	8.464	6.464	3.964	8.442	6.442	3.940	9.420	6.420	3.920	Maintenance of equipment
1.982	2.114	1.057	1.784	2.220	1.110	1.790	1.903	1.059	1.783	1.971	1.050	Depreciation of vehicles
.053	.053	.053	.047	.048	.055	.048	.048	.053	.047	.049	.052	Depreciation of shop mach'y
10.529	8.651	5.094	10.295	8.732	5.129	10.280	8.393	5.052	11.250	8.440	5.022	Total equipment
3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620	Power
9.022	9.022	9.022	8.570	9.925	9.925	9.022	9.022	9.925	9.022	9.336	9.782	Conducting transportation
.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	Traffic
3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	General and miscellaneous
27.313	26.120	27.440	26.596	26.915	27.286	27.011	25.475	26.111	27.956	25.644	24.835	Total operating expense
.374	.548	2.010	.338	.529	1.600	.337	.431	1.160	.337	.407	.732	Taxes
.159			.142			.143			.142			Licenses and permits
1.309	1.916	7.036	1.178	1.852	5.602	1.179	1.511	4.062	1.180	1.422	2.550	Fixed charges
29.155	28.584	36.486	28.254	29.296	34.488	28.670	27.417	31.334	29.615	27.473	28.117	Cost of service

is believed that those who are operating with one man per car would have to pay the same rate irrespective of the form of vehicle. The base rate was taken at 60 cents per hour, with 5 cents per hour added for loadings such as pull-in and pull-out time, making out reports and the like. This wage figure is, however, subject to many variations due to purely local conditions which are not at all universal.

As will be noted, there is considerable leeway or layover time in many of the schedules, while in some cases no layover time is allowed. In actual operation tight schedules are difficult to maintain, but in view of the fact that this study is of operation on an extension and not through central business districts where delays might be encountered due to vehicular traffic, it is believed that these tight schedules are feasible.

Working from these assumptions to determine the cost of service, the results shown in Table III were obtained. The results are also shown diagrammatically, the costs for each class of service being plotted to the same scale so as to show more readily the variations that exist in the three modes of transportation.

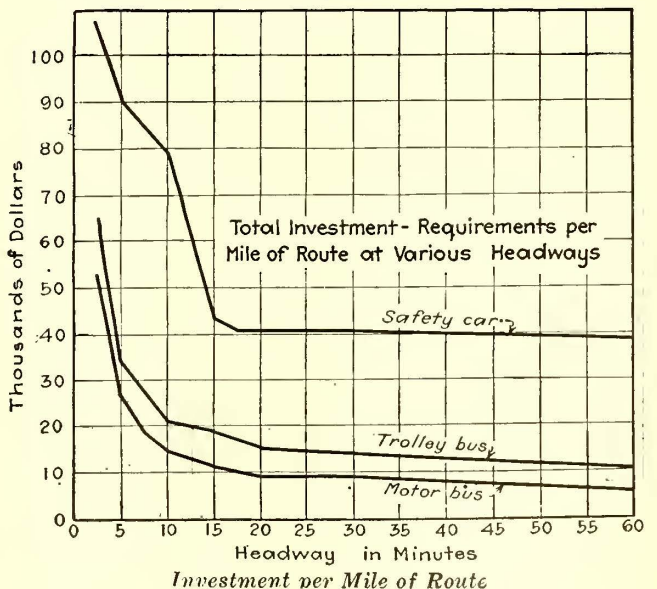
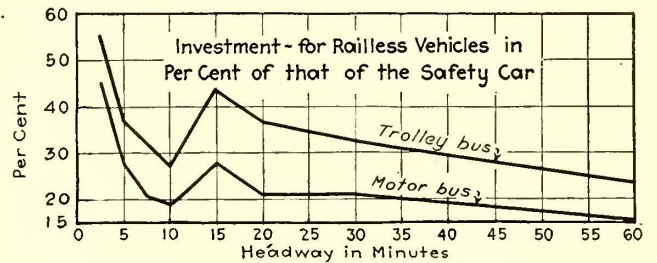
CONCLUSIONS

From an analysis of the curves it is evident that under the conditions assumed the relative fields for the use of these three different forms of transportation, namely, the motor bus, the trolley bus and the safety car, are distinctly divided. Two sets of curves showing the cost of service, with and without wages of operators, are given for the purpose of pointing out what an important part this expense bears to the total cost of service for each vehicle.

The field of the motor bus appears to be the most varied. It is apparent that on schedules with headways of fifteen minutes or more calling for a maximum of 116 seats per hour in each direction the motor bus on the basis assumed can be operated more cheaply than the other types of vehicles. It has a field of its own in the exploitation of new routes, and in addition, even with this seemingly small number of seats per hour, it is believed that there are many places in

and around traction centers where such service would be welcomed.

The trolley bus has its field of operation in between that of the motor bus and safety car. It is but natural to believe that as the traffic increases and a larger investment is warranted the cost of operation should decrease and so pay the larger fixed charges rendered necessary. The trolley bus appears to be able to accomplish this. Its cost of operation is lower than the motor bus for headways below fifteen minutes, but for headways of less than two and one-half minutes, or where more than 696 seats per hour are required in each direc-



tion, rail-borne service can be operated more cheaply. This analysis is based on the assumption that road vehicles will not be subjected to any road tax above the usual license fees which have already been included. If such a tax should be imposed, the relative economies of the different modes of transit would be changed.

Any individual operator can easily substitute for the assumptions made actual cost figures to fit individual conditions. Such a substitution might vary the conclusions considerably, especially if a different length of route were taken and the operating conditions were such that the schedules as laid out could not be maintained with more or less layover time.

Credit for collaboration in the preparation of this article should be given to Albert S. Richey, electric railway engineer, Worcester, Mass. All of the assumptions used and the method of calculation followed were agreed upon after conference.

Another Trolley Bus Tested

Details Follow in All Essential Features the Specifications Issued by the Detroit Street Railway Department, Which Incorporated Some Novel Features

TESTS on an improved new type of trackless trolley car or trolley bus, manufactured by the Trackless Transportation Corporation of New York, were completed last week at the General Electric Company's plant, Schenectady, N. Y., where the electrical equipment is being installed. This new trackless trolley will shortly be placed in operation in Detroit by the officials of the Municipal Railway and will be used for demonstration purposes. It incorporates a number of new features both in design and operation not found in any previous bus installation.

The bus demonstrated at Schenectady is an adaptation of electric drive to the standard low center of gravity gasoline motor bus built by the Trackless Transportation Corporation. The driving motors and control are placed beneath the hood. The collector consists of a standard U. S. trolley base, a 14-ft. Shelby seamless steel trolley pole with a double-contact sliding-type collector head. This collecting head is swiveled on the

pole and provides sufficient flexibility for making close contact with the overhead under all service conditions.

The main dimensions of the bus are: Length from spring horn to back of body, 25 ft.; wheelbase, 183 in.; over-all width, 88 in.; over-all height, 8 ft. 2 in. loaded and 8 ft. 4 in. light; weight 10,700 lb.

The chassis is of pressed-steel frame with specially designed front axle and internal gear rear axle. The propeller shaft is equipped with service brakes and there are external drum-type brakes on the rear wheels for emergency.

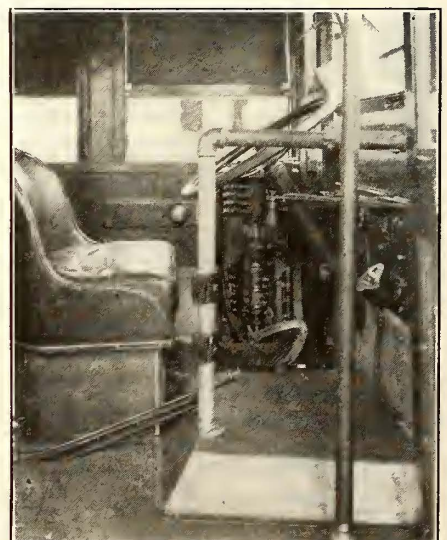
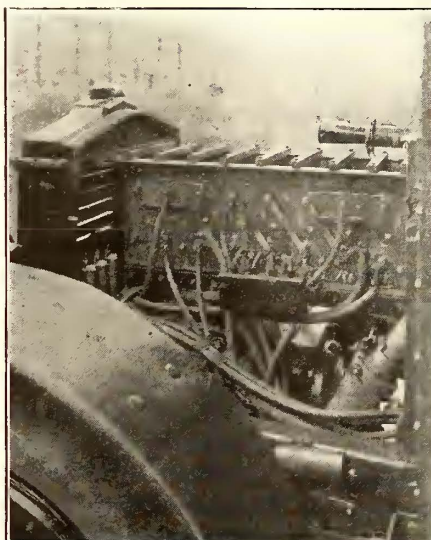
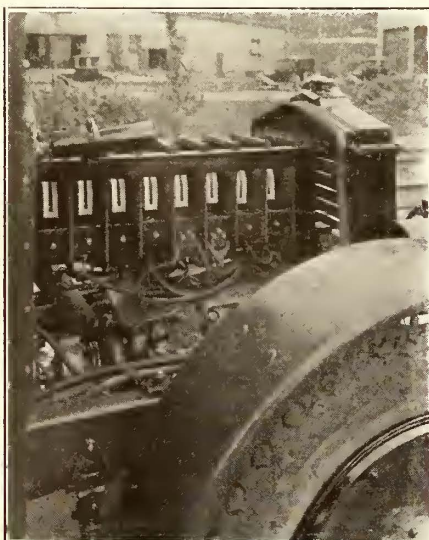
The driving mechanism consists of two 600-volt GE-258 railway motors connected in tandem and drives the standard rear axle through the usual universal joints. The maximum speed will be about 25 m.p.h.

The control is of the series-parallel type consisting of eight electrically operated contactors and a foot operated master controller of the non-automatic type. This allows the operator to select the most suitable speed for operation. The control has four steps in series and three in parallel, which is ample for starting easily without a hammer blow on the gearing or discomfort to passengers.

Overload protection is provided by two 600-volt cartridge fuses M.E.C. standard. Experience has proved that overload protection by means of circuit breakers is unsuitable to the trackless vehicle.

The following is a résumé of the principal facts about the Trackless Transportation Corporation's vehicle:

Seating capacity	29 passengers
Track of rear wheels	71 in.
Track of front wheels	66½ in.
Size of front tires	36x6 pneumatic
Size of rear tires	40x8 pneumatic
Height from ground to roof	8 ft. 2 in. pneumatic
Height from ground to floor (light)	27 in.
Height from ground to floor (loaded)	26½ in.
Inside width on seat line	82 in.
Inside length on seat line	20 ft. 5½ in.
Inside height from floor to ceiling	6 ft. 5 in.
Height from ground to step	16 in.
(10-in. riser on step—one-step and in.)	
Chassis interchangeable for gas or electric drive.	
Lighting 6-volt storage battery charged by automobile type generator belted to driving motors.	
Window posts, centers	29 in.
Width of seats	33 in.
Lights	Seven flush receptables, step light destination light—tail light—two headlights.
Curtains	Standard Curtain Supply Company
Buzzer	Signal system standard.
Fare box	Standard



Views of Some of the Details of Detroit's New Trolley Bus

At left, right-hand side of the front with the hood removed, showing the method of arranging the contactors. The two GE-258, 600-volt railway motors in tandem can be seen immediately under the contactor hood. In center, left side of the front with the

hood removed, showing the connections of the contactors, and the method of arranging the conductors in the small space allowed. At right, view of driver's seat, showing also the location of the controller and other operating apparatus.

Letters to the Editors

FOLLOWING are given two further comments on the proposed reorganization of the American Electric Railway Association, which will be considered at the coming convention:

Mr. Shannahan Recommends Open Field

PECK-SHANNAHAN-CHERRY INC.

HAMPTON, VA., Sept. 14, 1921.

To the Editors:

I have read with interest the letter of J. D. Mortimer regarding the proposed changes in the constitution and by-laws of the American Electric Railway Association, in which he states that the success of the association will depend rather upon the substance of its leadership than upon its form of organization.

It strikes me that it is entirely possible that the substance of its leadership will depend to a considerable extent on its form of organization, or, at least, upon the method pursued in creating the leadership. It is comparatively easy for the nominating committee to select a fourth vice-president for the ensuing year, but it is a more difficult matter for it to select a man to be president four years hence, which is exactly what is proposed to be done by the section of the constitution providing for the election of officers. It may be argued that the constitution as written does not necessitate the automatic promotion of the vice-presidents, but every one familiar with the facts knows that it has been the custom so to do, and frequently custom provides a more rigid law than the written statute. More than once during the past decade this custom has given difficulty, and why it should be perpetuated, rather than leaving the nominating committee free to select the man who at the moment most nearly meets the exigencies of the hour, is difficult to say.

Is it not a fact that striking the shackles from the nominating committee might result in the kind of leadership which would develop the forward looking policies which may so materially assist in the rehabilitation of the electric railway industry?

J. N. SHANNAHAN.

Comments from Mr. Shoup

SOUTHERN PACIFIC COMPANY

SAN FRANCISCO, Sept. 13, 1921.

To the Editors:

You ask me for some comments on the proposed A. E. R. A. constitution.

The changes in the constitution are of minor importance. Whether the association succeeds or fails depends upon the energy and thought its members put into the work, and particularly the officers who accept the direction of its affairs. If it is a constructive policy worth while, then the association is worth while and not otherwise. The form through which it operates, if practicable, is quite secondary to the operation itself.

It seems to me that the executive committee is too large. The privilege of a member of the executive committee to send a substitute is a doubtful one. A man is selected for such work because of his personal qualifications. His company is not elected. Would it not be better to have a smaller committee which carried the full responsibility and would be present at nearly all meetings?

The provision with respect to membership for trackless transportation companies ought to be carefully worded. If it should mean the admission of motor buses, I suspect that there will be trouble out our way.

The various changes that make for systematic and regular consideration of the problems confronting the industry are very good.

PAUL SHOUP,
Vice-President.

Railways Must Take Up Buses Now

MOUNT VERNON, N. Y., Sept. 15, 1921.

To the Editors:

Having returned from a couple of months study of the enormous development of the motor bus in Great Britain—from London's 2,700 working vehicles a day to the humblest countryside service—I find it harder than ever to understand those who vainly believe that in this country the motor bus is not going to get beyond the anarchistic jitney stage. It is true that electric railways will never be supplanted by this catch-as-catch-can or go-as-we-please service of the individual operator, although they can be and have been ruined by such competition. Yet there is no reason to suppose that the motor bus will always remain in the ragamuffin stage, for even the worst enemy of the electric railway recognizes that that stage must not be allowed to continue.

It does not seem that we will have to wait much longer for the motor bus to appear in much more dangerous form. Hitherto, when an electric railway has "downed tools" it has been able to fold arms calmly while a host of irresponsibles tried to fulfill its functions. Sooner or later an influential part of the public has seen the point and asked the electric railway to resume. But in several recent cases, a new phenomenon has appeared. Motor-bus projectors have definitely offered to replace all of the electric railway service at a fare below that which the electric railway management insists it must have. It is not my purpose here to analyze their figures, but simply to point out the appearance of a new and more dangerous competitor.

The electric railways must not be led astray by the fact that the operating expenses of a car-seat mile are, for so large a portion of the output, less than those of a bus-seat mile. The real question is: Can the financially unencumbered motor bus offer a lower rate of fare than an electric railway which is trying to carry the accumulated overhead and taxes of one or two generations? Apparently a well-organized bus system will be able to do so in many of the top-fare communities where the average length of ride is between 1 and 2 miles.

At least one thing is clear: Electric railways must hasten to secure all the bus rights possible before jittneys have been operating long enough to secure a vested interest in local mass transportation. The recent New Jersey bus measure which specifically exempts pre-existent operators from seeking a certificate of public necessity and convenience illustrates what I mean by "vested interest." The right to run motor buses should not be confined to cross-town connections and extensions, but should be of such breadth that the electric railway system will be able to say truthfully that it is prepared to give any kind of mass transportation that can be obtained by either joint or separate operation of trackways and buses.

WALTER JACKSON.

Iowa Operating Men Meet

Claims Work from Legal Standpoint and Great Need for Co-operation of All Departments Discussed—
Track and Equipment Men Talk About Their Problems and Bring Out
Experience of General Interest

TRACK WORK, motor maintenance, problems of the transportation department and co-operation between all departments and the claims department were the subjects considered and freely discussed by the regular meeting of the Iowa Electric Railway Association held at Waterloo, Iowa, Sept. 15 and 16, and devoted exclusively to the operating men. Two papers dealing with the topics named appear elsewhere in this issue. The meeting was presided over by R. J. Smith, Davenport, on Thursday, in the absence of Chairman John Sutherland, Davenport, who, however, was present and presided Friday. At the conclusion of the convention Mr. Sutherland was unanimously elected to act again next year as chairman of the operating men's meeting for the third time.

M. A. Welsh, superintendent of transportation, Waterloo, Cedar Falls & Northern Railway, read a paper in which many aspects of the general transportation situation were reviewed.

In discussing Mr. Welsh's paper C. M. Feist, Sioux City, made the point, in relating the experience of his company with safety cars, that if a company can afford to buy standard Birney cars, this is the thing to do rather than to attempt to substitute rebuilt old type cars. He said that the additional cost of operating the rebuilt type in one year would go a long way toward purchasing the standard car. T. E. Woods, Omaha, Neb., said that the Omaha & Council Bluffs Street Railway now has in operation five standard safety cars which are used on five runs from 5 a. m. to midnight, so that the only chance the equipment department has to inspect them and maintain them is during the night, and the results have been very satisfactory.

Mr. Welsh reviewed the history of the difficulties in securing permission to operate one-man cars in Waterloo. One-man operation was finally made possible by an injunction secured against the newspapers preventing them from publishing an ordinance prohibiting the operation of such cars, an Iowa law providing that no ordinance shall become effective until published. The ordinance has never been published. The company operated remodeled cars with one man for six years prior to the purchase of standard Birney cars, with which the Waterloo city lines are now 100 per cent equipped. Later, a committee of the City Council went all over the country to take depositions on this subject, and after this study was made the City Council avoided responsibility by placing the matter directly to a popular vote, which over-

whelmingly approved the one-man cars. Mr. Welsh made the comment that he believed that whatever sentiment was manifest against the one-man operation was largely manufactured by city officials and was not real or spontaneous, and that this applied not only to Waterloo but to many other cities. Mr. Welsh declared that the best defense against any claim is to prevent the accident, and that the safety car goes a long way toward doing this.

DISCUSSION OF CLAIMS WORK

In discussing the paper on co-operation between the claims department and other company departments by H. J. Connell, W. P. Thomas, Omaha, Neb., told of the experience of the Omaha company in endeavoring to impress the claims work upon student trainmen. He said they had formerly tried to teach the duties in this connection to the men during the period they spent in a training school, but that while the company had a competent instructor, the trainmen were more interested in learning the operating side of the business and they did not absorb a great deal of the claims side. The plan followed now is to have a representative from the claims department ride on the cars with the trainmen and go over actual cases with them to teach them wherein they should have done differently and to outline the various phases of this work, as well as to emphasize the method of avoiding accidents. Mr. Thomas said that this system of instruction on the claims work has been found to be much more successful than the instruction of the men in training school or in holding smokers or meetings at which these things are discussed. It was also brought out that the Omaha company had had good success in collecting damages from automobilists who had run into and damaged street railway property. Such cases had been undertaken only where the company had a clear case, and the outcome in every one has thus far been successful.

TRACK MAINTENANCE WORK

T. E. Rust, Waterloo, in discussing the paper on track maintenance by R. J. Smith, said that in maintaining the city lines in Waterloo the street railway had been largely in the position of having to wear out the cast-off equipment of the interurban system operated by the same company. He said that he was swinging back to the use of bolted work for railroad crossings and getting away from manganese special trackwork for the reason that, while the latter is good, it goes to pieces all at once when it has reached its life, while a bolted intersection can

always be repaired and its life extended in emergency. In purchasing special trackwork the Waterloo company follows the practice of supplying two sets of drawings to the manufacturer, who is required to return one set with all of the drilling dimensions and locations marked on it, and this is then kept for the company's permanent record. Thereafter, when it is necessary to renew any piece, the drilling measurements are taken off the drawings, thus avoiding the necessity to make bolt-hole measurements in the field, which is very difficult to do. Mr. Smith raised the question whether any difficulty was found in following this practice, due to worn bolt holes and creeping of the rail with which the new piece must be connected. Mr. Rust explained that no particular difficulties of this nature had been found. He added that the greatest weakness in railroad crossing trackwork is in the bolts and that he uses nothing smaller than 1½-in. treated bolts.

In building city track on gravel ballast Mr. Rust follows a plan of keeping the track open for about two weeks after it is constructed in order to permit the ballast and roadbed to settle. This is done mainly because of the fact that the company has no tamper. During this period while the track is kept open it is gone over to keep it to grade and alignment. This plan results in practically avoiding any settling of the pavement when the track is closed in. He said, however, that the use of a tamper is a better practice if one is available. Sometimes a heavily loaded car is run over this open track repeatedly to hammer it down and cause as much settling as possible before paving.

Mr. Feist brought up the question as to the cause of a number of broken rails which had been experienced in Sioux City in new track built with 80-lb. T-rail on steel ties and set in concrete, with the joints welded with a resistance type arc welder. Eight cases of broken rail occurred in the first eight months, the break taking place about 8 in. from the joint. Mr. Smith pointed out that this might be due to defective welding which altered the structure of the metal and made it unable to withstand the very high internal stresses set up in rail concreted in.

Turning to the subject of interurban track maintenance, Mr. Smith told of his experience with the use of weed killers. He said he had followed the theory of the manufacturers of the chemical, of using a heavy treatment the first year, a lighter treatment the second year, still lighter the third year,

skip the fourth year, and then a light treatment each year, but this plan had not worked out satisfactorily. He thought the results obtained depended much on the type of ballast and kind of weed, etc. The weather has been said to have a good deal of influence also on the effectiveness of the killer. Some contend that it should be applied after a long dry spell when the weeds are dry and will drink in the chemical. Others claim that it is better to apply the chemical in wet weather so that it soaks into the roots. Mr. Smith said he had come to the conclusion that it was very difficult to say which was the better plan, but that he was convinced that it is worth while to use the weed killer and that it saves a substantial amount of money as compared to the cost of removing the weeds by hand. His thought is that the labor that is used in weeding the line could thus be released for use in other much needed trackwork. He said that his company had skipped one season in using the killer and had regretted it.

As to the method of applying the chemical, he thought the scheme of spraying under pressure was better than the gravity sprinkling. The base of the chemicals used is arsenic. It has been very difficult to determine whether any sterilization of the roadway is secured from the use of the weed killer. Sometimes, when one predominating weed is killed off, while it does not reappear, it is promptly succeeded by another kind of weed. He said he knew of a five-year test made by a manufacturer which did not sterilize the ground, but he was satisfied that even in the absence of sterilization it was worth while on account of the saving in labor made possible.

Mr. Rust explained that the 60-mile line from Waterloo to Cedar Rapids had been treated with weed killer on July 1 of this year, and that while the growth of weeds was very dense and rank, the roadbed was thoroughly cleaned up. However, a certain amount of regrowth was appearing by the end of August. None of those present who had had experience with weed killers could say that it had any bad effect on the ties.

DIPPING AND BAKING OF ARMATURES

Frank R. Grant of the Westinghouse Electric & Manufacturing Company, Des Moines, Iowa, presented a paper describing methods used and results obtained from dipping and baking railway motors.

Mr. Feist, in discussing Mr. Grant's paper, took the position that he was unable to see how dipping and baking of motors by the Sioux City Service Company would represent a saving. He cited a rather remarkable motor service record. The records of the company show that on ninety-six motors of one type in use for ten years a total of fifty-nine sets of coils have been used. On seventy-six motors of another type, also ten years old, nineteen sets of armature coils has been

used. These two instances are at the rate of, respectively, six and two armature failures a year for ten years.

R. H. Llewellyn, general foreman in the shops of the Waterloo, Cedar Falls & Northern Railway, told of the experience he had in dipping and baking armatures during the last three years. Trouble was had at first when the armatures were dipped with the commutator end down, due to the hot varnish leaving pockets behind the risers, in which dirt and copper dust collected, forming a paste and causing trouble. The practice now followed is to dip with the pinion end down, a clamp for the commutator end having been made to handle armatures in this manner. During the baking process the armatures are rolled to prevent the varnish from running to one side. They are baked for thirty-six hours at 165 deg. C. and then painted with a light coat of varnish and baked twenty-four hours more. In the last three years six motors have failed because of loose connections at the risers and this difficulty has been eliminated by the use of a spongy compound furnished by the Westinghouse Electric & Manufacturing Company to pack in the leads. The practice followed by the Waterloo company is to wrap the armatures and bake them for twelve hours before banding. This is done to get the coils thoroughly moistened and flexible before the banding and final dipping. Another practice is to avoid soldering the clips on any one band consecutively. To do so causes the band to become too hot and expand, allowing a slippage of the coils. The practice followed is to solder a clip at a time on each band, giving the band a chance to cool off before the next clip is soldered on that band.

Mr. Llewellyn said that the Waterloo company is not having one-fifth the trouble with armatures now that it did before it began the practice of dipping and baking armatures. There is one bad feature that if a failure does occur it is necessary to rewind the whole armature on account of the stiffness and hardness of the coils. Another advantage of the process, however, is that the hard varnish prevents trouble when a flashover occurs between the commutator and case.

W. B. Brooks, Westinghouse Electric & Manufacturing Company, said that his company knew that the dipping and baking process is a success because of the material falling off in the sale of coils. A question had been raised by two members about the value of this process in eliminating moisture, they having stated that the dipping had a tendency to trap moisture and seal it in. Mr. Brooks replied that this was not a very pertinent point because the percentage of armatures lost because of moisture was very small. Motors in service will dry themselves out. He explained that the main object in dipping and baking is to do away with vibration, which is the big cause of trouble. The main reason for dipping as against rolling, painting or spraying is simply

that it involves less labor cost. He also explained that the heat-radiating ability of a dipped and baked armature is much greater. Mr. Wood, Omaha, Neb., and Mr. Sutherland, Davenport, reported very good success with the dipping and baking practice. No one present was able to supply any good figures as to the cost of dipping and baking.

The delegates to the convention were the guests of C. D. Cass, general manager Waterloo, Cedar Falls & Northern Railway, for luncheon, and thereafter were taken on a special two-car train for a trip to Cedar Rapids and back over the company's 60-mile high-speed line. At Cedar Rapids the party visited the shops of the Cedar Rapids & Marion City Railway, and made a tour over several lines of the city property under escort of E. C. Allen, general manager. In the evening a banquet was held at the Russell-Lamson Hotel, Waterloo, at which entertainment was afforded by very splendid local talent.

The Relation of the Claim Department to Other Departments

By H. J. CONNELL

Trial Attorney Omaha & Council Bluffs Street Railway

GIVEN the best organized street railway company conceivable, it goes without saying that there must, as a matter of necessity, exist between the claim department and each and every other department of the company a close inter-relation and interdependence. These characteristics may exist with little or no co-operation between the claim and other departments, but without some co-operation existing the organization is absolutely doomed, sooner or later, and generally quickly, to failure. It is an easy matter to say that co-operation is necessary. If I make no other point clear, let me drive home the proposition that two great factors, understanding and co-operation, are absolutely essential to the success and very life itself of the corporation's existence.

I have noted at different times in some organizations the existence of petty jealousies between different departments. Suggestions or recommendations from one department to another may be looked upon as interference with authority, and received, therefore, with disfavor and without the accomplishment of the good which the merit of the suggestion may justly deserve. This is not teamwork. The natural pride which the head of a department should have is to welcome any suggestion or plan which may improve the efficiency of his unit, even though the idea was born in the mind of a man not connected with his own organization.

It is just as important for the su-

*Abstract of paper presented before Iowa Electric Railway Association at Waterloo, Iowa, Sept. 15, 1921.

perintendent of transportation to be an ideal claim man as it is for him to be an ideal operating manager. The claim and transportation departments are more closely identified than any two other departments. They should work hand in glove. The aim of one should be the aim of the other, the methods employed the same for both.

There is a question of whether the claim department or the transportation department should assume the task of instruction. In my opinion, the instructor should be a competent, trained man, taken directly from the ranks of practical operating men, knowing everything about a car and how to run the thing, and knowing also everything about accidents, how to prevent them as far as possible, and what to do after one has occurred. The instruction department should be under the direction not of the claim department, but of the operating or transportation department. But the claim department should be constantly consulted and should be constantly offering suggestions when new situations arise, so that the instructor can be kept up to the minute on every phase of accident work.

I have always advocated a follow-up system of instruction, under which the men at different intervals of time are taken off the cars for a freshening up on accident work. This can be done either by the original instructor or in talks to the men by someone connected either with the legal or claim department who is fully equipped for the task, and by regularly posted bulletins, keeping the men in touch on the bulletin board with new features arising in claim work. Our company had inaugurated, prior to the war, a system under which the men were brought in at intervals and polished up on their accident information. However, due to the emergency situation during the war, and the unsettled labor conditions following that period, this policy was necessarily abandoned, and at the present time we are somewhat weak along this line and are left again to another feature of co-operation between the claim and transportation departments.

Whenever an accident is reported inaccurately, or without sufficient detail, the matter is immediately referred to the transportation department, whereupon the erring employee is given a hearing by the superintendent. The same procedure is followed where it appears that the motorman or conductor were apparently negligent in an accident. In this way a constant check is kept on the men at large and it is seldom that a man is found wanting more than once in the same particular. Were the claim agent to sit back, satisfied in his false security, only to take care of the claims that come to his office, without turning a hand to remedy conditions requiring attention, or to co-operate with the transportation department in this check-up or follow-up system, he would not be fulfilling the ideals which should rightly belong to his office, and he would be working

toward the injury, rather than the betterment of his employer. I think it very essential that a lively interest among the employees in accident prevention and in accident cure should constantly be maintained, and among the small companies the job is less difficult than where a large number of employees are on the pay roll. Every day new and different kinds of accidents are occurring which before had never been thought of by even the most experienced. Striking examples of such class of accidents brought to the attention of the men, with suggestions how they could have been avoided, tend toward the maintenance of a constant vigilance on their part, are very helpful and instructive and at the same time keep up the *esprit de corps* of the organization. The system just referred to requires the utmost co-operation between the two departments.

CO-OPERATION OF OTHER DEPARTMENTS NEEDED TOO

The same considerations that apply to the relation between the claim and operating departments apply with equal force and effect to the relationship of the claim department to the other departments enumerated in the subject of this discussion. An unsafe switch, wye or crossing, where cars have jumped the track, is first detected by reports received by the claim department of similar accidents occurring over a course of time at the same location. Without co-operation the track department might remain in total ignorance of the defective condition for a considerable period of time. Accidents and claims otherwise avoidable would be multiplied.

Some accidents are unavoidable and cannot be anticipated or guarded against. An example of this occurs to my mind in the case of a pedestrian on the street crossing behind one of our cars just entering a curve. The trolley wheel jumped the wire, ran up over a trolley hanger, became fixed and lodged thereon, the trolley pole was wrenched free from the socket of the trolley base and fell to the street, striking the pedestrian upon the head and inflicting a very serious fracture of the skull. Claimant, of course was innocent and free from negligence. What was the cause of the accident? Was there negligence on the part of the company?

Investigation disclosed that had the trolley pole been more securely fastened in the socket the whole trolley base might have been wrenched from the car. We have had examples in our experience of this nature of accident. It was disclosed that the trolley pole was fastened securely enough to permit its use safely for all practical purposes. The overhead trolley construction did not give way, which might have been the case had the pole not been wrenched free. Then came the question as to the trolley frog and hanger involved in the accident, and it was developed that these two instrumentalities were of the

latest improved type, both from a mechanical and safety standpoint. They were the best on the market and had been selected not only for their efficiency in operation but also from considerations of safety and accident prevention. Our superintendent of electric lines has been in close touch with accident work and with accident prevention, and the result of the trial of the case in question championed the cause of co-operation and proved that where it exists the company has but little to fear.

We brought into the courtroom every appliance on the car and in the overhead trolley system which was connected with this accident and exhibited them to the jury, explained their construction and the use to which they were put. The plaintiff had alleged defective and unsafe construction and when our evidence was complete was at a loss to find one point upon which to base an argument of negligence on the part of the company. Our offer to claimant before trial was in the sum of \$7,500, for we realized the seriousness of the injury and feared the effect of sympathy and prejudice. The verdict of the jury, in the same amount as our offer, was the talk of court house attaches for several weeks. Needless to say, the amount of the judgment was paid into court within three days and the case disposed of. Had there been defective trolley construction, I have no doubt that the verdict would have reached the sum of \$20,000 or more.

Closed doors on the rear and front platforms of all cars operated by the company have reduced to a minimum the boarding and alighting accidents, much dreaded in former years. The closed door construction has been the result of numerous conferences between the different departments and a strong advocacy in favor of their use by the legal and claim departments.

Not a long time ago headlights on the cars were insufficient on a dark night for the motorman to distinguish a vehicle stalled on or near the track within sufficient distance, in all cases, to stop the car and avert a collision. Improved headlights now in use have practically eliminated this class of accident and are the result of constant poundings on the part of the claim department. Examples of possible co-operation are legion. I cite these few merely to illustrate my point.

RELATIONS BETWEEN LEGAL AND CLAIM DEPARTMENTS

A modern lawyer who is equipped to handle for the company in court the damage suit, so full of possible traps and pitfalls for a corporate litigant, may, if he is not duly cautious, look upon himself as a sort of little tin god on wheels and become imbued with the idea that all information should be served to him on a silver platter, and that investigations of accidents are within the province only of the humble claim agents and their assistants. In the dignified isolation of such superi-

ority he will sooner or later be confronted with a situation with which even his eminent learning and ability cannot cope. If you know any such fellow in your organization advise him to come off his perch. He must, in order to be fully armed, keep himself constantly in active touch with all the details and workings of the claim department. He is the surgeon called by the company to attend its case. He must look for his supply of medicines, dressings and surgical instruments to the claim department, which is the source. He must, for efficiency, be informed with the history of the case from the time the accident first occurred down to the last instruction to the jury, and exception taken. He cannot acquire this knowledge unless he is at all times within reach of the claim department. My experience has shown me that there is no measurement for the aid and assistance to the trial attorney which comes to him from knowing the nature and progress daily of the investigation of the individual accident. In every major or serious accident he should be on the ground before the debris has been cleared away. He should take note of all physical evidences remaining after the accident. He should immediately suggest to the claim department such lines of investigation as may occur to him to be proper for the preparation of a successful defense.

Only last week, in our city, an individual who had partaken in unsafe quantities of the "cup that cheers" attempted, while driving a flivver, to pass a street car going in the same direction, and in so doing struck an automobile parked at the curb, with the rather unexpected (to him) results that his automobile was overturned some one hundred feet further down the street, effecting, for other occupants of his flivver, a fractured skull, a broken back, a fractured arm and minor injuries. The police department informed our company of the accident immediately, for the reason that on more mature reflection the driver claimed in an incoherent fashion that the street car had run into him. Our claim department was already at work upon investigation, for the motorman had called the carhouse foreman, who had in turn immediately notified the claim department. It was disclosed that our company was neither directly nor indirectly involved and that the street car had not so much as touched the unfortunate flivver. Within three hours after the accident notice of the same was in the hands of the legal department and the writer personally called at the police station to interview the driver. He was still intoxicated, despite his vehement claims to the contrary and even went so far as to assert that he hadn't "had a drop." The day following the accident two suits, each for \$50,000, were filed against this company.

Am I not better qualified, six months or so from this date, to defend successfully these cases, than I would be in

the situation that immediately before trial the files were first presented to me and I noted from some written statements or memorandums, long since "cold," that probably the driver was drunk, and that at least one or two persons were of the opinion that he was drunk? I, the fellow upon whom will later devolve the task of proving it, know now, personally, he was intoxicated. From my personal observation and information derived from the investigation I know now just how the accident occurred.

We are all human, none of us perfect. The best that we can do is constantly to strive in our personal and business life toward perfection. If I could leave with you one thought the observance of which will tend toward the reduction of accidents, or the preparation of successful defenses thereon after they have occurred, I could originate no better slogan or standard than that contained in the following three words:

"Knowledge — understanding — co-operation."

Knowledge, thorough and complete, on every phase of the accident question; understanding, of what to do, when to act and where, before, if possible, if not, after, the accident has happened; co-operation between each and every department in the organization, co-operation which is unselfish, whole-hearted and without stint or compromise. If these qualities are instilled in every cog of our great machine from the president of the concern down to the lowliest messenger boy we shall soon find ourselves almost within reach of that enviable position of a certain claim agent whose motto, hung and emblazoned in large letters in his office, greeted the eye of every claimant calling there, and bespoke the following trite, concise and independent message, "Not a Damn Cent."

Track Maintenance and Construction Kinks*

BY R. J. SMITH

General Manager and Engineer of Way
Tri-City Railway, Davenport, Iowa.

CONDITIONS prevalent in the street railway industry during the past five years have so reduced track forces that roadbed has been allowed to wear out faster than it could be maintained. Due to this fact, track forces have become little more than emergency gangs, temporarily repairing track which has caused derailment.

Various expedients have been employed in the Tri-Cities to effect economies in the maintenance of special trackwork. Last winter a tongue in an old Pennsylvania pinless switch broke about 6 in. from the heel. A pattern was made in our repair shop and taken to a local steel foundry, where a new tongue was cast of electric steel. Very little grinding was necessary on this casting. It was in-

stalled Jan. 6, 1921. Today it shows practically no wear. The pattern cost \$13 and is available for future use at several other locations where the same type and size of tongue is in service. The casting cost \$20, while a new manganese tongue would have cost \$56.

A number of hard centers set in spelter with rapid renewable bolts in iron-bound manard construction special work became loose. They were repaired without spelter by shimming them to the proper level with triangular shims and tightening with new bolts. After the cars had run over them a few days they were again tightened and the holes filled with hot asphalt. After several months they still remained tight and are giving good service. In a few cases it has been necessary to replace the hard center. A $\frac{3}{4}$ -in. plate the size of the old center was used, to which were riveted small pieces of $\frac{3}{4}$ -in. plate in such a way as to make the throat-way for the wheel flanges. They were raised to the proper level by shimming in the manner described above and welded to the ends of the rail in the casting. This work cost \$15 as compared with \$50 for a new manganese center.

At several special work locations frogs have broken or worn out completely, and since no new ones were available it has been necessary to manufacture them in our own small construction shop. Such frogs were made of high T and girder-grooved rail. Accuracy in obtaining the proper curvature was secured by using a templet made of two strips of wood $\frac{1}{2}$ in. thick, nailed together and sawed out to conform to the proper angle and curvature. Rails of correct length were bent and the top half of one rail and the lower half of the other rail cut out with a torch where they intersect. They were then welded to a base plate 24 in. x 36 in. x $\frac{3}{4}$ in. Plates were also welded to the web of the rail and the throat-way ground out with a track grinder. The total cost of these frogs was from \$50 to \$80, and they are giving very good service after a year's wear. Bolted T-rail frogs have been repaired at a cost of \$20. For making these home-made frogs it is very desirable to have a plane table built of rail and concrete, but as yet we have not been able to construct such a bed and have contented ourselves with laying out some T rail at 14 in. centers upon a support of timbers about 30 in. high. A small swinging crane constructed of T rail was rigged up upon a post adjacent to this table.

Broken running and bearing rails on steam road crossings have been removed and new rails installed in their places. Until recently, bolt holes in the rails were burned in with an oxy-acetylene cutting torch. However, in the case of high-carbon open-hearth rails, this burning of holes is detrimental to the metal in the web, so that whenever the time permits we are drilling the holes in the repair shop on a press, the proper spacing being secured by the use of a templet.

*Abstract of paper read before Iowa Electric Railway Association at Waterloo, Iowa, Sept. 16, 1921.

Very little construction or even reconstruction of track has been done on our properties in the last few years. Briefly, our practice is this: Standard construction consists of 7-in., 80-lb. T-rail laid on creosoted red oak ties, spaced 2-ft. centers with 8 in. of crushed stone under the ties. Where it is possible the subgrade is rolled with a 15-ton roller. A 6-in. layer of stone is laid and rolled, then the track constructed upon this ballast bed. After the track is spiked and the joints welded it is filled with stone to the top of the tie and then tamped to grade by a four-tool electrically driven air tamper. Before the track is concreted regular car service is permitted to operate over it for a period of two or more days, depending upon the frequency of service. Then the track is tamped a second time, which requires about half the time used in the first tamping. The paving base consists of a 5-in. layer of 1:3:6 mixture of concrete. Brick are laid on a 1-in. 1:4 grout bed and filled with a 1:2 grout. All paving is covered with sand to prevent too rapid drying of the filler, and vehicular traffic is not permitted on a newly grouted pavement for at least five days. Rail is hauled on the side of a differential dump car. This car has a hollow built-up bolster on each truck, which is larger than the standard tie. Two ties are cut to a 6-ft. length and inserted into these bolsters, projecting about 3 ft. from the side of the car. Five rail are laid upon these ties with a 5-ton electric crane and chained to the trucks.

Because of labor difficulty and expense, it has been our practice to use machinery wherever it was possible to finance its purchase. For instance, an excavator is used for trench work in city lines and ditching on the interurbans; a differential dump car is used for distributing rock ballast, hauling away dirt and delivering rail, sand and brick to the job; a 5-ton electric crane is used to unload rock ballast from steam equipment to stock piles or to our own work cars, also to handle special trackwork, and in some instances to excavate with clam shell; pneumatic machines tamp the track; resistance type electric welders weld the joints and cross bonds; wheel and reciprocating grinders are employed; tie-rod holes are either drilled with an electrically driven machine or cut with the oxyacetylene torch; electrically or gasoline driven concrete mixers place the paving base, grout bed and filler, and lastly, a conveyor is used to unload brick and cement from cars and to distribute brick from the side of the street to the track proper where the paving is being done.

As machinery is brought more into the practice of constructing and maintaining track, it is found necessary to vary the way organization to suit, and this variation tends toward higher grade foremen, more specialty men and fewer assistants, who used to be carried as "straw bosses" or "pushers." These latter are largely replaced by men of similar ability who have, however,

made a specialty of one or two operations, such as welding and grinding, torch work and the like. It has also been essential in addition to training the head foreman to understand, and even manipulate various mechanical devices, to carry on the payroll a man of foreman's rank who is an excellent mechanic and whose duties are very largely confined to keeping the equipment in condition. Furthermore, the ordinary laborer cannot, so much as formerly, be left to his own devices, but must be to a certain extent trained in the new methods. All of this change in organization and equipment means

increased overhead expense, so that in times of retrenchment it is a real problem to retain the backbone of the organization. The only solution of this formidable problem, and that only partial, is to instill such a spirit throughout the backbone aforesaid that it will cheerfully bend itself to any work, however menial, even to the use of the shovel. In other words, we expect head foremen to become laborers upon occasion, and by this better spirit and their greater intelligence and training to compensate the company for the difference existing between their salaries and the wages of common

American Association News

Be On Time

PRESIDENT GADSDEN announces that the convention meetings will run on schedule. This is absolutely necessary in order that the amount of work planned can be transacted. He says that the American Association meetings will convene promptly at 9:30, regardless of the number in attendance.

Reduced Rates for Convention

IF 350 certificates are filed with the special railroad agent at Atlantic City by those attending the convention a reduced rate amounting to a fare and a half for the round trip will be granted by practically all of the railroads in the United States. The plan has been approved by the Trunk Line Association and by the New England, the Central, and Western Passenger Associations.

A certificate stating that the purchaser is planning to attend the Atlantic City convention should be requested when the regular one-way ticket is purchased, and this certificate should be filed on arrival at Atlantic City at the registration booth of the association. If the necessary number of certificates are filed at Atlantic City they will be validated and will entitle each person holding a certificate to a return ticket by the same route over which he came at one-half of the regular one-way adult fare from the place of meeting to the point at which the certificate was issued.

Convention Specials

The "Chicago Special" for the Atlantic City Convention will leave at 10:30 a.m. central time, Sunday, Oct. 2, over the Pennsylvania Railroad, arriving at Atlantic City at 10:10 a.m. on Monday. It is expected that two or more special cars will be attached to the Manhattan Limited and it is possible that the delegation from Denver and other western states will join the Chicago crowd. Persons in the Chicago territory are invited to make their arrangements through H. J. Kenfield, of *Electric Traction*.

The "St. Louis Special" will leave St. Louis at 12:02 p.m., Saturday, Oct. 1, over the Pennsylvania Railroad, arriv-

ing at Atlantic City at 2:06 p.m., Sunday, after a change to special parlor cars at North Philadelphia. Those in the St. Louis territory should make their arrangements through B. W. Frauenthal, general traffic agent of the United Railways Company, St. Louis.

Nominating Committee Activities

The Nominating Committee, J. H. Pardee, chairman, will not present its report until Monday or Tuesday of convention week. The committee was instructed to report as early as feasible, but at no particular date. Invitations have been sent to the entire membership and these will still be welcomed up to the final meeting of the committee on Monday, Oct. 3, at Atlantic City. Suggestions should be addressed to the chairman in care of J. W. Welsh, secretary, at association headquarters, New York.

Engineering Association Reports Discussed

THE committee on standards of the Engineering Association met at association headquarters on Sept. 15 to pass upon all features of committee reports coming under the committee's jurisdiction. Reports from the following committees were presented for consideration: Buildings and structures, stores accounting, wood preservation, power distribution, power generation, way matters and equipment.

In the main the recommendations of the committees were approved as incorporated in the reports which have been printed and distributed to the members of the association. A few apparent discrepancies were referred back for correction, and several recommendations were referred for action to the convention.

An interesting feature of the meeting was the discussion on standards to be submitted to the American Engineering Standards Committee for indorsement.

During the discussion the way committee was complimented on the form in which its recommendations were framed.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Vote on Ouster

People of Detroit Will Be Permitted to Say If Railway Shall Be Dispossessed

When confronted with petitions for a referendum on the ouster of the Detroit United Railway tracks from Fort Street and Woodward Avenue, the City Council decided to submit the question to the voters at the November election. The ordinance passed by the Council ordering the tracks removed from the streets in question where franchises have expired, will be held in abeyance to allow the vote since enough signatures were attached to the petitions to prevent the ordinance from going into effect. A direct vote will be taken and it must be decided by a majority of the people as to whether they desire the tracks of the Detroit United Railway removed.

The Council could of course have repealed the Castator Ordinance. This measure ordered the company off the streets within ninety days and would have gone into effect if the petitions had not been circulated. It was passed by the Council and approved by the Mayor after the company had refused the Street Railway Commission's offer of \$388,000 for the tracks.

One other point in the controversy between the company and the city was settled when the Council approved an agreement reached by the company and the city providing for the centering of the company's tracks on Grand River Avenue from Joy Road to the City Limits. The contract for paving Grand River Avenue at that point has been let and it is expected work will be started immediately. The company will meet the cost of centering the tracks in the street and will do the work under city supervision so that the line will be in accordance with municipal ownership standards. When the franchise expires on that section of the line the city, according to the agreement, will buy the tracks from the company for \$127,827, less depreciation. The city recently started court action to compel the company to remove the tracks from the side to the center of the street. Proceedings were stopped when the agreement was reached.

Ten miles more of municipal ownership lines are to be started in operation soon, being the double track Clairmount-Owen cross-town line, which extends for 5 miles from Grand River Avenue on the west to Milwaukee Avenue. Track construction is practically completed and the overhead is being placed. This line will not connect up immediately with other municipal railway lines but will be linked up with the main municipal system by the day-to-day lines when they are taken over by the city.

No further action has been taken by the Street Railway Commission with regard to acquiring trackless trolleys or trollibuses as part of the city equipment and further trials of these buses will probably be made in the near future. An amendment to the city charter will be voted on which provides for giving the Street Railway Commission authority to buy buses or other forms of transportation equipment which are deemed advisable for purchase. The Council members in voting for the amendment supported the provision that the Council reserve the right to reject or confirm contracts for the trollibuses.

Large New Power Plant for Winnipeg Property

Arrangements have been completed for the financing of a \$10,000,000 power development project at Great Falls on the Winnipeg (Can.) River. A. W. McLimont, vice-president of the Winnipeg Electric Railway, has recently returned from a trip east where he was in consultation with the firm of Nesbit, Thomson & Company, Montreal, who will finance the undertaking.

When completed the plant will have a capacity of 168,000 hp. Work has begun and about 200 men are now employed. This force will later be increased to between 1,500 and 2,500 men, and the whole plant is expected to be finished in 1927.

The undertaking will be carried out under the charter of the Manitoba Power Company, Ltd., which is taking over the assets of the Winnipeg River Power Company. Sir Augustus Nanton, Winnipeg, who is also a director of the Winnipeg Electric Railway, will be president and A. W. McLimont will be vice-president, of the Manitoba Power Company, Ltd.

Trackless Trolley Considered in St. Louis

A proposal is before the St. Louis Board of Public Service and the Municipal Bridge Commission for permission to operate trackless trolleys around a down-town loop in St. Louis, across the free bridge and to a loop in East St. Louis. It is thought that the one-way fare will be 5 cents.

George H. Tontrup, president of the National Safety Car & Equipment Company, is back of the scheme and it is his desire to put the system into operation as soon as the cars are built and the trolleys erected which, he says, will take less than two months.

Mr. Tontrup estimates the cost at \$10,000 per mile and he proposes to install the system on a trial basis preliminary to a permanent franchise.

Progress Reported

Prospects for Settlement at New Orleans Assuming Concrete Form

The solution of the problems confronting the New Orleans Railway & Light Company, New Orleans, La., suggested in the report of Commissioner Maloney of the Public Utilities department would appear now to be dependent upon action taken in New York City. Telegrams received at New Orleans on Sept. 10 from those in touch with the situation there, where a conference of the security holders of the company was begun on Sept. 8, indicate that the prospect for a settlement is now assuming concrete form.

The report, as a whole, while not approved editorially by the local papers, is conceded by them to present a tangible means of putting an end to conditions which must inevitably produce further discomforts to the public and retard the industrial growth of the city.

One of those pleased with the outlook is R. S. Hecht, president of the Hibernia Bank & Trust Company and chairman of the committee of forty. In discussing the matter on Sept. 10 Mr. Hecht announced that he had received word from New York which indicated that the eastern bondholders favored the so-called Maloney plan of settlement.

In support of this opinion he issued the following statement:

Based on the information before us we feel justified in saying, however, that the general disposition of the security holders appears to be to meet the city in the same spirit of compromise which the Council has shown toward the company. While there seems to be a good deal of disappointment among them that the rate of return was not made 8 per cent, we are inclined to believe that both the valuation and the rate of return fixed in the city's proposal will be accepted.

Everybody seems to be ready to admit now that the future operations of the company will be absolutely subject to the control of the Council through its regulatory powers, but there are some minor details which will no doubt require a thorough discussion between the Council and the representatives of the security holders before the matter can be finally settled.

The security holders emphasize that they are exceedingly anxious to get the matter settled at the earliest possible moment, and they expect their representatives to be able to reach New Orleans within a week to bring their formal answer and their suggestions as to the best method of working out a reorganization plan which will be permanent and will make the future financing as inexpensive as possible. We feel very much encouraged over the outlook and believe that a satisfactory agreement will be reached.

Assistant Attorney General Luther Hall addressed a communication to the Commission Council on Sept. 7 warning that body that it is without authority to negotiate with the railway on any basis that will carry a higher fare than 5 cents, as provided in the franchise.

Des Moines Muddling Along

Disgust Is Increasing With Present Make-Shift Bus Transportation—
Proposal from Mr. Fay

T. J. Fay, president of the Fay Motor Bus Company, Rockford, Ill., made a definite proposition to the City Council of Des Moines, Ia., on Sept. 16 for taking over the transportation problems of the city under a two-year franchise. Mr. Fay's proposal received no immediate attention from the Council. It was simply "received and filed." His offer provides for a 5-cent fare with universal transfers and eight tickets for a quarter for school children. Mr. Fay advised the Council that he could show ample financial backing and that if the franchise was granted to him he would guarantee to have 100 buses in operation within sixty days and sixty more in an additional thirty days.

According to Mr. Fay studies that he has made would tend to show that 160 buses are ample to handle the situation in Des Moines. This figure is based upon an average seating capacity of twenty with ten additional capacity without discomfort. According to Mr. Fay these figures were secured after his company has carried 10,000,000 passengers under conditions not widely different from those which prevail in Des Moines.

FAY OUTLINES HIS PLAN

The Fay proposal provides for the city being reimbursed for wear and tear on pavements by the payment of \$25,000 a year by the bus company. City Councilmen expressed themselves as feeling that this figure is ridiculously low, considering the damage that has already been done to the paving in Des Moines by the buses.

Attorneys for the present bus operators have expressed themselves as being opposed to any amalgamation with the Fay interests. They contend that they made the first proposition to the Council and that they are entitled to the first consideration if a bus franchise is awarded by the Council.

The City Council took its first definite stand in the regulation of buses during the week ended Sept. 17 when it ordered buses placed on three lines now without service, and also demanded that two additional buses be placed on the Southwest Ninth Street line.

The proprietor of a truck sales company which has been supplying buses to some of the local operators made a statement in a daily newspaper last week that the buses could not operate successfully at a 5-cent fare and called attention to the fact that one of the customers of the company had pulled off three buses because they were not paying.

Ten additional buses arrived in Des Moines on Sept. 14, having been driven the entire distance from Connecticut. They were apportioned to various existing lines in the city.

There is every reason to believe that sentiment is steadily growing in favor

of the railway as the people tire of the discomforts of the present makeshift bus transportation.

Corporation Counsel Miller made his preliminary report to the City Council on Sept. 19 upon certain features of the franchise submitted by the Harris interests in behalf of the Des Moines City Railway. It was expected that Judge Miller's final report would go to the Council on Sept. 23 or 24. The report submitted constituted only certain changes which Mr. Miller would recommend that the Council make before submitting the franchise to the city for a vote. Among the changes suggested by Judge Miller are the following:

Complete change of labor arbitration clause and the substitution for three district judges provided in the original franchise members of the State Railway Commission acting as individuals.

City car supervisor to be a graduate engineer of at least ten years' experience in electric railway operation to be elected by the City Council and responsible to it alone, although to be paid by the city. Under existing franchise supervisor is paid by the company.

Definite sliding scale of fares to be contracted by the railway before franchise is submitted. Franchise should provide for satisfactory service and necessary repairs before payment of any dividends on common stock.

Clause suggested by which company will agree to handle disputes with employees by arbitration.

Question of extension should be arbitrable and company should not have the right to veto. Use of one-man cars recommended where practicable.

The bus owners made what is considered a good political move when on Sept. 21 they started service on Center Street, which formerly had no service. The line is in one of the best residential sections of the city located at a considerable distance from two existing car lines.

Saginaw Knows the Bus Won't Do

This is the seventh week that Saginaw and Bay City have been without electric railway service and nothing definite has been done to provide Saginaw with a form of transportation on which to build for the future. Even the friends of the buses are frank to admit they will not do and if the cities are not to have electric railway cars some other means must be provided to take care of the people. It is now well known that the jitneys, numbering about sixty-five and owned and operated by individuals, cannot be properly regulated. Many drivers do not appear on the streets until 6:30 or 7 o'clock and a majority are running on a go-as-you-please schedule. When business is quiet, they lay off, and only work during rush hours.

Members of the Council will attend the demonstration of the trackless trolley which will be given in Detroit the early part of next week, and it is expected that a representative of the Imperial Omnibus Company, New York, will come to Saginaw right afterward to survey the city's requirements and present a proposition to the people through the Council.

Members of the Council have been considering a regulatory ordinance regarding jitneys for several weeks past, but apparently are as far off from

adopting it as when they first considered it. The matter of the owners furnishing a suitable indemnity bond has been the bone of contention. Every member of the Council has gone on record as favoring a large bond, but when the jitney men threatened to appeal to the people the Councilmen backed down and are about ready to agree on a \$5,000 policy for one accident. They do not want to have the jitney men go through with their threat, and they are afraid if they fix the maximum at \$5,000 the people will object. So in the meantime passengers ride at their own risk.

Otto Schupp, receiver for the railway, says the company is still working on the inventory and until it is completed and filed with the referee in bankruptcy he knows of no new developments.

Little Damage to San Antonio Utilities

Damage to the property of the San Antonio (Tex.) Public Service Company as a result of the flood on Saturday, Sept. 10, was slight. At the New York office of the American Light & Traction Company, which controls the electric light and power, street railway and gas utilities in San Antonio, it was stated that there was little or no physical damage to any of the company's property. Only one of the company's plants, a comparatively small one, known as Station B, was reached by flood water, and it was not believed that the total cost of clearing away debris and making necessary repairs would exceed \$15,000 or \$20,000. Electric service was interrupted shortly after the flood started, but was restored 8 o'clock in the evening of the same day. Traction service was resumed on Sunday morning. The gas service was affected the least.

Mr. Mitten Wants His Status Re-established

Thomas E. Mitten, chairman of the executive committee of the Philadelphia (Pa.) Rapid Transit Company, on Sept. 19 addressed the executive committee of the board of directors as follows:

General supervision of P. R. T.'s rehabilitation and its operating organization has now been continuously under my direction for more than ten years; the extent of my obligation and compensation being established under an arrangement made with E. T. Stotesbury and approved by the board of directors.

The scope of my duties and responsibilities, during this period, has been so changed and enlarged as to make a review of the whole matter desirable.

With this in mind, I would request that the present agreement be considered as expiring March 31, 1922.

In commenting on Mr. Mitten's letter the Philadelphia *Ledger* says that it is generally believed that Mr. Mitten desires to step out of active charge of the company's affairs and place the details of running the road into the hands of a group of executives whom he has trained in the electric railway business and who are now identified with the Philadelphia Rapid Transit Company or allied lines.

Amalgamated Seeking to Save Albany Situation

In spite of the fact that the Amalgamated Association in convention in Georgia passed a resolution endorsing the 1,400 Albany and Troy strikers who "are on the firing line," and voted to assess each of the 132,000 members 50 cents with authority for a further assessment if required to keep up the struggle until an honorable settlement or adjustment can be reached between the company and its former employees, it is evident that the strike has been won by the United Traction Company.

On the Sunday before Labor Day, President Droogan of the Albany local came out in an open letter indorsing the independent candidacy of Patrick E. McCabe for Mayor of Albany, he being the only candidate who has made an issue of the strike and the only man seeking office who has espoused the cause of the laboring man. Mr. Droogan in a very stormy sessions of the Albany local was bitterly assailed for having dragged the union into politics, but he asserted he did it merely as a private citizen and not as the union head. Mr. Droogan attended the convention at Atlanta, but it is understood, he is to be asked to step down and out of the leadership on his return.

Should he do so much of the cause of difference between the United Traction Company and its former employees will have been eliminated, as the fight of the company to break the union was to a very considerable extent an effort to break Droogan, whose tactics of abuse of the company have for years been a source of rancor.

The immediate result of Mr. Droogan's letter espousing the candidacy of Mr. McCabe was the driving onto the cars of some 5,000 to 10,000 members of other unions who had refrained from riding all during the period of the strike. This was best evidenced that same day at the ball grounds, where the Sunday before only about a dozen passengers had been carried. The day Mr. Droogan's political statement appeared, fully 2,500 boarded the cars. While the strike is all over but the shouting, the remote possibility still exists that some eleventh-hour agreement may be patched up between now and the eve of election in order to gain votes.

Practically all of the former employees of the railway are working at occupations which from a salary standpoint are about as lucrative as their former jobs, according to reports.

Watchful Waiting in Connecticut

President Lucius S. Storrs of the Connecticut Company stated upon his return from California last week that there would be no fare decrease at present to meet the competition of the new motor bus business.

The trustees of the company held their regular meeting Sept. 3 but did not take up the fare question. Mr. Storrs pointed out that while the railway company was paying its way it has many obligations to meet and a fare

decrease will have to wait for some time. A decrease will be granted, however, just as soon as conditions permit.

Mr. Storrs stated that he did not have knowledge of the full plans of the promoters of the Advertisers' Special Coach service but if the service is a jitney service proper steps will be taken to prevent any violation of existing laws.

Samuel Silvergilt, secretary of the motor bus interests, called a meeting of all drivers at 1 p.m., Sept. 8, in New Haven to outline plans and give out supplies for initiating the service on four local cross-town lines.

Orders Being Placed for Material for Running Change

Orders for new cross-overs and special work are being placed by the British Columbia Electric Railway, Vancouver, B. C., in connection with the changing of the rule of the road from left to right at the end of the present year. There are on the mainland system of the company thirty-three cross-overs which must be removed and replaced. Some of them may be taken up and no new cross-overs installed as the necessity has gone.

In New Westminster, new special work will be necessary at the interurban station. None of this will be installed before the change is made, but the intention is that cross-overs will be blocked up temporarily until the gangs can reach them. Electric switches, of which there are fifteen on the mainland, will be hand operated until the work of transferring them to the opposite tracks can be completed. Some work will also be necessary in readjusting the trolley wire alignment at curves.

The actual date of making the change has not been decided. It was proposed to make it on or about Jan. 1, 1922, but the possibility of snow at any time during the winter makes the change hazardous. The company has placed orders for new castings for two of its snow sweepers, leaving the others for left-hand operation in case snow should come before the change is made.

Trainmen Reduced Twelve Cents an Hour

By a recent decision of the arbitration board selected under the agreement of April 28, 1921, between the officials of the Auburn & Syracuse Electric Railroad, Auburn, N. Y., and the Amalgamated employees, wages prevailing for the year ended April 30, 1921, were reduced as follows:

	Cents per hour	
	Old	New
City trainmen	60	48
Interurban trainmen.....	62	48
Freight and express trainmen	65	50½

In the case of all other employees the decrease in the cost of living was applied to the rate in effect for the year ended April 30. The results arrived at were obtained on the basis of the reduction in cost of living in Auburn, which was found to be and agreed upon as 22.6 per cent.

The board consisted of Henry J. Barrette, president of the local division of the Amalgamated Association, who represented the men; Lawrence E. Lippitt, auditor-treasurer of the Auburn & Syracuse Electric Railroad, who represented the company, and Richard C. S. Drumond, former city attorney, who acted as the chairman of the board which passed upon the matter.

News Notes

Franchise Vote in October.—The date for the referendum election in Houston, Tex., on the new street railway franchise drawn in favor of the Houston Electric Company has been changed to Oct. 4. The City Council had previously set Sept. 27.

May Request Arbitration.—It is expected that employees of the Hull (Que.) Electric Railway will soon request an arbitration board for a settlement of negotiations over a 7-cent an hour reduction in wages proposed by the management. The new wage scale which would mean about a 20 per cent cut would bring the pay back to the 1920 level. Negotiations have been going on in a quiet way with the expectation that the men would accept the reduction.

Michigan Towns Test Rate Law.—Avon township, which is in Oakland County, and the city of Pontiac have advised the Detroit United Railway that an appeal to the United States Supreme Court is being made against the decision of the Michigan Supreme Court, which in June sustained the D. U. R. in a case which had been started by Avon township and upheld the validity of the Smith rate law. Under the Smith rate law franchises between communities and electric railroads could be set aside and new rates fixed by the Michigan State Public Utility Commission. It is not expected that the case will come up for a hearing as to its final disposition before early next year.

Decides in Favor of Railway.—The judges of the State Supreme Court on appeal refused to grant an injunction upon petition of A. M. Scott and others against the Charleston (W. Va.) Interurban Railroad involving the use of Ruffner Avenue for railway purposes. This action of the Supreme Court removes the last obstacle to the new system of operating cars on Capitol Street and the east end. The proposal of the railway was fought from the beginning by residents of Ruffner Avenue and others. It is understood the new system, which will be started when a railway is built on Ruffner Avenue, will furnish three-minute service. Capitol Street would be made a one-way street for traction cars as well as Washington and Virginia Streets.

Financial and Corporate

\$40,000,000 Fair Purchase Price

Engineer for City of San Francisco Fixes This Sum as Amount Municipality Should Pay for Market Street Railway

M. M. O'Shaughnessy, city engineer of San Francisco, Cal., has submitted to the Mayor and Board of Supervisors a valuation of the properties of the Market Street Railway in which he recommends \$40,000,000 as the fair price which the city should pay for the property. He refers to the wide variation in values under previous valuations of the property and says that in his judgment it is conservative to state that the reproduction cost new less depreciation as of today cannot be less than \$35,000,000.

THE report was made at the request of the Board of Supervisors and is believed to be preliminary to the adoption of an ordinance by the board calling for a referendum on the purchase of the properties. This, if done, would be under Charter Amendment No. 30, enabling the city to acquire public utility properties and pay for same out of earnings.

VOTE IN NOVEMBER UNLIKELY

When various civic organizations urged the submission of the purchase plan to the voters and an appropriation of \$15,000 for a survey was made in the budget, it was expected that the question would come up at the municipal election next November. Officials doubt now whether this can be done, and say there is hardly time in which to pass the necessary ordinances even if the city and the corporation can come to an agreement upon the price.

Reports on valuation of the property had previously been made by the company's engineers and the California Railroad Commission. That of the latter, made in approving the reorganization plan which became operative last April, was \$41,424,961, representing physical value only. The company's engineers, on the same basis, arrived at a valuation of \$51,856,218.

In discussing the valuation of the Railroad Commission Mr. O'Shaughnessy states that the commission's valuation was consistent at the time it was made, the value being based on values in 1918, 1919 and 1920. The valuation arrived at by the city's engineer, however, covered a five-year period, from 1913 to 1917, this period having been selected as basic for the valuation which was based on labor and material costs in that period.

MR. O'SHAUGHNESSY HOPEFUL

The Market Street Railway was finally reorganized in April of this year from the old United Railroads of San Francisco. The new company has a total capitalization of \$47,973,000 as compared with \$82,411,600 par value of capitalization of the former company.

Mr. O'Shaughnessy estimates that the following economies will be obtained by municipal ownership:

Yearly saving in taxes.....	\$551,000
Damages in operation reduced by automobile and jitney regulation	50,000
Adjustment of Market St. Ry. power contract	350,000
Adjustment of car schedules with non-competitive conditions ...	500,000
Combination of work in shops, etc.	70,000
Elimination of presidents and directors, and legal expense.....	275,000
Increase in receipts from elimination of competitive jitney operation	500,000
	<hr/>
	\$2,296,000

The Municipal Railway is now paying a greater wage to its employees than the private company and Mr. O'Shaughnessy has made a careful computation of the annual increase of wages to be incurred by placing those men on the municipal scale. On this point he says:

This added expense would amount to \$1,715,000. By deducting this from the savings of unified operation an annual increase of \$575,000 in net earnings can be made. This amount with the net income from operation would at present more than meet interest at 5 per cent on the \$40,000,000 valuation which I place on the property. If the unified holding is conducted as economically and safely as the municipal railway has heretofore been operated, there is no doubt that the proposed purchase will be an advantage to the city.

HIGH IDEALS NECESSARY

Many other changes suggest themselves to the city's engineer. Of some of them he says:

Universal transfers could be adopted which would promote more car riding and increase revenues, and besides be a great convenience to the public in saving time in making trips from different portions of the city now served by the two lines. Conditions on Market Street could be improved by restricting rapid transit to the center tracks, with a longer distance between stops and confining the service to cars for the outside districts; the outer tracks on Market Street would be used for local shorter hauls and frequent stops would be made with greater safety and convenience to the public. Economies could be effected by discontinuing unnecessary car lines, as many of these now operated by the company are due to franchise requirements; new extensions of track could be made into districts now without service due to dual ownership which has heretofore restricted extensions; the jitneys should be absolutely forbidden to travel on streets now served by cars, as it is an economic waste to have a dual service for the same object.

Success of the unified ownership, says Mr. O'Shaughnessy, would, however, depend on conducting the system on the same high ideals and good business principles which have controlled the operation of the present Municipal Railway in the past nine years.

Toronto Arbitration Started

Present Value of \$20,447,612 Placed on Road by Expert for Railway—
Three Arbitrators Sitting

The board of arbitration which is to determine the amount that the city of Toronto, Ont., is to pay for the plant and properties of the Toronto Railway, taken over by the city upon the expiration of the franchise on Sept. 1 last, commenced taking evidence on Sept. 13.

The board of arbitration consists of Major Hume Cronyn, London, chairman; Sir Adam Beck representing the city of Toronto and Sir Thomas White representing the Toronto Railway. The fees of the members of the board of arbitration have been fixed not to exceed \$250 per day.

COMPANY HEARD FIRST

In opening N. W. Rowell, of counsel for the company, stated that a completed inventory of the properties and plant had been made. The railway was of the overhead trolley type, consisting of 139.03 miles of railway converted into single track, of which 129.58 were on public streets and 9.44 miles in car-houses. There were 152 special track intersections, 709 motor cars, made up of 475 double-truck cars, 253 single-truck and 251 P. A. Y. E. cars; there were also 121 trailers, 5 sprinklers, 19 sweepers and 26 repair and miscellaneous cars.

With respect to traffic 21,816,551 car miles were run in 1920; 307 cars were operated in minimum hours and 797 during maximum periods, while 197,346,726 passengers were carried and 77,911,713 transfers issued.

It was decided to limit the number of witnesses, including experts, to twenty-four for each side.

W. J. Hagenah, Chicago, specialist in the investigation of public utilities and formerly of the Wisconsin Railroad Commission, was the first witness for the company. He stated that he was given absolute charge to value the properties of the railway, employing in doing so, a staff of fifteen to twenty and going as high as forty. He stated that 19 miles should be taken up and replaced at once; 12 miles was in generally fair condition; 14 miles in better than 50 per cent condition and 45 miles in excellent condition.

AVERAGE PRICES USED

The valuation was made on the basis of the average value of labor and material for the three years up to August, 1921, because it would take three years to build the system. Mr. Hagenah set down the present value of the entire system at \$20,447,612, while the replacement value was considered at \$27,161,649.

A full account of the taking over of the railway system by the Toronto Transportation Commission on behalf of the city corporation was published in the ELECTRIC RAILWAY JOURNAL for Sept. 10.

Boston's Industrial Slump Hit Elevated Hard

The revenue of the Boston (Mass.) Elevated Railway for July was \$192,089 less than the same month last year. Expenses for the month exceeded receipts by \$142,486. On July 1 there was a surplus of \$131,985, which has since been changed to a deficit of \$10,501.

The total bonded indebtedness was \$250,000 and the bonds are to be accepted at 60 per cent of the face value on the purchase price. The court's costs, taxes, pay of Receiver George Whysall and the trustees of the road in the two years it has been in the hands of the receiver amount to approximately \$17,500. These are declared to be entitled to priority over other claims. Other claims having

court went at length into a discussion of the "present fair value" as the correct basis for rate making and concluded that since present fair value was not sought by the commission its resulting computation necessarily reduced the total valuation so substantially as to make the rate based thereon inadequate and practically confiscatory. It is understood that in considering the second appeal of the company for relief the commission did allow due weight to some of the considerations in rate making outlined by the court in its original restraining order.

REVENUE OF BOSTON ELEVATED RAILWAY

	Third Trustee Year Ended June 30, 1921	Second Trustee Year Ended June 30, 1920	First Trustee Year Ended June 30, 1919	Year Ended June 30, 1918
Revenue from fares	\$33,122,199	\$31,899,320	\$24,472,429	\$18,781,370
Revenue passengers	337,381,994	324,192,374	331,348,124	376,466,229
Rate of fare	10 cents	10 cents	5, 7, and 8 cents	5 cents

COMPARATIVE DIVISION OF EXPENSES

	1921	1920	1919	1918
Wages	\$16,753,667	\$16,381,206	\$13,554,684	\$9,147,757
Materials and supplies	2,899,983	3,321,672	4,096,538	2,680,424
Injuries and damages	627,629	627,626	805,353	817,227
Depreciation	2,004,000	2,004,000	2,004,000	352,670
Fuel	2,399,277	1,996,717	1,901,597	1,381,957
Taxes	1,306,736	1,075,497	941,612	905,033
Rent of leased lines	2,673,166	2,607,565	2,587,129	2,547,421
Subway and tunnel rentals	1,947,963	1,591,324	1,491,999	991,551
Interest on borrowed money	1,483,625	1,593,258	1,423,142	1,238,374
Miscellaneous items	54,479	69,285	37,373	16,050
Dividends	1,523,367	1,403,970	1,360,220	None
Profit or Loss	550,253	17,080	4,980,152	598,442
		Back pay	435,348	
			5,415,500	

New Company at Toledo

Light and Power Interests in \$25,000,000 Corporation Which Meets Mr. Doherty's Promises

The Toledo (Ohio) Edison Company, has been incorporated to take over the lighting and power business of the Toledo Railways & Light Company, the railway lines of which are included in the Community Traction Company, formed some time ago to take over the city railway lines at Toledo.

The new corporation is capitalized at \$25,000,000. It will include the same Power Company, the Toledo Railways & Light Company, the Toledo Gas, Light & Heating Company, and several of the smaller Doherty subsidiaries at Toledo.

The Toledo & Western Railroad, the Maumee Valley Railway & Light Company, the Adrian Street Railway and other traction interests will be kept as separate companies.

The Public Utilities Commission has authorized the new company to issue \$4,000,000 of preferred stock as provision for the permanent financing of its business in Toledo. Of this issue \$2,500,000 will be first preferred 8 per cent cumulative stock and \$1,500,000 will be 7 per cent cumulative preferred stock.

The commission has also authorized the company to issue \$13,500,000 of first mortgage 7 per cent bonds. The proceeds of this issue will be used to refund the \$12,000,000 issue of Toledo Traction, Light & Power bonds which are due in 1922. A portion of this issue will be used to remove the encumbrance from the railway property turned over to the Community Traction Company, last February.

Henry L. Doherty and the Cities Service Company guaranteed to the city of Toledo that the property now included in the system of the Community Traction Company would be freed of debt and liens before December of this year.

It is planned to unite the development of all the lighting, power, heating and artificial gas production under the new company and provide the means for extending service as the city grows.

Frank R. Coates, president of the Toledo Railways & Light Company, has sent out the call for a stockholders' meeting to be held Oct. 10 to approve of the change in name and the new financing of the company.

In a statement dated Sept. 6 Edward Dana, general manager of the company, said that this was the result of country-wide conditions affecting the company's gross business as indicated by the decrease in revenue passengers in other large cities this year as compared with last year. The figures used by Mr. Dana follow:

preference as to their order made a total of \$97,261.

Receiver Whysall has on hand cash and quick assets of the company to the amount of \$12,880. The order of the court has been concurred in by all parties interested in the disposition of the road.

St. Joseph Valuation Case Not Carried Up

Events which followed the granting of the injunction of Judge Van Valkenburgh in the federal court at Kansas City, Mo., last fall, restraining the Public Service Commission from enforcing its order fixing fares on the railway lines of the St. Joseph Railway, Light, Heat & Power Company, led the commission not to perfect its appeal in the case. For one thing the company returned to the commission, and it became necessary to grant a rate higher than the one which formed the basis of the suit. That development, in connection with other considerations, led the commission to conclude that it would not appeal from the court decision.

The grounds of the court's opinion restraining the commission from enforcing its original fare order were the wrong methods used by the commission in valuation—specifically, the use of original cost figures, and standards of prices of a past period and of a pre-war period. At the time of the court decision, which was reviewed at length in the ELECTRIC RAILWAY JOURNAL for Nov. 27, 1920, page 1122, members of the commission were quoted as saying that if the opinion was allowed to stand the whole system of rate making of the commission, affecting many utilities, would have to be made over.

In deciding the St. Joseph case the

	July, 1921	July, 1920
Interborough Rapid Transit	73,799,633	75,789,538
Philadelphia	54,031,261	63,089,650
Boston	25,279,587	26,640,614
Detroit	23,181,841	32,136,658
St. Louis	23,162,769	24,534,799
Cleveland	23,029,791	27,978,414
Pittsburgh	21,168,000	23,478,000
Baltimore	20,233,905	22,369,206
Minneapolis	18,207,344	19,882,822
Chicago Elevated	13,802,153	17,024,667
Cincinnati	8,632,780	10,175,578
Toledo	4,118,848	4,568,013

The accompanying table indicates the revenue and the division of expenses during the last four years.

Court Fixes Status of Claims Against Road Sold Under Foreclosure

The status of the various claims against the Springfield Railway, Terminal Power Company, Springfield, Ohio., and arrangements for completing the transfer of that concern to the bondholders, who have bid it in, are ruled upon by Judge Slater in the United States District Court at Cincinnati (Ohio).

To complete their purchase it is directed that the bondholders, in addition to the \$25,000 which they already have paid and the \$245,500 of the company's bonds which are to be applied as part of the purchase price, must also pay the further sum of \$84,390, in installments of \$28,126, in thirty, sixty and ninety days. The bid of W. P. Sturtevant, New York, for the bondholders' committee was \$300,000.

Traffic and Transportation

1,500,000 Fewer Passengers

Traffic Falling Off in Cincinnati
Despite Recent Reduction
in Fares

Despite the recent reduction in fares on the lines of the Cincinnati (Ohio) Traction Company, a preliminary report of the number of riders for the month of August shows a decrease of approximately 1,500,000 revenue passengers as compared with the same period last year. Figures as to the actual receipts and the exact amount of the deficit based upon the number of passengers will be ready within a short time.

Officers of the traction company, as well as William J. Kuertz, director of street railroads, appear to be sanguine that whatever deficit may have been incurred by reason of the falling off of passengers during August will be made up in September.

SATURDAY TRAVEL VERY LIGHT

The loss of revenue passengers during last month is attributed to the fact that large department stores were closed one-half day Saturdays during the summer months and also to the fact that factories shut down on Friday nights for the week-ends instead of reopening their plants for a half-day Saturdays. Records indicate the number of revenue passengers on Saturdays has been especially light.

The situation is being viewed with keen interest by the city officials, since it will have a decided bearing upon the fare in November, on the first day of which a further reduction in fares to 7½ cents is scheduled under the ordinance passed two months ago by the City Council, modifying the terms of the service-at-cost franchise under which the company is operating.

A reduction in fares to 8 cents was made possible only on Aug. 1, because the ordinance modifying the franchise provided that the payment of the annual franchise tax, to be paid by the company when earned for the current year and also for last year, was to be deferred until April 1, 1922. Furthermore this tax was not to be calculated as a deficit for rate-making purposes. This fact, together with a saving of several hundred thousand dollars by the company in the reduction of the wages of platform men, created a surplus sufficient for use to predicate a reduction in fares.

PRESENT RATE MAY CONTINUE

The modification ordinance provides in substance that unless the reductions are made on Aug. 1 and Nov. 1 the terms of the original service-at-cost franchise again become operative. In view of this situation, unless the receipts of the company during September are sufficient to take care of oper-

ating costs and also provide a surplus to wipe out the deficit for August, it is not improbable that the rate of fare will remain as it is, if it is not increased.

Commission Side Heard in New Jersey Case

L. Edward Herrmann, counsel for the Board of Public Utilities Commissioners of New Jersey, made a preliminary statement to the special statutory court consisting of Federal Judges Woolley, Rellstab and Davis on Sept. 14 before he started his argument against the Public Service Railway's appeal for an injunction which would prevent interference with the collection of a 10-cent fare.

Mr. Herrmann said:

No increased fare is going to give relief. Much falling off in profits follows each increase, and much of it is brought about by similar vicifications. You have heard described the terrible nightmare of bankruptcy and disaster.

There have been no deficits as claimed by the company. They (the Public Service) ingeniously tried to include in operating expenses interest on leases, rentals and also guaranteed dividends. Ratepayers can not be mulcted to pay these extravagant rentals or charges.

A man can't be compelled to pay excessive rents for a house just because the owner has mortgaged it for twice as much as the property is worth. If the company goes into bankruptcy it will be through its own misdeeds. All it is entitled to is a fair return on a fair value. The Utilities Board is obligated only to see that it gets this fair return. The company can appropriate it to any channel it sees fit. This issue is not before the court.

The court announced at the outset of the hearing that no decision had been reached on the appeal of the municipalities for admission as defendants. The cities claim that a 10-cent fare will be confiscatory of the rights of the people.

The commission was not entirely successful in the other issue it raised before the court at the forenoon session, that of the introduction of the 13,000 pages of testimony taken in the rate cases before the board as evidence in this proceeding. An hour's deliberation by the three judges ended in the conclusion that only such parts of the record as were pertinent would be admitted.

Inquiry Planned Into Buffalo Fare Charges

Upon the recommendation of Public Affairs Commissioner Frank C. Perkins, the Socialist member of the Buffalo City Council, the Council adopted resolutions authorizing Corporation Counsel William S. Rann to examine the books of the International Railway to determine whether the city should ask the Public Service Commission to restore the 5-cent fare. The International now charges a 7-cent fare within the city, with four tokens for 25 cents.

Commissioner Perkins told the Council that the total operating revenue of the International Railway for the first six months of the year is greater than the operating revenue of the company for the corresponding period of last year. Wages have been reduced by the company and Commissioner Perkins declared that from \$2,000,000 to \$3,000,000 is now being used out of earnings to rehabilitate the system, which has been neglected since the early days of the war.

Youngstown Adopts Pass

Unlimited Weekly Rides for \$1.25 as a
Stimulant to Increase Business—
Present Fare Nine Cents

Under the terms of an ordinance passed on Sept. 19 by the City Council of Youngstown, Ohio, supplementary to the service-at-cost ordinance under which the city street railway service is furnished, the way has been cleared for The Youngstown Municipal Railway, a subsidiary of The Pennsylvania-Ohio Electric Company, to make an eight-week trial use of the "weekly pass." If the plan proves successful in that period it will be continued as a regular feature.

The date on which the use of the "weekly pass" will start has not been definitely decided, but it is planned by the company to begin the use of the pass on Monday, Oct. 3. The ordinance was passed unanimously by City Council, both city authorities and company officials being of the opinion that the innovation will act as a stimulant to traffic in the city.

The plan for the use of the pass in Youngstown is similar to that in vogue in Racine, Wis., and other cities. The pass will sell for \$1.25 and will be good for an unlimited number of rides for the bearer within the period of a week, from Sunday midnight till midnight of the following Sunday. The passes will be good for any ride within the city fare limits at any time during the day or night, on exactly the same basis as a cash fare or the city tickets which are sold in strips of six. No transfers will, however, be issued to bearers of the passes, who, of course, will use their unlimited passes for any continuance of their rides.

The passes will be used as supplementary to the present rates of fare, which are 9 cents cash, six tickets for 50 cents and 1 cent additional for a transfer. The passes will be sold at the ticket offices of the company and on the cars by conductors and operators and will be placed on sale each week two or three days before the day on which their use will begin, so as to distribute the sale of the tickets over several days.

Street car riders and the public in general will be acquainted with the use and advantages of the "weekly pass" through newspaper advertising and street car window posters prior to and following the introduction of the use of this form of ticket.

Ten-Cent Fare Denied in Utica

Case There of Unusual Interest Because of Comment by Commission—First Important Fare Decision by New Body

Permission has been denied by the State Public Service Commission to the New York State Railways Company to increase fares in Utica from 6 cents to 10 cents. The opinion was prepared by Chairman William A. Prendergast. It was unanimously adopted by the entire commission and emphatically outlines the policy of the commission in similar cases. The ruling covers the first fare increase case of any importance to be decided by the new commission.

A STATEMENT of particular significance in the commission's opinion is as follows:

Public utilities just as other departments of business must expect to cope with periods of depression and short earnings, just as at other times they enjoy periods of prosperity and full dividends. If the public is expected to make up every deficiency in order to give a utility a good round rate of earning power, then the public is entitled to the benefit of the surplus over the agreed earning rate in times of prosperity.

On Dec. 22, 1920, the company applied for permission to set up a new rate of at least 10 cents per passenger in the territory known as the Utica zone, described as "the lines operating in the city of Utica and between Utica and the villages of Whitesboro, New York Mills, New Hartford and Clinton." Approximately 60 miles of trackage are affected by this petition. Operation in this zone is conducted under a franchise from the city of Utica and other local authorities, on the basis of a fare per passenger of 5 cents. In 1918 in consideration of acute cost conditions due to the war, permission was granted by the local authorities to charge a fare of 6 cents, which has since been in effect.

On the opening of the fare proceedings before the commission the city entered an objection to the jurisdiction of the commission, on the ground of existing franchise relations between the city and the company. This objection was overruled by the presiding commissioner, Judge Kellogg. Subsequently the city sought court intervention to prevent action by the commission, but was unsuccessful. The hearing upon the petition then proceeded.

In support of its claim to a larger return the company submitted three distinct appraisals. These it described in its brief as follows:

An appraisal based on the trend and average prices of the years 1912, 1914 and 1916 known as the (1) pre-war valuation. (2) An appraisal based on average prices from the years 1915 to 1919 inclusive. (3) An appraisal reflecting 1920 prices, known as the reproduction cost new or present-day valuation.

The commission points out that the company's proof was therefore confined to a single element of "fair value," namely, cost of reproduction, new, on the basis of (1) prices prevailing before the war, (2) prices in 1915-1919 and (3) prices in 1920. The results of the three valuations were as follows:

	Field Costs	Total Cost New
Pre-war prices.....	\$3,977,700	\$6,168,456
1915-1919 average.....	5,786,567	8,898,312
January 1, 1921.....	7,801,837	11,940,796

In commenting on these figures the commission says:

In setting up these appraisals the company's expert, Mr. Campion, has apparently sought to establish a wholly theoretical estimate of value. The element of original cost seems to have been largely discarded. In addition to this the place of a depreciation account in the calculation of "fair value" has been entirely ignored. It is not going too far to say the company appears to have rested its case upon the foregoing claimed reproduction values. It cannot be presumed that the commission is confined to any one such type of valuation. The judgment of courts up to this time clearly states it is not. In addition, business experience and common justice to the public demand that it should not be. To reiterate an argument which has been used very frequently of late by regulatory bodies it would be grossly unfair to the public to use the extraordinary dislocation in prices due to a world war as the groundwork for the fixation of a proper rate base.

The courts have repeatedly ruled that the estimated cost of reproduction is merely one method of reaching just decisions. It cannot be used without reason and its use in a period when prices have been subject to such violent fluctuations as have characterized the past five years would leave little of fairness in the term "fair value," which means essentially the just amount on which a public utility company is entitled to earn a return.

The commission regards the city's evidence on the question of the value of the property employed by the company to be of a much more definite character. On this point it says:

In its computation the city has used the actual figures given by the company in years past in its sworn tax reports, figures used by it in reports filed with the Public Service Commission, and in addition has as to certain periods taken the exact cost figures as they appear upon the company's books. For these reasons the city's valuations are based upon determinable quantities. Through its experts it has submitted evidence of the actual cost of the railway property used in rendering service in the Utica district and proved that the normal reproduction cost (pre-war) would not exceed the actual cost. So far as the tangible property is concerned, there is no considerable difference between the city's figures and the company's pre-war field cost figures; but the company fails to make any deduction for depreciation or exhaustion of capacity for service of physical property, and it makes larger additions for intangible values, thus:

	City	Company
Road and equipment—cost	\$3,500,472	3,695,077
Accrued depreciation.....	1,355,721	none
Present value.....	\$2,164,751	\$3,695,077
Materials and supplies.....	125,000	282,623
Cash—working capital.....	.....	51,855
Interests during construction.....	80,000	546,303
Taxes during construction.....	10,000	82,134
Organization and development.....	40,000	.....
Total.....	*\$2,429,751	**\$6,168,456

* Includes \$10,000 added for bridge at final hearing.
** The total includes \$121,779 for preliminary expenses, \$254,942 for cost of financing and numerous other items, including \$764,825 going concern value.

The large "overheads" in the company's valuation are based on the theory that the property is to be constructed as a whole, whereas the city's overheads are based largely on the company's records, which show that the necessary engineering, law and administration services in connection with construction are furnished by

the regular staff of the company whose salaries are charged to operating expenses. If they are now treated otherwise it would be necessary to revise the operating expense accounts by excluding a portion of the salaries of the officials concerned and such revision would produce larger net earnings. When a company has once charged off an item as expense it has been reimbursed by the public, which is under no obligations to pay interest upon the item perpetually on the impossible hypothesis that the property is to be reproduced at some one time.

A point is made by counsel that owing to the inadequacy of rate of fare the company has not received a proportionate part of the cost of its property equal to the depreciation or exhaustion of capacity for service. The proof of this point is not convincing. From the exhibit filed by the company subsequent to the last hearing, it appears that the company's earnings were amply sufficient to provide for depreciation as well as an adequate return from 1907 to 1917, inclusive. This is not the case, however, since 1917, owing to the greatly increased cost of material and labor. Seven per cent on the original investment (1 per cent for sinking fund and 6 per cent for return) would amount to approximately \$260,000 a year or \$780,000 for three years, as compared with a stated income of \$346,000 or a deficiency of \$434,000. The war conditions of the year since April, 1917, are such as to require of the commission special consideration. The calamity of the war, the impossibility of obtaining labor and material of the proper character except at abnormally high prices, and a limited amount of such as it was possible to obtain, resulting in unusual burdens upon all enterprises of a business character, furnished a reason for assuming that this deficiency of \$434,000 under such special circumstances should be regarded by the commission for the present proceedings as a part of the rate base which will then amount to \$2,864,000, or 8 per cent on the amount \$229,120, although it is not conceded that 8 per cent is an irreducible allowance.

REVENUES AND EXPENSES ALLOCATED

The company's allocation of revenues and expenses to the Utica 6-cent fare zone was as follows:

	1919	1920
Operating revenue.....	\$1,200,335	\$1,288,523
Operating expenses.....	1,029,334	1,169,034
Net operating revenue..	\$171,000	\$119,489
Taxes.....	73,935	65,000
Operating income (available as return on investment)	\$97,065	\$54,489

The commission said that on the basis of the 1920 income the company would fall short of the amount required for an 8 per cent return on investment and adequate provision for depreciation by the sum of \$196,631, as follows:

Return on investment 8% on \$2,864,000.....	\$229,120
Additional for depreciation.....	36,000
Total.....	\$265,120
Operating income 1920 ..	\$54,489
Adjustment.....	14,000
Net addition to be paid by passengers.....	\$196,631

In this connection the commission said:

It must be borne in mind that we are not dealing with the conditions of 1920, nor the previous abnormal years, but with the present period which is one of profound economical adjustment. It is with this pregnant fact before us that a decision in this and similar cases must be made. The fact is that the proceeds of revised wage relations has already reached this company.

In estimating reductions the commission said it considered only those which were applicable to personnel and did not take into account the reductions in the cost of supplies. As the commission

sees it the situation resolves itself into this:

Net addition to be paid by passengers...	\$196,631
Adjustment for payrolls of January-April, 1920.....	66,690
	\$262,721
Less expenses which it is estimated will be saved:	
In wages (arbitration award).....	\$74,000
From one-man car operation.....	95,000
On materials and supplies.....	35,000
	\$204,000
	\$58,721

In conclusion the commission said in part:

It must be understood that even if the company should fail to make up this deficit of \$58,721, it would still be earning at the 6-cent fare approximately 6 per cent of its investment and on previous deficiencies and earnings. In addition to the 6 per cent, the company would also be getting a further allowance of \$36,000 for depreciation. Under these circumstances, there would be no justification for any increase in fare. Public utilities just as other departments of business must expect to cope with periods of depression and poor earnings just as at other times they enjoy periods of prosperity and full dividends.

If the public is expected to make up every deficiency in order to give a good round rate of earning power then the public is entitled to the benefits of surplus prosperity. While a franchise rate once fixed must not be presumed to be immutable, the reasons advanced for changing it should be of the most controlling character. In this case the local authorities have already conceded an advance in passenger fare from the original franchise rate from 5 cents to 6 cents. The local authorities, therefore, cannot be charged with failure to appreciate the additional revenue requirements of the railroad due to the war conditions.

With the subsidence of these conditions it is not in order for the railroad to be seeking further advances, especially in the form of its present utterly extravagant request for a 10-cent fare. On the other hand, it is the duty of the company so to administer its affairs through economies and improvements that the fare to be charged to the public will be at the lowest possible minimum consistent with good service and an adequate return to the investors.

Emergency Rate Case Hearing Postponed

Appeal proceedings by the city of Minneapolis from the order of the Minnesota Railroad & Warehouse Commission granting the Minneapolis Street Railway an emergency increase in fare from 6 cents to 7 cents have been postponed by Judge E. S. Montgomery of the District Court in Hennepin County to Oct. 24. The restraining order was issued by the court on Sept. 3.

Postponement was asked by the railway company to permit it to produce certain witnesses necessary to proper presentation of its case. The company suggested thirty to ninety days. The city will object to the introduction of figures and testimony at that time other than to show that the company cannot earn enough on the rate of 6 cents to keep up reasonable service and meet fixed charges. Other data will be for presentation before the state commission at a future hearing as to a permanent rate based on valuation of the company's property, a work on which experts for the city and railway company have been engaged for some time.

Interurban Fares Fixed Pending Valuation

An injunction has been issued by the Ingham Circuit Court restraining the Detroit (Mich.) United Railway from collecting more than 1½ cents a mile over four of its interurban lines. The action was taken under the so-called Gaspie bill, which supplants the Smith rate bill under which utilities had been operating in the State. The petition for the injunction came as a result of the company's failure to file a new rate schedule as demanded by the new law. Under the Gaspie bill the Detroit United Railway is not permitted to charge over 1½ cents a mile on its lines until such time as the Michigan Public Utilities Commission has had an opportunity to complete an inventory of its properties and business and fix a permanent rate of fare.

The Gaspie bill was framed and put through the last Legislature by Representative A. B. Gaspie, of Pontiac and Oxford. Representative Gaspie was assisted in the framing of the bill by Judge Glenn C. Gillespie, who has been actively engaged in the prosecuting of several cases against the Detroit United Railway to determine whether that corporation had the right to override existing franchises which were disregarded at the time the Smith rate law went into effect two years ago.

In explaining the changes in fares, Assistant General Manager E. J. Burdick is reported to have said:

The new rates on all the lines will differ materially from those that have been in effect through the so-called Smith bill, which is supplanted by the Gaspie measure. The Gaspie measure calls for a temporary reduction on all the Detroit United Lines, according to the utilities commission, to a rate of 1½ cents a mile instead of the 2-cent rate now being charged. While this will largely decrease the cost of riding on the interurban lines, there will, however, be some cases in which the cost of riding will be increased. These increases come through the abolition of the 5-mile zone around the several cities involved, this zone having been created by the Smith bill. In this zone the 2-cent rate was not permitted to apply, except on through fares, and original franchise fares prevailed. There is no zoning outside of the limits of city railway systems under the Gaspie bill.

In connection with this matter the Michigan State Public Utilities Commission has ordered a new appraisal of the properties of the railway for use as a basis of fixing fare rates on its interurban lines. The work will require about six months. Representatives of the company proposed that the commission use the Cooley appraisal but this was declined. Professor Cooley made first appraisal in 1915 and since then the original data was supplemented from time to time to make it an up-to-date report.

One-Man Cars for British Columbia

One-man cars will probably be installed in the Vancouver and Victoria systems of the British Columbia Electric Railway shortly. Ten one-man safety cars will probably be purchased to provide additional rolling stock while

the rule of the road is being changed at the end of this year. At present it is proposed to operate one-man cars only on shuttle lines in Vancouver, but downtown lines in Victoria will probably be operated the same way at an early date. Representatives of the platform employees have approached the premier of the province, but it is not expected any difficulties will be placed in the way of the company from that source.

Fares Raised Again at Toledo

For the second time within six weeks the fare of the Community Traction Company, Toledo, Ohio, has been increased. Tickets will now sell at the rate of six for 40 cents, or 6½ cents each, as against a rate placed in effect on Aug. 1 of eight tickets for 50 cents, or 6¼ each. The cash fare of 7 cents and the 1-cent charge for transfers remains the same, to which point it was raised from 6 cents cash and 1 cent for transfers on Aug. 1.

The company can change its rate of fare every ten days if necessary. It is operated under an ordinance which provides for whatever rate of fare may be necessary to maintain funds for replacements, working capital and amortization and to pay interest charges on its bonds and dividends on its preferred stock. A committee, composed of city and company representatives, meets every ten days to see if the profits are large enough or too large and has full authority to change rates any time it sees fit.

Scenic Route Drops Trolley for the Bus

The Niagara Gorge Railway, Niagara Falls, N. Y., has discontinued its trolley service between Niagara Falls and Lewiston and between Lewiston, Fort Niagara and Fort Niagara Beach. Outstanding tickets, the company announces, will be accepted for passage on the Gray bus lines which are also operated by the Gorge Company. The buses will continue to operate during the fall and winter months on a two-hour schedule.

Explaining its action, the Niagara Gorge Railway says that increasing use of automobiles has reduced passenger traffic over its lines to such an extent that operation now is unprofitable. The company, however, will continue to operate the Niagara Gorge belt line service in co-operation with the Park and River division of the International Railway, Buffalo. On this portion of the line the difficulties of operation would be great during the winter while the tourist traffic would naturally be very light.

A franchise exists for the operation of the Lewiston-Youngstown division of the road which requires the operation of at least two cars a day. On the Lewiston-Falls division the franchise allows for a suspension of service between Oct. 1 and June 1.

Ten-Cent Fare Petition Renewed

The Helena Light & Railway Company, Helena, Mont., has renewed its application before the State Railroad Commission for a cash fare of 10 cents with tickets at 6½ cent. The company claims that the 8-cent rate with tickets at 5 cents has failed to bring the revenues up to the expenses and further relief is needed.

When the company petitioned last May, the fare was 7 cents. At that time in its decision the commission ordered an 8-cent rate for a period of ninety days.

The proposed 10-cent cash fare applies to the city alone. To East Helena the proposed rate is 15 cents.

Reference to the 8-cent fare award was made in the *ELECTRIC RAILWAY JOURNAL*, issue of May 28.

Jitneys Appear in Cincinnati

A new bus line has made its appearance in Cincinnati. The "jitneys" are being operated by three local men from Rose Hill to the heart of the city. E. F. Hagaman, William Thompson and Fred Hershbar, after consulting with Mayor John Galvin and other city officials as to the legality of the procedure, made their appearance on Aug. 27 with three automobiles. The promoters disclaim any connection with the Detroit, Mich., promoter who recently received considerable publicity on a similar project, which never materialized.

Mr. Hagaman said the new interests intend to increase the service by the addition of more cars and new routes running over the other arteries of Cincinnati as soon as their business will permit them to do so. According to the present schedule the "jitneys" start at 7 o'clock in the morning and operate at twelve-minute intervals until midnight, Sundays included.

One-Man-Car Issue Before Commission

In a final effort to avert, if possible, the installation of one-man cars on the lines of the Tri-City Railway on the Illinois side of the Mississippi River, Mayor H. M. Schriver and City Attorney John L. Scott of Rock Island, Ill., have been in Chicago several days where they are fighting the case before the Illinois Public Utilities Commission. The officials of the Tri-City Railway are attempting to show that the installation of one-man cars is imperative if the Tri-City Railway is to operate on a profit. Some time ago the Mayor and the City Commission of Rock Island rejected the one-man car type which caused the company to take the case to the Illinois Public Utilities Commission. The company also asks permission to operate the same type of cars in Moline, East Moline, Silvis and Milan. Officials of these cities have joined the Rock Island mayor in the matter. The company first installed

one-man cars on the Bridge Line and asked the Rock Island Commission to grant thirty days trial. The company then asked permission to extend the service on the Third Avenue and the Long View lines.

State Powerless Before Jitneys

There is no law for the regulation of rates and practices of jitneys operating between cities and towns of Oklahoma and the State Corporation Commission cannot control such carriers. This conclusion was recently reached after an investigation into the laws relating to transportation companies conducted by E. F. McKay of the commission.

The investigation was started at the behest of the mayors of Dewey and Bartlesville, who stated in their application that they were unable to control the buses operating between both cities and wanted the commission to fix rates and schedules. The matter was referred to in the *ELECTRIC RAILWAY JOURNAL* for Sept. 3.

Safety Cars for Peoria

Twenty standard Birney safety cars are to be installed by the Peoria Railway, a subsidiary of the Illinois Traction System, during September, for the complete equipment of three lines. These will be the first cars to be operated with one man in Peoria. The installation has been made possible only through a revision of the contract with the local union and an amendment to a city ordinance, both of which contained clauses requiring two-man operation of all street cars.

The new safety cars will be installed on the basis of an approximately 25 per cent increase in number of cars. The Illinois Traction System is now operating cars of the light weight safety type in Champaign and Decatur, Ill., Wichita and Topeka, Kan., and has one-man operation of older cars in a number of other towns.

Guaranteed 6 per Cent Looks Good to Them

The Cleveland (Ohio) Railway has accepted a new franchise for extending its lines on St. Clair Avenue from its present Nottingham Road terminus to Bliss Road, a distance of 1½ miles. Construction is to be begun during the next few months. Financing of this extension was a problem that looked to be unsolvable until owners of industrial plants in the territory touched by the extension stepped forward and agreed to buy the company's 6 per cent stock at par. The stock is now selling on the open market around 86, but provision in the company's grant forbids its sale by the company at any figure under par. As the people refused to sanction an increase in the dividend rate to 7 per cent, the company has been unable to finance any other extensions through the sale of stock.

Transportation News Notes

One-Man Cars Prohibited—The Macon Railway & Light Company, Macon, Ga., has been restrained from using one-man safety cars on lines of heavy travel. The City Council first authorized this method of transportation and later rescinded its order.

Fares Back to Five Cents—The City Council of Ironwood, Mich., has voted to reduce the fares on the lines of the Ironwood & Bessemer Railway & Lighting Company from 6 cents to 5 cents. This is the second reduction in three months. The fares were advanced to 7 cents last fall.

Ten Cents Cash Suggested—The Tri-City Railway & Light Company is reported to have suggested to the city of Muscatine a fare of 10 cents, with books of tickets at 50 cents which would entitle the holder to a 5-cent fare. The effect would be to require the occasional rider to pay a rate commensurate with the service he received, while retaining to the regular patron the benefit of the low fare.

Seven Cents in Phillipsburg—The Phillipsburg (N. J.) Transit Company has received an order from the Public Utility Commission allowing it to raise the fare from 5 to 7 cents within the town limits. The petition for increased fares was filed on May 4, 1920, and was opposed by the municipal authorities on the ground that the service given by the railway was not up to the standard called for under its franchise ordinance.

Tokens Replace Tickets—The Louisville (Ky) Railway has replaced its paper tickets with metal tokens about the size of a dime. The tickets were sold in strips of five with receipt attached for 35 cents. The tokens will be sold at the same rate while the envelope which contains them is a receipt for 35 cents, and can be used by the patron in the event that the city wins its 5-cent fare suit. In this case the company will have to refund 2 cents on each fare represented by the receipts.

Court Restrains Jitneys—Electric railways cannot withstand the competition of the jitneys is the opinion of Justice Frank S. Katzenbach, of the New Jersey Supreme Court. The jurist made this announcement during the mandamus proceedings involving ten jitneys operating between Salem and Pennsgrove. The Salem & Pennsgrove Traction Company brought about the proceedings. It claims that the jitney men had no licenses from the Board of Public Utility Commissioners. Justice Katzenbach upheld the railway and said that the jitneys would eventually drive the traction companies out of business. The jitney men must now suspend operating between the two towns until their applications are approved by the Board of Utility Commissioners.

Personal Mention

Heads Mexican Railroad

H. B. Titcomb, Vice-President of Pacific Electric, Is Chosen President to Succeed Col. Randolph

Herbert B. Titcomb, vice-president of the Pacific Electric Railway, Los Angeles, Cal., was chosen president and director of the Southern Pacific Railroad of Mexico, to fill the vacancy caused by the death of Col. Epes Randolph on Aug. 22, 1921. Mr. Titcomb will have headquarters at Tucson, Ariz., and at Empalme, Mexico. The Pacific Electric Railway is a Southern Pacific subsidiary.

Mr. Titcomb, who was elected vice-president of the Pacific Electric Railway, with headquarters at Los Angeles, but three years ago, has been the executive in charge of that property, for



H. B. TITCOMB

since his assuming this position President Paul Shoup has had his office in San Francisco as operating executive of the Pacific system of the Southern Pacific. Mr. Titcomb, in rising to occupy this important place in the transportation world, has earned his advancement step by step through his own individual effort and because of his thorough knowledge of every phase of railroading.

There is a very large field for Mr. Titcomb in his new position with the Southern Pacific, as he is, with his vast experience, most capable to handle the new work before him. In his new capacity Mr. Titcomb is expected to build up the system which spreads its tentacles fan-wise through old Mexico—the system which was wrecked and nearly ruined by the Mexican revolution which preceded the Obregon administration. Countless miles of roadbed were destroyed and the work of rebuilding started by Colonel Randolph will be carried on. Service which became intermittent must be restored. These tasks lie within the keeping of the road's new chief executive, whose

work in handling the Pacific Electric affairs during the three years at the head of its organization has been very commendable.

No one has at this time been appointed to the post vacated by Mr. Titcomb with the Pacific Electric lines.

Mr. Titcomb has spent thirty years of intensive service with the Southern Pacific Company. Graduating from Cogswell Polytechnic College in 1891 he entered the service of the Southern Pacific as a draftsman, working up from this position to assistant engineer of the construction division in 1898. He was appointed roadmaster of the Western division a year later and was successively roadmaster of the Shasta and Sacramento divisions from 1900 to 1904. After serving as assistant resident engineer he held a like position until 1906 at San Joaquin, and at Los Angeles from that time until 1909. Mr. Titcomb was then promoted to district engineer at Los Angeles, holding this position until 1914, when he was made maintenance of way assistant to the assistant chief engineer at San Francisco. In 1917 he became superintendent of the Stockton division, going from there to Los Angeles to become vice-president of the Pacific Electric.

Mr. Titcomb was born in Indianapolis, Ind., in 1871, but as a small boy he came to California and located on a farm with his parents in Modesto.

Mr. Smith Resigns from McGraw-Hill Company

F. E. Smith, having finished the work for which he was especially engaged about eighteen months ago by the McGraw-Hill Company, Inc., has resigned his office as controller of the company. He is returning to Fort Myers, Fla., where he has real estate interests and where he will resume his connection with the First National Bank of Fort Myers, which he gave up in 1918 to join the Emergency Fleet Corporation. Mr. Smith is a past president of the American Electric Railway Accountants' Association, and was for fifteen years auditor of the Chicago Union Traction Company and of its successor, the Chicago Railways. He resigned from the Chicago Railways in 1914 when he moved to Florida. Mr. Smith's special work with the McGraw-Hill Company, Inc., was to prepare and put into operation a system of accounts including monthly cost statements.

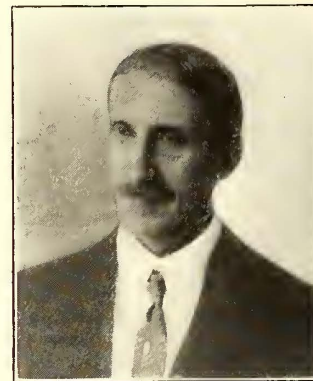
M. B. Baer, formerly chief clerk of the traffic department of the Bamberger Electric Railroad, Salt Lake City, Utah, has been appointed general soliciting agent for the road. Mr. Baer has been in the employ of the company for the past five years. The position of chief clerk will be filled by Loney Flint, a newly added member of the personnel.

Mr. Cooper Resigns

Has Been Secretary of Southwestern Electrical & Gas Association for Nine Years

H. S. Cooper, who has been secretary of the Southwestern Electrical & Gas Association for the past nine years and has also been a public utility advisory engineer in Dallas, has resigned his secretarial office. He is planning now to take a vacation to which he is undoubtedly entitled after thirty-five active years in the public utility business. Mr. Cooper was one of the organizers of the Southwestern Electrical & Gas Association and served a term as president before he became secretary in 1912.

Mr. Cooper is a native of the Isle of Wight in England, where he was born in 1856. In 1876, after he had moved to America, he began the manufacture of agricultural machinery and shortly thereafter entered the electrical field. In 1893 he was appointed general manager of the Schenectady properties of the Electrical Development Company,



H. S. COOPER

which consisted at that time of the electrical and gas lighting and the railway systems of Schenectady, all of which were then in the hands of a receiver. Later these properties were reorganized and placed on a paying basis by Mr. Cooper. Subsequently he directed the rehabilitation of the Ithaca (N. Y.) Railway, and later became connected with the Electrical Development Company in New York. In July, 1904, he accepted the position of general manager of the Galveston City Railway, and continued with that company and its successor, the Galveston Electric Company until 1910. About this time he was retained to supervise the design and construction of the new Hotel Galvez at Galveston. In 1912 he was elected secretary of the Southwestern Electrical & Gas Association.

New York Commission Appoints Mr. Vanneman Chief Engineer

The New York Public Service Commission on Sept. 20 announced the appointment of Charles R. Vanneman as chief engineer of the commission. Mr. Vanneman was with the old Public

Service Commission of the Second District up to the time of the creation of the present commission. He was appointed in 1910 to the old commission as inspector of transportation. His new position as chief engineer places him in charge of engineering and inspection work for the commission of all steam railroads, street railroads, grade crossings and electric light, gas, telephone and telegraph companies throughout the state.

A Public-Spirited Service

Frequently, indeed, are the virtues of the street railway manager extolled in the daily press. It might be claimed that they have none worthy of mention. Perhaps they haven't, but they just succeed without them. However, there is a little appreciative and sympathetic paragraph that appeared recently in the *Boston News-Bureau* showing that it has some realization of what transportation men have been confronted with during the past few years:

There is a man in Boston who is doing valiant service in the public interest whose work is not receiving the praise it deserves. Reference is made to Homer Loring, who, for a paltry salary of \$5,000 as trustee, is struggling to keep the Bay State Street Railway on its financial feet. The employees, the public and the security holders are quick to condemn him for any situation which doesn't happen to fit in with their own particular idea of how to run a street railway. Mr. Loring courageously sticks to his job and doesn't allow ignorant criticism to "get him." He did not accept the thankless task because he wanted it; he doesn't need the salary and he is on his third year of service, although he had agreed to accept but one. He will probably retire at the end of the current year and the road will lose one of its real assets. He has long been an advocate of "service at cost" and it is to be regretted that with the generally disturbed conditions of business since the property was reorganized, his theory has not had a fair chance to demonstrate its possibilities.

M. D. Payne, who has been superintendent of transportation in Gadsden division of the Alabama Power Company for several years, has been transferred to Duncan's Riffle, Ala., having been sent there to help in railway construction.

Charles L. Edgar, president of the Edison Electric Illuminating Company, Boston, has been elected president of the New England section of the N. E. L. A. Mr. Edgar has been prominently identified with N. E. L. A. work, both in the national and local organizations, for a number of years. He has served several times as vice-president of the N. E. L. A. and was president in 1903.

E. Arnold has been appointed master mechanic of the Cleveland Alliance & Mahoning Valley Railroad, Ravenna, Ohio. He is the successor to W. C. Carter, who recently resigned. Mr. Carter has not as yet accepted any other connection. Mr. Arnold was at one time connected with the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, having entered their employ in 1904. He remained there until September, 1919, when he resigned to go with the National Tube Company, Lorain, Ohio. It was the latter company that he has just left to become master mechanic of the Cleveland, Alliance & Mahoning Valley Railroad.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Cut in Cement Prices

Reduction Made of 30 Cents a Barrel—
Production During August
Increased

Announcement was made last week to the effect that manufacturers have taken off 30 cents a barrel on the price of cement. Although there had been reason to suspect that some price change might occur before the first of the year the trade had not been expecting it to come so suddenly nor with so much precision. It became effective simultaneously with the issuance of the announcement, first by the Atlas Portland Cement Company, and was immediately followed by similar price cuts by other cement manufacturers.

The dealers immediately followed suit with a reduction in price to their customers. Instead of the quoted price today being \$3.00 to \$3.20 a barrel, the dealers are now asking \$2.90.

The reason for the price cut, it is said, is that important savings have been made by the Atlas Portland Cement Company in the cost of manufacturing its product. It has passed the benefit of these savings on to its customers. These savings have been effected by greater efficiency among the mill employees, resulting in lower costs of production. Coal and other raw materials are cheaper.

Some of the biggest buyers stated that as the new cut narrowed manufacturers' margins almost to the vanishing point, a condition of stabilization might soon be expected as far as prices were concerned. The prediction was made that by spring cement prices would rebound. In fact, the general trend of the market continues to be toward a higher price level in spite of the fact that normally prices begin to weaken at the approach of autumn.

Production and shipments of Portland cement in the United States continued to increase during August, 1921, and, according to available statistics, scored new high records for that month. The August production exceeded the average for August, 1917-1921, by about 15 per cent. Production for the first eight months of 1921 was about 99 per cent. of the quantity produced during the corresponding period of 1920 and exceeded the average for the first eight months of 1917 to 1921 by about 8.5 per cent.

As is usual in summer, the August shipments exceeded production, and the total for the eight months just ended was equivalent to more than 99 per cent of the record quantity shipped in the first eight months of 1920. The average for the same period during the five years 1917-1921 was exceeded by about 9.5 per cent.

Stocks of finished cement at mills at the end of August were approximately 8,280,000 bbl., compared with 8,941,000 bbl. on Jan. 1, 1921, and with the average of about 9,600,000 bbl. for August during the last five years.

Higher Steel-Sheet Base Does Not Affect Electrical Sheets

Toward the end of last week most of the prominent independent manufacturers of sheets advanced their prices \$5 per ton. Black sheets went from 2.75 cents to 3 cents, galvanized from 3.75 cents to 4 cents, and blue annealed from 2.25 cents to 2.5 cents per pound, Pittsburgh base. Considerable booking was done before the old price was cleared off the boards. At this time the leading sheet producer has not made any advance in price to the new bases taken by the independents.

As far as can be learned, there has been no advance in electrical steel sheets for magnetic use. This market is still quiet, although it is reported better than it was in the early summer. Under this condition it is considered unlikely that a higher price will be placed on it at this time unless it reacts in that direction through the influence of the general sheet market.

Gear Cases in Good Demand

Although one or two manufacturers of gear cases report that the demand for their product is still below the average and that electric railways seem to be making no attempt to provide for their winter needs, the majority of producers have found conditions considerably more favorable and are making what are considered good sales. As has been the rule in the electric railway industry for the past few years, their purchases have been only of sufficient volume to satisfy current needs. However, this volume of buying is said to represent a sizable total.

Under the present condition of the industry it appears as though activity in the gear-case line had come early. Undoubtedly it has to a certain extent and some give the explanation that requirements to replace those lost by breakage last winter were practically nothing, as track and roadway conditions were exceptionally favorable. Since this winter demand was almost negligible, and railways in most cases kept buying so close to actual needs that they were not left with heavy stocks; they are now obliged to replace much equipment that will not survive any longer. Also these advance orders indicate that some railways are in slightly better financial condition and that some money is being expended in

anticipating the winter's needs, especially for equipment that has been neglected and is likely to be wanted on short notice.

A good volume of advance orders is yet expected from lines that have only covered their present needs, and with the raw material supply improving and a constantly better attitude on the part of labor it is hoped that prices may be reduced. Prices under present conditions, however, are as low as it is possible to make them, manufacturers state. Stocks are good on both sheet steel and malleable iron cases, consequently deliveries are not awaiting any manufacturing processes. The fact that numerous inquiries are incoming is certainly indicative of an ever improving market.

More Interest in Labor Saving Shop Tools

The fact that some dealers and manufacturers of labor saving tools and machinery such as coil winding, armature banding and commutator slotting machine report numerous inquiries for this type of shop equipment can be interpreted as indicating that whenever possible electric railways are anxious to provide themselves with such apparatus as will enable them to lessen maintenance and repair costs. The tendency, it is reported, is to purchase and install these labor saving devices because the beneficial effect of their use is quickly apparent in respect to their high quality of work, labor saving and the decreased time rolling equipment is out of service.

As far as manufacturing conditions are concerned, there have been no changes recently, although it is stated that readjustments will be made as soon as costs permit. Deliveries can be made in a reasonable time, since all raw material is readily obtainable. Plants turning out this sort of machinery are running at from one-third to one-half capacity.

Electrical Materials Little Affected by Higher Cotton Prices

With the higher cotton prices which have been holding quite steadily for the past two weeks at just under 20 cents a pound, there has been some inquiry as to whether or not certain electrical materials containing cotton have reacted to higher levels or are liable to go there in the near future. So far as can be learned, there has been no advance in general. The exceptions found are in flat insulations. Certain woven white tapes have been marked up 4 per cent, and one brand of sheet varnished cambric is reported 15 per cent higher. No change was noted in varnished cambric tape, insulated wires and cables or non-metallic flexible conduit. Local reports of higher prices on loom and insulated wire are undoubtedly the result of local conditions in distributing channels and not of the increase in raw material prices.

Rolling Stock

British Columbia Electric Railway, Vancouver, B. C., will probably purchase 10 one-man safety cars to provide additional rolling stock while the rule of the road is being changed at the end of the year from left-hand running to right-hand running.

Holyoke (Mass.) Street Railway states that it expects to purchase 2 motor buses in the near future. No information is given in regard to the type or seating capacity of the vehicles that it contemplates ordering nor is any mention made of the kind of service in which they will be employed.

Track and Roadway

Boston (Mass.) Elevated Railway has placed an order for 900 tons of girder rails, 200 tons of standard T rail and 1,250 pairs of rail joints. The Bethlehem Steel Company will supply this material.

Houston (Tex.) Electric Company will start on improving its lines if the new franchise is approved by the city at the election on Oct. 4. This statement was recently made by Luke C. Bradley, district manager of the Stone & Webster Company in Texas.

Tulsa (Okla.) Street Railway and the Oklahoma Union Railway will rearrange their routings so as to utilize the under-grade crossing at Quannah Avenue. This crossing was recently ordered constructed by the State Corporation Commission. The order required the City of Tulsa and the Missouri, Kansas & Texas Railway to join in the construction of two crossings over the Katy right of way in Tulsa.

Chattanooga Railway & Light Company, Chattanooga, Tenn., is rebuilding its Alton Park line from Main Street to Twenty-Eighth Street with 6-in. 100-lb. rail, which represents 4,981 ft. of single track and 286 ft. of double track. The East Chattanooga line is being rebuilt from Jefferson to Stewart Street with 4½-in. 70-lb. rail. It involves a length of 1,228 ft. of double track and 5,341 ft. of single track.

Portland Railway, Light & Power Company, Portland, Ore., recently completed reconstruction and improvement work on East Twelfth Street, and the intersections of East Eleventh and East Twelfth and Hawthorne Avenues, at a cost of \$60,000. A number of carlines have been re-routed and in many cases the installation of new curves and other special work has eliminated the use of switches and cross-overs. The company also has under way other reconstruction work that will cost \$36,000.

Columbus Railway, Power & Light Company, Columbus, Ohio, has contracted for and expended in general improvements \$2,908,498 since the present fare ordinance became effective (April 3, 1920), according to a recent statement by C. L. Kurtz, president of the property. Doing away with overhead high-tension wires and substituting underground conduits in the downtown section have cost \$650,000. An expenditure of \$381,000 was made for repairs to the intersections of Chittenden Avenue, Naghten, Chestnut and Spring Streets with Fourth Street. Increasing the capacity of power stations has cost \$1,315,000 and new substations have cost \$450,000.

Power Houses, Shops and Buildings

Dallas (Tex.) Railway is installing new concrete pits in its repair beds at the East Dallas carhouse. These pits will greatly facilitate repair work.

Pacific Electric Railway, Los Angeles, Cal., proposes to build a freight house and station on Philadelphia Street just west of Whittier Avenue, Whittier.

Harrisburg (Pa.) Railways recently placed a contract for two Heine boilers of 600 h.p. equipped with Coxe stokers and also conduits for new coal bunker at central power station. These boilers are expected to be in service by Jan. 1, 1921.

New Orleans, La., H. K. Johnson, builder of the Orleans-Kenner interurban line has filed application with Commissioner Paul Maloney of the Department of Public Utilities for a franchise for an electric light and power plant in the city of New Orleans.

Boston (Mass.) Elevated Railway has applied to the Public Utilities Commission for permission to establish a station and shelter, with approaches, tracks, etc., adjoining Lechmere Square, Cambridge, for the convenient transfer of passengers between cars operating through the Boylston Street Subway, Tremont Street Subway and over the viaduct from the North Station in Boston to Lechmere Square in Cambridge.

Professional Notes

Coverdale & Colpitts, consulting engineers, 66 Broadway, New York, announce the engagement as a member of their staff of George W. Burpee, formerly managing engineer of Westinghouse, Church, Kerr & Company, and lately of its successor, Dwight P. Robinson & Company. Mr. Burpee is a member of the American Society of Civil Engineers and of the Engineering Institute of Canada.

F. H. Sauter, formerly associate editor of the Locomotive Dictionary, has accepted a position with Gibbs & Hill, consulting engineers, New York City. His work with this firm will have to do with the development of railway electrification. Mr. Sauter was connected with the General Electric Company from 1894 until 1903, when he joined the Schenectady Railway as assistant master mechanic. At one time he was also in the service of the American Locomotive Company, Schenectady, N. Y., where he held various positions including those of designer of steam and electric locomotives.

Trade Notes

George W. Thomas, president and co-founder of the R. Thomas & Sons Company, East Liverpool, Ohio, manufacturer of insulators, died on Aug. 7, 1921, at the age of seventy.

Automatic Reclosing Circuit Breaker Company of Columbus, Ohio, has announced the opening of a Philadelphia office at 1613 Chestnut Street, Philadelphia, Penn. H. A. Van Dyke has been placed in charge of this office.

Barney & Smith Car Company, Dayton, Ohio, has been recommended by its receiver, Valentine Winters, that further operations at the plant be discontinued and that the plant be sold. Mr. Winters informed the court that since the receivership was established the loss to the plant has been \$157,330. What further action has been taken by the receivers has not yet become known.

U. T. Hungerford Brass & Copper Company, 510 Arch Street, Philadelphia, has purchased the merchandise stock of the A. P. Swoyer Company and has leased the premises formerly occupied by it at 17 North 7th Street, Philadelphia. Possession was taken by the Hungerford Company Sept. 1. It is intended to carry a full line of brass, copper, tin bronze, nickel silver and monel metal products in sheets, rods, tubes, wires, etc.

Henry C. Esling, secretary of the J. G. Brill Company for the past thirteen years, died on Sept. 18, at his home in Philadelphia after a brief illness. He was fifty-eight years of age. Mr. Esling was a member of the Philadelphia bar and prior to his affiliation with the electric railway car-building industry was associated in the practice of law with Francis Rawle. He was a director of the Pennsylvania Manufacturers' Association Casualty Insurance Company and of the Beneficial Savings Fund Society of Philadelphia.

New Advertising Literature

Safety Limit Switch.—A new crane safety limit switch, known as type LC, has been put on the market by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Oil Circuit Breakers.—The Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., has issued special publication 1643, entitled "Application of Oil Circuit Breakers."

Motors.—The Mechanical Appliance Company, Milwaukee, has issued bulletins Nos. 401, 402, 403, 404 and 405, covering the "Watson" direct-current motors, alternating-current motors, multispeed motors, slip-ring and high-torque motors and ball bearing motors respectively.